

THE T. & R.

BULLETIN

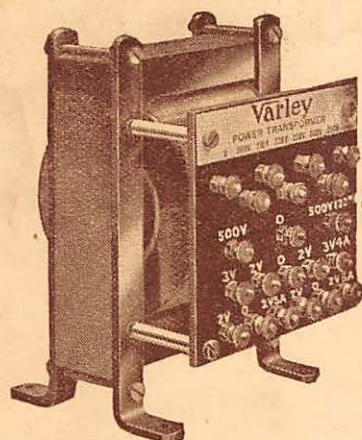
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OF GT. BRITAIN

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RADIO UNION

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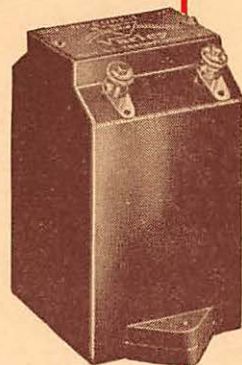
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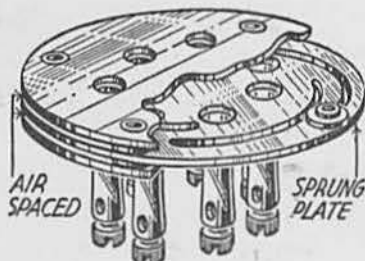
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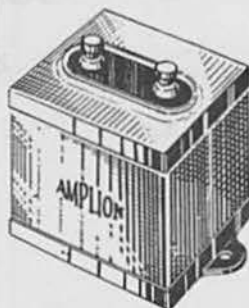
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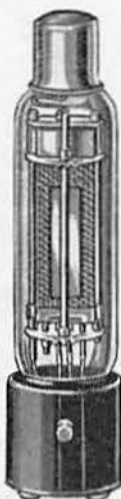
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THE T. & R. BULLETIN

CONTENTS.

Honorary Editor:—

H. Bevan Swift (G2TL)

Vol. 10

| | Page |
|--|------|
| Editorial | 405 |
| 100 Watt Tri-tet Excited Transmitter .. | 406 |
| The Mechanism of Propagation .. | 411 |
| Amateur Radio in the Desert .. | 414 |
| The 1935 1.7 mc. Contest .. | 417 |
| Reception Contest .. | 419 |
| Soliloquies from the Shack .. | 420 |
| New Valves Reviewed .. | 421 |
| Book Reviews .. | 422 |
| National Field Day, 1935 .. | 424 |
| Research and Experimental Section .. | 427 |
| Hic et Ubique .. | 431 |
| Notes and News from the British Isles .. | 434 |
| Empire News .. | 440 |

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No. 11

INTO THE OPEN

THE sun was shining somewhat fitfully when these lines were written, but by the time they appear in cold black print, the days should have lengthened, and the weather become more settled.

Radio amateurs enjoy a fine summer even as much as they *seem* to enjoy a howling wind, a swirling snowstorm and a roaring fire—when the DX begins to break through late on a winter evening.

In a fortnight, the operators at some 50 British and about 30 odd Colonial and foreign amateur stations will be preparing for the great annual trek to mountain fastnesses, uncultivated bush, and green hilltops, for National Field Day will be upon them.

It was a happy thought to bring together in this increasingly popular event, our friends abroad, because, although the contacts we make are a little reminiscent of "tip and run" contests, there is a difference, especially if the station worked is itself portable. This year's Field Day event will be made more interesting than its predecessors by virtue of the fact that quite a number of B.E.R.U. stations will be on the look-out for the British and European portables, and although it will, perhaps, lose a few minutes, may we suggest that the operators working each QSO tell their colleagues at the other end, a little about their station and its site? If we were to cut out the contest angle from the event, we feel sure some of its popularity would be lost, but let us remember that the real object of the Field Day is to test out the efficacy and efficiency of the gear we possess *from a communication point of view*.

It is unlikely that British amateur stations will be called upon in a case of emergency to maintain communication, but the fact that emergencies *do* arise in other parts of the world, should at least spur us on to make the very best possible use of the opportunities presented during N.F.D.

We do not expect "rag chewing" in the accepted sense, but let us endeavour to stop the mad rush from one station to the next.

So much, then, for N.F.D., but what of the other occasions when we get out into the open with portable gear? This coming summer will probably see many hundreds of amateurs in all parts of the world active with portable 56 mc. apparatus; some will carry specially designed aerial systems to produce beam effects, others will be testing new receivers, other new transmitters. The point we wish to make in connection with this interesting and healthy work concerns co-operation. In the past, not many attempts have been made by one party to co-operate with another, and as a consequence really useful data has been missed.

(Continued on page 442)

A 100-WATT TRI-TET EXCITED TRANSMITTER

By G. McLEAN WILFORD (G2WD).

This article describes a tri-tet excited transmitter which requires no coil changing for work in any three harmonically related amateur bands.

Part I contains a general description of the transmitter, whilst Part II will describe the circuit, connections, and operation.

Foreword.

THE author makes no apology for presenting a transmitter which uses valves of American origin; had British valves having similar characteristics been obtainable at a price comparable with that of the American, they would most certainly have been used.

General.

It has long been the author's idea that an amateur transmitter could be simplified as regards the amount of time that is spent when changing from one band to another, and to this end the transmitter now being described is the outcome of much experimental work. As will be seen from the circuit diagram, Fig. 1, the number of valves used (excluding those in the modulator unit) is four, two RK20's as P.A.'s, one 59 as tri-tet, and a 53 as a double doubler, i.e., doubling in either one or both halves of the valve, which is really a Class B amplifier.

The whole transmitter is designed to give three-band operation without changing coils. The only operations that have to be performed are the throwing of two or more switches, the tuning of the P.A. tank and grid circuits and the aerial adjustment.

Three crystals are used in a special triple holder, made to specification by G6WQ, for 2 Q.C.C. (round) and 1 Brookes (square) crystals.

Disregarding actual frequencies the operating frequencies of the three portions of the exciter unit will be:—

| Fundamental. | mc. | mc. | mc. | Arrangement. |
|--------------|------|------|------|---------------------|
| (1) 1.7 m.c. | 1.7 | 3.5 | 7.0 | Type 59 valve |
| (2) 3.5 " | 3.5 | 7.0 | 14.0 | used as pentode, |
| (3) 7.0 " | 7.0 | 14.0 | 28.0 | cathode circuit |
| | | | | shorted. |
| (4) 1.7 " | 3.5 | 7.0 | 14.0 | Using tri-tet, nor- |
| (5) 3.5 " | 7.0 | 14.0 | 28.0 | mally doubling in |
| (6) 7.0 " | 14.0 | 28.0 | 56.0 | plate circuit. |

From this table it will be seen that any three bands which are harmonically related can be set up and a frequency change made in a few moments after the complete transmitter has once been calibrated.

Changing from C.W. to suppressor grid modulated phone is only a question of throwing one switch, which will be described later.

The P.A. unit is link-coupled from the exciter unit by means of a special switch, which is really a double-pole 3-way rotary type made out of a Bulgin S94 switch. By means of this switch the exciter output required is connected to its appropriate grid coil by the simple process of inserting two Clix plugs into their appropriate sockets on the small terminal board above the grid coil unit and setting the selector switch to its correct position.

Construction.

The complete transmitter is built in a wooden framework with a wooden base; the uprights are fitted with runners, so that each unit slides in from the front in a similar manner to a drawer.

The overall dimensions are: width 19½ ins., height 25 ins., depth 9 ins., which dimensions make the whole transmitter of a size which will stand on the operating table.

The transmitter is made up of three units, which, reading from top to bottom, are as follows:—

- A. Power amplifier unit.
- B. Exciter doubler unit.
- C. Speech amplifier unit.

Units A and B are identical as regards dimensions, each being built on a wooden box with no bottom, the dimensions being 18"×8"×1½" deep.

The speech amplifier unit is 18"×8"×2" deep, to accommodate larger components.

After the components have been located and the valve holders (which are National isolantite) fitted, the unit is covered with 24 S.W.G. aluminium sheet. The holes for each component, previously made, are drilled out again and each component is fixed permanently, "shake proof" lock washers being fitted to ensure that components will "stay put."

The panels for each unit are all the same size, being 19½ ins. long and 7 ins. high, and are of 16 S.W.G. aluminium. The meter panel is 16 S.W.G. aluminium, but measures 19½ ins. by 5½ ins., which size is ample for Howard Butler & Co. instruments, which are exclusively used in this station. If other types are used, or only one instrument with a system of jacks, this panel would have to be varied as regards its size. The omission of five of the meters would, of course, decrease the cost, but the author prefers to have a meter in each circuit so that when the set is in full operation each part can be checked instantly.

Each unit is fitted with chassis-mounting valve-holders for making the necessary H.T. and L.T. connections from the main connection panel. This panel is shown in Fig. 2, being the panel with two 5-pin holders on either side of the 7-pin Bulgin socket. The 7-pin plug and socket carries the H.T. supplies from the power packs to the meters, and thence to the 5-pin sockets. From there the leads are taken per 4- and 5-pin plugs and leads to the appropriate sockets in the P.A. and exciter units. The 2-pin plug on the P.A. unit carries the 7.5-volt 6.5-amp. supply for the RK20 valves.

The speech amplifier plug and socket carry both H.T. and L.T. leads for this unit.

All valve-holders, chokes, bias resistances, etc., are under the base in the exciter unit and above the base in the P.A. unit. These are shown in Fig. 3.

Europe being Worked on 28 M.C.—

From the foregoing it will be seen that each unit is complete in itself, and by removing four screws which hold the panel to the frame, and disconnecting the appropriate plugs, the whole unit can be withdrawn for examination or repair. It is now proposed to describe the three units in detail.

operation could be obtained with the minimum of apparatus.

The inductance is made by Q.C.C. The plate tank condenser is a *Cydon* 200 mmf. each section (100 mmf. effective), and the grid a *Polar* Type E 150 mmf. per section (75 mmf. effective). The valves are mounted horizontally with the filaments

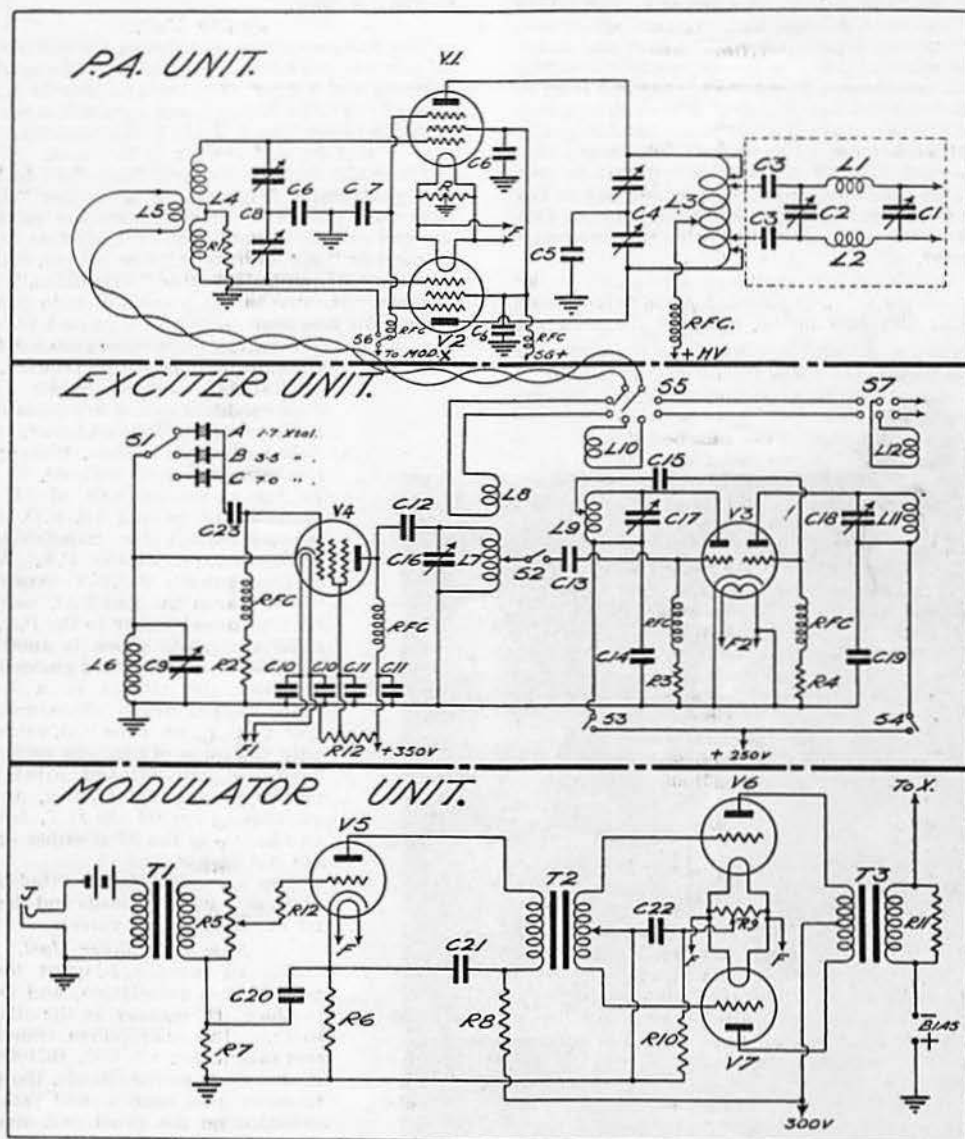


FIG. 1.
CIRCUIT DIAGRAM OF TRANSMITTER.

Power Amplifier Unit.

This unit is designed for two type RK20 valves (50-watt pentodes) in push-pull, with the grid and plate circuits tuned with split stator condensers. The RK20's were chosen because of their stability, ease of excitation, and the fact that phone or C.W.

in the vertical plane. The two sockets are mounted on the top of an aluminium screen, and the plates fit into two spring clips supported on copper strips mounted direct on the condenser stators. The coil is centre fed through an *Eddystone* sectional choke, and the connections from each end of the

coil-supporting insulators to plates are of copper braid. The shield also supports the by-pass condensers from the screen grids and suppressor grid.

At the left-hand end of this unit is mounted a *Bulgin* SW22 short-wave tuning unit, which is used without any alteration except that only four coils are inserted and the front set of switches, i.e., the set nearest the panel, are not used. This means that only three of the four pins are in use, the two outside pins being used to start and finish the grid winding and the centre connected to the grid-leak resistance. When the photograph (Fig. 3) was taken the method of changing the link coupling had not been decided upon, but it is a small micanite panel with four pairs of *Clix* sockets, to each of which is connected the link coil of the appropriate grid coil. Two *Clix* wander plugs are connected to the exciter terminals, and these are fitted into the two sockets of the coil corresponding to the frequency being used.

The switch in the centre of the panel is for changing from C.W. to phone, but, as will be seen later, this may be omitted, for since the unit was

built the author has evolved a much simpler means of changing over.

One 2-pin plug and socket is for the filament L.T., and the 5-pin plug and socket for the H.T. leads. The lead from the speech amplifier to the P.A. suppressor grid terminal is clearly shown in Fig. 2 coming from the bottom right-hand corner to the P.A. unit.

Exciter Unit.

This unit uses a type 59 valve as a tri-tet oscillator or pentode oscillator (with the cathode condenser shorted) and a type 53 valve as a double doubler. This 53 is a Class B valve, and each half is used as a separate triode, the cathode being common. Auto bias is used on both valves in this unit.

Along the front of the unit from right to left of the photograph (Fig. 4) are a *Cylodon* "Bebe" 365 mmf. condenser (mounted on the panel) for the grid cathode circuit, next an *Eddystone* 50 mmf. "Scientific" for the tri-tet plate circuit, and then two more 35-mmf. *Eddystone* "Scientifics." Each condenser is mounted on a small ebonite panel, as both rotor and stator are above ground potential.

The last two condensers are for tuning the two halves of the 53 doubler.

The triple crystal holder and its 3-way selector switch are mounted just behind the *Cylodon* condenser.

The four coil-holders, looking from right to left, are 59 cathode, 59 plate, 1st half of 53, 2nd half of 53, while between the 59 and 1st F.D. is the selector switch for transferring the exciter output to the P.A. At the extreme left is a D.P.D.T. snap switch, which allows the 2nd F.D. output to be transferred either to the P.A. or to a 56 mc. unit, which is another 53 operated as a neutralised pushpull P.A.

Under the chassis is a S.P.S.T. snap switch, which disconnects the tri-tet output from the F.D. valve when only the 59 is in use. In each anode circuit of the 53, and fitted in the middle of the meter panel, are snap switches to cut off the H.T. from the two halves of the 53 if either or both are not in use.

Two valve sockets are fitted to this unit, one for L.T. leads and the other for the H.T. to both valves.

Speech Amplifier Unit.

This is specially adapted for suppressor grid modulation, and is built in the same manner as the other two units. The microphone transformer was taken from a G.E.C. BC1900, and mounted above the chassis, the potentiometer gain control, and jack being mounted on the panel just above it. All other apparatus is mounted under the chassis. The by-pass condensers are all T.C.C., the push-pull input transformer was picked up at a sale of set makers' parts, and the output transformer is a *Philco* 1.1 to 1 Class B input reversed with a stabilising 5-watt B.A.T. resistance across its output. The bias resistances in this unit are all B.A.T.

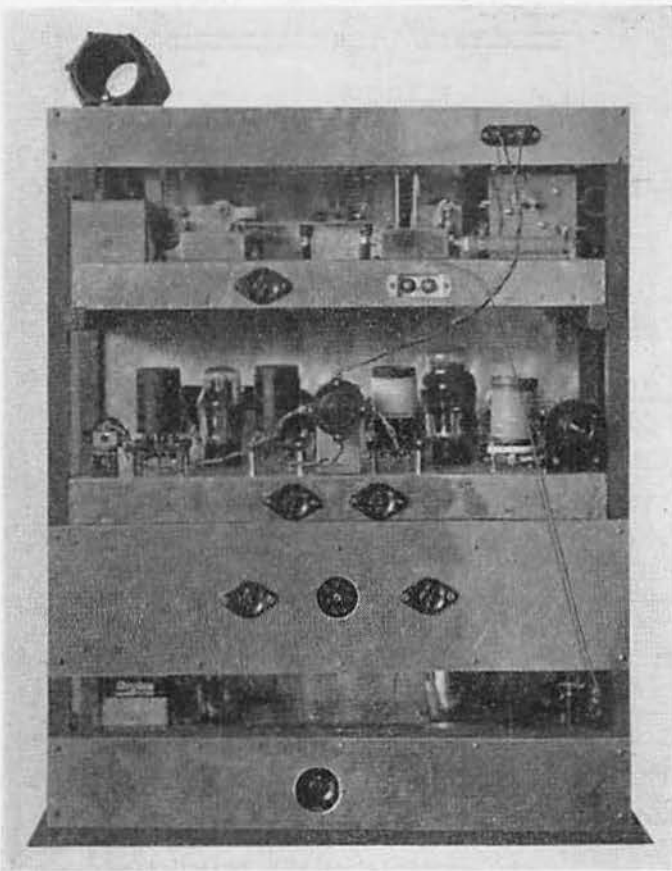


Fig. 2.—Rear view of transmitter. The power amplifier unit is at the top, the exciter doubler unit in the centre, the speech amplifier unit at the base. The main connection panel is above the amplifier unit. Note connection to suppressor grid terminal of power amplifier from speech amplifier.

R8 Reports Being Obtained—

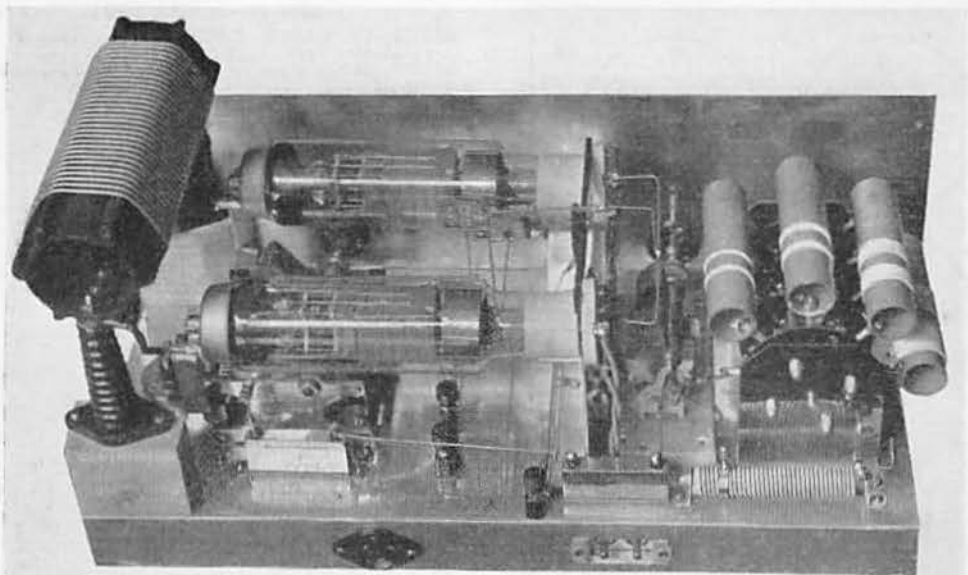


Fig. 3.—The power amplifier unit.

The two 45 valves are of low impedance, and are coupled to the P.A. suppressor grid through a transformer resistance combination, so that the audio voltage is not distorted by the flow of grid current. A negative bias of 45 volts is supplied to the suppressor grids of the RK20's, and a .0/3 milliammeter in this circuit will give a good check on modulation peaks, and should either not move or not show more than about 1 milliamp. This is

the only part of the transmitter which uses battery bias, all other circuits being auto biased.

Valve Socket Connections.

For the benefit of those who may be unfamiliar with the socket connections for the American valves used, Fig. 5 will show the connections. These are all illustrated looking *DOWN* on top of the socket.

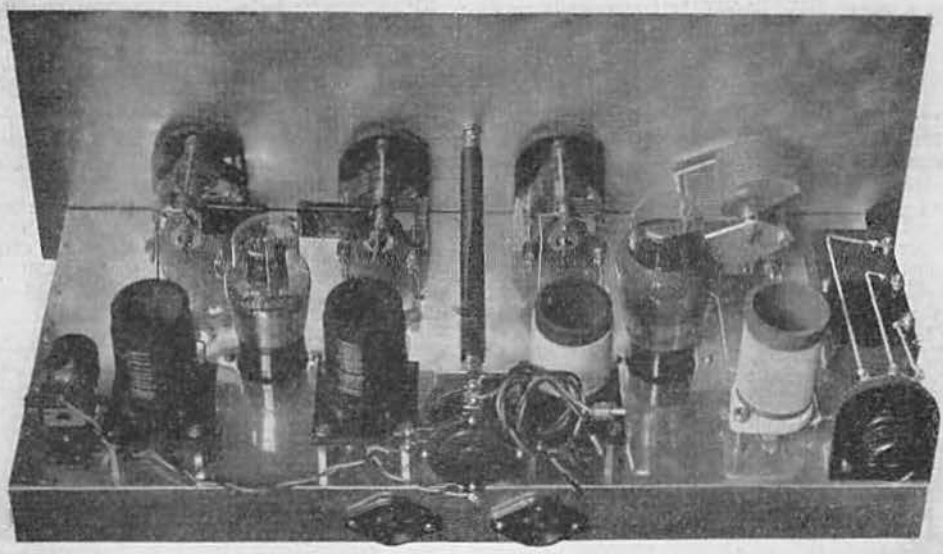


Fig. 4.—The exciter doubler unit. The special crystal holder is on the extreme right. The left-hand valve is a 53, and the right-hand valve a 59.

From Europe on 23 m.c.

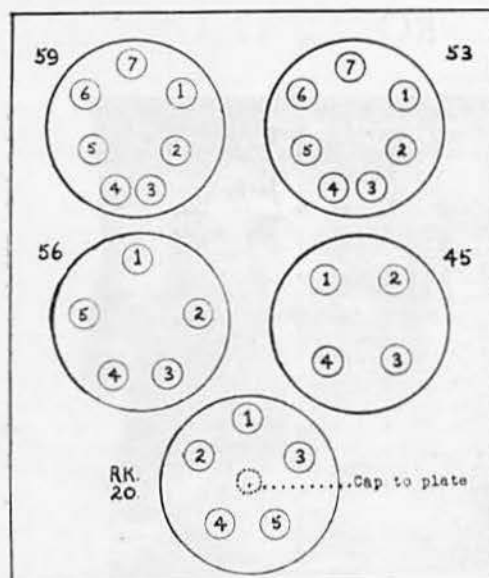


Fig. 5.

- | | |
|------------------------------------|------------------------------|
| Top left, No. 59. | Top right, No. 53. |
| 1. Grid 2. | 1. Grid. |
| 2. Plate. | 2. Plate. |
| 3 and 4. Heater. | 3 and 4. Heater. |
| 5. Cathode. | 5. Plate. |
| 6. Grid 3. | 6. Grid. |
| 7. Control Grid. | 7. Cathode. |
| (1 and 6 strapped to form screen.) | |
| Centre left, No. 56. | Centre right, No. 45. |
| 1. Control Grid. | 1. Grid. |
| 2. Plate. | 2. Plate. |
| 3 and 4. Heater. | 3 and 4. Filament. |
| 5. Cathode. | |
| Bottom, RK. 20. | |
| 1. Grid. | |
| 2. Screen Grid. | |
| 3. Suppressor Grid. | |
| 4 and 5. Filament. | |

LIST OF COMPONENTS.

- L1, L2, C1, C2, C3, Collins coupler. (See T. & R. Bulletin, April, 1935.)
 L3, 30 turns 3 in. diam. 14 s.w.g. t.c. spaced wire diameter Q.C.C.
 L4, Grid coils (see coil table).
 L5, Link coil (ditto).
 L6, Grid cathode coil (ditto).
 L7, Tritet plate coil (ditto).
 L8, Tritet link coil (ditto).
 L9, First F.D. coil (ditto).
 L10, First F.D. link coil (ditto).
 L11, Second F.D. coil (ditto).
 L12, Second F.D. link coil (ditto).
 C4, 200 mmf. (100 mmf. effective) Cylcon.
 C5, .005 mfd. Dubilier 577.
 C6, .002 mfd. ditto.
 C7, .002 mfd. T.C.C. type M.
 C8, 150 mmf. (75 mmf. effective), Polar E.
 C9, 365 mmf. Cylcon Bebe.
 C10, .005 mfd. T.C.C. Type M.
 C11 and 12, .002 mfd. ditto.
 C13 and 15, .001 mfd. ditto.
 C14 and 19, .01 mfd. ditto.
 C16, 50 mmf. Eddystone Scientific.
 C17 and 18, 35 mmf. ditto.
 C20, .5 mfd. T.C.C. 200v. type.
 C21, 2 mfd. T.C.C. 400v. type.
 C22, 1 mfd. T.C.C. 200v. type.
 C23, 250 mmf. T.C.C. type M.
 S1, 3-way single pole switch Bulgin.
 S2, On-off snap switch, ditto.
 S3, 4, single pole single throw switches ditto.
 S5, 3-way double pole Bulgin S94 remodelled.
 S6, single pole single throw Bulgin.
 R1, 15,000 ohm 25 watt Bulgin.
 R2, 50,000 ohm 1 watt B.A.T.
 R3, 4, 10,000 ohm, 2-watt Dubilier.
 R5, 500,000 ohm Potentionmeter Lewcos.
 R6, 2,500 ohm 1 watt B.A.T.
 R7, 50,000 ohm 1 watt B.A.T.
 R8, 10,000 ohm 5 watt B.A.T.
 R9, 20 ohm hum dinger Claude Lyons.
 R10, 800 ohm 5-watt B.A.T.
 R11, 10,000 ohm 5-watt B.A.T.
 RFC, Sectional chokes, Eddystone.
 V1, V2, RK20, Raytheon.
 V3, Type 53, Ward.
 V4, Type 59, Ward.
 V5, Type 56, Ward.
 V6, 7, Type 45, Ward.
 T1, Microphone transformer, G.E.C. type BC1900.
 T2, Push-pull, input transformer (see text).
 T3, Class B transformer, Philco (see text).
 J, Open circuit microphone jack.

(To be continued)

Thames Valley Amateur Radio Society

An attendance of over 50 was reported at the April meeting of the above society, when Mr. H. V. Wilkins (G6WN) acted as commentator during the showing of the N.F.D. films. At the same meeting Mr. Cooper (G5LC) gave a talk on Radio Receiver Test Apparatus. It is anticipated that at least three field days will be arranged by the Society during the coming summer, when R.S.G.B. members will be heartily welcomed.

Mr. F. Crocker (G2NN), the first Chairman of the Society, has been offered and accepted the position of President.

56 MC. Activities in Southport

We are advised by Mr. Fennessy (G5ZI) that several members in and around Southport are interested in 56 mc. work. The first inter-town work on this frequency was carried out during the Easter holidays by G5ZI, 2IN, and 6SX. Co-operation is requested from other members in the area. Offers of help should be sent to G5ZI via G2IN, 6, Denmark Road, Southport, Lancs.

Another QRP Achievement

An amazing instance of low power DX working has been brought to our notice by Mr. Fenner (ZC6FF). For some weeks during March and April this station was in daily contact with VE1BV, and on one schedule contact was still maintained after power had been reduced by ZC6FF to 0.3 watt. The power supply was from a 45 volts dry battery, and the valve an LP2.

Canadian Phone Band

We are advised by VE1EI via G5VL that the Canadian Phone band has now been extended to 3,850-4,000 kc.

Glasgow Police Radio

Mr. C. F. Laidig (BRS1770), 2, Hawkhead Crescent, Liberton, Edinburgh, informs us that the Wireless Dept., City of Glasgow Police, are anxious to receive reports on their transmissions carried out on a frequency of 2,070 kcs. Reports may be sent to Mr. Laidig, or direct to Headquarters Division, Wireless Dept., St. Andrew's Square, Glasgow.

Technical Tips Wanted.

THE MECHANISM OF PROPAGATION

BY MAURICE GIBSON.

Introduction.

THIS article can hardly meet with the approval of the more advanced members, as I intend to touch only briefly on the various points, my object being to link up the theories step by step. There are two types of wave motion that interest us in the study of wireless, (a) sound waves, and (b) radio waves.

In longitudinal waves the velocity of a particle is in the same direction as that of the wave motion as a whole. Sound waves are longitudinal waves consisting of a series of compressions and rarefactions of the actual air particles. Sound waves require a material medium, and are propagated in air at 0° C. at 332 metres per second approximately.

In transverse waves the velocity of a point and of the wave motion as a whole are at right angles to each other. Radio waves and other components of the electromagnetic spectrum are propagated in the form of transverse waves in the ether. These waves can be plane polarised, and this forms one of their outstanding characteristics. The velocity of propagation is 3×10^8 metres per second, and they require no material medium for propagation. The strip of the electromagnetic spectrum known to-day covers a frequency range of roughly from 30 to 4×10^{22} cycles per second.

Spherical and Cylindrical Waves.

Spherical waves may be considered to be like innumerable spherical shells of electromagnetic energy expanding continuously from the transmitting source as centre. The inverse square law, which is of common application in many branches of physics, applies here, and states that the intensity falls off as $1/d^2$ where d is the distance from the source. This law was first tested over short distances in 1905 by Duddell and Taylor.

The rate of attenuation is very great, and it was on consideration of the volume attenuation and absorption to which these spherical waves are subjected that the early mathematical physicists thought that wireless communication over appreciable distances would be impossible with reasonable power. Since the inverse square law held for spherical waves and resulted in an attenuation quite out of accordance with experimental results, it was obvious that some other form of propagation took place. It is now found from consideration of the electromagnetic theory and from experimental evidence that while the method of propagation is principally by spherical waves over short distances, over long distances it occurs by means of cylindrical waves, which suffer considerably less absorption. It has been found that the amplitude rather than the energy determines the intensity at any point, and it follows that over longer distances an inverse first power law holds, and this has been verified by experiment.

In order to make quite clear the difference between the inverse square and inverse first power laws an analogy may be drawn from sound. When a sounding body is suspended in space the inverse square law applies, but if confined between the ground and a sounding board, the inverse first power law applies. The first case may be compared

to transmission by spherical waves over short distances, and the second to cylindrical waves confined between the earth and the Heaviside layer.

Diffraction.

Poincaré pointed out that the lengths of long wireless waves were to the radius of the earth as the mean wavelength of light to the radius of a pin point, and therefore it was extremely possible that diffraction occurred (i.e. bending round a solid object). The theoretical attenuation resulting from the acceptance of a simple diffraction theory, however, is far too great owing to the fact that an exponential law holds.

We have therefore two theories, (a) spherical waves and (b) simple diffraction, neither of which could explain the results achieved. The case for cylindrical waves necessarily presupposes the existence of some confining shell in the upper atmosphere, otherwise it is obvious that the waves would leave the world tangentially. G. N. Watson put forward the theory that diffraction did take place, but not simply round the spherical surface of the earth, but between two approximately concentric conducting spheres, the inner one being the earth, and the outer one the Heaviside layer. This combination theory came much nearer to explaining the experimental results obtained.

Electromagnetic Theory.

Clerk Maxwell worked out the electromagnetic theory mathematically in about 1860 for the case of light, although he already suspected the existence of similar waves of lower frequency, i.e. radio. The two rival theories of light before this time were Huyghens' theory based on longitudinal waves, and Newton's corpuscular theory. It is interesting to note that one of the breakdown points of both these theories was polarisation; it is for this reason that the phenomenon has been given as characteristic of transverse waves.

In brief, Maxwell showed that the relationship between the absolute electro-static and absolute electromagnetic system of units was some power of the velocity of light. The method of the proof is to start with Maxwell's four principal assumptions, to build up his sets of equations from first principles by the calculus, and from them to deduce the general wave equation. This latter is a differential equation and its solution gives a velocity (of light) = $\frac{1}{\sqrt{\mu \kappa}}$ where μ is the permeability and κ the specific inductive capacity of the medium.

For example, 1 ampere equals 10^{-1} absolute e.m. units and 3×10^9 absolute e.s. units, $\frac{3 \times 10^9}{10^{-1}} = 3 \times 10^{10}$ centimetres per second. Then again, 1 farad equals 10^{-9} absolute e.m. units, and 9×10^{11} absolute e.s. units, $\frac{9 \times 10^{11}}{10^{-9}} = 9 \times 10^{20} = (3 \times 10^{10})^2$, and so on.

Maxwell himself obtained an experimental value of the velocity equal to 3×10^{10} centimetres per second approximately by measuring a capacity accurately in the two systems, their ratio giving the square of the required velocity. The mean

experimental value of the velocity of light determined directly by various astronomical and terrestrial methods is about 3×10^{10} centimetres per second, and therefore agrees very well with that obtained from the electromagnetic theory.

Ionisation and the Heaviside Layer.

In ionisation the neutral gas molecules are dissociated into positively and negatively charged units through the separation of the available electrons from the proton. Then the conductivity of the gas increases from zero to some positive value. Ionisation is produced in many ways, but all entail the absorption of a definite amount of energy by the molecule. Ionisation in the case of a gas may be produced by very high frequency electromagnetic waves, such as ultra violet and X-rays.

Sunspots may well be large-scale solar eruptions, in which case at each occurrence of sun spots fresh energy is released from the interior of the photosphere (solid part of the sun), and a barrage of penetrating (and ionising) rays would be transmitted to the earth. This would not only affect the ionic condition of the upper atmosphere, but indirectly the magnetic variations.

Heaviside put forward the theory that in the upper regions of the atmosphere there existed a belt of rarefied air ionised by the ultra violet rays from the sun. This region, called the Heaviside layer, was supposed to commence at a height of about 100 K.M., and to consist not only of ionised atoms of gas, but also of free electrons. This belt increases downwards during daylight owing to the increased ionisation by the sun's rays, and at night-time recombination occurs among the ions in the lower layers which raises the effective height.

The presence of this conducting shell is necessary in order to explain the propagation of cylindrical waves, but in addition to this, strong experimental evidence has been obtained of its actual existence. Professor Appleton has, by photographic methods, recorded interference effects which can be completely explained on the supposition that they are caused by the reception of two independent waves, one directly and the other indirectly via the Heaviside layer.

The Ionosphere and Atmospheric Structure.

More recent work has shown that there are three or more layers of different maximum ionic density, one at 100-120 K.M. called the E layer, an intermediate one at 130-180 K.M. called the M layer, and one at 190-300 K.M. called the F layer. Each layer can be observed only as long as its maximum ionic density exceeds that of the layer below it. The ionic density of E and M are of the same order of magnitude, hence the presence of M is not always apparent, but is usually most apparent at midday. F has a step-like structure, and its ionisation varies abruptly 25-50 per cent. within 15-30 minutes. These variations suggest that there must be some variable source of ionisation probably cosmic in origin, the effect of which is superimposed on the normal ionising effect due to the sun. The ionisation of the E layer increases with time in a uniform manner, attaining a maximum at noon.

The criteria for examination of a wave bent back by the ionosphere are (1) time occupied in the double journey, (2) relative intensity, (3) state of polarisation, (4) time of travel times velocity of

light equals the equivalent path, and (5) time of travel measured rapidly for a number of different frequencies gives the approximate height of various ionic densities.

The following table will give readers some idea of the structure of the atmosphere.

| Name of Shell | Approx. height above earth | Characteristics |
|---------------|----------------------------|---|
| Troposphere | 0-15 K.M. | Regular fall of temperature with height, atmospheric turbulence (winds). |
| Tropopause | 15 K.M. | Intermediate surface at which cessation of fall of temperature occurs. |
| Stratosphere | 15-35 K.M. | No regular fall of temperature with height. |
| Ozonosphere | 35-80 K.M. | High ozone content, of great importance in considerations of radiation and possibility of life. |
| Ionosphere | E (Heaviside) | High degree of ionisation of the low pressure gases. F has roughly four times the ionic density of E. |
| | 100-120 K.M. | |
| | M | |
| | 130-180 K.M. | |
| | F (Appleton) | |
| | 190-300 K.M. | |

Skip Distance and Fading.

Surface waves are those which are propagated along a great circle, and space waves are those which leave the earth at an angle to be reflected back at some distant point by the Heaviside layer. Long waves appear to be largely surface waves, and short ones largely space waves; medium waves are composed of both types. The very short waves will be refracted least and will travel farthest before being bent down again to earth, and skip distance will increase with decrease in wavelength.

The refractive index of the Heaviside layer for short waves depends on the frequency, but for the longer waves it approaches a constant positive value, and is therefore independent of frequency. We may therefore consider the bending of long waves by the Heaviside layer as analogous to the ordinary reflection of light from metallic surfaces. Larmor and Eccles have put forward a theory that explains the long-distance transmission of short waves by supposing that the Heaviside layer for these frequencies functions as a dispersing refracting dielectric.

With ultra short waves the frequency is so high that the space wave is not bent down again by the Heaviside layer, but leaves the world entirely. The reception of these waves is then analogous to the reception of ordinary short waves within the skip distance, and near enough to the transmitter for there to be some propagation of local surface waves.

Using the echo method (i.e. receiving the surface and space waves separately) it has on rare occasions been found that the time interval is of the order of 30 seconds. Two theories have been put forward to explain this; one, that the space wave leaves the atmosphere and is eventually reflected back by some electron stream; and the other, that owing to special conditions in the upper

atmosphere the speed of the waves there is greatly decreased.

In practice the signal strength from a short-wave station first decreases rapidly with distance, then increases after the skip distance is passed, and finally decreases due to attenuation. The observed fact that signal strength increases at the antipodes of the transmitting station is quite in accordance with the above theories, since the waves in both directions round the world come to a focus as it were and intensify each other at that point.

It would seem that fading is caused partly by rapid changes in the reflecting and refracting properties of the Heaviside layer, and partly by interference of the waves causing a neutralising effect of short duration.

Losses.

It has been observed that the attenuation *en route* increases with frequency until a wavelength of about 50 metres is reached, after which this rule no longer holds, which is in accordance with the successful use of short waves with low powers for long-distance communication. It is extremely difficult to deduce any reasonably constant law of propagation owing to the irregularities of the two conducting spheres. For example, a patch of poor conductors on the earth's surface causes reduced signal strength by allowing greater penetration into the medium, resulting in loss by wider distribution of energy, and a patch of good conductors results in absorption due to the formation of eddy currents, the electromagnetic waves being degraded into heat in the material (e.g. iron ore, etc.). When energy is lost by this latter method the speed of the wave is reduced, and consequently in the earth the wave will lag behind that portion in the atmosphere. The inclination of the wave front to the normal is a measure of the eddy current losses, because the angle of intersection between the electric component and the surface of the conductor determines the magnitude of the e.m.f. produced by a wave of given frequency.

Theory and experiment show that the attenuation of the surface wave is much more rapid for short waves than for long, and is much more rapid over land than over sea. For very long distances

the surface wave is completely absorbed, and communication is solely by space waves.

The attenuation due to losses at the Heaviside layer is much more important than that due to losses at the surface of the earth. The discrepancies which occur in the propagation of the waves are largely due to variations in the ionic condition of the Heaviside layer depending upon the amount of light or darkness in the regions traversed by the waves. It can be shown that the free electrons not only deviate the waves but also absorb energy from them. The amount of energy absorbed is greater when the electrons exist in a place where the pressure is high than where it is low. The space wave is thus absorbed to a greater degree in daytime owing to the presence of the reflecting layer in regions of higher pressure (i.e. nearer the earth), while at night the absorption of energy is much less. Further, it is often found that signals to the antipodes travel for preference by the longer path through largely dark regions. One last effect of the electrons may be mentioned. It can be shown that owing to their being situated in the permanent magnetic field of the earth, they are capable of altering the polarisation of any waves which pass through them. This polarised wave returning from the Heaviside layer is supposed to cause the drift of bearings in the "night effect" of direction finding.

Conclusion.

In conclusion, the subject is a very wide one, and the theories are under constant revision, so that it is unlikely that the books and papers at the disposal of everyone will be the same. Hence the material used in a précis of the subject by two writers is bound to differ greatly.

I have tried to refer briefly to some miscellaneous points that I consider of interest, but it should be realised that I have had, in some cases, to rely on memory.

It is too much to hope that I have always assigned the correct importance to the various points, or that some of the theories mentioned have not been superseded. While I have no wish to split hairs on debatable questions, I shall be grateful to any member who chooses to point out glaring errors.

British Ten Metre News.

Conditions on the 28 mc. band were certainly brighter during April, and although no one has reported any DX, there has at least been something, other than ground wave signals, to listen to.

G2YL has received a letter from FM8BG, who reports hearing her signals; Miss Corry is now running a definite sked with this station, but so far no contact has taken place.

G6LK heard a very weak signal calling "CQ TEN" at 07.30 G.M.T. one morning and believes that the call was VSIAH.

Amateur signals outside the ground wave area have been scarce, and the only ones logged have been U2BY on April 14, and a very weak U3 on April 28. Commercial harmonics, however, have been audible practically every day during the month. Those identified by their calls being GMR, GLT, EAM, EAJ, PCT, FOF, and OXR.

No information is to hand regarding conditions in other parts of Europe, except for a brief report that JNJ and OQH have been heard in Belgium.

Algeria appears to be experiencing conditions similar to our own.

A long letter has been received from VK2YC, which gives details of the DX heard and worked by VK2EP, VK2HY, VK2LZ, and himself. Unfortunately, space does not permit the publication of this letter, but it might be mentioned that the following dates were excellent: March 24 and 31, April 1, 2, 3, 6, 7, and 8.

Between them these stations have worked or heard:—W2TP, 4AJY, 4TZ, 6AKY, 6ALD, 6BLS, 6BNU, 6CAL, 6CIS, 6DIO, 6IDF, 6IDY, 6RH, 6VQ, 9FFQ, 9NY, J2HJ, 2IS, X1AY, CE4AW, ZL1BA, 2GQ, 3AJ, VK3BQ, 3BW, and 6SA.

VK2LZ says that conditions were so good on March 31 that it was only necessary to call and sign and then pick whom you wanted! In this way 15 American stations were worked.

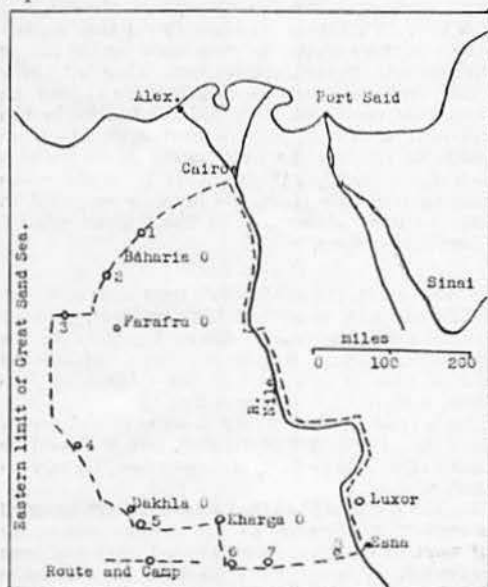
The information for this article was supplied by G2YL, G5SY, ON4AU, VK2YC, G5OJ, and G2HG.
E. H. S.

On 28 MC. Get Busy!

AMATEUR RADIO IN THE DESERT.

By ERIC COLE (SU1EC).

ATEN days' motor tour into the Egyptian desert was undertaken by the writer and some friends during the Christmas and New Year holiday period, during which time some 1,500 miles of little known country were explored. The route followed a south-west course from Cairo via Baharia Oasis, and Farafra Oasis, thence to the Great Sand Sea. Following the sea in a southerly direction to its eastern edge, we turned east to Dakhla Oasis, thence on to Kharga Oasis until the cultivated Nile valley near Luxor was reached. The route is set out in the accompanying map.



In view of the length and nature of the trip it was decided to take a portable W.T. set, and this was constructed somewhat hurriedly just before the start. A simple Hartley transmitter was combined in one small box with a two-valve 0-v-1 receiver, and power was derived from a 25-watt rotary converter. Two 17-ft. poles in four sections were used as masts, and these carried a 66-ft. aerial and 30-ft. downlead. Nightly schedules were arranged with SAA, an Army station located in Abbassia.

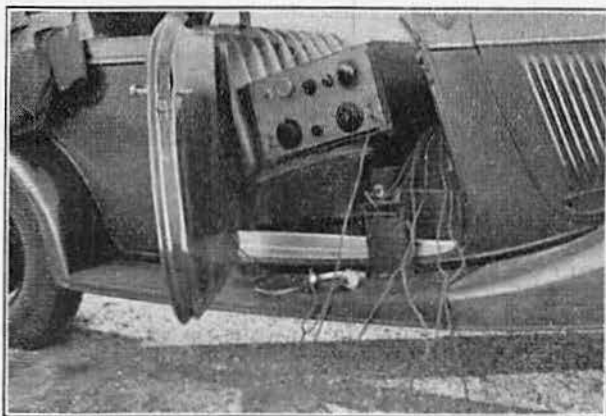
The start was made from Cairo on December 22, via Mena and the Great Pyramids, thence into the desert. From this point farewells were made to roads and signposts, compasses and maps were produced, bearings taken, and the trip began.

Approximately 130 miles were covered on the first day over "going" which appeared bad, but in view of later experiences was decidedly good. The set, its normal resting place the front seat of a car, was as often in the air as not! A halt was made at 5 p.m., and it was in great trepidation that

we connected up and erected the aeralis. The "send/receive" switch was set to "receive," and the lusty squeal proclaimed the healthiness of the receiver. Over went the switch to "send," but a dismal silence was all that greeted us from the rotary. A hasty inspection of connections showed that a layer of sand and dust had worked into the commutator; with a scrape and a whizz the machine sprang into life after these encumbrances had been removed. The key was pressed and an aerial reading of $\frac{1}{4}$ amp. obtained.

Sharp on 19.00 G.M.T. SAA was heard calling SU1X, the call we had adopted for the expedition. Contact was established immediately and a Q5 R9 report obtained. At 07.30 the following morning the party left for Baharia, reached at mid-day. A halt was made there for petrol, which had been ordered six weeks previously; a quick meal was taken, and the party recommenced its journey. From this point we ran into the most atrocious "going" for some 25 miles, and breathed thankfully when we reached sand again at 5 p.m. The under-surface had been three times worse than that encountered on the previous day, but the complaining "box of tricks" produced another R9 report at schedule time that evening.

The following morning, Christmas Eve, saw us leaving the sandy depression, only to find the surrounding scarp, a limestone plateau, the worst possible country for transport. It was not possible to maintain an even keel once in 30 miles, huge boulders, jagged rocks, turns and dips being the order of the day. At 2 p.m. the party were again on good surface; a sand plain stretching for 30 miles, enabled us to get the cars up to a speed of 60 m.p.h. with ease. Owing to the failing light, a way through the dunes was left unreconnoitred, a fatal mistake, because two cars were soon up to their axles in soft sand. Half-an-hour's hard work and much perspiration were necessary in order to extricate them. Up went the aerial posts eventually, with petrol tins as stay holds, and the schedule again worked most satisfactorily.



The portable transceiver used at SU1X.

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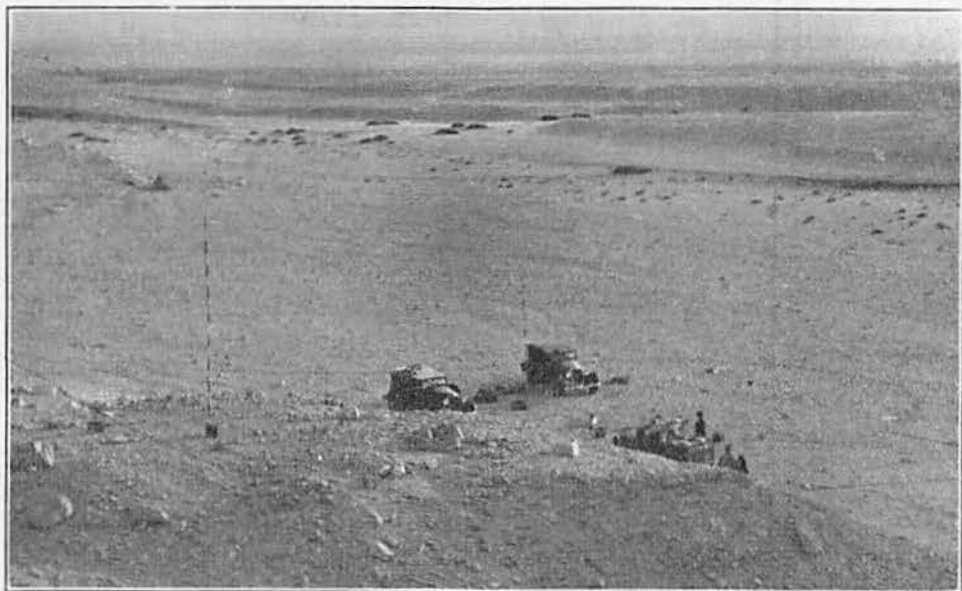
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The Empire transmissions were tuned in, and the thrill of hearing Henry Hall's dance band through a single pair of headphones, 200 miles

The schedule went on successfully each evening, and on the last night before reaching the cultivation of the Nile, and battery economy was not essential,



Typical camp site. The boulders in the foreground were pebbles compared with those on the mountain side. This photograph was taken at 6.30 a.m.

away from other human beings, will never be forgotten by those in the party.

On Christmas Day the party came to a remarkable depression stretching for 7 miles, where the ground had subsided, leaving isolated mounds hundreds of feet high. Dinner that night consisted of tinned Christmas pudding, sausages and mashed, and a rum punch.

we had the good fortune to contact Ham Whyte (G6WY). His reply to our greetings is worthy of record: "Ge, om, glad to work you while you are out for a spin in your car!" So back to the Nile, Luxor and Cairo—11 days away, 1,500 miles traversed, a splendid beard, and wonderful memories.

The photographs which illustrate this article give some indication of the country traversed.



*A WAYSIDE HALT.
SU1EC is to the left saluting the happy morn!*

THE 1935 1.7 MC. CONTEST.

THE popularity of top band working was again demonstrated during the short but interesting 1.7 mc. Contest which took place during the week-end, January 12 and 13.

As reported earlier, the winner of the event was Mr. Harold Old (G2VQ), of Nottingham, whose signals on this band and on 3.5 mc. have for some months been the envy of many. Mr. Old is the first English D.R. to win one of our local contests, and his success will no doubt spur other officials of the Society to greater efforts.

Second place was taken by Mr. Dick Canning (G6YJ), of Newport. This station finished second in the 3.5 mc. contest, and has for the past three years always put up a good showing in contests of this nature. Unfortunately, Mr. Canning has recently been compelled to put aside his amateur work in order to concentrate on a professional job remote from Newport, but we hope his call will come back on the air at an early date.

An old stager in Mr. A. Watson (G6UJ), of Driffield, Yorks, tied with Mr. J. Stanley (G6SY), for third place. We have had the pleasure of inspecting Mr. Watson's station and can readily understand the reason for his success.

The Entries

A very satisfactory total of 48 entries were received for this event; these included most of the well-known 1.7 mc. workers, with a fair sprinkling of those who were up for the day! We recently published a short article (March BULLETIN, Page 334) from the pen of Mr. Woodcock (G6OO) dealing with this Contest, and it is to be hoped that his suggestions in regard to keeping up interest on this band will bear fruit.

Table 1 shows in detail the scores and equipment used by all competitors.

G2VQ used a Comet Pro and the old-fashioned Marconi T-type aerial. G6YJ heard an overtone from HB9Y and also two U.S.A. stations on telephony. He found conditions extremely variable with the band full of life one minute and dead the next. QRM from trawlers was experienced by this entrant, and by most others. The period selected for the contest was in his opinion very satisfactory. G6SY heard WIGCT and 2GZ; he found the band dead for a period around 1800 G.M.T. on the 13th. G2PL had two grouses—first, machine static, and second, QRM from three T1 100 per cent. modulated trawler transmitters! Overtones were heard from D4CAF, PAOKH, PAOASD, HB9Y and PAODC, working on 3.5 mc. G6FN also used a Comet Pro single-signal superhet. G2II enjoyed the contest, but considers that the average G called Test for too long a period. He suggests that in future contests more reward be given for working distant stations, i.e., over 400 miles.

G2MI returned a log of 78 stations either heard or worked. G2XC derived much pleasure from his first transmitting contest. G6QB devotee of all bands from X to Y, decided to compete just to put his pet District (South London) on the map. He mentioned that the general standard of operating

seemed to be excellent and "miles ahead of that on 7 and 14 mc." Trawlers were also responsible for difficulties at G5YV, who was compelled to grind down a crystal in order to get clear of a particularly offensive station on his frequency.

G6NA commented upon the enthusiasm and friendly atmosphere surrounding the event; G2VQ was the strongest signal heard at his station, being R9 most of the time. G6QC wrote "every moment was enjoyed, was gratified at the excellence of the notes of practically all stations"; he also had trawler QRM. We think it might be a good plan next year to invite these stations to take part in the event!

G6RQ commented upon interference from a station calling on phone "Amsterdam Radio." No other information regarding this station has yet been received at Headquarters. G2DQ "watched the fun this year." It will be remembered that Mr. Collin won this event in 1934. G5IJ sent a list of stations heard as well as worked.

Competitors' Comments

It is the opinion of the Awards Committee that their decision to reduce this event to one week-end of 31 hours proved entirely satisfactory. They regret that more contacts with European countries were not possible, but realise that British amateurs are among the few who have authority to use this band of frequencies.

In regard to trawler interference, it is suggested that in future years some attempt be made, prior to the contest, to publish a list of frequencies on which this interference is most likely to be encountered. It must be understood that this band is shared with other services and therefore no complaint can be raised against these transmissions, unless we can establish that the equipment used is of a type forbidden by International law.

We recommend our R.E.S. Group working on 1.7 and 3.5 mc. problems to look into this matter at an early date.

The Committee appreciated the spontaneous effort made by Mr. Woodcock to put his views on paper, whilst still fresh in mind. They consider that in general, insufficient use is made of these contests in so far as the collection and publication of technical data is concerned.

They note with interest that applications for the loan of entry forms have been made by two members of the R.E.S. Fading and Propagation Group.

The Committee desire to place on record their thanks to Messrs. Jackson (G2KZ), Hamilton (G5JH), Ponting (G6ZR), Proctor (G5PR), Mainprize (G5MP), Olivier (F8XF) and Grossin (F8RJ), who forwarded interesting check logs.

Mr. Mainprize was located in Tenerife at the time of the contest and heard 37 British stations. He enquired in his report for the position of GWQL on the evening of January 12, as his signals were heard at R8 calling G2PL. [We hope to publish at an early date a long article from Mr. Mainprize dealing with his reception of amateur stations in the Canary Isles.—Ed.]

TABLE 1.

| Position. | Name. | Call. | Town. | Points | <i>Report</i> |
|-----------|-----------------|-------|----------------|--------|---------------|
| 1 | H. B. Old | G2VQ | Nottingham | 65 | 10 |
| 2 | F. R. Canning | G6YJ | Newport | 62 | 9.1 |
| 3 | J. F. Stanley | G6SY | Ashford | 61 | 9.4 |
| | A. Watson | G6UJ | Driffield | 61 | 9 |
| 5 | H. Jones | G5ZT | Preston | 59 | 9.4 |
| | E. G. Ingram | G6IZ | Aberdeen | 59 | 9.6 |
| 7 | P. Pennell | G2PL | Cambridge | 58 | 10 |
| 8 | G. W. Slack | G5KG | Mansfield | 57 | 10 |
| 9 | S. A. French | G6FN | Edinburgh | 54 | 9.2 |
| 10 | D. S. Mitchell | G2II | Colwyn Bay | 52 | 9/10 |
| 11 | J. Hum | G5UM | Welwyn | 51 | 10 |
| 12 | J. N. Walker | G5JU | Bristol | 48 | 9 |
| | S. Newell | G5RX | Bacup | 48 | 10 |
| 14 | V. J. Bartlett | G5BI | Tredegar | 46 | 8 |
| | A. O. Milne | G2MI | Larkfield | 46 | 10 |
| 16 | E. J. Williams | G2XC | Portsmouth | 45 | 10 |
| 17 | L. H. Thomas | G6QB | Thornton Heath | 44 | 10 |
| 18 | R. F. Hilton | G6QK | Wanstead | 43 | 9.8 |
| 19 | H. Beaumont | G5YV | Dewsbury | 40 | 9.7 |
| | T. Woodcock | G6OO | Bridlington | 40 | 10 |
| 21 | R. V. Allbright | G2JL | Newport | 36 | 10 |
| 22 | F. J. Ritson | G5RI | Hexham | 35 | 10 |
| 23 | J. P. Stove | G5ZX | Glasgow | 34 | 9 |
| 24 | K. T. Harvey | G5KT | Bristol | 33 | 10 |
| 25 | H. C. Spencer | G6NA | Guildford | 30 | 9.4 |
| 26 | J. M. S. Watson | G6CT | Westcliff | 29 | 10 |
| | E. T. Pethers | G6QC | Rainham | 29 | 10 |
| 28 | F. E. Woodhouse | G2SX | New Barnet | 29 | 9.8 |
| | T. L. Herdman | G6HD | Dudley | 27 | 2.5-3 |
| 29 | J. B. Inglis | G6IN | Hawick | 27 | 9.8 |
| | M. H. Munro | G6MF | Edinburgh | 27 | 10 |
| 32 | J. R. Wilson | G2XT | Gosforth | 26 | 10 |
| | H. J. Harding | G6RQ | Sittingbourne | 26 | 10 |
| 34 | T. H. Streeter | G5CM | Alford | 25 | 9 |
| 35 | G. W. McDonald | G2OX | Aberdeen | 22 | 10 |
| 36 | H. G. Collin | G2DQ | Wickford | 19 | 10 |
| 37 | I. Auchterlonie | G6OM | Heswall | 18 | 10 |
| 38 | W. Walker | G2WO | Swansea | 17 | 10 |
| 39 | A. C. Brown | G6ZX | Clarkston | 15 | 9 |
| 40 | I. J. P. James | G5IJ | Penzance | 13 | 2 |
| | P. M. Carment | G5WW | Golders Green | 13 | 10 |

TABLE 2.

| Position. | Name. | Call. | Town. | Points Scored. | | Total Points. |
|-----------|-----------------|---------|----------------|----------------|---------|---------------|
| | | | | 3.5 mc. | 1.7 mc. | |
| 1 | C. A. Bradbury | BRS1066 | Burton | 1,710 | 272 | 1,982 |
| 2 | C. J. Greenaway | 2BWP | Leigh | 1,656 | 244 | 1,900 |
| 3 | W. A. Laidlaw | BRS1213 | Northumberland | 1,615 | 212 | 1,827 |
| 4 | P. Seymour | 2AZX | Gosport | 1,349 | 244 | 1,593 |
| 5 | J. Alexander | BRS822 | Birmingham | 798 | 184 | 982 |
| 6 | R. J. Lee | BRS1173 | Heathfield | 700 | 100 | 800 |
| 7 | H. J. Houlding | BRS720 | Bristol | 539 | 200 | 739 |
| 8 | H. B. Sumner | 2ASH | Mansfield | 528 | 156 | 684 |
| 9 | R. E. Dabbs | 2BUS | Thornton Heath | 468 | 36 | 504 |
| 10 | R. M. Flavill | BRS884 | Leicester | 400 | — | 400 |
| 11 | L. G. Spencer | 2AOI | Gosforth | 300 | 99 | 399 |
| 12 | E. H. Jones | BRS770 | Bolton | 126 | — | 126 |
| 13 | A. J. Mathews | 2BPK | Hornsey | 200 | 21 | 221 |

RECEPTION CONTEST

It will be remembered that an innovation was tried out last winter, when receiving station members were invited to participate in the 3.5 mc. transmitting contest held in November, and also in the 1.7 mc. contest arranged in January. Scores were based on the totals obtained during both legs of the contest.

The response, as is usual with local reception events, was poor, but we believe all who entered considered the idea quite satisfactory.

In our March issue we recorded the fact that Mr. Cecil Bradbury (BRS1066), of Burton, Mr. Cyril Greenaway (2BWP), of Leigh-on-Sea, and Mr. Laidlaw (BRS1213) were the leaders, but unfortunately Mr. Laidlaw has now passed over; therefore third place is taken by Mr. Percy Seymour (2AZX), one of the earliest of B.E.R.U. Receiving Contest competitors.

Only 13 entries were received, and the final scores are recorded in Table 2.

Some confusion occurred in regard to the scoring of points, several competitors failing to multiply their score in the 1.7 mc. contest by the number of countries heard. As a result, the scores claimed have in these instances been adjusted by the Awards Committee.

Competitors' Comments

2BWP considered the times and periods very satisfactory. Conditions during the 3.5 mc. event were particularly good. VOSHK was heard as early as 2200 G.M.T. on the Saturday of this contest. 2AZX agreed with Mr. Greenaway that the times selected were very suitable. He mentioned that certain G stations signed off very badly, which made it difficult to log correctly their calls. BRS1173 also complained of this remissness.

One or two entrants sportingly sent in entries for one section of the contest, although unable to take part in the other.

Awards Committee Comments

The Committee congratulate the first two stations on the excellence of their logging. Many entrants in contests seem unable to set out their reports in a clear and legible manner, therefore, when well prepared entries are received a special word of praise becomes due.

The future of Receiving Contests will be considered carefully during the coming months, but impressions gained in recent years leave the Committee with the feeling that these events are hardly worth organising.

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SOLILOQUIES FROM THE SHACK.

By UNCLE TOM.

(Spring is cer-humming, cries the festive old bird, who proceeds to fly round in small circles and utter raucous cries of joy.)

WHEN Spring is in the air, I'm told, for so 'twas sung by bards of old, the young man's fancy lightly turns to thoughts of something 'ot, which burns; but none of this for poor old Unkie, for all it does is get his monkey. And don't forget that in the Spring (when said young man is on the wing) conditions usually improve, and then the ham gets on the move, his power gradually increasing, and calling test and never ceasing.

(At this point a chorus of beautiful females appears on the stage, with your poor old Unc. bringing up the rear, casting clouts, not to mention pearls before piglets.)

And this is about the only decent word he's got to say for Spring, which, normally, is the season that does not agree with his chronic dyspepsia (see medical dictionary, or any local chemist.)

And so to business. Did I think anyone in this country had an American Commercial Transmitter? Well, I've had confessions from three of the ghastly criminals, and only the law of libel prevents me from telling them a thing or two in front of you all. As it is, I have to put on a sickly smile and say "How very naice."

Another Epidemic.

As the original and only inventor of that word "spitch" (of which I am still very proud), I am more than distressed to see the ghastly habit spreading. Every Tom, Dick and Harry (with an occasional Ernie thrown in) seems to have one ambition—to get R9 speech across the Pond. Every Elmer, Willard, Tay and Clive seems to have only one ambition—to get R9 speech back to us. And so it goes on. There's just a little room left for a C.W. station—I think you'll find it just there, about half-an-inch from the third kilocycle on the left. The one good thing that I must say, in perfect fairness, is that the average 14 mc. transmission is speech and not "spitch."

And now, out with the old tub. Last month a correspondent remarked upon the use of the American language by British 'phone operators. He was very sweet and polite about it, and I have no intention of dealing so lightly with it. Every time I hear the little children copying the Yanks with their "What say, Doc?" and "Whang in, somebody," and all the rest of the ghastly business, my blood boils.

For the love of Mike (who was, comparatively speaking, English), what d'you think the English language is for? You can't go to the talkies without hearing a lot of half-educated milli-wits in the sevenpennies trying to copy the American wisecracker, and I suppose you won't be able to listen on the amateur bands soon without getting some more of it.

Finally, when I hear British operators cultivating an American accent (of all the particular accents to choose!) I pass out completely. I've nothing against our good friends the Yanks, but why we should try to copy everything they do—even to receiver and transmitter design—I can't quite fathom. Explain, someone.

One more whack, ere I leave the tub. A certain amateur who happens to be the only representative, on the air, of the small island in the South Atlantic wherein he resides, shall whack it for me. Listen to him: "Every single time I come on the air, supposing I have a sked with some station, I call this station only and then go over for him. Running over the band, I find my call coming in, so as it's near where I am expecting him (it always is), I wait for him to sign. After several minutes it turns out to be a W, the result being that it's too late to get my man, who thinks I have broken down and gives me up."

In despair I answer the W, who is then "Vy pleased to meet u OM, pse QSL, nw QRU 73 cuagn, dit-dit-dit-dah-dit-dah."

Imagine my wrath—a perfectly good sked ruined for a card-cadging W who covers half the band with enough watts to reach Mars. . . . With all due respect to him, it's no good Uncle Tom grumbling about these things in his yarns—it should be officially taken up with the A.R.R.L. and made an offence for a station to call another unless that station is giving a general call."

That's definitely a good thump. The operator in question has my sincere sympathy.

Verse and Worse.

I suppose my irresponsible tame poet will be hurt if I don't quote some of his effusions, so here goes:—

There was a young ham in Worksop,
Whose bug-key so quickly would pop,
That he found in the end
That all he could send

Was "Erase, exclamation, full stop."

There are blokes in the B.E.R.U.

Who can never find nothing to do

And every day

All that they have to say

Is "Test," "QSL," "QRU."

Thank you, Mr. Anonymous-Poet, and may your Iambics and Dactyls never become entangled.

But here's worse:—

"He thought he heard an elephant
Emit a donkey's bray;
He looked again, and found it was
Our friend SX3A.

'If he looked in on me,' he said,

'I'm sure he wouldn't stay.

He thought he saw a jelly-fish

A-scratching of an itch;

He looked again, and found it was

Some forty-metre spitch.

'If that man comes near me,' he said,

'I'll biff him on the snitch.'"

And, while we're talking of poetry, did you know that Music Hath Charms to Soothe the Savage Secretary? Since the said savage sec. sits scribbling sizzling sentences scarcely six inches from a broadcast receiver, there is a new rhythm in the BULLETIN Editorials. And, would you believe it, I hear that he is reporting a local ham for interfering with the Headquarters Broadcast Receiver.

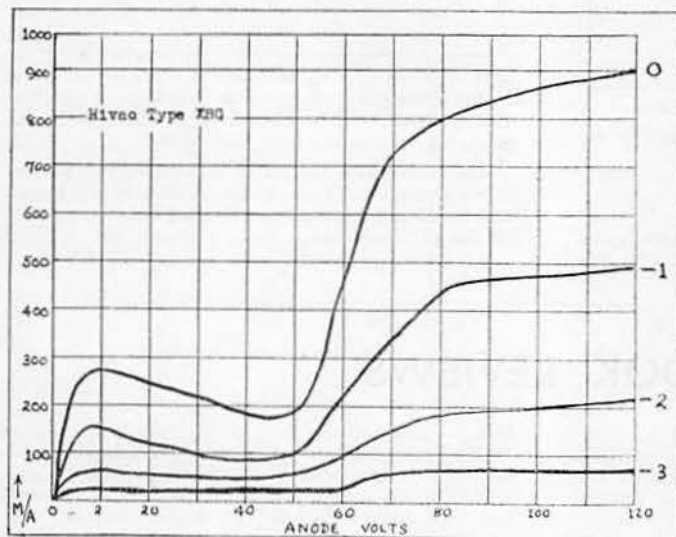
NEW VALVES REVIEWED.

This month three new midget valves manufactured by the High Vacuum Valve Co. are reviewed.

HIVAC MIDGET XSG.

This valve is a diminutive screened grid valve fitted with a Weco type base, and a push-on standard size top cap. The overall dimensions are: Length, 6.5 cms., max. diameter, 1.6 cms.

| Characteristics. | Makers. | Measured Sample. |
|--|---------|------------------|
| Filament volts ... | 2.0 | 2.0 |
| Filament current (amp.) ... | 0.06 | 0.055 |
| Anode volts (max.) ... | 120 | 120 |
| Screen volts (max.) ... | 60 | 60 |
| Amplification factor ... | 360 | 470 |
| Impedance ... | 600,000 | 960,000 |
| Mutual conductance ... | 0.6 | 0.505 |
| Inner Mu. ... | — | 12 |
| Inter-electrode capacity (mmf.) ... | 0.02 | not measured |
| Anode current (ma.) ... | — | 0.9 |
| Measured at anode volts 120, screen volts 60, grid volts, 0. | | |



The valve was tested in a normal 3-valve battery receiver and the gain was found to be +12db, actually higher than a normal screened grid, presumably due to the incidental reaction caused by the higher inter-electrode capacity. The valve was found to be entirely non-microphonic.

No curves were submitted by the makers, but our curves are shown herewith. They show that the valve would also make a very useful dynatron oscillator for wavemeters and the like, besides its main use as an economical and efficient R.F. amplifier for a small portable receiver.

HIVAC MIDGET XD.

This valve is a diminutive triode rather smaller than a peanut valve, fitted with a Weco base. The overall dimensions are: length 5.8 cms., and maximum diameter 1.6 cms.

| Characteristics. | Makers. | Measured Sample. |
|--|---------|------------------|
| Filament volts ... | 2.0 | 2.0 |
| Filament current (amp.) ... | 0.06 | 0.05 |
| Anode volts (max.) ... | 100 | 100 |
| Amplification factor ... | 16 | 16 |
| Impedance ... | 27,000 | 29,000 |
| Mutual conductance ... | 0.6 | 0.55 |
| Anode current (ma.) ... | — | 2.4 |
| Measured at anode volts 100; grid volts 0. | | |

The valve was tested in a 3-valve battery receiver as a leaky grid detector, and the gain was only —6 db. on a normal size triode. Reaction was in every way satisfactory, but the valve was found to be somewhat microphonic. No curves were submitted by the makers, so that our own curves are shown herewith.

HIVAC MIDGET XL.

This valve is a triode similar in size to the XD, but having a lower impedance suitable for L.F. amplification.

| Characteristics. | Makers. | Measured Sample. |
|--|---------|------------------|
| Filament volts ... | 2.0 | 2.0 |
| Filament current (amp.) ... | 0.06 | 0.052 |
| Anode volts (max.) ... | 100 | 100 |
| Amplification factor ... | 12 | 10 |
| Impedance ... | 14,000 | 13,000 |
| Mutual conductance ... | 0.85 | 0.7 |
| Anode current (ma.) ... | — | 3.5 |
| Measured at anode volts, 100; grid volts, 0. | | |

The valve was tested in the receiver mentioned above at 100 volts and a grid bias of —3 volts, the anode current was 1.8 ma., quite a strong signal was produced on a small M.C. loud-speaker, and the valve was entirely non-microphonic. It would appear in every way suitable for its purpose; it would also be useful as an oscillator for wavemeters and the like.

MAZDA ES501.

This valve was reviewed in the last issue as the ESW50. The valve has been recoded in the meantime, and the rated dissipation increased to 65 watts.

The inter-electrode capacities have been measured and the values are below:—

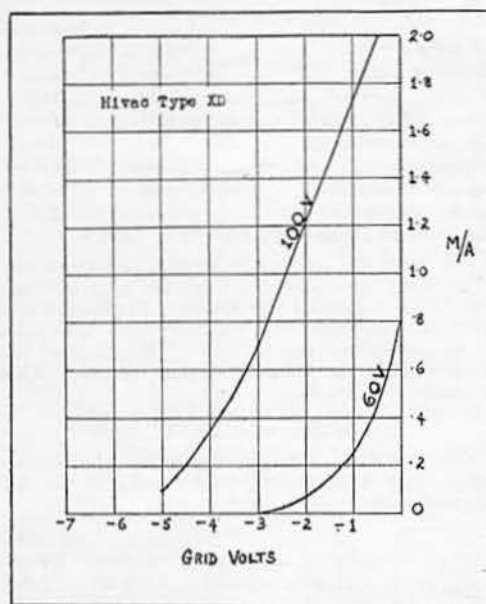
| | |
|--------------------|-----------|
| Grid-Anode ... | 4.8 m.mf. |
| Grid-Filament ... | 3.0 m.mf. |
| Anode-Filament ... | 3.0 m.mf. |

These figures are not guaranteed to a high order of accuracy, but are close enough for estimating neutralising capacity, etc.

The valve has been tested under ultra-short wave conditions, and the following figures were

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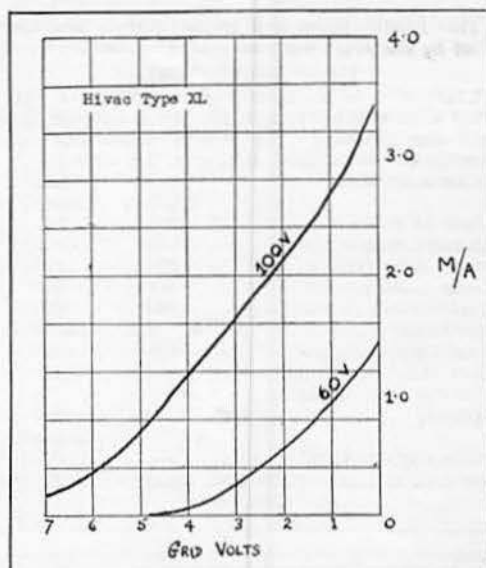
obtained with 100 watts on the anode at voltages around 1,000 volts:—



| Approx. frequency. | Power output. |
|--------------------|---------------|
| 150 m.c. ... | 7 watts |
| 112 " ... | 14 " |
| 56 " ... | 17 " |
| 28 " ... | 20 " |

The above figures show that the valve gives an efficiency of the order of 10 per cent. at a fre-

quency of 150 m.c. and about 20 per cent. at 56 mc, good figures for this class of valve.



No figures have been taken as a driven amplifier at the above frequencies due to difficulties of providing drive, but it is safe to assume that the efficiency would be of the same order.

The valve can be safely recommended for use as an oscillator or P.A. on the 28 and 56 mc. bands, and especially so for those carrying out experiments on the 112 mc. band.

D. N. C.

BOOK REVIEWS

MODERN RADIO COMMUNICATION. By J. H. Reyner, B.Sc. (Hons.), A.C.G.I., D.I.C., A.M.I.E.E., M.Inst.R.E. 330 pages and 157 illustrations. Published by Sir Isaac Pitman and Sons, Ltd. Price 5s. net.

This is the fifth edition of the little book, which has always proved a favourite with students studying for the City and Guilds of London Institute Examinations. Though much larger than previous editions, it remains the same price.

The present volume is now called Volume I and is intended for students taking Preliminary and Intermediate Grades in the Examination. Vol. II, covering the Final Grades for the "City and Guilds," as well as for the A.M.I.E.E. and Intermediate B.Sc. examinations, is in preparation.

The author assumes a working knowledge of magnetism and electricity, but the book is not a mathematical work and calculations when they arise are of a simple nature.

As the book is intended for examination preparation, the effect of the syllabus is rather obvious. The "City and Guilds" in their earlier grades require a little knowledge about a big number of

things—and nothing very deeply. This is reflected in the book, and we find thirty-two chapters, five appendices, specimen examination papers, answers and an index, compressed into 330 pages. It works out at a little over nine pages per chapter; the chapter on loop aerials gets five pages and that on short-wave transmission the same space.

The author gives no more than necessary from the examination point of view, and having stated the intention of the book one must agree with his method. Nor is this the place to criticise the syllabus of the "City and Guilds," though its effect, as mentioned before, is apparent.

The book is very fully illustrated by both line blocks and half-tone reproductions of apparatus. The whole lay-out of the book is clean and attractive, and the author has a gift of lucid explanation which maintains the reader's interest.

The scope of the book is really the whole field of radio engineering, from circuit theory to direction-finding, from valve curves to high-speed telegraphy. All is done rather briefly, but descriptively and interestingly.

Errors are few, but it would appear that one has

A Good Book is an Investment

crept in on page 46, where the word "reactance" is used in describing a calculation of "impedance." Also, despite the author's explanatory note, the conception of radiation from an aerial, as shown in Fig. 41, would seem very unconvincing.

To students who intend to present themselves for examination this little book will prove even more popular than heretofore; and to those who want a radio *hors d'œuvre* with a deal of the practical meat and almost none of the mathematical parsley, this little book can be thoroughly recommended, as indeed it can to every beginner.

T. P. A.

DEFINITIONS AND FORMULÆ FOR STUDENTS. Radio Engineering. By A. T. Starr, M.A., Ph.D., A.M.I.R.E. 35 pages and 23 illustrations. Published by Sir Isaac Pitman & Sons, Ltd. Price 6d. net.

This is one of a series of little pocket-size booklets giving formulæ and definitions relating to various subjects. The present one is concerned with radio engineering. It opens with a very concise but remarkably useful list of definitions; a radio dictionary on a small scale. Though of only 15 small pages, the meaning of four test words were given very satisfactorily, and in more detail than might have been expected. This comprises Section I.

Section II deals with formulæ and circuits. It opens with a tabulation of the E.S., E.M. and practical units used in electrical work. Then there are formulæ on the capacity of condensers, concentric cables and aerials; the inductance of straight wires, single-layer and multi-layer coils; resistance of wires and skin effect; impedance; resonance; coupled circuits; "DBs"; and valve circuits of many sorts.

It is a very useful little book with a wealth of information compressed into a few pages.

T. P. A.

RADIO CLUB OF AMERICA (TWENTY-FIFTH ANNIVERSARY YEAR BOOK).

I have just laid down a little silver-backed book which has been a sheer delight to read, and for a brief hour allowed me to throw off a few years and recapture those days when I unscrewed the little ornamental brass balls from old iron bedsteads to make spark-gaps, rummaged plumbers' shops for old gas-control valves, if that is what they were called—we used them for crystal holders—and held more breath listening for signals than is now spent in talking about DX.

No one who knew those early days could help feeling a little sentimental over the story of enthusiasm, keenness, and real amateur interest triumphing over material, financial and legislative obstacles. The story of the Radio Club of America is the story of amateur radio from the year 1909 to the present day. Actually, it was started as a club among a group of schoolboys. The President was 14 years of age, and as such went to Washington with a deputation of members—all mere boys—and appeared before a Committee of the Senate to successfully oppose a Bill to prohibit amateur experimenting.

The earnestness of this handful of mere youngsters attracted no little attention, as interest in radio was growing by leaps and bounds. In 1911 it was decided to adopt the name "Radio Club of

America," and the members at that time totalled exactly 13. Frank King was the first President.

By the end of 1911, the membership had grown considerably, and by compiling a list of the call-signs worked "over the air" the first call-book was published—a blue-printed sheet which was sold at 10 cents a copy—this was in 1912. That call-book must raise a smile nowadays; the calls were obviously self-assigned, and three amateurs used the call HX; some names which were afterwards to be very well known in amateur radio appeared. John Grinan (now VP5PZ) was JG. There were several three-letter calls, and at least two single-letter calls—a charter member of the Society chose the call "X."

In 1912, the club successfully opposed the Alexander Bill which purported to kill the amateur cause.

About this time the club arranged for papers to be read at its meetings to increase the knowledge of members, who had only a very meagre supply of technical literature in those early days. The practical side of amateur radio at that time is reflected in the statement that the advent of the crystal detector allowed amateur operators to establish quite reliable communication up to 15 miles.

Little did the members think that they were participating in important historical events when they listened to Dr. Hudson talking over the pool table in Frank King's house about the Hudson coated filament, or when E. H. Armstrong told them of his new regenerative circuit at a meeting in 1915. Long before this, in 1911, two members, George Eltz and Frank King, broadcast music to the fleet from an arc telephony transmitter, and this is claimed to be the first real broadcasting station operated with any degree of success.

Then came the early efforts to achieve trans-Atlantic reception, and Paul Godley made valiant efforts with a specially constructed receiver on the banks of the Hudson; later he was to make history in a little tent in Ardrossan, Scotland, when he received a twelve-word message from the club's station W1BCG.

The club soon grew so large that meetings were held in a lecture hall at Columbia University, and the small body of amateurs changed gradually to a scientific organisation of recognised standing. But the club spirit was never lost, and to-day is as strong as it was in the early days.

In 1916, an amateur station, perhaps what will be remembered in future years as one of the most famous of amateurs, 2PM, smashed all records by sending the first trans-continental relay message from New York to California, and a few weeks later was successful in getting signals to California, a distance of 2,500 miles with a power of 1 kilowatt. This station was owned and operated by our old friend, John Grinan.

The war then put a stop to the activities of the club, but its members carried on their radio activities in one or other of the fighting services, and their radio training made their services very valuable to their country. In this connection one is reminded of E. H. Armstrong's work on the superheterodyne receiver while with the Allied forces in France.

After the war the club was quick to realise the work lying to its hand, and soon was very active again.

When the A.R.R.L. organised the trans-Atlantic amateur tests, a member of the club, Paul Godley, was chosen to proceed to Scotland to carry out the reception. The club participated in these tests; six members, including John Grinan and E. H. Armstrong, built a station especially for the tests. It was IBCG; it was successful and won the prize offered by Mr. Burnham, of London. It was heard in every State of the Union, in Holland, Germany and Porto Rico. It sent three complete messages to California and a 12-word message to Godley in Ardrossan. This was the first time in history that an amateur station had sent a complete message across the American continent or across the Atlantic, and probably the first time that any message had been sent with less than a kilowatt and on a wave as low as 230 metres. This event attracted the attention of many prominent men, who visited the station to see for themselves "What you boys are doing."

Another landmark in the club's history, and indeed in the history of radio, was the meeting in 1922, where Armstrong demonstrated his newly-invented super-regenerative circuit.

About the same time, Armstrong represented the club on a special committee called by Secretary Hoover and reporting direct to Congress on the framing of radio regulations.

The rest of the story brings us up to the present time, but throughout its existence the club has been a vital force in radio, and the membership and achievements are something of which the club should be very proud. We amateurs, no matter where we live, have benefited by the club's early work and their stout efforts on behalf of the cause.

The club has issued this little booklet as its Twenty-fifth Anniversary Year Book. A very beautifully-produced story of the club's life from those early days right up to the present time. It is illustrated by photographs of many of the early stations and amateurs, reproductions of historical documents, and concludes with a "Who's Who in The Radio Club of America."

I think I would be expressing the views of many old-timers, and probably many budding amateurs, if I offered the club a few words of thanks for placing much of this early history on record and doing so in such an extraordinarily interesting way. The club has had a very eventful 25 years, and there is no doubt that it maintains its early traditions and spirit in no uncertain measure; may it have many more anniversaries, each recording successful effort and increasing prestige.

T. P. A.

[At the express wish of Mr. John Grinan, the R.C.A. arranged for a copy of this Jubilee Year Book to be sent to all R.S.G.B. affiliated societies, a gesture much appreciated by this Society.—Ed.]

PROBLEMS IN RADIO ENGINEERING. By E. T. A. Rapson, A.C.G.I., D.I.C., A.M.I.E.E., Assoc.I.R.E., F.P.S. 91 pages and 7 diagrams. Published by Sir Isaac Pitman & Sons, Ltd., London. Price 3s. 6d. net.

For some years the student of electrical engineering has had available problems of many types, and specimen solutions and answers. These books of problems have been of immense value, particularly to the student relying on private study.

This book is, I think, the first of these books to cater for the student of radio engineering, and as such it is more than welcome. It will be helpful in no small way to students and teachers alike, but there are a few points on which criticism of a constructive kind might reasonably be made.

As the author points out in the preface, the problems are drawn from the examination papers of the City and Guilds of London Institute, the I.E.E., and the University of London. Examination questions are of great value to students studying for those examinations, but the book would have been immensely more valuable had it included graded problems leading up to examination standard, and original problems to fill the gaps which must occur in a collection of examination questions.

Descriptive questions have been included but not supplied with answers. It is reasonable not to attempt to answer them in a small book of this sort, but a list of references, as is supplied in the case of engineering problems, would have assisted the private student.

The problems are classified under 43 headings, and at the beginning of each section a résumé of the formulae required is given. In the case of the section on "Self-inductance," the author gives the formula used in low frequency work, a very approximate one at high frequencies, and no mention is made of flux leakage or the factor which depends on the shape of the winding. The fact that the problems given can be solved with the approximate formula does not seem a sufficient justification for omitting such an important matter.

Despite these points of criticism, I feel that this book is very badly needed and will be welcomed by all students of radio engineering whether they are preparing for the above examinations or not, though I think the author has had the examination student mainly in mind.

T. P. A.

TELEVISION TO-DAY is the title of a new part work published by George Newnes, Ltd. An examination of Part I reveals that no efforts have been spared to obtain the services of the most competent authorities connected with Television developments as contributors. The work will run to some 800 pages, and is to appear weekly for the next four months.

Part I is noteworthy because it sets out in clear language a brief survey of High Definition Transmission and Reception, and a summary of the various systems in use.

Mr. Barton Chapple describes 30-Line Television Receivers, whilst a constructional chapter from the pen of Mr. T. D. Humphrey deals with the assembly of a cathode-ray receiver. The Baird High Definition System of Transmission, Photometry applied to Television systems, and the beginning of a chapter on Electron Optics go to make up a very worth while first part.

The illustrations and diagrams are very clearly reproduced, the paper is of an art texture, and the format of convenient size. Each part sells at a price of 1s., and back copies can be obtained from the publishers or any newsagent.

(Continued on page 442).

NATIONAL FIELD DAY, 1935

ALTHOUGH we are retaining for this year the title "National Field Day," the time is fast approaching when the event will become of international importance. It is with considerable pleasure we have to record that Groups and Societies in several parts of the world have responded to our invitation to take an active part in the 1935 event.

For the benefit of those who did not read the rules published in the February issue of this journal, we would mention that the Field Day proper commences at 16.00 G.M.T. (5 p.m. local British Summer Time), Saturday, June 1, and finishes at 19.00 G.M.T. (8 p.m.), Sunday, June 2. Each British district will place in operation one or two official communicating stations, and, thanks to a recent ruling made by the G.P.O., these stations will be recognised easily by the suffix P which they will add to the call signs in use.

"A" stations will operate in the 1.7 and 3.5 mc. bands and "B" stations in the 7 and 14 mc. bands. Points will be scored for all stations worked, providing they are outside the district in which the transmitter is operated, or in the case of the London stations outside their home districts.

It is hoped that cinematograph records will be taken at as many sites as possible, in order that a complete N.F.D. film may be available in time for display at Convention. The film size recommended is 9.5 mm.

Below will be found a complete list of portable stations which we have been advised will be active during the event.

ENGLAND AND WALES.

| District. | Station. | Call. | Site. |
|-----------|----------|-------|--|
| 1 | A | G2OA | Barnston, Wirral, Cheshire. |
| | B | G2OI | "Smith Hill," Haslem Farm, near Bolton, Lancs. |
| 2 | A | G5QY | Stocksfield, Northumberland. |
| | B | G6KU | Beacon Hill, Wibsey, Bradford. |
| 3 | A | G2AK | Barr Beacon, Birmingham. |
| | B | G5VM | Birds Farm, Rubery, Birmingham. |
| 4 | A | | No details. |
| | B | | |
| 5 | A | G6RB | Dundry Hill, near Bristol. |
| | B | G2HX | Griffiths Meadow, Sandhurst, Glos. |
| 6 | A | G5WY | Salcombe Regis, Devon. |
| | B | G5SY | Haldon, Devon. |
| 7 | A | G6GZ | Farnham Park, Farnham, Surrey. |
| | B | G5LA | Jones Farm, High Street, Walton-on-the-Hill, Tadworth, Surrey. |
| 8 | A | G6BS | The Dingle, Houghton Road, St. Ives. |
| | B | G5FB | Maces Place Farm, Rickling Green, nr. Bishops Stortford. |

| | | | |
|------------|---|-------------------|---|
| 9 | A | G2XS | Castle Rising Lodge, Knights Hill, King's Lynn. |
| | B | G2MN | Upland Farm, Stoke Holy Cross, near Norwich. |
| 10 | A | G2SN | Bryn Nodyn Field, Three Crosses, nr. Swansea. |
| | B | G5WU | Leckwith Hill, near Cardiff. |
| 11 | A | G2II | Pen Gogarth, Carnarvonshire. |
| | B | G2II | As above. |
| 12 | A | G5CD | Hollington's Farm, Park Road, Potters Bar, or Morleys Farm, Bignell's Corner. |
| | B | G5BO | James Farm, Bentley Heath, Gantwick Corner, near Potters Bar. |
| 13 | A | G6QB | Field opposite Wheatsheaf Inn, Ide Hill, Kent. |
| | B | G6CB | Grounds adjoining Westerham Heights Guest House, Westerham, Kent. |
| 14 | A | G6UT | Rookwood Hall, Abbees Roothing, Essex. |
| | B | G6CT | Tile Works, Retten-den, Essex. |
| 15 | A | G6WN | Rush Green Farm, Rushey Green, nr. Denham, Bucks. |
| | B | G6YK | Flowers Bottom Farm, Speen, nr. High Wycombe, Bucks. |
| 16 | A | G6SY | Colliers Hill, near Broad Oak, Mer-sham, Ashford, Kent. |
| | B | G2MI | Burnham Downs, Bluebell Hill, Chatham - Maidstone Road, Kent. |
| 17 | A | G2LR | Brauncewell, 1 mile from Cranwell R.A.F. ground. |
| | B | G5BD | Stenigot Hilltop, nr. Donnington - on - Bain, Lincs. |
| 18 | A | G6OO | White Hill Field, Scarborough Road, Bridlington. |
| | B | G5FV | Clarke's Field, Hull Road, Keyingham, near Hull. |
| A District | A | SCOTLAND. G2DI | Kingshill, New-mains, near Wishaw, Lanark-shire. |

| | | | | | | | |
|-------------------|----------|--------------------------------------|---|---|----------|--------|------------------------------------|
| | B | G5ZX | Eaglesham Moor, Renfrewshire. | Kenya | B | VQ4CRH | Probably in the bush near Nairobi. |
| B District | A | G6LG | Newmachar, near Aberdeen. | Malta | B | ZBIC | No details. |
| | B | G6IZ | Devenick, near Banchory. | North India | B (?) | VU2AR | No details. |
| C District | A | G5AP | Amulree, Perthshire. | SWITZERLAND. | | | |
| | B | G6KO | Ditto. | District. | Station. | Call. | Location. |
| D District | A | G6IN | Macbiehill, 1 mile south of Macbiehill Station. | 1 | A B | XHB9AM | Geneva |
| | | | | | A B | XHB9AN | Geneva |
| | | | | | A B | XHB9AR | Geneva |
| | B | G5IG | Lamanch Station, Dolphinton Branch. | 2 | A B | XHB9G | Lausanne |
| | | | | | A B | XHB9K | Lausanne |
| | | | | 3 | A B | XHB9AJ | Neuchatel |
| | | | | | A | XHB9AY | Neuchatel |
| NORTHERN IRELAND. | | | | 4 | A | XHB9AV | Bienne |
| A | GI5GV | Green Graves, Newtownards, Co. Down. | | | A | XHB9BB | Bienne |
| | | | | | A B | XHB9S | Bienne |
| B | GI2CN | Stormont, Co. Down | | 5 | A | XHB9AA | Berne |
| | | | | | A B | XHB9T | Berne |
| IRISH FREE STATE. | | | | 8 | A | XHB9AC | Basle |
| A | EI6F | In County Dublin. | | | A B | XHB9B | Basle |
| B | EI2G | Ditto. | | 9 | A B | XHB9A | Zurich |
| | | | | | A B | XHB9AK | Zurich |
| BRITISH EMPIRE. | | | | 10 | A | XHB9H | St. Gall |
| Country. | Station. | Call. | Location. | 11 | — | XHB9AU | — |
| Ceylon | B (?) | VS7RP | Probably portable, near Colombo. | Note.—The Swiss stations will operate on 3.5 mc. and 7 mc. only. In the above list "A" indicates 3.5 mc. and "B" 7 mc. operation. | | | |
| Egypt | B | SU1A | Alexandria. | | | | |
| " | B | SU1C | Cairo. | | | | |

Note.—The Swiss stations will operate on 3.5 mc. and 7 mc. only. In the above list "A" indicates 3.5 mc. and "B" 7 mc. operation.

Apparatus Reviewed

Quartz Crystal Co., of New Malden, have submitted a sample of a new honeycomb wound radio frequency choke for use in transmitter and receiver circuits, with anode currents up to 120 milliamperes. The choke is wound in three sections on an insulated former and the terminations are brought out to metal caps to which are soldered connecting leads. The construction is rigid, but some electrical advantage might have been gained if the end caps had been dispensed with.

The inductance at 800 cycles is in the order of 2 mh. and the D.C. resistance approximately 28 ohms. The self capacity is about 1.4 mmfids.

We can with confidence recommend this component for circuits operating between 1.7 and 14 mc. The retail price is 2s. 3d. post free.

Specimens of small glass fuses manufactured by Messrs. Amplion (1932), Ltd., of 82-84, Rosoman Street, London, E.C.1, have been submitted to us for test. The fuses are enclosed in a glass tube averaging $\frac{1}{8}$ " in length and 35 mils in diameter. The tube is firmly cemented into polished metal caps which, incidentally, resisted our attempts to loosen them by force and by the application of heat. The thickness of the glass precludes any possibility of the tube breaking should the fuse blow. They are a particularly neat job and retail at the reasonable price of 6d. each.

Six samples were submitted to an operating test and the results are as follows:—

| Safe Carrying Current. | Fusing Current. |
|------------------------|-----------------|
| 60 m.a. | 102 m.a. |
| 150 m.a. | 270 m.a. |
| 250 m.a. | 380 m.a. |

| | |
|----------|-----------|
| 500 m.a. | 1.1 amps. |
| 1 amp. | 2 amps. |
| 2 amps. | 3.5 amps. |

It should be noted that the figures marked on the fuse indicate safe carrying current.

The full range at present in manufacture is as follows:—

| Rating. | Colour. | Rating. | Colour. |
|----------|---------|-----------|------------|
| 60 m.a. | Black | 700 m.a. | Green |
| 100 m.a. | Grey | 1 amp. | Blue |
| 150 m.a. | Red | 1.5 amps. | Light Blue |
| 250 m.a. | Brown | 2 amps. | Purple |
| 500 m.a. | Yellow | 3 amps. | White |

Each fuse is clearly labelled and coloured with a distinctive paper slip inside the tube.

A. O. M.

STRAYS

We are informed by Mr. Lythaby, 2AFA, that a station using the call W6USA will be on the air as from May 29 next, at the Californian Pacific International Exposition in Balboa Park, San Diego. The input employed will be in the neighbourhood of 1 kilowatt, and phone and c.w. will be worked in the 3.5 and 14 mc. bands.

We are also advised from the same source that W6KTW and W6JYT hold the endurance transmitting record, having held a QSO for 11 hours, thus beating the previous record held by W6JWY and W6IQE. (We hope British stations will not attempt to emulate this example.—Ed.)

W8HGA, using a frequency of 14,360 kc., will call "Test BRS" from 21.00 G.M.T. to 21.15 G.M.T. from June 1 to 15 inclusive. He will transmit a different three-letter word each day, and hopes that as many BRS as possible will send him reports on the series of tests.

Support our Advertisers

RESEARCH AND EXPERIMENTAL SECTION

MANAGER :

H. C. PAGE (G6PA), Plumford Farm, Ospringe, near Faversham, Kent.

ASSISTANT MANAGER :

DR. G. F. BLOOMFIELD (G5MG), 34, Morton Way, Arncliffe, London, N.14.

GROUP MANAGERS :

No. 1: 1.7 and 3.5 MC. WORK

J. H. HUM (G5UM), "Byeways," The Drive, Welwyn, Herts.

No. 2: 56 MC. WORK

No. 3: ARTIFICIAL AERIALS

No. 4: ATMOSPHERE AND PROPAGATION.

J. C. ELMER (G2GD), Aethelmar, Seabrook Road, Hythe, Kent.

No. 5: TELEVISION

C. W. SANDS (G5JZ), Springfield, Heathfield, Sussex.

No. 6: CONTEMPORARY LITERATURE

R. A. FERREY (PAOF), Abrikozenstraat, 87, The Hague, Holland.

No. 7: RECEIVER DESIGN

E. N. ASHCOCK (G2DV), 206, Atlantic Road, Kingstanding, Birmingham.

No. 8: TRANSMITTER DESIGN

A. E. LIVESEY (G6LI), Stourton Hall, Horncastle, Lincs.

No. 9: AERIAL DESIGN

F. CHARMAN (G6CJ), Orchard Cottage, Stoke Poges, Bucks.

No. 10: VALVE RESEARCH

D. N. CORFIELD (G5CD), 10, Holders Hill Gardens, Hendon, N.W.4.

No. 11: 28 MC. WORK

W. A. CLARK (G5FV), "Lynton," Hull Road, Keyingham, Hull.

No. 12: AUXILIARY EQUIPMENT

A. O. MILNE (G2MI), "Southcot," Larkfield, Kent.

THIS month R.E.S. Notes appear for the first time in their new form. Of necessity they are a little abbreviated because sufficient time has not elapsed to allow members to send in to their Group Managers material of suitable form. I wish to suggest one or two ways of augmenting this type of material. We have in the section a considerable number of individual members, most of whom have contributed little or nothing to the section. The new arrangement of presenting R.E.S. Notes offers an excellent opportunity for these members to show their ability, for there must be many who have material suitable for short articles of the type we are seeking, or even for a long article if necessary.

Then there is another class of member I would particularly appeal to. I refer to those who have undoubted ability, but who have constituted themselves our critics. Often their criticisms have been just and well-founded, and have been appreciated, but I would like to suggest that they lay aside the pen of criticism for the present, and help on the Section by offering us articles of technical interest.

In an organisation such as R.E.S. there must always be a number who have had no experience whatever of Research work, and consequently lack the knowledge of how best to put the results of their practical work forward in the best manner. I am very pleased to be able to announce that Mr. W. A. Scarr (G2WS) has consented to contribute a series of short articles setting out in simple language the methods best suited to the amateur in the tabulation of his results. These articles will commence shortly.

I feel sure that quite a number of our members possess typewriters, and I would like to make an appeal to them to offer their help to our Group Managers. It is a duty of a G.M. to send in a report each month of the work his section has been doing. These reports are not necessarily for publication, but when some of the material is so intended, it is essential that it should be presented in the clearest form possible, as this makes things easier for all who

have to handle it, not the least of these being the compositor. Therefore, a typewritten article is greatly to be preferred, as most of us have not the art of copper-plate writing that our forefathers possessed.

G6PA.

1.7 and 3.5. MC. Group (No. 1).

Group 1C submits the first of a series of reports on various types of valves used under amateur transmitting conditions. It is stated that the 4211E is unsuitable as a P.A. on 1.7 mc., due to instability and parasitic oscillation, caused, apparently, by the grid and anode chokes (incorporated inside the valve) resonating on this frequency. The valve works well on higher frequencies. The 4211D is satisfactory, not having internal chokes.

The 4211E makes a good modulator at 500 anode volts, and will modulate a 10-watt P.A. to more than 80 per cent. When operated at 500 volts, it requires about 6 to 9 volts battery bias, adjusted to give about 50 milliamperes plate current. Automatic bias is not so satisfactory. The internal chokes of this valve obviate precautions to prevent R.F. feedback.

An L210 followed by a P220 at 100 V. gives sufficient output to swing the grid of the 4211E completely. (It is suggested that the Group communicate with G5CD on valve problems.—H.C.P.)

In connection with high fidelity phone work, the group has been comparing the properties of grid and anode modulation, the latter finding slightly more favour, although it is liable to "cut the top." The importance of an adequate modulation choke is stressed, a value of 40 to 50 henries on load being not too great.

With the general availability of high quality microphones, it is essential to use a really good modulator, and push-pull is often of great value in this direction.

G5UM.

Technical Hints Wanted

Atmosphere and Propagation Group (No. 4).

The promised test signals from G6CJ were started on Sunday, April 7, about which all members of Group 4 will have been notified by their G.C.

In the Schedules below, "High" means that high angle radiation predominates, and "Low" mostly low angle. To be of value, reports must be regular, whether positive or negative; if negative, the state of activity (jamming) might be noted. Records of the signals should give relative strength, exact tone of signal, whether pure or modulated, and details of any echo presentation which mutilates the signal and reduces readability. Effort will be made to produce the type of wave which is pure over short distances, but develops modulation after reflection, in order to try and obtain information about the path taken by the wave. Regular observations on what is commonly called the "ground wave" are particularly desired. All reports by Group 4 members should be sent in to their G.C., keeping G6CJ and G2GD reports to separate sheets of paper. Reports from other members will be welcomed by the G.M.

SCHEDULE OF TESTS FROM G6CJ.

POWER 50 WATTS.

Times: G.M.T. Sundays.

08.00 to 08.05 on 7188 kc.

"Test RES4 de G6CJ, G6CJ, G6CJ, 7 mc.

High," repeated.

08.10 to 08.15 on 7037 kc.

"Test RES4 de G6CJ, G6CJ, G6CJ, 7 mc.

Low," repeated.

08.20 to 08.25 on 14075 kc.

"Test RES4 de G6CJ, G6CJ, G6CJ, 14 mc.," repeated.

The series will be repeated at 21.00 to 21.25 G.M.T. in the same order, i.e.,

21.00 to 21.05, 7 mc. High.

21.10 to 21.15, 7 mc. Low.

21.20 to 21.25, 14 mc.

REVISED SCHEDULE OF TESTS FROM G6GD, FROM MAY 1.

Power: 10 watts.

Times: G.M.T. Mondays, Wednesdays, Fridays.

18.00 to 18.04 on 1789 kc.

"Test RES4 de G2GD, G2GD, G2GD, 1.7 mc.," repeated.

18.05 to 18.09 on 3578 kc.

"Test RES4 de G2GD, G2GD, G2GD, 3.5 mc.," repeated.

(Temporarily suspended during the summer.)

18.10 to 18.14 on 7156 kc.

"Test RES4 de G2GD, G2GD, G2GD, 7 mc.," repeated.

18.15 to 18.24 on 14312 kc.

"Test RES4 de G2GD, G2GD, G2GD, 14 mc.," repeated.

G2GD.

Valve Design Group (No. 10.)

THE TRITET OSCILLATOR.

This article is intended to record the results of some experiments made on the Tritet oscillator as a harmonic generator. The object of making the measurements summarised below was to gather some information as to the output of such an oscillator, and to compare an English experimental

valve with an American type 59. The English valve is not available at present on the market with the suppressor grid brought out to a separate pin due to causes beyond the makers' control, but results are shown in order that the delusion held in some quarters that English valves are never made, and if they were, are not so good as American, can be speedily dispelled.

All measurements were made for convenience, using the valves as crystal oscillator multipliers.

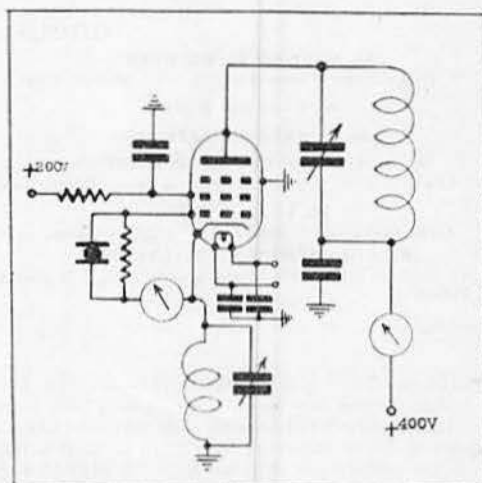


Figure 1.

The circuit used is shown in Fig. 1, and is conventional. A microammeter was connected in series with the grid leak across the crystal in order that the grid bias and the voltage across the crystal could be observed. The screen was tied to ground with a large condenser, and decoupled with 1,000 ohms, the screen voltage throughout being maintained at 200 volts. The suppressor grid in all cases was earthed, and the anode voltage maintained at 400 volts. The coils used were bare wire wound with 16 S.W.G. wire spaced and tuned with receiving type condensers having brass vanes. The coils did not represent the last word in efficiency, and in consequence the power output figures obtained could possibly be improved with higher "Q" coils.

The valves had the following characteristics:

| | Raytheon | Exp. |
|------------------------------|----------|--------|
| | 59 | Valve. |
| Filament volts ... | 2.5 | 4.0 |
| Filament current (amps.) ... | 2.0 | 2.5 |
| Anode volts (max.) ... | 400 | 400 |
| Screen volts (max.) ... | 250 | 250 |
| Triode connected: | | |
| Mutual conductance ... | 3.8 | 10.0 |
| Amplification factor ... | 6.5 | 27.5 |
| Impedance ... | 1,700 | 2,750 |
| Grid bias ... | -18 | -4 |
| Pentode connected: | | |
| Mutual conductance ... | 3.0 | 9.0 |
| Amplification factor ... | 100 | 850 |
| Impedance ... | 33,000 | 94,500 |
| Grid bias ... | -18 | -4.0 |

Support R.E.S.

With a 1.7 mc. crystal on the grid, and the anode circuit tuned to 3.5 mc., the currents were as follows:

| | Raytheon | Exp. |
|----------------------|----------|--------|
| | 59 | Valve. |
| Anode current (Ma.) | 28 | 28 |
| Screen current (Ma.) | 14 | 7.5 |
| Grid current (μa.) | 3,200 | 2,300 |

The above figures show that the English valve takes only half the screen current of the No. 59, and the grid current is considerably less, indicating less wear and tear on the crystal.

The R.F. voltage was next measured with a valve voltmeter across the output coil with various load impedances made up of non-inductive resistances, the power output and voltage for up to the 4th harmonic being recorded. The results are shown below:

| Band. | Load Impedance. | No. 59 | | Exp. Valve. | |
|--------------------|-----------------|--------|--------|-------------|--------|
| | | Volts. | Watts. | Volts. | Watts. |
| 1.7 Fundamental | Open circuit | 370 | — | 340 | — |
| | 30,000 ohms | 310 | 3.2 | 265 | 2.35 |
| | 15,000 " | 265 | 4.7 | 230 | 3.5 |
| | 10,000 " | 230 | 5.3 | 210 | 4.4 |
| | 7,500 " | 230 | 7.0 | 200 | 5.4 |
| 3.5 mc. | Open Circuit | 290 | — | 340 | — |
| | 30,000 ohms | 260 | 2.25 | 235 | 1.85 |
| | 15,000 " | 240 | 3.85 | 192 | 2.45 |
| | 10,000 " | 200 | 4.0 | 154 | 2.4 |
| | 7,500 " | 190 | 4.8 | 133 | 2.35 |
| 5.1 mc. | Open Circuit | 120 | — | 145 | — |
| | 30,000 ohms | 108 | 0.39 | 86 | 0.25 |
| | 15,000 " | 96 | 0.61 | 72 | 0.35 |
| | 10,000 " | 86 | 0.74 | 59 | 0.35 |
| | 7,500 " | 60 | 0.48 | 50 | 0.33 |
| 7.0 mc. | Open Circuit | 83 | — | 96 | — |
| | 15,000 ohms | 63 | 0.265 | 48 | 0.15 |

The mean values of load, viz., 10-15,000 ohms, represent the approximate load of a 50-watt driven P.A. The above figures show that on the whole, as far as power output, there is little to choose between the two valves, the No. 59 gives more power output into a low impedance load, but the voltage on open circuit is higher for the English valve. This effect was expected, as the static figures above show the No. 59 to have the lower impedance. Taking into consideration the fact that the screen current and the load on the crystal is less, the English valve would appear more efficient, but a higher step down between the Tritet and P.A. would be advantageous.

Under actual test conditions it was found that, using a 4211D valve as P.A., with a grid bias of —150 volts on 3.5 mc., and a step-down transformer between Tritet and P.A. of 1.4-1 ratio, both valves gave almost equal drive, and were capable of sufficient drive for an input of over 50 watts.

It is of interest to note that no difficulties were experienced when the anode circuit of the Tritet was tuned to fundamental. Also the fact that the drop in voltage between fundamental and 2nd

harmonic is small was due to the improved L.C. ratio obtaining in the anode circuit on 3.5 mc.

It is hoped that the information above, which is very valuable to the writer, may also prove of value to those using and experimenting with the Tritet oscillator.

D. N. C.

Auxiliary Apparatus Group (No. 12)

The following may be of interest to those members who construct their own microphones. The G.M. recently had trouble with his microphone, and this was traced to a punctured rubber diaphragm. No suitable rubber being to hand for replacement, the home was ransacked for a substitute. The discovery of a packet of cellophane jam pot covers provided the solution, and one of these was used. No difficulty was experienced in ensuring that the

diaphragm was taut, and tests showed that the sensitivity of the microphone had been very materially increased. Excessive damp may cause the diaphragm to become wrinkled, but otherwise it seems to give no trouble and can, of course, be replaced at negligible cost should it become damaged.

It is not known if the idea is original, but it certainly seems too good not to receive mention.

A.O.M.

Su1rk

Mr. R. Keating (ex-BERS252) is now licensed under the call SU1RK. He will be operating from the British Coaling Depots, Ltd., Port Said, Egypt, on a frequency of 14,200 kc., using fone and cw. Transmissions will shortly commence on 7,100 kc. Reports will be welcomed.

56 MC. Co-operation Wanted

Mr. E. Scudder (BRS981, H.M.S. *Titania*), c/o G.P.O., London, is anxious to get in touch with members in the Weymouth, Portland and Oban areas, who are interested in 56 mc. work.

DX CHART—No. 6

DX CONDITIONS: MARCH 15 TO APRIL 15, 1935.

| G.M.T. | 14 mc. | 7 mc. | 3.5 mc. |
|--------|--|---------------------------|---------|
| 0100 | | W1 | W1 |
| 0200 | | W1.5 | W1 |
| 0300 | | W1 | W1 |
| 0400 | | | W1 |
| 0500 | | | W1; K4 |
| 0600 | | W4.5; ZL2.3 | W9 |
| 0700 | K6; VE5; W6.7 | W4.5; ZL3.4; VK2.3 | |
| 0800 | J | W5; VK2 | |
| 0900 | | | |
| 1000 | ET8 | | |
| 1100 | ZL; VK; VP5 | | |
| 1200 | VK; ZC | | |
| 1300 | W1; VK4; J | | |
| 1400 | W1; VK; J; KA; ZD; OM; VS6; K6; X2 | | |
| 1500 | W1.6.7.9; VK; J; KA; LBI | | |
| 1600 | W1.6.7; VK; VS1.6; PK; ZC6 | | |
| 1700 | W1.7.9 | | |
| 1800 | W1.6; VK5; VP2 | J5 | |
| 1900 | W1.7; VQ8; PY1; ZB1; VP5; VE; VO | J5; KA1; ZB1 | |
| 2000 | W1.7; VE4.5; XZN; VP; VQ8; PY | PK1; ZS | |
| 2100 | W1.5.6.7; PY; HC; VE4.5; FF8; VO; ZT6 | KA1; VK3.5; J5 | |
| 2200 | W1.5.9; VP2; ZT6; LU; CX; PY | W1; NY; LU; PY; PK1 | |
| 2300 | W1; LU3.5; PY; VP1.5.6; CX2 | W1.5.6; VO; VE; PY; PK | W1; VE |
| 2400 | | W1.5.6; VE | W1; VE |

(A) Bold type indicates strong signals.

(B) W1 indicates East Coast areas when conditions are good.

Conditions on many nights on 14 mc. are still abnormal after 22.00. We are glad to welcome 2BVF and 2BHP to the scheme. It is noted with regret that six members have failed to contribute this month.

Empire Calls Heard

By J. Alexander (BRS822), 63, Tennyson Road, Birmingham, 10. From March 1 to April 14.

1.7 mc.: velea (3.3.9).

7 mc.: velet (5.5.9), vk2ae (4.4.9), 2hf (4.4.9), 2hg (4.5.9), 2ns (5.5.9), 3fb (3.4.9), 3gu (3.3.9), 3jk (4.5.9), 3kc (4.4.9), 3ky (4.4.9), vq4crl (5.6.9), zd1d (5.6.9), zllgx (4.5.9), 2ca (4.5.9), 3bs (4.5.8), 4ck (4.5.9), 4fo (5.5.9), zt6ac (4.4.9).

14 mc.: sulfs (4.5.8), velau (5.6.7), 1bh (4.4.8), 1br (5.5.9), 1dc (5.6.9), 1et (4.5.9), ex (5.6.9), 1fn (5.6.9), 1ge (5.5.6), 1hg (5.5.9), 1hy (4.6.8), 2ap (5.6.9), 2ax (5.7.9), 2ca (5.7.9), 2ee (5.8.9), 2hf (4.5.9), 3hc (4.5.9), 3kf (5.5.9), 4no (3.5.9), vk5wk (4.5.8), volp (5.6.9), 2z (4.6.7), vp2at (5.5.8), 2cd (5.6.9), 4ta (4.6.6), vp6mo (5.6.8), 6yb (5.5.9), vs1aj (4.5.9), zblh (4.6.8), zd2c (5.6.8), zs5a (5.6.8), zt6m (3.4.9).

O-V-2 receiver used. Figures in brackets denote signal strength and tone.

By 2BVU Grimsby, January to April.

14 mc.: sulro (6.9), 1sg (6.9), 1ec (7.9), velbv (8.9), 1et (4.9), 1ex (7.9), 2aa (4.8), ve2ee (7.9),

2hn (7.9), ve3kp (6.9), 4hg (8.7), volp (3.8), vq4crl (6.9), vk7jb (5.8), vp5pz (7.6), zblb (6.8), 1e (8.9), 1f (6.8), zc6ff (4.8), zd2c (5.8), 1d (6.9), zs5a (7.8),

7 mc.: sulch (7.9), 1ec (7.9), 1kg (7.8), 1sg (4.8), 2fd (8.9), velcl (8.9), 1ea (6.9), 1ey (4.9), 1ft (7.8), vk2er (4.9), 2hf (7.8), 2ns (3.8), 3gq (5.9), 3mr (6.9), 3uh (7.9), 5hu (6.8), vo2j (6.9), 1p (7.9), 4y (7.9), vp6yb (8.9), vq4crh (6.8), 4crl (4.9), vu2jp (6.9), zblc (6.9), 1e (8.9), 1f (4.8), zllhy (6.9), 2cl (7.8), 2fn (6.9), 2lb (3.9), 3aj (6.9), 3an (5.8), 3bj (7.9), 3cm (6.8), 3jd (7.8), 3fg (7.8), 3gm (8.8), 3ja (5.9), 2jm (4.9), 4ck (6.8), xzn2c (7.9), zt6ac (6.8), zs6af (4.9).

3.5 mc.: velhj (6.8).

Figures in brackets indicate QRK and tone.

Reports Wanted

We are advised by G2MI that VK4AP is anxious to contact British stations. He is working daily on the 7 mc. band between 20.00 and 20.30 G.M.T., and between 1100 and 1300 G.M.T. on 14 mc.

Q.S.L. with Discretion

HIC ET UBIQUE.

Headquarters' Notices—Calibration—Q.R.A. Section— Slow Morse—New Members.

THE LOYAL RELAY, 1935.

AS in former years, we anticipate being in a position to hand to our Patron, H.R.H. The Prince of Wales, K.G., Loyal Greetings from all parts of the British Empire, on the occasion of his 41st birthday on June 23 next.

The arrangements follow similar lines to those adopted in previous years, except that incoming messages can be handed to any British Isles station in a position to receive them.

Messages should be initiated by either the President of the National Society, or where no society exists, from the B.E.R.U. Representative. Personal messages should not be sent on this occasion. Overseas stations with a message on hand should call "B.E.R.U. Loyal Relay de..."

All messages received by Home stations should be forwarded without delay to Mr. A. E. Watts, G6UN, 58, Woodside Avenue, Highgate, London, N.6. Telephone: Tudor 3970.

Unauthorised Transmissions

Council have decided that in future no publicity shall be given in the columns of this journal to the unauthorised use of members' call signs.

Whilst it is known that certain calls have been misused, Council hold the opinion that a large number of the cases reported recently can be traced to *misread* call signs, especially when they refer to telephony transmissions.

Members who are satisfied that their call signs are being used illegally are requested to communicate the facts to the Engineer-in-Chief, Radio Section, G.P.O., Armour House, E.C.1.

K.C. Conversion Charts

We have been advised by the A.R.R.L. that their Government Printing Office has completely exhausted its stock of K.C. charts. We shall therefore be unable to supply copies in future as there is no likelihood of a reprint being made.

W.B.E. Certificates

The following W.B.E. Certificates have been issued:—

| Name. | Call Sign. | Date. |
|--------------------|------------|---------------|
| L. O. Rogers ... | G2HX ... | May, 1934 |
| B. M. Scudamore... | G6BS ... | March 1, 1935 |
| W. E. F. Corsham | G2UV ... | " 5 |
| R. A. Hill ... | ZE1JB ... | " 5 |
| P. Pennell ... | G2PL ... | " 11 |
| O. W. Gillion ... | ZL2BZ ... | " 20 |

| Name. | Call Sign. | Date. |
|---------------------|------------|----------|
| J. MacIntosh ... | VS2AF ... | March 21 |
| F. A. Robb ... | G16TK ... | " 22 |
| F. W. Garnett ... | G6XL ... | April 1 |
| J. Radeneyer ... | ZS6AL ... | " 1 |
| I. V. Miller ... | VK3EG ... | " 4 |
| D. Martin ... | VU2BL ... | " 10 |
| G. F. K. Ball ... | VQ3BAL ... | " 10 |
| F. E. Groom ... | VU2CD ... | " 10 |
| V. G. Mellor ... | G5MR ... | " 10 |
| G. Koenig ... | V8AC* ... | " 11 |
| J. S. Nicholson ... | VU2JP ... | " 15 |
| R. Barr ... | G15UR ... | " 18 |
| E. S. Wilson ... | G5CW ... | " 23 |
| J. N. Walker ... | G5JU ... | " 26 |
| K. T. Harvey ... | G5KT ... | " 26 |

*First Mauritius award.

Empire QSO Parties

A suggestion has been made by Mr. Mellars, ZL1AR, that certain week-ends be set aside each year for QSO parties between amateurs in the British Empire. Council have given consideration to this suggestion, and have decided to organise an initial party for the week-end AUGUST 10 AND 11. If this event proves successful others of a similar nature will be arranged. In selecting August for the first party we have in mind the fact that some members feel that the summer months afford little or no opportunity for DX working, particularly on the 7 mc. band, and it is therefore with the object of testing the truth of this assumption that the QSO party

has been arranged for the above dates.

No prizes are offered, but the event should provide an opportunity of carrying out some interesting research work. Every Empire station is cordially invited to take part and, what is more important, to forward a detailed log to Headquarters as soon as possible after August 11. These logs should be enclosed in an envelope and the words "QSO Party" clearly marked in the left-hand corner.

The Melbourne Centenary Contest.

The following are the positions and scores of the leading stations in the Melbourne Centenary Contest held last year:

Open Section: 1st., VK3MR, with 100,320 points.
2nd., VK3GQ, with 97,218 points.
3rd., VK3JQ, with 56,666 points.

Handicap Section: Winner, VK3HL, 40,181 points, equivalent to 1,747 points per watt.

Foreign Section: Great Britain.

G2ZQ, 3,850.

G6CJ, 3,400.

G6RB, 2,300.

First in Europe: D4BAR, 5,400.

Receiving Section: First in Europe, BRS 250, 6,150.
Second " DE 1836 R, 5,202.

G2ZQ's score placed him third in Europe, PAOAZ being second to D4BAR, with a score of 4,908.

Hearty congratulations, G2ZQ and BRS 250.

We are advised by Mr. Gilbert Pollock, VK2XU, that he scored 109,980 points in the above contest, but his entry was disqualified because he was not a financial member of W.I.A. Mr. Pollock is an old member of R.S.G.B.-B.E.R.U., having joined us in 1932.

Affiliations.

We are pleased to announce that the Newfoundland Amateur Radio Society has been granted honorary affiliation with the B.E.R.U. A further affiliation is that of the 5th Jersey (Modern School) Scout Group, Scoutmaster E. Banks. This troop has been issued with the Boy Scout Receiving Station No. 3, and we understand they will be active during the coming summer months.

Calibration Section.

Manager: A. D. GAY (G6NF).

The Standard Frequency Transmissions on 3.5 mc. will re-commence on Sunday, September 29, 1953. The calibration service for members' crystals and frequency meters will be continued, but will those intending to make use of this service please read the instructions printed under "Calibration Section" in the April BULLETIN. This month we have had to return two pieces of apparatus, marked "Unsuitable for calibration," which not only wastes time, but money as well. In one instance a member sent an old ex-WD Townsend buzzer wavemeter, which looked as if it had just come off a junk heap. When the buzzer was switched on it could be heard from one end of the spectrum to the other. Another member sent a 115 kc. crystal, which would not oscillate, and insufficient money to cover calibration fee and return postage. These are only two instances of many similar thoughtless actions.

Now, is this fair treatment? A good deal of the writer's spare time is given to running the Society's Calibration Section, special instructions have been printed, and yet within a fortnight of their appearance three members have shown conclusively that they have not read them.

If you want this service to continue, so far as the present Manager is concerned, (and incidentally a great deal of the apparatus used is personal property), do your bit by reading the instructions published in the April BULLETIN, and amongst other things, remit postage stamps separately for the return of the apparatus.

R.S.G.B. Slow Morse Practices

Dates, times and frequencies of the stations sending slow Morse for the benefit of those members wishing to learn the code are given below. As usual test matter will be taken from recent issues of the T. & R. BULLETIN. The page number and month of issue will be given at the end of each test. More reports will be appreciated and are desired in order to ascertain range of transmission and numbers utilising the service. The schedule contains three new stations—G6VD, of Leicester, and two Bristol stations—G5JU and G5UH. Station G2UV is no longer sending, but hopes to resume at the end of the summer, and is thanked for his past services. Stations willing to assist on the 1.7 mc. band—particularly from those districts at present without a service—are invited to communicate with Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4. Telephone, Silverthorn, 2285.

SCHEDULE OF SLOW MORSE TRANSMISSIONS.

| Date, 1953 | B.S.T. | Kcs. | Station. |
|------------|--------|--------|-------------------|
| May 19 | Sunday | 00.00 | 1761.5 ... G2WO |
| " 19 | " | 09.30 | 1785 ... G5BK |
| " 19 | " | 10.00 | 1850 ... G6VD |
| " 19 | " | 10.15 | 173A ... G5JU |
| " 19 | " | 10.30 | 1911 ... G2JL |
| " 19 | " | 11.00 | 7104 ... G6PJ |
| " 19 | " | 11.20 | 1761.5 ... G2WO |
| " 26 | " | 00.00 | 1761.5 ... G2WO |
| " 26 | " | 09.30 | 1785 ... G5BK |
| " 26 | " | 10.00 | 1850 ... G6VD |
| " 26 | " | 10.15 | 173A ... G5UH |
| " 26 | " | 10.30 | 1911 ... G2JL |
| " 26 | " | 11.00 | 7104 ... G6PJ |
| " 26 | " | 11.30 | 1761.5 ... G2WO |
| June 2 | " | N.F.D. | No Transmissions. |
| " 9 | " | 00.00 | 1761.5 ... G2WO |
| " 9 | " | 09.30 | 1785 ... G5BK |
| " 9 | " | 10.00 | 1850 ... G6VD |
| " 9 | " | 10.15 | 173A ... G5JU |
| " 9 | " | 10.30 | 1911 ... G2JL |
| " 9 | " | 11.00 | 7104 ... G6PJ |
| " 9 | " | 11.30 | 1761.5 ... G2WO |
| " 16 | " | 00.00 | 1761.5 ... G2WO |
| " 16 | " | 09.30 | 1785 ... G5BK |
| " 16 | " | 10.00 | 1850 ... G6VD |
| " 16 | " | 10.15 | 173A ... G5UH |
| " 16 | " | 10.30 | 1911 ... G2JL |
| " 16 | " | 11.00 | 7104 ... G6PJ |
| " 16 | " | 11.30 | 1761.5 ... G2WO |

QRA Section

Manager: M. W. PILPEL (G6PP).

NEW QRA's.

- G2AF.—C. BRYANT, 66, Layer Road, Colchester, Essex.
 G2AS.—H. V. BOOTH, 62, Hawthorn Road, Hillsborough, Sheffield, Yorkshire.
 G2DH.—DR. H. N. WALLS, 6, Pine Grove, Prestwich, Manchester.
 G2RO.—W. A. ROBERTS, "Walco," Sawday Street, Leicester.
 G2RX.—R. T. REED, 9, Leigh Street, Russell Square, London, W.C.1.
 G2ZF.—D. S. WATSON, 84, Bath Street, Rugby, Warwickshire.
 G5JL.—J. F. ISAAC, "Grasmere," High Town Road, Maidenhead, Berks.
 G5MN.—C. R. S. MOON, 774, Holderness Road, Hull, Yorks.

- G5PR—G. C. PROCTER, Gt. Flanchford Farm, Reigate, Surrey.
Also at "The Cottage," Carlton Road, Harpenden, Herts.
G5YK—G. W. THOMAS, Granta Cottage, The Ridgeway, Oxshott, Surrey.
G5ZK—R. N. LAWSON, "Firlands Glen," Middle Gordon Road, Camberley, Surrey.
G5ZP—E. PAGET, 95, Montague Road, Leicester.
G6BA—J. R. BAKER, "Tressdene," Century Road, Rainham, Kent.
G6HU—J. E. HUNTER, 10, Tasmania Gardens, Fairlop Road, Barkingside, Essex.
G6KZ—W. MCKENZIE, 23, Summerside Place, Leith, Scotland.
G6OB—R. S. G. BARTLE, 46, Goods Station Road, Tunbridge Wells, Kent.
G6XS—W. SULLIVAN, "Vitesse," Waverley Drive, Bangor, Ulster, N. Ireland.
G6ZQ—J. E. SQUIRE, "Winston," Alstone Avenue, Cheltenham, Glos.
2AGK—J. J. PLATT, "Purlea," Ferncliffe Drive, Keighley, Yorks.
2AGX—W. G. TAYLOR, 2, Woodhouse Road, Leytonstone, London, E.11.
2AHU—J. C. H. TUCKER, Brentwood, Solihull, Warwickshire.
2AHV—N. C. HOBBS, 29, Upper Beckwith Street, Birkenhead, Cheshire.
2AKV—J. A. PRINCE, 34, Grange Road, Cleckheaton, Yorks.
2ALY—N. C. STAMFORD, 44, Spath Lane, Cheadle Hulme, Cheshire.
2AUW—F. J. R. TAYLOR, 8, Kingswell Road, Ensby Park, Bournemouth, Hants.
2AWG—A. W. GODDEN, 14, Inglis Road, Ealing, London, W.5.
2BAV—A. G. HAYLES, 23, Station Road, Bromley, Kent.
2BGQ—S. O. HAGAN, 293, Rothbury Terrace, Heaton, Newcastle-on-Tyne.
2BHI—W. P. KEMFSTER, 2, Yeading Gardens, Yeading Lane, Hayes, Middlesex.
2BJJ—H. CAUNCE, 24, Vanbrugh Road, Anfield, Liverpool, 4.
2BOM—E. H. TREVERTON, 68, Ashgrove Road, Ashley Down, Bristol, 7, Glos.
2BVO—D. G. BAGO, Fresh Woods, London Road, Tonbridge, Kent.
2BVU—D. S. AND J. B. WALKER, 63, Park Drive, Grimsby, Lincs.
The following are cancelled:—2AGN, 2ANV, 2ASI, 2AWD, 2BJH, 2BJN, 2BJP.

NEW MEMBERS.

HOME CORPORATES.

- E. A. SAUNDERS (G2SK), 35, Lavington Road, Beddington, Surrey.
W. K. WHITEOAK (G2WU), 83, Gisburn Road, Barnoldswick, via Colne, Lancs.
CAPT. G. F. STEVEN (G5BA), Stecarven, Berwick-on-Tweed.
W. W. INDER (G5IP), 22, Gray Street, Aberdeen, Scotland.
H. B. CAWCE (G6CO), 256, Ladbrooke Grove, N. Kensington, W.10.
H. R. B. GAUTHY (G6GA), Melton Grange, Brough, E. Yorks.
S. G. BUTTON (G6KL), 106, Whitham Road, Sheffield.
J. A. SANG (G6TB), 22, Stanmillis Gardens, Belfast, N.I.
C. H. HOPWOOD, M.B., Ch.B. (2AAV), Calstock, Cornwall.
F. BOOTH (2AHA), 26, Upper Bridge, Holmfirth, Nr. Huddersfield, Yorks.
B. RAYNER (2AJV), 33, Ness Road, Shoburness, Essex.
A. E. YOUNG (2AKY), 369, Shields Road, Newcastle-on-Tyne.
A. E. LEACH (2ART), 5, South View, Yatton, Bristol, Glos.
G. B. CONNOR (2BJS), 124, Victoria Street, Grantham, Lincolnshire.
R. G. E. DENNETT (2BLN), 81, Beaver Road, South Ashford, Kent.
G. E. HELLIN (2BYU), 16, Cavan Walk, Knowle-West, Bristol, Glos.
C. R. SHEARER (BRS1782), 28, Dunbar Avenue, Rutherglen, Scotland.
I. McDONALD (BRS1783), c/o Rollo, 33, St. Swithin Street, Aberdeen.
M. G. BOURKE (BRS1784), "Creditor," Samares, Jersey, C.I.
N. L. AVERY (BRS1785), "The Homestead," 82, Hatherley Road, Winchester.
F. CARTWRIGHT (BRS1786), "Trenance," 102, Carlton Road, Derby.
H. J. LEWIS (BRS1787), 4, Sunny View, Withycombe, Exmouth, Devon.
R. BRETT (BRS1788), 6, Hughes Avenue, Cross Heath, Newcastle, Staffs.
J. D. PARKER (BRS1789), 174, Rhyddings Terrace, Brynmill, Swansea.
W. W. LOTHIAN (BRS1790), Mackismill Gordon, Berwickshire, Scotland.
C. SYMONDS (BRS1791), Station Road, Over, Cambs.
R. J. PEARCE (BRS1792), 2, The Rosery, Hillfields Park, Fishponds, Bristol.
F. E. WARD (BRS1793), 41, Leonard Avenue, Sherwood, Nottingham.
H. LEATHERLAND (BRS1794), 45, Bonnington Crescent, Sherwood, Notts.
B. WILLINGS (BRS1795), 30, Belmont Gardens, West Hartlepool, Co. Durham.

- W. E. CROOK (BRS1796), 7, Hampton Road, Redland, Bristol 6.
W. C. PARLEY (BRS1797), 10, The Walk, Cardiff.
G. PERCY (BRS1798), 76, English Street, Dumfries, Scotland.
G. MASON (BRS1799), 44, Beaumont Road, Blackheath, Nr. Birmingham.
R. M. STRICKLAND (BRS1800), 58, Milden Road, Hillsborough, Sheffield.
J. LEVY (BRS1801), 32, Benson Street, Bolton, Lancs.
J. M. FLEET (BRS1802), St. Davids, Colwyn Avenue, Rhos-on-Sea, Colwyn Bay, North Wales.
D. J. McDONALD (BRS1803), Aberturret, Hiltonbank Street, Hamilton, Lanarkshire.
E. W. MORTIMER (BRS1804), 81, Whiteman Street, Swindon, Wilts.
A. S. FURNESS (BRS1805), 95, Dudley Avenue, Leith, Scotland.
J. H. KIDD (BRS1806), 19, Brunswick Street, Manchester 13.
J. THOMPSON (BRS1807), 14, Monteith Row, Glasgow, Scotland.
R. E. LEWIS (BRS1808), 167, Park Road, Sittingbourne, Kent.
W. HOWARTH (BRS1809), 346, Preston Old Road, Fenscliffe, Blackburn, Lancashire.
H. DENNIS (BRS1810), 20, Goulden Street, Salford 6, Lancs.
G. F. HAMILTON (BRS1811), 189, Hartlaw Crescent, Hillington, Glasgow, S.W.2.
W. H. MOREHOUSE (BRS1812), 7, Kingsway, Waterloo, Liverpool 22.
J. S. DONALDSON (BRS1813), 11, Greenlaw Avenue, Paisley.
A. B. DIXON (BRS1814), "Burton House," Hatters Lane, London Road, High Wycombe, Bucks.
J. M. FOGGO (BRS1815), The House, Chasetown, Nr. Walsall, Staffs.
F. H. BILLINGTON (BRS1816), 588, East Prescott Road, Knotty Ash, Liverpool 14.
F. W. GREEN (BRS1817), Ketley Post Office, Wellington, Shropshire.
C. R. GREENLAND (BRS1818), 37, Bratton Road, Westbury, Wilts.
R. FAIRWEATHER (BRS1819), 14, Neal Street, Bradford, Yorks.
F. J. HARRIS (BRS1820), 143, Collingwood Road, Sutton, Surrey.
L. W. DYMOND (BRS1821), "Fairway," Venn, Teignmouth, Devon.
P. B. DOLPHIN (BRS1822), "The Haven," Victoria Park, Filton, Bristol.

DOMINION AND FOREIGN.

- R. J. BEATSON (VK4BB), 179, Sussex Street, Maryborough, Queensland, Australia.
O. E. ALDER (VK4JB), 16, Old Sandgate Road, Albions, Brisbane, Australia.
N. ISHERWOOD (W6AMC), 2,732, Humboldt Avenue, Oakland, California, U.S.A.
T. M. YULE (ZU6C), 25, Ellis Street, Bellevue, Johannesburg.
F. W. WILCOCKSON (BERS278), c/o Messrs. Garnet & Co., Merchants, Georgetown, Demerara, British Guiana.
E. W. MARSH (BERS279), A2 Room, R.A.F. Base, Halifar, Malta.
J. W. C. TREERY (BERS280), Bemban Hydraulic, Ltd., Sungai Siput (N.), Perak, F.M.S.
W. S. HOME (BERS281), P.O. Box 23, Jinja, Uganda.

Aerial Matching Networks.

With reference to Mr. G. McL. Wilford's article published in our last issue, we find that, owing to a printer's error, the size of the 14 mc. coil mentioned in the table at the top of page 370, was given as 16 turns: this should read 6 turns.

Furthermore, the wire size for the receiver coupler mentioned in the caption below Fig. 2 should have read 18 S.W.G. and not 28 S.W.G.

THE LATE MR. C. H. BAILEY.

We have to record the passing of Mr. C. H. Bailey (ex-G2WU), of Newport, who was killed in a serious railway accident in France last month. Mr. Bailey was at one time an active member of District 10, having held a licence before and after the War. He was the founder of the first local radio society in Newport, and was amongst the first to join the old Wireless Society of London.

Our deep sympathies are extended to his relatives and friends.

NOTES and NEWS



BRITISH ISLES

DISTRICT REPRESENTATIVES.

DISTRICT 1 (North-Western).

(Cumberland, Westmorland, Cheshire, Lancashire.)
Mr. J. NODEN (G6TW), Fern Villa, Coppice Road, Willaston,
near Nantwich, Cheshire.

DISTRICT 2 (North-Eastern).

Yorkshire (West Riding, and part of North Riding), Durham,
and Northumberland (Middlesbrough is in this district.)
Mr. L. W. PARRY (G6PY), 13, Huddersfield Road, Barnsley,
Yorks.

DISTRICT 3 (West Midlands).

(Warwick, Worcester, Staffordshire, Shropshire.)
Mr. V. M. DESMOND (G5VM), 199, Russell Road, Moseley,
Birmingham.

DISTRICT 4 (East Midlands).

(Derby, Leicester, Northants, Notts.)
Mr. H. B. OLD (G2VQ), 3, St. Jude's Avenue, Mapperley,
Nottingham.

DISTRICT 5 (Western).

(Hereford, Oxford, Wiltshire, Gloucester.)
Mr. W. B. WEBER (G6QW), 2, Balmoral Road, St. Andrews,
Bristol.

DISTRICT 6 (South-Western).

(Cornwall, Devon, Dorset, Somerset.)
Mr. W. B. SYDENHAM (G5SY), "Sherrington," Cleveland Road,
Torquay.

DISTRICT 7 (Southern).

(Berkshire, Hampshire, Surrey.)
Mr. E. A. DEDMAN (G2NH), 65a, Kingston Rd., New Malden, Surrey.

DISTRICT 8 (Home Counties).

(Beds., Bucks., Cambs., Herts. and Hunts.)
Mr. G. FEATHERBY (G5FB), 30 Lindsey Road, Bishops Stortford,
Herts.

DISTRICT 9 (East Anglia).

(Norfolk and Suffolk.)
Mr. H. W. SADLER (G2XS), Redways, Wootton Road, Gaywood,
King's Lynn, Norfolk.

DISTRICT 10 (South Wales and Monmouth).

Mr. D. LOW (G5WU), "Nantissa," Westbourne Road, Penarth,
Glamorgan.

DISTRICT 11 (North Wales).

(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth,
Montgomery, Radnorshire.)
Mr. T. VAUGHAN WILLIAMS (G6IW), "Malincourt," Grosvenor Ave.,
Rhyll, Flintshire.

DISTRICT 12 (London North).

Mr. S. BUCKINGHAM (G5QF), 9, Brunswick Park Road, New
Southgate, N.11.

DISTRICT 13 (London South).

Mr. J. B. KERSHAW (G2WV), 13, Montpelier Row, Blackheath,
S.E.3.

DISTRICT 14 (East ern).

(East London and Essex.)
Mr. T. A. ST. JOHNSTON (G6UT), 28, Douglas Road, Chingford, E.4.

DISTRICT 15 (London West and Middlesex).

Mr. H. V. WILKINS (G6WN), 81, Studland Road, Hanwell
W.7.

DISTRICT 16 (South-Eastern).

(Kent and Sussex.)
Mr. A. O. MILNE (G2MI), "Southcot," Larkfield, Kent.

DISTRICT 17 (Mid-East).

(Lincolnshire and Rutland.)
Mr. A. E. LIVESY (G6LI), Stourton Hall, Horncastle, Lincs.

DISTRICT 18 (East Yorkshire).

(East Riding and part of North Riding.)
Mr. T. WOODCOCK (G6OO), "Conakry," Cardigan Road, Bridlington.

SCOTLAND.

Mr. J. WYLLIE (G5GV), 31, Lubnag Road, Newlands,
Glasgow.

NORTHERN IRELAND.

Mr. W. GRAHAM (G15GV), 5 Ratcliffe Street, Donegal Pass, Belfast

NEW MEMBERS ARE CORDIALLY INVITED TO WRITE TO THEIR LOCAL DISTRICT REPRESENTATIVE.

DISTRICT 1 (North-Western)

TWENTY-EIGHT members paid a visit to the station of G2UF on Thursday, April 3, to witness a demonstration of 30 and 60 line television. Unfortunately Mr. Bailey (G-2UF) had been called away on urgent business to Scotland, but the visitors had the opportunity of viewing the apparatus.

The location for the N.F.D. station for this section will be the same as last year—Haslam's Farm, Smithill, near Bolton. Members coming by road to visit, or to help work the station, should either follow or take a Halliwell car from Bolton. This will bring them to within half-a-mile of the actual location. Inquiries from the terminus at Halliwell will enable visitors to find the place without any trouble. Offers of help are wanted to help carry gear, tents, etc., up to the top of the hill on Friday night, May 31, or Saturday morning, in readiness for erecting at the specified time.

Gear required comprises dry batteries for the receivers, L.T. batteries, M.A. meters, H.W. meters, copper wire, stoves, etc. Members who have any-

thing they can lend to make N.F.D. a success, or who can attend, please write G2OI, stating how long they will be able to stay. All-night operators are needed.

The following stations report: 2WQ, good conditions on 14 mc., raised XU, OM and J.; 2DH still building; 5YD completed SS super all A.C., hoping start Duplex; 2AXH ex BRS1389 collecting gear, and busy with code; 2ACP, 5CH, 5PX, 2AXA, 2BZK, 2JC, 2HL, 6AX all active on various bands; BRS1236 and 1579 both busy on reception; 1643 erected a new outdoor aerial, and working on a double detector; 1614 now has a new den with better equipment; 6GV still building and entertaining friend of SUISG; 2OI working 14 mc., reports VK QSO's with ease, receiving VK at R7-8 under excellent conditions on this frequency; 6ZS busy on 14 mc., just missed a W6 through QRM; 5WR busy on 14 and 1.75; hoping to join RES; 5ZT and 5SO both report active on various bands. BRS1774 welcomed amongst the members, who wish him good luck with the morse; has joined the AA section RES; 5SO sends in the following

Only Four Months Left—

report of members active for which the C.R. thanks him: 5TH been off the air for some time, but now working at intervals with a TPTG; 2TR working QRP from home, also from Oxford; 5HS is congratulated on taking a YF; 5SO reports working CM, W, VE, SU all on 10 watts only, on the 7 mc. band; 5ZN still busy on 7 and 14 mc.

The April meeting in Liverpool was again well attended, and after discussing N.F.D. arrangements a general ragchew developed. The N.F.D. station for this district will be located at Barnston, Wirral, and full directions will be given at the next meeting. Plenty of volunteers reported for duty as operators,

FORTHCOMING EVENTS

May 16.—District 13, 8.30 p.m., at Brotherhood Hall, West Norwood.

May 19.*—District 11, 6 p.m., at G6IW, talk by Mr. Eyton, 2AZJ, "Thunderstorms and their Effects."

May 22.—District 14 (Essex section), 8 p.m., at 2BNR, 15, Nelson Street, Southend-on-Sea.

May 22.*—District 15, 8 p.m., at G2IY, 2, Tring Avenue, Ealing Common.

May 28.—District 14 (East London section), 8 p.m., at 2AYB, 16, Station Road, St. James's Street, Walthamstow.

June 1, 2.—National Field Day.

June 5.—District 1 (Manchester section), 8 p.m., Brookes Café, Hilton Street, Manchester.

June 11.*—District 12, 7.30 p.m., at Wander Inn Café, Church End, Finchley, N.

June 16.—District 2 (Newcastle section), 6.30 p.m., at 14a, Pilgrim Street, Newcastle-on-Tyne.

June 23.—North-Eastern Provincial meeting at Leeds.

July 7.—London and Home Counties Summer Outing, when a visit will be made to the Ongar Radio station, by kind permission of Cables and Wireless, Ltd.

July 21.—North-Western Provincial meeting at Manchester.

Aug. 14 to 24.—R.M.A. Exhibition at Olympia.

Aug. 22 to 24.—Annual Convention in London.

* Sale of disused apparatus at this meeting.

and it is hoped that the event will be a complete success. Offers of apparatus will be very welcome, and should be sent to G2OA, 6OM or 6CX.

The 1.75 mc. band seems to be more popular than ever in this district, and some high-quality 'phone has been noticed, also the fact that a great number of C.W. stations are to be heard working during broadcast hours speaks well of the work of local amateurs in clearing up B.C.L. interference. An old-timer in G5TH is back on the air—he is CC, and doing good work. G5OP is still getting excellent results on 1.75 mc., and incidentally is taking part in a Southport group, 56 mc. test. G6ZR,

2IN, 5KL, 6FA, 6PO, 6LY, 6JT, 5JC, 2IF, 6QR, 5GY, 6XD, 2KZ and 6OM have all been reported active on 1.75. G5RY is still working duplex with G2FD. G5ZR has transferred his experiments on field strength of various antenna systems to 56 mc., and has joined forces with G5OP.

DISTRICT 2 (North-Eastern).

Arrangements for the Field Day seem to be the most important items in the affairs of the Bradford Area members at present. A meeting at G6BX was held to discuss the plans and these are now well in hand. The QRA is Beacon Hill, the same site as the one used two years ago. It was decided at the meeting, in common with most other districts, to form a fund to help to defray expenses, and most members made a subscription of one shilling, and an appeal is made to all members interested to send a donation of any amount to G6BX, 3, Regent Street, Queensbury, Bradford, who has consented to act as treasurer to the fund. It is hoped that members will give all the assistance they can to make the affair a success, as a great deal of time and energy has been expended in order to ensure the trophy coming north this year. Several field days are to be arranged in connection with the Bradford Radio Society during the coming summer season to include D.F. hunts and 56 mc. tests. Most stations are active in the area and at meetings; the interest of the B.R.S. and A.A. members is well looked after by means of morse classes, general discussions and examination of fellow-members' apparatus.

Owing to an accident the Tyneside section notes have been unfortunately destroyed in transit to H.Q., and it was too late to have them replaced, consequently apologies are tendered to members sending reports.

DISTRICT 5 (Western)

The outstanding event in this district during April was the Second Provincial Meeting held at Bristol on Sunday, April 7, when the gathering numbered 54.

Members assembled at noon, for lunch at 1 p.m., and were honoured by our Vice-President, E. Dawson Ostermeyer, Esq., being present, also our Secretary.

At the business meeting, "Clarry," who was greeted with the usual enthusiasm, addressed the meeting, outlining recent activities of the Society, and talked on many matters of general interest to the members. Many points raised during question time were all fully answered by the Secretary.

After tea the members visited the control room of the Central Electricity Board (grid system), and finished up by station visiting.

Although the number was not so great as usual for this district, the meeting was most successful. The D.R., who as convener of the meeting, presided, thanks all members for their support, especially those who travelled so far to attend the gathering.

The Bristol section held their usual monthly meeting, which was very well attended.

Owing to the length of the business meeting, the proposed lecture by G6FO had, unfortunately, to be postponed to another date.

Individual reports received from members of the Oxfordshire section show that most stations are active.

To win the 28MC Trophy

DISTRICT 6 (South-Western).

Individual activity is still very much in evidence and a good deal of excellent work is being done.

G5VL, 2ZP, 5YR and 5SY have all been active on 3.5 mc. phone and have had some good contacts. 5VL, 2ZP and 5SY have also been working W's on phone on 14 mc. Most members consider that the 14 mc. band is improving, especially with regard to America.

Most of the new BRS members are doing well, the two Dawlish members BRS1580 and 1581 especially. The latter has heard 80 countries in all six continents. BRSS36 says that WSJOE, W2EEN and W4UP want BRS reports on their 14 mc. phone. 5WY has made some very good DX contacts on 14 mc., using about 30 watts input.

The Somerset membership seems to be very interested and good work is being done. Congratulations to ex-2ABQ on getting his two-letter call, he is now G6LQ.

The main point of interest in district matters is National Field Day, for which great preparations are being made. District 6 has every intention of giving the others a good run for their money.

DISTRICT 8 (Home Counties).

The resignation of 2AZD as C.R. for Hertfordshire is recorded with regret. The D.R. wishes to thank Mr. Scobell on behalf of the district for endeavouring to carry on with practically no support from his county.

The letter budget which was to have been suspended as stated in last month's notes, is to continue under the temporary editorship of a committee of St. Ives members. All communications please to P. Crisp (G6DX), "Ousebank," St. Ives, Hunts.

As several of our stations are interested in 56 mc. work, what about a field day for District 8?

DISTRICT 9 (East Anglia).

The meeting-place for our final discussion on National Field Day, etc., will be as before—at Marchesi's Restaurant, 77, Prince of Wales Road, Norwich, on May 19, at 3 p.m., to be followed by tea, at an inclusive cost of 1s. 9d. Members who have not yet informed either G2MN or G2XS of their intention to be present, please do so at once.

We are hoping to see all our newer members at this meeting as well as the older ones, so please make an effort to be present.

The B station on N.F.D. will be located at Upland Farm, Stoke Holy Cross, near Norwich.

The A station will be at King's Lynn. The exact postal address will be advised to participants in due course.

Most of the local stations are active: G2MN is now putting out a good QRP lone signal on 3.5 mc. and G5UF has also been heard on this band. G6QZ is using QRP and has been busy experimenting with filter arrangements. BRS1603, of Ipswich, becomes 2APS. G5JL is now in business in Norwich and is doing some QRP work at weekends.

DISTRICT 10 (South Wales & Monmouthshire)

News is somewhat scanty this month in spite of the fact that there is considerable activity all round, mainly in connection with the preparation of gear for N.F.D. and completing arrangements for our District Conventionette.

Meetings at both Newport and Swansea received

excellent support and your D.R. wishes to convey his appreciation of the keen and enthusiastic support which has enabled the above mentioned-items to be discussed very freely to the distinct advantage of all concerned.

We are pleased to report that G6YJ has now completely recovered from his recent serious illness.

DISTRICT 11 (North Wales).

The D.R. apologises for the absence of notes last month, but he wishes to mention that unless members will let the C.R.'s have some news, he will have nothing to write about. The Flintshire C.R. wrote to ten members in his county some weeks ago, and had three replies!!

The attendance at the monthly meeting at G6IW on March 17 was excellent, the following being present: G2II, 6OK, 2RF, 2JT, 6IW, 2AJT, 2BKH, 2AZJ, BRS1060, 1191, 1303, and 1395; and two newcomers, 2AWN and Mr. Fleet.

The main item was a very excellent talk by G2RF on QRP phone transmitters. A very compact transmitter built by the lecturer was on view, consisting of CO (Type '47) PA (Type '59), and Modulator (Type '56). 2RF talked mainly about the characteristics of the '59, and the uses to which such a valve can be put, and emphasised the use of same in a CO-PA modulated by a single '56, using the suppressor grid modulation system.

On March 10, G2II was successful in contacting VE1EA on 1.75 mc., and was called by W2BFA on the same morning. This is believed to be the first G-VE contact for some years.

2BRK is getting ready for some work on an E.C. M.O. with a push-pull PA, using grid bias modulation.

G2II and G6OK are building the N.F.D. gear. Mr. Eyton, 2AJZ, will give an interesting talk at the next meeting to be held at G6IW on May 19. There will also be a junk sale, so please bring along all the gear you do not want.

DISTRICT 12 (London North).

At the April district meeting a very interesting talk was given by Mr. D. N. Corfield (G5CD) on "Modern Valves." He commenced by outlining the different stages in their development from the early R to the latest Hexode and gave a detailed description of the great improvement this valve will bring about in short wave superhets. A description of the Ediswan ESW501 and graphs showing the improved efficiency of this valve down to 56 mc. were handed round. As not a single reply to my request last month for a card from members interested in a district meeting being held on a Saturday has been forthcoming all future meetings will be held on the *second Tuesday in the month*.

The D.R. would like to thank those members who have sent donations towards N.F.D.

We are pleased to welcome to the district G2BL. G5WW has worked FM (R.8) using C.W. and U4LD (R.4), on phone on 1.7 mc. The QRA for N.F.D. "B" Station will be James Farm, Bentley Heath, Ganwick Corner, on the Great North Road, three miles from Barnet Church and $\frac{1}{2}$ mile from Potters Bar cross-roads. The Duke of York Inn on the main road is about 300 yards from the site.

The following list of crystal frequencies used by stations in District 12 may be useful to BRS members: G5QF, 3520 kc.; G6PI, 7141 kc.; G5BO, 7065 kc.

Support Your Local Meetings.

DISTRICT 13 (London South).

The attendance at the April District meeting was a record, there being 30 members present. This is indeed gratifying, especially in view of the fact that the meeting was held on the day before Good Friday, and we do wish to thank everyone for showing so much enthusiasm. There can be no doubt now as to whether South London is active or not, and it only remains for the district to continue as at present for its so-called "Lethargy" to be a thing of the past.

The D.R. would like to bring to the notice of members the fact that he is endeavouring to pay a personal call on every amateur in the district. So far some 25 stations have been visited, but it will be appreciated that it must necessarily take some time to complete the proposed scheme in view of the large number of calls to be made.

The sites for N.F.D. stations are now definitely fixed. The "A" Station will operate with call G6QB in a field opposite the "Wheatsteeple" at Ide Hill, whilst the "B" station will operate with call G6CB on ground adjoining the Westerham Heights Guest House at the top of Westerham Hill. Official operators have been appointed for both stations, but, of course, any member who cares to go along to either station will be most welcome. With regard to funds for N.F.D. expenses, it has been arranged that the cost of food will be borne by the station staffs, and the D.R. would like to take this opportunity of most heartily thanking those present at the last District meeting for their unhesitating support of the collection which was made in order to meet the other expenses of N.F.D.

Now for individual reports. G6CS has nearly completed his CO.PA and speech amplifier for work on the 1.7 mc. band and hopes to be on the air by the time this appears in print. G6AN is having some trouble with his new transmitter, a CO.FD.PA. He is erecting a Windom aerial and intends to concentrate on 14 mc. G2YG is putting up a new mast and aerial counterpoise system for 1.7 mc. G2AI is still inactive owing to domestic affairs. G2JH is now on the air using his biscuit-tin outfit, which he reports is behaving in a somewhat unorthodox manner! Still, he is getting out very well. G6AQ has for some time past been carrying out reception tests on behalf of the World Radio Research League. [We hope to make an announcement regarding these tests in an early issue. An informal meeting has already taken place between the organiser, G6DW, and H.Q.'s.—Ed.]

We were glad to meet BRS1747 at the April meeting. He is a new member to the District and we extend to him a cordial welcome and wish him the best of luck. Don't forget to report regularly, OM! G2FS, 2ND and 2UW are all active, the latter working chiefly on 1.7 mc. G2GZ has phone working on 1.7 mc., using choke control with which he is very satisfied. Comparative tests are being carried out at G6QN between a self-excited oscillator and a crystal-controlled CP.PA circuit. During the last month contact was made with Japan, and a contact with Australasia is all that is now required for this station to claim W.A.C. on 10 watts. A very comprehensive report has been received from G5JW, who is intensely interested in the 56 mc. band. He has been conducting many experiments on this frequency and is on the air from 2230 B.S.T.

onwards. A portable station is operated most week-ends and he is anxious for co-operation from other stations in South London. The D.R. notices that no other station, with the exception of G5OX, has reported activity on 56 mc. this month. How is this, OM's? There must be many stations now equipped for this frequency, judging from last month's reports, and it is felt that much useful data might be amassed by more co-operation. Last month G2JB, G5HF, 2BUS and BRS1357 all reported activity on this band. As mentioned above, G5OX is active on 56 mc.

We should like to tender an apology to G6CB for the fact that his report last month was mislaid and that no mention of his activities was made in these notes. We will see that this does not occur in future. G6CB is actually very active, the transmitter being kept consistently on 7 and 14 mc. in preparation for N.F.D., when it is hoped to use the apparatus at the "B" station.

The next District meeting will be held at the Brotherhood Hall as before, on May 16, at 8.30 p.m., and we hope to see you all there again. Please do not forget your report next month, and we should very much like to see many of you at the next S.L.D.R.T.S. meeting.

DISTRICT 14 (Eastern).

At the last meeting of the Essex section held at G2KT, a large attendance was recorded. G2ZJ was welcomed on his first appearance, whilst amongst the visitors were G6LL and G2JO. A most interesting exhibit at the meeting was the portable 56 mc. RX constructed by 2BNR, who has offered his QRA for the next meeting—see calendar. G6DH is now on 1.7 mc. W stations have been coming through well on this band and G5ZJ has made a contact. Will 1.7 mc. enthusiasts note that F8NU of Orleans, who is using good fone on 170.14 metres at 23.00 B.S.T., knows our language quite well. On 7 mc. station ON4VC, the ham station representing the Réseau Belge at the Brussels Exhibition, is being received at Southend at R9+; the two operators are splendid fellows and have a fine command of English. G5UK enquires if any Italian stations have been worked recently and if so will members send him details. Congratulations to BRS1534, who has been allotted the sign 2BLM.

At the East London section meeting held at the QRA of BRS1605, Loughton, only a small attendance was recorded. At this meeting G2ZJ made his first appearance, a welcome visitor was G6LB from Chelmsford. It was suggested that members of the district active on 56 mc. should make a 'point of listening and transmitting each Sunday between 10.00 and 11.00 B.S.T., and it is hoped that adjacent districts will also do the same and so encourage DX and relay work.

DISTRICT 15 (London West and Middlesex).

The date of the April meeting had to be changed at the last moment and at the time of writing it is not possible to make any remarks concerning it. The date and venue of the May meeting will be found under the District calendar as usual.

Final arrangements have not yet been made concerning N.F.D., but the following are the locations, call signs and those supervising the activities. Station A (G6WN), at Rush Green Farm, Rushey Green, Denham, Bucks, under G2UV and G6LJ.

Station B (G6YK), at Flowers Bottom Farm, Speen, near High Wycombe, Bucks. Should any member have overlooked the circular letter, the D.R. would be pleased to have his reply immediately.

This month has produced three verbal and three written reports, which is not good enough from a District the size of ours. The D.R. has been asked why a letter budget cannot be got going again; well, if sufficient members would contribute it would be an easy matter, but when only three written reports come to hand it is futile to think of one. Will all those interested please send a report to the D.R. by the 29th of the month?

G2UV, 6LJ and 6YK are busy with N.F.D. gear. G2VV and 2UV have at last decided to change over to crystal control, while both G2KI and 2LA are rebuilding. The latter is also experimenting with telephony. G2BY is using a Windom; he keeps schedule with ZL every morning and has a fine list of DX on both 7 and 14 mc. G6VP wants to see a letter budget again and has begun to report again in the hope others will follow; he has changed the roof of his Windom to a heavier-gauge wire to effect an impedance match and now seems to work W6 and W7 with ease. His list of DX on 14 mc. is all W and VE districts, VS1, VU, YI, SU, VK7, VK, ZL, PY, VP2, 4, 5, 6 and ZS (R9). G6WN is on both 28 and 14 mc. On the latter band several W's and a couple of VE4's have been contacted. Congratulations to BRS1241, who is now 2BAI; he invited six local BRS men to his QRA last month, but only one turned up. This is the sort of thing that is likely to damp the enthusiasm of anyone trying to help the D.R. in his scheme. Please do your best to make these meetings a success. 2BAI is trying his hand at re-planting accumulators.

DISTRICT 16 (South Eastern)

North Kent claims to be the most active area this month. All members are active on 56 mc., and frequency stabilisation is receiving a great deal of attention. G2AW and 2GB are using long lines with success; 6QB is now very much a member of the gang.

G2KJ burnt his hand badly with a 230 volt short-circuit. We wish him a speedy recovery. Tunbridge Wells are adding to their numbers. Congratulations to 2BJP, who is now G6OB, and to BRS1715, now 2BVO. Shades of "Sniggles"! G6OB is C.C. on 7 mc. and asks for reports.

The Folkestone group are chiefly occupied with building 56 mc. gear and receiving visitors; 6CW and 2GW were among those who visited the town during Easter. BRS981 also visited several local stations. G5MR and BRS1093 report active.

Gravesend is thoroughly awake. G5GH, 2IZ and 6VC all send individual reports. 2IZ gives some interesting information on Neon tubes for current limitation to the C.O. (BULLETIN article, please.)

The Medway group are busy preparing for N.F.D. G2MI has welcomed visits from 6JB and 2JO. Some interesting tests on 56 mc. were carried out with a portable receiver in 5XB's car. BRS-1142 is now 2BAV.

There is no report from Sussex although BRS1173 complains of the lack of enthusiasm in that county. Well, oms, take a leaf out of Gravesend's book and buck your ideas up accordingly.

A more detailed report just arrived in time for inclusion, from the Medway group. G6NU experimenting with aerials, and still raises ZL. G2OV, QRL, 6RQ recovering from illness. 2CM building power pack. 5FN working Western DX. 6QC also working Western DX but still trying to work VK. 2VA wants skeds on 56 mc. 6VV using a transfeeder system. BRS745 experimenting with television. 2CS has worked J on 7 mc.

DISTRICT 17 (Mid-East).

On Sunday, April 28, the Northern members met at Louth to deal with the "B" Station Field Day plans. The station will be located, as in former years, at Stenigot Hill Top, near Donnington on Bain. Thirteen members proved a representative assembly and included G5BD, G5CY, G6AK, G6GH, 2AUR, 2ARR, 2BJY, 2BQR, 2BVU, 1515, 406 and 103, with the D.R. presiding. Grimsby members will be pleased to hear that their individual difficulties received the attention of the whole company and that the meeting broke up in a very satisfactory tone. All Field Day plans were settled. Members desiring to attend the Southern section "A" station at Cranwell should get in touch with Flight-Sergeant W. E. Dunn, 22B Married Quarters, Royal Air Force, Cranwell (G2LR), who is holding his decisive meeting very shortly.

The D.R. would thank the Northern members for their recent reports sent direct, which have been passed to G6LH, the C.R. at Boston. G6AK, 5GS, 6RN and 2QH are active calls. The latter only wants VK to complete his WAC and WBE on both telephone and C.W.—a most commendable piece of news. He is to be congratulated upon his recent award of the A.M.I.E.T. Diploma for Talking Picture Engineering. Almost every other member is active.

G5BD is as active as ever on 14 mc. and has just contacted VK4YL, making the first G contact for this twelve-year-old YL operator. G6LI continues 14 mc. telephone tests with American stations.

G2LR will have ZC6FF with him at Cranwell at Whitsuntide. We hope that he will be able to get round to some of our stations.

Those interested in the comparative value of link or capacity coupling should consult G6LH. G6AC co-operates with 1329 on 56 mc. We welcome a new member in 2BJS at Grantham and the C.R. thanks him for his report.

G2LR is now using a very satisfactory aerial array directed on Singapore.

DISTRICT 18 (East Yorkshire).

G5JD at Whitby is welcomed into the district as a fully-fledged station. 2AUN (C.R. for Scarborough and District) has written him, asking for co-operation, and hopes to visit his station soon. G5AX has made a good recovery from his recent illness and has returned from the local hospital to the key, which news gives us great pleasure. BRS1480 has heard the following stations on telephony: W4AXZ, 4CRE, 5BCP, 5VEE, 6GCQ, 7BLT, 9LD, 9AGO, VE2HN, 3HC, 5HN, CO2HY, VP6YB, 3BG and CT2AV, all at good strengths.

Some members of the Scarborough section thought it would be a good idea if the 7 and 14 mc. bands used by the Hull section last year during N.F.D. were this year used by the Scarborough

members, and 3.5 and 1.7 mc. used by the Hull members, but this is not to be as the respective "A" and "B" stations are already in hand, with apparatus being prepared in various shacks. Incidentally, the top bands are better known to the Bridlington and Driffield membership, so as you were!

It was thought that a district meeting was long overdue, but the Hull members are not yet ready to turn up in numbers, so this has again been postponed for a few weeks. G2QO has been testing 4211D valves in his final stage (1P) in place of the usual 4211E type. No difference in the output was noticed, but some trouble was experienced at first, due to parasites. Various Collins-coupler circuits are also being tried out.

G6SO is active and preparing to change over to A.C. mains.

G5BP is active on 14 and 28 mc., working all U.S.A. Districts except 5 and 7 on the former band, using an electron-coupled oscillator. The receiver has been rebuilt, using valve-base coils.

G5GC is testing telephony apparatus with G5MN; some trouble cropped up with local B.C.L.'s, but this has been cleared with the assistance of G2QO.

G6OY has worked KA, VS6, and VO on 14 mc., but finds conditions poor on the whole.

2AGN is to be congratulated on obtaining his two-letter call G5MN. He is now making his first contacts on 7 and 14 mc. The frequency of his crystal is 7,170 kc.

G5FV is active on 14 and 28 mc., but the only contacts made have been on the former band.

SCOTLAND

In "B" District, Mr. Inder, has joined our ranks, and has been granted a full licence under the call G5IP. Further changes in status are registered in "A" District. BRS1342, Mr. W. N. Landles, has been allotted an "A.A." call under 2BWV, and BRS1486, Mr. J. P. Male, Custom House, Greenock, becomes 2BYK.

New members in "A" District are: Mr. A. H. Cutt, 2, Kirkton Terrace, Heathhall, Dumfries (2BHQ), and Mr. D. M. K. Harrower, Forthbank Cottage, Stirling (2AVC).

In the recent QRP Contest, Scotland was represented by G6LD, G5ZX, and G6RI, who finished in that order with 58, 53, and 28 points respectively.

"D" District is unfortunate in suffering a further loss this month by the departure of G2RQ, who leaves for Singapore.

"Fonitis" continues to spread, and the latest converts are G2OX, G6LD, and G6LG, who are active on 7 mc.

We understand that G5JK is staging a "come-back," and that he is anxious to get into touch with some of his collaborators of the pioneering days.

Mr. Baker, G2SB, of Kilmarnock, has now received his 3.5 mc. permit, and would like to hear from anyone who is willing to barter his (SB's) dud 1.7 mc. crystal for a perfectly good 3.5 mc. "brick."

In spite of the advent of summer-time, both "A" and "B" Districts have found the attendance at the last monthly meetings showing no signs of falling off, and arrangements for N.F.D. are under consideration by all the Districts.

G6JD, G5ZX and 2BWV are taking part in the April Band Occupancy Checks, while G5KF reports a QSO with LU on 14 mc. Mr. Adams (KF) has now worked five continents, which is very good going considering the short time he has been on the air.

We have just received a copy of "Amateur Radio," published by the W.I.A., in which are given the results of the Melbourne Centenary Contest. There were 250 competitors, with G5YG securing 23rd place. British entrants numbered 25, and 4th place was obtained by "YG," the station having to yield priority to G2ZQ, G6CJ, and G6RB in that order.

G2DI and G2FV are preparing for summer activities on 56 mc., while G6ZX has been successful with his "high Q" outfit, and has resumed his Sunday morning transmissions in co-operation with a local short-wave club.

The "A" District final meeting and dinner will be held on May 22, while "D" are arranging to have theirs on June 5.

Northern Ireland

Two stations will be operated in the forthcoming N.F.D.: "A" being situate at Greengraves, Newtownards, Co. Down, and "B" at Stormont, Co. Down.

Conditions appear to have been very good during the past month, and G16YW has taken advantage of the fact and worked a considerable amount of DX, including W7 eleven times. A new country worked was VP4, Trinidad. In all he had 72 DX contacts, and on perusing the list, the D.R. turned bright green with envy! 5UR has also been doing some work and has contracted the following new countries: ET8, U7 and ZT6. 5HV has built a new transmitter in the rack style, using a type 47 as crystal oscillator and two 46's in parallel as power amplifier. He is using a Collins coupler and finds the outfit to his liking.

The following stations are also active: Gi 2kr, 2sp, 2cn, 5sj.

Belgium.

By ON4AU.

ON4RX won the W.I.A. Centenary Contest award for Belgium. ON4AU and 4JB are on 28 mc. and heard harmonics of JNJ and OQH. 4AU received a message from J2HJ stating that he wants daily skeds on 28 mc. at 08.00 and 13.00 G.M.T. J2HJ works all day on Sundays, with 200 watts on 28,250 kc.

A meeting was held at Cambrai on March 28. Those present included F8EO, EX, WB, FC, EB, and ON4AU, HM, RX, UU. It was decided to suggest to the I.A.R.U. Member Societies that frequencies between 14,250 and 14,400 kc. be reserved for W and VE stations, and those between 14,000 and 14,250 kc. be reserved for the rest of the world. Similar proposals were made for the 7 and 3.5 mc. bands.

In the April R.E.S. section notes, the times of transmissions of Belgian amateurs on 28 mc. were given in summer time. ON4JB and 4AU will give additional calls every Saturday evening at half-hourly intervals between 21.00 and 24.00 B.S.T. during May and June.

August 22nd to 24th, 1935.

Empire



News.

B.E.R.U. REPRESENTATIVES.

Australia.—H. R. Carter (VK2HC), Yarraman North Station, via Quirindi, N.S.W. *Sub-Representatives.*—J. B. Corbin (VK2YC), 15, Yanderra Flats, East Crescent Street, McMahon's Point, Sydney, N.S.W.; R. Ohrbom (VK3OC), 22, Gordon Street, Coburg, N.13, Vict.; A. H. Mackenzie (VK4GK), Fire Station, Wynnum, Brisbane; G. Ragless (VK5GR) South Road, P.O., St. Mary's, S.A.; N. F. Ollivier (VK6FO), 26, Merriwa Street, Hollywood, W.A.

Bahamas, Bermuda and the Eastern Part of the West Indies.—P. H. B. Trasler (VP4TA) No. 2 Mess, Pointe à Pierre, Trinidad, B.W.I.

Burma.—W. G. F. Wedderspoon (VU2JB), Government High School, Akyab, Burma.

Canada.—C. S. Taylor (VE1BV), Stewiacke, Nova Scotia; Earle H. Turner (VE2CA), 267, Notre Dame Street, St. Lambert, P.Q.; W. P. Andrew (VE3WA), 1337 Dougall Avenue, Windsor, Ont.; A. E. Howard (VE4CJ), 2401, 25th St. West, Calgary, Alberta; and A. L. Cusden, (VE5HJ), 1465, 17th Avenue, New Westminster, British Columbia.

Ceylon.—A. T. Kingston (BERS. 196), P.O. Box 100, Colombo, Ceylon.

Channel Islands.—Capt. A. M. Houston Fergus (G2ZC), La Cotte, La Moye, St. Brelades, Jersey.

Egypt, Sudan and Transjordan.—F. H. Pettitt (SU1SG), Catholic Club, Mustapha Barracks, Alexandria.

Hong Kong.—C. Emary (VS6AX), R. C. Signals, Hong Kong.

Irish Free State.—Col. M. J. C. Dennis (E12B) Fortgranite, Baltinglass, Co. Wicklow.

Jamaica, British Honduras, Turks Island and Cayman Island.—C. M. Lyons, (VP5MK), P.O. Box 36, 12, Port Royal Street, Kingston.

Kenya, Uganda and Tanganyika.—W. E. Lane, (VQ4CRH), P.O. Box 570, Nairobi.

Malaya and Borneo.—R. J. Bee (VS2AG), P.W.D., Kuala Kangsar, Perak.

Malta.—L. Grech (ZB1C), 44, Sda San Benedetto, Chircop, Malta.

Newfoundland.—E. S. Holden (VO1H), Box 650, St. John's, Newfoundland.

New Zealand.—C. W. Parton (ZL3CP), 69, Hackthorne Road, Cashmere Hills, Christchurch.

North and South Rhodesia.—J. W. Mavis (ZE1JE), P.O. Box 160, Umtali, South Rhodesia.

North India.—J. G. McIntosh (VU2LJ) Baghjan T. E. Doom Dooma P.O. Assam.

South Africa.—W. H. Heathcote (ZT6X), 3, North Avenue, Bezuidenhout Valley, Johannesburg.

South India.—J. Shepherd Nicholson (VU2JP), c/o Kanan Devan Hills Produce Co., Ltd., Munnar, Travancore.

Canada (Second District).

By VE2CA, via G5YH.

VE2BB complains of poor conditions, VE2AX is applying for membership, VE2AP is a proud owner of a National HRO receiver. VE2BG is trying Class "B" modulation.

Canada (Third District).

By VE3WA via G5YH.

The Ottawa Amateur Radio Transmitting Association has decided to apply for affiliation with B.E.R.U.

Conditions during March and April were very erratic and only a few G's were heard in the A.R.R.L. Contest. South African stations have not been heard since the B.E.R.U. tests. VE3WA has qualified for W.B.E. by QSO with ZC6FF. VE3WA wishes to thank VE1BV and ZC6FF for the splendid co-operation and patience in making the contact possible.

Egypt, Palestine and Transjordan.

By SU1SG via G6RB.

Farewell to SU1EC, SU1AQ, SU6SW, and ZC6FF, who are returning home; most of them

seemed just as sorry to leave us as we are to lose them. We wish them all the best of luck and happy days. A hearty welcome is extended to SU2TW, ex G2TW.

CAIRO.—SU1AQ is experimenting with ultra short-wave portable gear suitable for use in cars. So far he has been successful in pushing out an R9 fone signal a distance of 2 miles on 2.5 metres; antenna is copper rod 125 cms. long. SU1AQ is using MOP'A 25 watts to 66 ft. Zepp. SU1FS has rebuilt to MOP'A, using two 45's as MO and same type PA. SU1RO is working daily schedules with G2GB and has also QSO'd W6 and 9. Construction of his SS super is progressing favourably, and results are awaited with interest. SU2GA has augmented its staff by enlisting the services of SU6RM, who will do most of the clerical work, as well as punch the key. SU2TW hopes to be on the air soon, using COP'A and 132-ft. Zepp with impedance matching network. SU5NK has left for three months' vacation in G; he will probably be staying with G5JX, ex SU1SJ. SU1CH is believed to be experimenting with Class "B" modulation. BERS215 has taken over sufficient gear from SU1EC to rig up a TPTG rig of 10 watts.

Help to make these Notes Interesting.

and hopes to make his debut soon; he is also interested in portable gear for use on desert trips.

PORT SAID.—In this district SUIRK, our only member, is interested in serious experimental work. For the past few weeks tests have been carried out on 14 mc.

ISMAILIA.—BERS261 is shortly leaving for G, and from there will go to VU, so this leaves BERS225 to play a lone hand in this district. He is dividing his attention between curing bad mains hum in the RX and punching up code.

ALEXANDRIA.—SUIGP is radiating a good quality fone signal, and has effected some 100 contacts with Europe; the RX is RCA type ACR 136. SUSMA's fone is acquiring the quality of F spitch, owing to the addition of a further speech amplifier to cope with insensitivity of a new crystal mike; if instability is the trouble, let's hope the bug hunting does not take too long, O.M.! SUIKG complains of QRM from SUSMA's fone, whose QRA is only 100 yards distant. SUIWEM has erected an antenna, so is a step nearer getting on the air. SUIJD is a new member, who will shortly be using a 50 CO and 10 PA modulated by two 50's push-pull. RX is new RCA type ACR 136. He is interested in directional antennas. No reports are to hand from SUITM or SUIRL, so they are presumed to be inactive.

From Palestine ZC6FF reports his departure for U.K. He is WBE on both 7 and 14 mc. ZC6CN is inactive at present. ZC6FF handed over his gear to a friend, so we hope to hear this call on the air again soon.

SUDAN.—ST2WF has been inactive owing to flying duties.

During N.F.D., Alexandria will be represented by SUIA, the portable station of SUIHG, and Cairo by SUIK under SUIAQ.

The conditions of the licensing scheme in Egypt are still more or less a matter of conjecture, and an answer to the letter of enquiry sent to the Government by SUIHG is still awaited with interest. SUIHG is on the air for local QSO's on 7 mc. every Tuesday, Thursday and Saturday each week. BERS and inactive stations are requested to report each month by mail before the 20th. In conclusion, many thanks to the group for their good wishes—their support is most appreciated.

(It is regretted that the above report had to be abridged, owing to space limitations. Overseas representatives are requested to confine their reports to matters of general interest. Reports should not exceed 200 words in length.—Ed.)

Hong Kong

By VS6AX via G6CJ.

During April, conditions on 7 mc. were bad, and on 14 mc. very erratic. Some interesting QSO's were made by VS6AQ and W8CRA. BERS265 is in Japanese waters, and has sent a "calls heard" list for publication. Mr. Cragg is now BERS273, and is concentrating on 14 mc. VS6AH has been in hospital and consequently inactive. VS6AS left for England on April 19, and is due to return in December. During the middle of April, G stations were very consistent on 14 mc. between 16.00 and 19.00 G.M.T.

Irish Free State

By EI9D for EI2B.

Conditions on all bands have been good during the month and, on 14 mc., many DX contacts were made. EI2B has had little time to be on the air but worked VE's and W9's during short periods available. EI4D is temporarily QRT but is building a d.f. RX. EI8D has worked Siam. EI9D has been QRP 4 watts for some weeks but worked VE's and W's. He is also teaching code to prospective members. EI5F has been QSO Singapore, Trinidad, Haiti and Antigua, in addition to a number of contacts with VP2, VE4, PY, W6, W7, and I.U. EI9F has had his first ZL contact. EI5G has worked a number of W's with QRP. Other active stations are EI5B, 8B, 2D, 6F, 7F, 2G and 4G. EI8B have received the VK Centenary Contest Certificate—congrats., oms.

BRS1429 has applied for his transmitting licence and expects to test soon. BRS1587 is concentrating on code practice. BRS1645 has obtained code proficiency and contemplates licence application. We welcome BRS1755 as a new member.

The QRA of EI8F is 1, Seaview Terrace, Donnybrook, Dublin. This was incorrectly recorded as the QRA of EI7F in last month's notes.

The IRTS arrangements for co-operation in N.F.D. are in the able hands of EI6F. Definite information is not available here but may now be recorded elsewhere in this issue. It is understood, however, that at least one portable station (call EI6F) will take the air from a location on Dalkey Island. There is also a possibility that portable EI2G and portable EI9D may be in operation from locations in Avoca, Co. Wicklow and Achill Island respectively. If, however, the respective operators find it possible to be in Dalkey with EI6F their own stations will be QRT. The membership generally is looking forward to this event as also to the I.R.T.S. D.F. hunt arranged for May 11. It is certain that these fixtures in the open greatly benefit amateur radio. Apart from other considerations we know that last year a lot of "lost" gear was recovered in the turn-ups of trousers? Anyhow, oms, come along and help us look for it.

Malaya and Borneo

By VS2AG, via D4BAR and G2YY.

The first news of importance this month is that our amateur calls are back to VS1 (ex VS8). Bad static has made conditions on the 7 mc. band very difficult, consequently little work has been done. KA, J, OM, VK, PK, VU2, XU were the only countries heard, except on April 6, when for an hour many W6's were heard at great strength. VS1AB, 1JA, 1AD, 1AJ, 2AG, and 2AE are active and report contacts on this band.

Conditions continue good on 14 mc. and VS1AJ reports DX work mostly with European stations between 15.00 and 18.30 G.M.T., and W6, 7, 8, 9 between 12.00 and 14.00 G.M.T.

Our Royal member, VS3AE, is back again on the air with a new 75 watt outfit; he has been putting out very strong signals, both on phone and key on 7 mc. One evening recently he fed back ZH1 to VS1AD with very good results. His 14 mc. crystals are expected out shortly and he will then be ready for European DX.

The best news this month comes from 1AD, who has been working phone tests with PK2DX situated near Sourabaya, Java, approximately 800 miles south of Singapore. With 2DX on 14 mcs. and 1AD on 7 mcs. excellent duplex work has been carried out. 2DX is using a directional aerial system focussed on Singapore and his transmitter is 100 ft. away from the receiver.

After some weeks of experiments on 7 mc. at VSIAD tests were carried out with duplex on 14 mcs. After installing a screened aerial for the receiver, it was possible to work perfect duplex with 2DX both transmitters being on 14 mcs. VSIAD was operating his receiver only 5 ft. away from the transmitter. The frequency separation between the two stations was about 50 kcs. PK2DX was using 25 watts in the aerial and VSIAD 70 watts, both were using superhets with pre-crystal selectors.

VSIAD, who is a licenced pilot, has also done some good work on 56 mcs. with portable trans-receivers. His next step is to carry out tests in one of the Royal Singapore Flying Club's sea-planes, the new "Miles Hawk" plane, which has just arrived.

We welcome a new member this month in Capt. J. C. W. Treeby, who we hope will get as much fun out of the game as we do.

Northern India.

By VU2LJ, via VS6AQ, G5BD.

Conditions during March were very patchy, and the static level was considerably higher than in earlier months, in fact, 7 mc. has been practically unusable. VU2AR and VU2FP hope to have portable stations on the air during N.F.D. There

is also a possibility that stations VU2JT and 2LS may also take part in this event.

Whilst on tour in Assam, VU2BY stayed a few days with 2LJ, when some DX was raised, but most of the time was spent in ragchewing. VU2BY was one of the pioneer amateurs in India. VU2LJ has again rebuilt his transmitter, but is experiencing some difficulty on the fone side. (This message was intercepted and fully checked by G2ZP and G6CJ.)

LATE REPORT via G2YL.

VU2BL is transmitting daily on 28 mc. from 12.30-12.40 BST with greater hopes of success this year. So far he has been heard twice at 2LJ, but no QSO resulted, QRB 1,800 miles. Judging from observations in N.E. India, the best hours are between 10.00 and 16.00 I.S.T., during which hours the band is liveliest. More time could be spent on the higher frequencies in India with advantage. BERS213 is working on 56 mc. field strength measurements and using half-wave vertical radiator with reflectors. 2RE is rebuilding to M.O.P.A. with the hope of curing T8 reports. He wishes to know the present QRA of ex-BERS74. VU2JA has gone on leave to G for six months.

Southern India.

By VU2JP, via VS1AJ and G6RB.

DX during April was very good at times, and G could be worked easily from 15.00 to 18.00 G.M.T. Local storms now make working in the early evening almost impossible. The most interesting QSO's were made with VS7GJ and VS7JW on 14 mc., both of whom are in the skip. The letter budget is still going strong with 38 copies being issued. All Burma have joined in. VU2JP is testing on 28 mc.

EDITORIAL.—(Continued from page 405.)

It should not be a very difficult task for those in charge of the various field stations to let us know their plans in advance, so that due publicity may be given, but even if this is not possible, we shall at all times be pleased to circulate our D.R.'s and others interested of last-minute plans.

When in Bristol last month, one of our keenest 56 mc. members mentioned an instance when his signals were heard nearly 100 miles away, but he had not himself received first-hand advice of the reception. It was probably a British record for house to house working, and yet the significance was missed by the receiving station operator. Co-operation is most essential if success is to come from our efforts to probe the mysteries surrounding 56 mc.—and dare we mention it?—112 mc.

May the sun shine during N.F.D. week-end.

BOOK REVIEWS.—(Continued from page 424.)

"Principles of Reception by Cathode-Ray Tubes" is the title of an interesting chapter in Part 2, whilst a description of Television Studio technique should appeal to both technical and non-technical readers alike. The Von Ardenne Receiving system is also described in some detail.

Perusal of Part 2 confirms our original impression—this work is essential for those who wish to be "in on" Television from the start of its commercial

application to the requirements of the general public.

Conversion Tables—Metres to Kilocycles is the title of a new pocket-book published by H. C. Van Rood, 93, Berrylands, Surbiton, Surrey. The production is opportune for the reason that the R.S.G.B. are no longer able to obtain supplies of the Kc.-Metre Chart from America. The booklet gives conversion figures to three places in steps of 10 metres or kc. There are 64 pages, size 4½ ins. long, 3 ins. wide, and the price is 1s. 6d. Copies are obtainable from Headquarters, or direct from the publishers.

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EXCHANGE AND MART.

BERS 38," free September 5, seeks employment with reputable firm, 12 years' experience in radio communication; excellent references. Would consider investing small sum.—24, Pyrmont Road, Chiswick, W.4.

EDDYSTONE "HAMBAND-TWO," complete with valves and coils, 20 and 40 metre bands, £2 15s.—G2NN, 17, Cross Deep, Twickenham, Middx. Phone: Popesgrove 1046.

FOR SALE.—Type IEH, MI, Rotary Transformer, input 12 v., output 400 v., 150 ma., complete with smoothing, £4 10s.—STEPHENS, Hollybank, Monmouth.

G5CP.—002 Mica Condensers, well-known make, 1s. 9d. dozen; Glass Tubes, suitable H.F. Chokes, Coil Supports, etc., 1s. 3d. dozen.—52, Bollin Drive, Timperley, Cheshire.

G6DS For neat and snappy QSL Cards, Log Books and Pads. Send for samples. QRA, "Inglebrook," Orlando Drive, Carlton, Nottingham.

G6GO, having failed to complete single signal super, has VMP4K's MH4D PT25 Varley 460 k.c. Eddystone Plug Coils, S.W. BCL Condensers, Band-spread Coupling, etc., less than half price.—G6GO, Ashby Parva, Rugby.

G6US here again!

G6US for small Pyrex Lead-in Bowls. These bowls make the ideal lead-in insulator for transmitter or receiver. Price 1s. 3d. each.

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