

Book Reviews

Strack, H.B.: Übungsfragen Biologie, 1. Ed.
Berlin-Heidelberg-New York: Springer 1977. 225 pp. Soft bound
US \$ 6.60

Students of biological disciplines have to master such an increasing amount of subject matter, that it should be welcomed when publishers and editors open up new methodic possibilities. The present collection of question is especially meant to be a book of exercises for the text book 'Biologie' edited by G. Czihak, H. Langer and H. Ziegler from the same publishing house. Furthermore it serves as a repetitorium for examinations. Such collections of questions involve the danger of covering the subject from a one-sided point of view or in extractions only. It is certainly owing to the great teaching experience of the author and co-authors (G. Czihak, C. Hauenschild, W. Haupt, H.F. Linsens, P. Sitte, H. Ziegler) that this collection of questions is of a very high level. By means of a skilled formulation of questions, the student will find out the correct answers only if he has really understood the context. Frequently there are several correct or incorrect answers while in other cases it is necessary to arrange several answers in a correct sequence. This book fills a gap on the market of teaching aids. The creditable cooperation of several experienced specialists has resulted, as in the case of the above-mentioned text book, in an exercise book treating in a complex way the fundamentals of biology as a uniform discipline. A clear arrangement of questions and answers (in the annex) as well as the handy and durable form of the inexpensive book are further advantages. This collection of questions can be recommended to students and university teachers alike.

H. Göring, Berlin

Ford, M., Monroe, J.E.: Living Systems, Principles and Relationships. 3. Ed.
New York, Hagerstown, London: Harper & Row 1977. 640 pp.,
555 figs. Hard bound £ 11.20

At first glance this book gives the European reader the impression of being written for well-educated laymen, but in actual fact it is expressively directed towards instructors and students. An explicit table informs the reader which of the 24 chapters should be used for courses on general biology, human biology, environmental biology, molecular biology, or behavioral biology, respectively. The book, an introduction to the whole field of biology, requires little preliminary knowledge from the reader. It is organized into 9 units: Life and change, structure, community and environment, metabolism, regulation, reproduction and development, behavior, evolution and the diversity of life. For this third edition, the authors were successful in emphasizing human biology, environmental aspects, biomedical applications, and evolution. However, due to the very broad spectrum of the contents, the scientific level is not very high. Many topics are only slightly touched upon: Osmosis is only described in qualitative terms neglecting the use of the term osmotic pressure; photosynthetic electron transport chains and the Calvin cycle are only superficially described, other pathways of carbon are not mentioned; regarding the origin of life, the decisive step of self organization is missing; etc. The impression that the book is for laymen is reinforced by the observation that many illustrations are more decorative than informative, and by the distribution throughout the text of numerous 'Bio-Topics'. These are chats written by A. Flexer, and include such topics as: 'Why Viking?'; 'Immortality in a Test Tube'; 'The Modern Alchemy'.

The polygraphic equipment is exquisite. All pedagogic and didactic aspects have been splendidly considered with minute detail. The book is very attractive, the reading is an aesthetic delight.

E. Libbert, Rostock

Krüssmann, G.: Handbuch der Laubgehölze, Bd. 2, 2. Ed.
Berlin-Hamburg: P. Parey 1977. 466 pp., 322 figs., 162 tabs. Hard
bound DM 228,-

The second volume of this excellent handbook deals with the broadleaved genera from *Eccremocarpus* Ruiz & Pav. – *Bignoniaceae* to *Protea* L. – *Proteaceae* are tabulated in alphabetical order of the scientific names of the genera, species and infra-specific taxa. It appears about one year after the first volume and includes many new species from the warmer regions of the earth.

One hundred and six genera are new additions to this part of the first edition. Among these 106 new genera are, surprisingly, the gymnospermous genus *Encephalartos* Lehm., *Zamiaceae* and the herbaceous genus *Musa* L., *Musaceae* with a false trunk. This remarkable enlargement is based on careful selection by the experienced author. Relevant recent literature is cited and new information, including necessary nomenclatural changes, is now available. All of which makes the book more valuable still.

The illustrations are usually in the immediate vicinity of the relevant text. They are, in general, of excellent quality, and show the essential characters expressed in the descriptions. The distribution maps, though not numerous, are of a high informative value.

The approved keys of the more important genera are indispensable for practical dendrological work.

The second volume of this excellent and abundantly illustrated handbook is as useful as the first volume and will surely find many new friends.

W. Vent, Berlin

Nover, L., Mothes, K.: Cell Differentiation in Microorganisms, Plants and Animals. 1. Ed.
Jena: VEB Fischer 1977. 639 pp., 193 figs. Soft bound DM 54,-

This volume, which contains 35 expert contributions to an International Symposium organized by the Deutsche Akademie der Naturforscher Leopoldina and held at the Reinhardsbrunn castle, Thuringia, GDR, in April 1976, is devoted to a very broad area of modern biological research. The definition adopted for cell differentiation includes the sequences of discontinuous events during the cell reproduction cycle, i.e. time-dependent changes in one cell, as well as the origin of time- and space-dependent intercellular differences in a multicellular organism. Both aspects of cell differentiation are physiologically related to each other, and in both cases, cells become different from each other by the unequal expression of the same genetic material. Knowledge of the complicated mechanism of gene expression is an indispensable prerequisite for an understanding of the regulation of cell differentiation. Accordingly, the basic molecular mechanism of nucleic acid and protein synthesis are the subjects of the first part of this volume, 'Specific Regulation of Gene Expression', with 14 contributions on 'Transcription', 'Pre-Messenger RNA and its Processing', 'Translation', 'Proteinogen Processing' and 'Protein Degradation'. The second part, 'Typical Aspects of Cell Differentiation', includes chapters on 'Programs of Gene Expression', 'The Cell Division Cycle', 'Enzymic Adaptation', 'Cell Specialization', 'Biogenesis and Transformation of Cell Organelles' (21 contributions).

As pointed out in the introduction by one of the editors, when working on cell differentiation, one should be primarily interested in the process as such and its specific regulation. In this respect, the most relevant contributions are found in the chapters on 'Programs of Gene Expression' and on 'The Cell Division Cycle'. They report the process of cell differentiation as an intrinsic consequence of the complex genetic structure and its multiple interactions, expressed in ordered sequential activities.

L. Stange, Kassel

Schuster, W.: Der Ölkürbis (*Cucurbita pepo* L.) Eine monographische Darstellung. Fortschritte im Acker- und Pflanzenbau, Beiheft 4. 1. Ed.

Berlin-Hamburg: P. Parey 1977. 53 pp., 8 figs., 25 tabs. Soft bound DM 39,60.

The booklet under review is a 'monograph on the relatively old, though in Middle and Western Europe, relatively unknown cultivated plant, the Ölkürbis (*Cucurbita pepo* L.)' presented 'with the aid of data from the literature and from the author's own experiments'. In four chapters, the author discusses origin and systematics, productiveness and noteworthy characteristics, cultivation measures (such as climatic and soil requirements, crop rotation, preparation and fertilization, sowing, harvest, diseases and pests, as well as possible applications) and the breeding prerequisites (flower biology, pollination, breeding goals, variability, breeding methods).

The reviewer, who worked between 1949 and 1968 with crosses of cultivated species of the genus *Cucurbita*, on genome analysis and transfer of the character 'Weichschaligkeit' from one species to an other, observed during those many years several hundred plants of various origin belonging to the species *C. pepo*, *C. maxima*, *C. moschata* and *C. ficifolia*. He feels therefore competent, and unfortunately obliged, to express several reservations against the present monograph.

In the title and the summary, the name 'Ölkürbis' is designed *Cucurbita pepo* L. Although this designation recently appears to be widely used in German agricultural literature (according to Marzell, Hegi, Mansfeld and others, the proper common name for *C. pepo* L. is Gartenkürbis, that is 'garden gourd'), it should be noted that this species includes numerous ornamental forms of gourds with dry, hard rinds, as well as varieties with fleshier skins, such as the summer squash, the winter squash, etc. In the varieties with fleshy skins, the young and the mature fruits are used, whereas in the case of the winter squash, the flesh, the seeds or both are used.

The name Ölkürbis (correct name: *C. pepo* L. var.) is confined, strictly speaking, to the recessive mutant observed by V. Tschermak-Seisenegg. This mutant is characterized by seeds with soft coats (in the literature they are named 'naked seed' or 'schalenlose Samen'), and consists of the varieties 'styriaca' (with long shoots) and 'oleifera' (with short shoots). On page 8, the author states that it is more correct to call the varieties soft-coated, than coat-less. He apparently overlooked the fact that the same suggestion was already made by Weiling and Prym-von Becherer in 1950! Consequently, a delimitation and use of the term 'Ölkürbis' in this monograph would have been appropriate and was definitely expected, but in fact, this name was sometimes used in the sense of pumpkin (Kürbis) and sometimes in the sense of Ölkürbis, and vice versa. And to the surprise of the reader, in the English translations of the headings of the tables and figures, both terms are translated as pumpkin. Furthermore, those forms are easily hybridizing, especially when the naturally flowering 'soft-coated' form grows in spatial proximity to flowering 'hard-coated' plants. The offspring

of such hybridizations have 'hard-coated' seeds. However, the author does not go into this problem in any detail. On the contrary (page 38), he says that the 'coatlessness or soft-coatedness of the Ölkürbis (sic!) is an important breeding goal.'

Comprehensive data from the literature has been compiled in the form of either mean values or ranges of the yield of fruits and seeds, as well as of other characteristics of the products. There is only an incidental evaluation of these data, which would have been highly valuable for further research. Moreover, mean values provide useful estimates only when accompanied by a variation statistic, and in the case of samples, by a adequate description of the size of the sample and, if necessary, of their structure. The statement (page 11), that 'the values of the sugar content, and sugar yield lie, in the experiments ... with the *C. maxima* varieties, (according to table 6, three varieties with the mean values from 3 years and 3 different stands, 6.36, 5.75, and 4.41 dt/ha or 11.51, 9.84 and 9.45% sugar contents), are clearly higher than those with *C. pepo* varieties (4.60, 4.87, 5.89 dt/ha or 8.93, 7.59 and 11.67% sugar content)' can hardly withstand a statistical examination. It should also been mentioned that the seed kernels are not attached to the parenchymal tissue with parenchymal fibres (page 29 f), but rather with cords (umbilical cord, funiculus), which have since become superfluous, to the placental tissue. The author in question, G., for Gudrun, Schoeninger (page 33) is not male!

Repeated discrepancies between the text and table or figure legends are disturbing. In table 1, data taken from Whitaker and Davis concerning the cultivated (species of the family) Cucurbitaceae, arranged according to tribe, genus, species, common name, geographic origin, and chromosome number, and based on the systematic classification of Müller and Pax (1894), are attributed, in the text, to Whitaker and Davis, and in the table, which has an incorrect title, i.e. Systematics and regions of origin of the genus *Cucurbita*, to Müller and Pax. In Figure 3, several size data, presented on the ordinate, which show the behavior of five different characteristics in relation to the space used by the individual plant, are unclear. In Table 12, seven of the itemized characteristics, unfortunately all of the data describing size, are missing. From Figure 5 until the end (Fig. 8), the numbering of the figures in the legends is one number higher than the corresponding reference in the text. The reason being that Figure 5 consists of two photographs, the second of which is numbered as '6' in the legends.

The reviewer regrets that, despite the unfortunately short but up-to-date and largely correct article about the 'Ölkürbis' of von Boguslawski in the Agricultural Handbook (1953) and Whitaker's contribution on the breeding of squashes and pumpkins in the Handbook of Plant Breeding (1962), and in view of the excellent design of the book, the opportunity for a critical stock-taking of the literature, particularly in pointing out present existing problems, was not really taken advantage of.

F. Weiling, Bonn

Rost, T.L., Gifford, E.M.: Mechanisms and Control of Cell Division. 1. Ed.

Stroudsburg, Pennsylvania, Dowden: Hutchinson & Ross 1977. 386 pp., 191 figs., 20 tabs. Hard bound \$ 31.50

Due to the ambiguous usage of the term 'cell division', those readers who expect to find a detailed discussion of cytokinesis will be disappointed. The volume is instead 'a compendium of several areas of cell cycle research'. The contributions appear to be of high quality, but on a whole, one cannot avoid feeling that they are an arbitrary arrangement of more or less independant discussions. They are either original papers (partly of continuing journal-ser-

ies!), reviews on selected topics, or digested and condensed versions of some chapters of more comprehensive simultaneously-appearing monographs. Sometimes it becomes difficult to follow the conception-line of the editors. This should be taken into consideration if advanced students are intended to be reached. For researchers, the book may be a source of new facts (e.g. dismantling the mystery of the *Euglena* mitosis or new data on contractile proteins in eucaryotic chromatin). Unfortunately the quality of the reproduction of electron micrographs is only sufficient to resolve coarser details. This is a pity as 8 out of 12 contributions are morphological. The contents of the text in catchwords are cell cycle regulation (histones, contractile proteins, cytokinin, hormones), nuclear structure and chromosome movement (structures during cell cycle, persistent nucleoli, membranes in the spindle, zipper-hypothesis), and mechanisms of cell division (higher plants, *euglena*, basidiomycotina). M. Girbardt, Jena

Spezielle pathologische Anatomie (Hrsg.: Doerr, W.; Seifert, G.; Uehlinger, E.). Otto, H.F.; Töndury, G.; Wanke, M.; Zeithofer, J.: Darm. Peritoneum. Hernienlehre. Bd. 2, T. 2.

Berlin-Heidelberg-New York: Springer 1976. 989 pp., 393 figs., 139 tabs. Bound DM 480,-

The contention that such a voluminous reference book as this could simultaneously also be a textbook is surprising, but in this case, completely justifiable. It is emphasized by the presence of a very detailed subject and author index of about 25 pages and a reference list which covers no fewer than 240 pages and contains entries into modern research of the field in question.

The clear arrangement of the chapters into functional and morphological parts makes for a good survey. The fluently written text presents the various sections of the intestines as a total system. The genetic aspects are very clearly described in the introductory chapter on the embryological development of the gut. Congenital malformations are treated in each of the various sections in detail so that the normal reader, who can be sometimes considered only an amateur geneticist, obtains the latest results of gastroenterological research.

The didactical value of an encyclopedic book of this size is in the accumulation of histological details and the excellent semi-schematic-graphic illustrations. The clinical reader will obtain special benefits from the section on the physiology of the intestine and the pathophysiology of the various diseases in relation to pathological anatomy. This is a brilliant book which will for a long time form the base of our knowledge in the study of the intestine, peritoneum, and hernia. W. Jorde, Mönchengladbach

Ricaardi, V.M.: The Genetic Approach to Human Disease. 1. Ed. New York: Oxford University Press 1977. 273 pp., 45 figs., 40 tabs. Soft bound £ 7.00

One of the chief purposes of medical genetics is to give information to couples on the risks of disease in future children, and to put the risks into perspective for them, both in relation to random risks and to the prognosis of the child, if affected.

'All clinicians must be able to determine whether a given disorder is genetic, possibly genetic, or not genetic, and be able to share that information with the patient or family and refer them, if necessary, to specialists for further assistance'. From this point of view, V.M. Riccardi presents in his book a clear picture of the basic types of genetic diseases — chromosome disorders, Mendelian

disorders (single gene), polygenic disorders and inborn errors of metabolism. Before dealing specifically with these disorders, in each chapter the common terms are reviewed in a brief glossary. The author shows in specific detail and with many case examples how knowledge of genetic diseases can be applied to clinical practice. The general principles governing the effects of environmental agents on genetic material and its expression are outlined in the following chapter. The adverse effects of clinically important environmental agents such as X-rays, progestational agents and rubella virus are described. Finally, the author demonstrates how these considerations influence patient care. Prenatal diagnosis techniques and their applications, which have become an established part of health care, are described in detail. Methods of genetic evaluations and of genetic counseling are discussed in practical terms in order to facilitate their application in routine clinical settings. An overview of clinical genetics, including brief discussions of therapy, is thus provided. A special chapter deals with the ethical, moral and legal aspects of clinical genetics.

This book is well illustrated, particularly with clear summary tables. The text reflects the author's experience as director of the Colorado-Wyoming Regional Genetic Counseling Program, which provides clinical service, professional training and public education to residents of Colorado, Wyoming, Nebraska and Utah. This book bridges the gap between a knowledge of medical genetics and its clinical application and is therefore intended for non-geneticists, physicians, students of medicine, nurses, paramedical professionals as well as for health care educators and planners.

F.H. Herrmann, Erfurt

Eveleth, P.B., Tanner, J.M.: Worldwide variation in human growth. Intern. Biol. Program, vol. 8. 1. Ed.

Cambridge: Cambridge University Press 1976. 498 pp., 199 figs., 111 tabs. Hard bound £ 20.-

In this book under review, a lot of information from the entire world has been compiled: Height, weight, chest circumference, sitting height, etcetera. There is data about racial and environmental influences on body size, for example, compared with individuals from other countries, people in developing lands have heights and weights below standard. In the industrial nations there are also areas in which the differences in the socio-economic status are responsible for differences in body size. But contrary to what has sometimes been stated by nutritionists versed in animal work, malnutrition in man does not significantly alter the shape of the body; a malnourished European child by no means acquires the short legs of the Asiatic. Most interesting is the data concerning the mingling of several racially different populations. The measurements taken from such populations lie somewhere inbetween those of the two original populations. A long discussion is presented about the secular trend of increasing growth and maturation. In wartime one has observed a decrease in the height and weight of German, Russian and Japanese children, while in recent years, increments in height and weight have been observed in the bushmen of the Kalahari and in the aborigines from Australia. Maturation, signified by age at the onset of menarche, has been occurring earlier in life by 3 to 4 months per decade in most European countries for the last hundred years. This trend, as well as increasing body size in upper and middle class families, however, now seems to be slowing down. The book also presents good instructions for the methods of compilation, statistics and measurements. It explains in simple terms the different sorts of growth surveys. All who are professionally concerned with child health should read it. A. Knapp, Greifswald

Delucchi, V.L.: Studies in Biological Control.

Cambridge: Cambridge University Press 1976. 304 pp., 22 figs., 22 tabs. Hard bound £ 15.00

This publication is the outcome of collaborative research on the systematics, physiology, ethology and ecology of five main groups of agricultural pests (fruit flies, aphids, rice stem-borers, armoured scale insects and spider mites). These studies were sponsored by the International Biology Programme from the years 1966/67-1974 and conducted by several hundred entomologists in more than 30 countries. As the title of the book indicates, the main aim of the research centered around the possible application of enemies or parasites of the five pests. A wealth of data has been collected for these species groups (life tables, density fluctuations and mortality factors). These were used to evaluate the respective roles of the various biotic and abiotic factors for the survival and maintenance of the individual and the population, and the potential application of these various factors for control purposes. About 900 references are quoted as background to the reports on the five species groups. Unfortunately this list is not quite up-to-date and contains only one reference since 1975.

Genetics as a tool for basic ecological research (population structure, migration, host selection, race formation, etc.), is mentioned here and there, but it is admitted that knowledge in the field of genetics of the five pests is very scanty or even totally lacking. Only in fruit flies is there a small series of genetic markers available and these are mainly variations in enzymatic and non-enzymatic proteins which have been used for general research problems. Genetics, as a means for control, is only mentioned as a possibility in the sterile insect release technique for fruit flies and aphids, in the last case with valuable considerations on the feasibility of this approach for control. The book is therefore mainly outside of the scope of genetics and geneticists. Nevertheless, it provides a broad background to the ecology and population biology of the species mentioned which is difficult to find in such a concise form elsewhere. The final chapter of the book is a convenient summary of the reports on the different species and indicates research achievements, possibilities and prospects of control, and last but not least, points to many lacunae in our knowledge, including the urgent need for more genetic information.

H. Laven, Mainz

Nezlin, R.S.: Struktur und Biosynthese der Antikörper.

Jena: Fischer 1977, 294 pp., 62 figs., 59 tabs. Soft bound DM 63,-

A simple look at the relative amount of recent literature in this German edition of Nezlin's book (first edition 1972) shows the increase of knowledge in the field (in some chapters up to 25% of the references are later than 1971). Probably for reasons of uniformity, the word 'antibody' is used in the titles of the various chapters although immunoglobulins would be preferred in most cases. After a survey of the methods available for quantitative determination and isolation of immunoglobulins, the properties of the various immunoglobulins and their structures are presented in an excellent way. The biosynthesis of immunoglobulins is discussed mainly from the *in vitro* point of view (cell cultures, cell-free systems, *Xenopus* eggs). Strangely enough, the space given to the macrophages is quite large while the cooperation of T and B lymphocytes is explained in less than one page and the role of IgD-receptors is not even mentioned. The last two chapters deal with genetical aspects, especially allotypes and regulation of the immunoglobulin synthesis and the very difficult problem of the origin of antibody diversity.

It is almost unbelievable that one person could write such a remarkably complete survey of modern molecular immunobiology. The name of F. Noll must be mentioned as the person

particularly responsible for this edition. One can regret that it is only accessible to those who are able to read German.

J.A.W.M. van der Donk, Utrecht

Wagner, H., Wolff, P. (Eds.): New Natural Products and Plant Drugs with Pharmacological, Biological or Therapeutical Activity. Proceedings in Life Sciences. 1. Ed.

Berlin-Heidelberg-New York: Springer-Verlag 1977. 286 pp., 152 figs., 35 tabs. Hard bound DM 67,-

The creation of centers for the research of natural plant products in various countries indicates that this branch of biochemistry is becoming more important (see H. Schildkrecht and M. Lindner, *Nachr. Chemie Techn.*, 1977, p. 285). The progress reports of investigators working on plant drugs and natural products with biological and pharmacological effects have, therefore, great significance. The reader of this book, edited by H. Wagner and P. Wolff, can be informed quickly and comprehensively of developments in phytochemistry research in the form of contributions from numerous scientists. N.R. Farnsworth and A.S. Bingel describe the prospects and the problems of discovering new drugs from higher plants by pharmacological screening while M.H. Malone discusses the pharmacological approaches to natural product screening and evaluation. A very special part, by G.A. Cordell, is the description of recent experiments and clinical data concerning antitumor and cytotoxic agents from plants. He places particular emphasis on the terpenesters of Euphorbiaceae, Simaroubaceae and Thymelaceae, as well as on those from the Maytanas species. Among the many progress reports on antibiotics is a paper on the recent advances in the field of antibiotics, by Ch. Tamm. This experienced investigator points to relationships between structure and effect and presents a overall view on a bulk of material. The contribution of O. Stiche on plant mono-, di- and sesquiterpenoids with pharmacological or therapeutical activity appears to be incomplete: cantharidin is mentioned, vitamin A - acid, a substance with increasing therapeutical value, is not. H. Achenbach reports on progress in the chemistry of alkaloids with pharmacological and biological activity. In traditional medical practices of the Western hemisphere, the most valuable medicines are alkaloid drugs; in East Asia, plants with saponins are more important. S. Shibata, in his report on saponins with biological and pharmacological activity, emphasizes Glycyrrhiza, Bupleurum, Platycodon, Polygala, Akebia, Aesculus, Ginseng and Zizyphus. The modes of action of these drugs, in many cases, are still unknown. One observation has been made, however: The pharmacological activity of natural plant products increases several times after dimerization. A classical example are the dimere procyanidins from *Crataegus oxyacantha*. The known facts on dimeric natural compounds has been compiled by A.E. Schwarting.

Most of the contributions, even if they concern biological and pharmacological results, are chemically orientated. This is true for the reviews of T.R. Govindachari on Indian medical plants and of O.R. Gottlieb on neolignans with potential biological activity. An exception is the paper by G. Vogel on natural substances with effects on the liver, which competently discusses the effects of Silybum drugs. The contribution of P.W. Thies on the modification of natural substances in modern drug synthesis will be especially important for scientists who are interested in the synthesis of drugs. It could be placed under the title 'Natural Products as Models for New Medicines'. The author's own discovery, the valepotriates from *Valeriana* rhizomes, and his effort to modify them by synthetic methods, in order to get new substances with effects on the central nervous system might have been the motivation for this paper.

This is an excellent book and one that is extremely worthwhile to read.

R. Hänsel, Berlin