THE T. & R.

# BULLETIN

THE INC. RADIO SOCIETY OF GT. BRITAIN

AND THE BRITISH EMPIRE RADIO UNION

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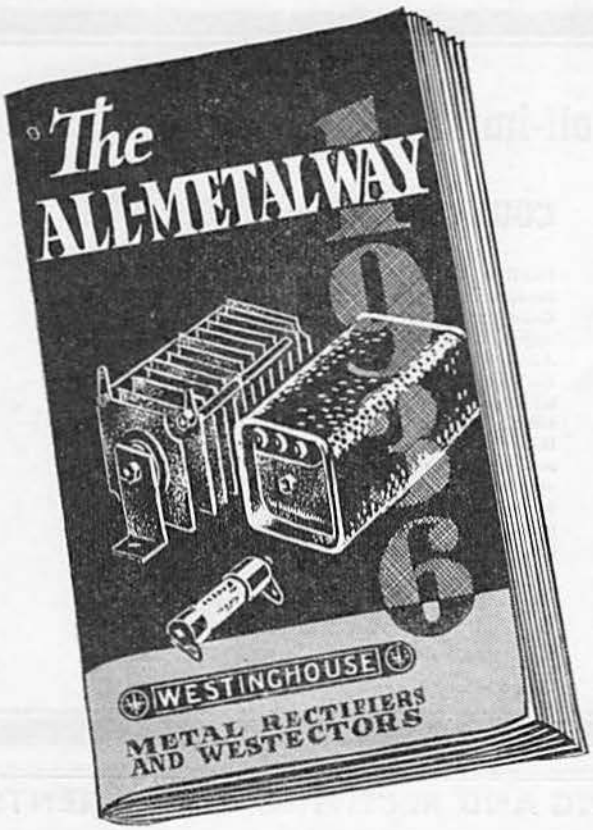


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# *Convention Programme*

## Thursday, August 22, 1935

*2.30 p.m. **VISIT TO THE DOLLIS HILL RESEARCH LABORATORIES OF THE BRITISH POST OFFICE.**

7.0 p.m. Gathering of the clans on Stand 202 at Olympia (bring your QSL card).

## Friday, August 23, 1935

*10.30 a.m. **VISIT TO BROOKMAN'S PARK BROADCASTING STATION.**

1.15 p.m. Coach parties take informal lunch at Whetstone and proceed at

*2.30 p.m. To visit the works of **STANDARD TELEPHONES AND CABLES LTD.,** Oakleigh Road, New Southgate.

6.0 p.m. **ANNUAL CONVERSAZIONE AND RUNNING BUFFET** at The Florence Restaurant, Rupert Street, W.1 (near Piccadilly Circus). Charge, 1/6 per head.

8.0 p.m. Display of Society films.

## Saturday, August 24, 1935

9.0 a.m. **DELEGATES** meeting at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2.

11.0 a.m. **BUSINESS MEETING.**

1.0 p.m. Informal luncheon at Slaters Restaurant, Strand.

1.50 p.m. **CONVENTION PHOTOGRAPH,** outside I.E.E.

2.15 p.m. Presentation of Society Trophies.

2.30 p.m. **LECTURE AND DEMONSTRATION** by G. Parr, Esq.: "Cathode Ray Tube Developments."

4.30 p.m. Tea.

6.15 p.m. **ANNUAL CONVENTION DINNER** at The Florence Restaurant, Rupert Street, W.1.

Tickets 5/- per head if paid for before August 21, 6/- per head *after that date. Early reservation for this function requested.*

*Successful Applicants for these Visits have been advised from Headquarters.

# THE T. & R. BULLETIN

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Vol. 11

No. 2


## OUR TENTH CONVENTION

LAST month we recorded the completion of ten volumes of this journal, to-day we are on the eve of celebrating our Tenth Annual Convention, another event of outstanding importance in the history of the Society.

In view of the interest which has been taken by members attending these meetings it may be appropriate to record at this stage how Convention first came to be started, but to do so we must take our minds back to the year 1926, when the old T. & R. Section was in being. At that time the London Council and members of the T. & R. Committee were experiencing difficulty in appreciating the needs of provincial members, therefore it was felt that if a special meeting could be arranged in London it would enable those attending to become better acquainted. The date for this first National meeting, or Convention as it was called, was arranged to coincide with the Radio Exhibition, because it was thought that this additional attraction would induce many of our provincial members to come to London for the purpose of attending both functions. The first Convention was therefore duly announced in the August, 1926, issue of the BULLETIN, but it must be confessed that its organisers looked upon it purely as an experiment. Like the T. & R. BULLETIN, the experiment proved an outstanding success, for before the first Convention closed we had received a prompt demand for a repetition the following year.

At first Conventions were devoted, in the main, to the provision of opportunities for discussing the needs of our members, and to formulate regulations for the T. & R. Section. On another occasion much useful work was accomplished in connection with the organisation of the D.R. and C.R. scheme, whilst at another meeting rules were drawn up for the operation of the various sections which now form an important part of the Society's work. From the year 1927 Convention has terminated with a Dinner, which is generally regarded as the high spot of the week-end.

Recent Conventions have been organised on more ambitious lines than those of earlier years. The idea of a Conversazione was first tried out in 1933 and voted a great success; last year a film show was introduced on the Friday evening and short talks given on the Saturday. This year our Secretary has "taken the bull by the horns," and has provided a three-day programme, details of which have already appeared in this journal. The special visits have already been fully booked, and we look forward to record attendances at both Florence Restaurant gatherings.

The group photograph, a regular feature of all Conventions, has for several years tested the skill of our photographer; possibly this year he will, by force of circumstances, be compelled to assemble us upon some more spacious site than the steps of the I.E.E.!

(*Continued on page* 86)

# A TWO-VALVE ALL MAINS SHORT-WAVE RECEIVER.

By W. L. V. Parker (G6WJ).

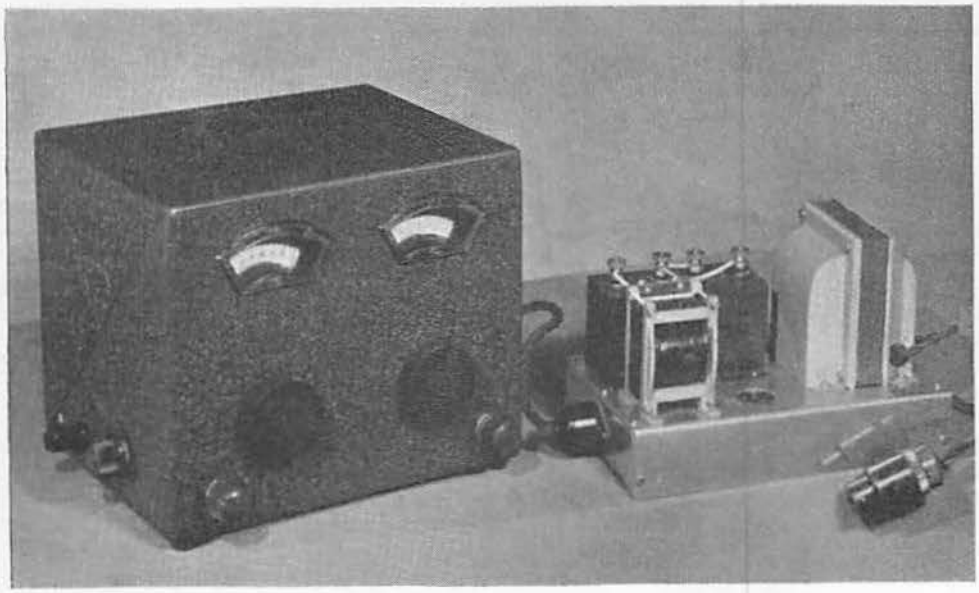
THE design of this short-wave receiver has been made as simple as possible consistent with good results to enable even an amateur with elementary radio knowledge to construct it and be sure of good results.

The receiver is designed for the reception of amateur transmissions from 1.7 to 28 mc/s. and is the result of many experiments to obtain a mains-driven receiver without any trace of mains hum. The two-valve type of battery receiver with screened-grid detector valve is still popular among amateurs, but this mains receiver will be found to be equally as efficient, more sensitive and with just as quiet a background noise level. Assuming that most amateurs use phones for reception, the output of the receiver is arranged for this purpose; but for those who prefer to use a loudspeaker, a power or pentode valve could be substituted in place of the valve specified. The alterations to the circuit would be a different value grid bias resistance to suit the output valve used and an output choke in place of the anode resistance.

The aerial circuit is adaptable to three types of aerial couplings. It was thought necessary, with the increased use of transposed feeder aerials, to make provision for coupling this type of aerial to the set; provision is also made for a loose-coupled aerial and also series aerial condenser arrangements. When using transposed aerial feeders the feeders are coupled to terminals B and C; for loose coupling the aerial is coupled to B, and C is shorted to earth, whilst A becomes the aerial terminal when series aerial condenser coupling is used.

Two main tuning dials are provided as a simple solution to band spreading on all the amateur bands. The right-hand side dial operates the band spread tuning on the 1.7 mc. and 3.5 mc/s. bands by arranging the capacity of the tuning condenser C.3 to spread the 1.7 mc. band well round the dial. This same dial controls the band setting on the higher frequency bands. The second tuning control, C.2, is then used for band spreading on the higher frequency bands.

An H.F. pentode is used as the detector valve and reaction is controlled by varying the screened-grid voltage by means of a variable potentiometer. A volume control is fitted to the front panel and is very useful where a strong C.W. or phone signal is being received. A tone control is also fitted to control the amount of top cut-off, heterodyne whistles and certain types of interference can often be eliminated by this method.



*A view of the 2-valve mains operated receiver with its associated power pack.*

The receiver is built into a metal cabinet as a precaution against hand capacity and acts as an effective screen to prevent pick-up from the mains.

The mains unit, with valve rectification, gives an output of 250 volts and is built into a separate unit, and connection between this and the receiver is by means of a four-way cable fitted with a four-pin plug, one end of which fits into a valve-holder socket on the mains unit.

*The Circuit*

The theoretical diagram gives the details of the circuit, from which it will be seen that the plug-in coils are fitted with three windings: L1 is the grid coil, L2 the reaction coil and L3 is used as an aerial

*Shall We See You at Convention?*

coupling coil, either when a transposed feeder aerial is used or when a single wire aerial is connected. When the latter is used, aerial terminal C is connected to terminal E. C.1 is the series aerial condenser and is in operation only when the usual single aerial is connected to A.

The first valve is an H.F. pentode, which makes a very sensitive detector, and, providing certain precautions are taken, is exceptionally free from mains hum. A low-value grid leak used in conjunction with a .0001 grid condenser eliminates any hum which with a higher value grid leak may develop and does not appear to affect the sensitivity in any way. Resistance capacity coupling is used from the detector valve to the output valve with a ¼ meg. anode resistance; a high value decoupling resistance of ¼ meg. is also used to effectually prevent any ripple that may be in the H.T. supply from getting to the anode of the detector valve. Reaction is taken from the anode of the detector: it was originally tried from the screen grid, but did not work satisfactorily on all the frequencies used. The reaction coil L.2 is connected to the anode and also to the pre-set reaction control C.4; reaction is controlled by altering the screen voltage of the detector valve by means of the variable potentiometer R.8. The pre-set condenser C.4 is adjusted to give the required amount of reaction: this amount varies with different aerial couplings and wavebands, and is only altered when the aerial coupling or coils are changed. A screened H.F. choke is connected in the anode circuit to prevent H.F. reaching the low-frequency part of the receiver and also for reaction purposes; C.7 connected between the anode and earth improves rectification and also ensures smooth reaction. The cathode, auxiliary grid and metalising of the detector valve are connected to the frame of the cabinet, which acts as the earth return.

A .01 condenser is used to couple to the output valve: this is connected to one end of the variable potentiometer R.9, which forms the grid return to earth for V.2, and also controls the strength of the signal passed on to the output valve. Automatic grid bias is obtained with the resistance R.7 connected between the cathode and earth; the by-pass condenser usually connected across this resistance is omitted to reduce the lower audio frequencies and mains hum.

The output arrangement from the last valve is rather unusual in that resistance coupling is used instead of choke coupling; the anode resistance

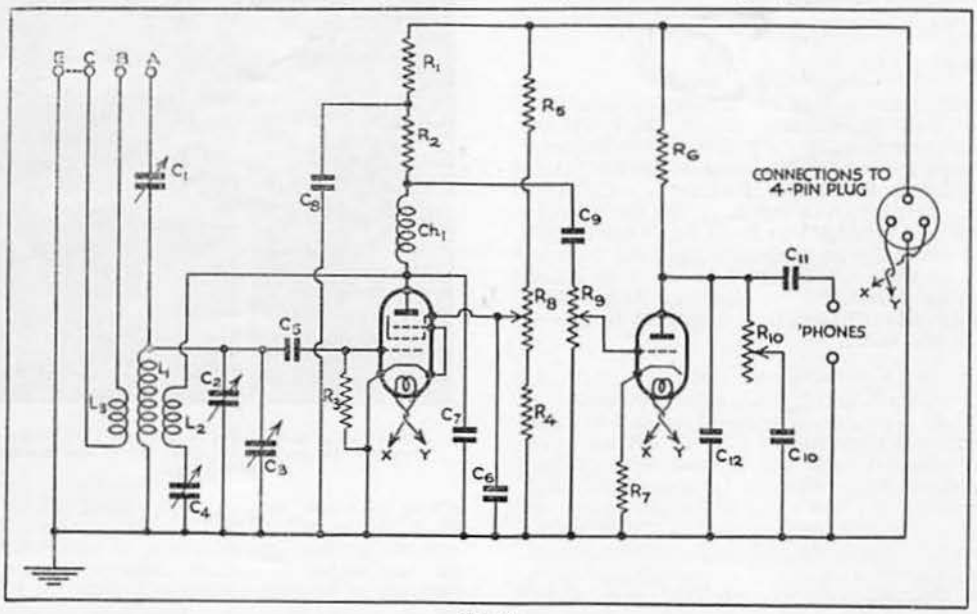



*Fig. 1.*

*Circuit Diagram of 2-valve all mains short-wave Receiver.*

*C1, 25 mmf. type 900, Eddystone*
*C2, 15 mmf. type 900, Eddystone*
*C3, 100 mmf. type 942, Eddystone*
*C4, .0003 mf. preset, Graham Farish*
*C5, C7, .001 mf. type M, T.C.C.*
*C6, C8, C11, 2 mf. T.C.C.*
*C9, .01 mf. type M, T.C.C.*
*C10, C15, C16, C17, .1 mf. tubular, T.C.C.*
*C12, .002 mf. type M, T.C.C.*
*C13, C14, 4 mf. 250-volt working, T.C.C.*
*R1, R2, R3, ½-meg. 1 watt, Dubilier*
*R4, 30,000 ohms, 1 watt, Dubilier*
*R5, 1 meg, 1 watt, Dubilier*
*R6, 60,000 ohms, 1 watt, Dubilier*
*R7, 400 ohms, 1 watt, Dubilier*
*R8, 100,000 ohms potentiometer, Ferranti*
*R9, ¼ meg. potentiometer, Ferranti*
*R10, 50,000 ohms potentiometer, Ferranti*
*CH1, screened H.F. choke, type 983, Eddystone*
*CH2, smoothing choke, 150h, type 981, Eddystone*
*Metal cabinet, type 975, Eddystone*
*2 Vernier disc dials, type 933B, Eddystone*
*6-pin coil base, type 969, Eddystone*
*5-pin valve holder, type 500, Eddystone*
*7-pin baseboard valve holder, Clix*
*2-4-pin chassis mounting valve holders, Clix*
*4-pin cable plug, Bulgin*
*6 pin coils, types 6LB, 6Y, 6R, 6P, Eddystone*
*2 terminal saddles, type 996, Eddystone*
*Mains transformer, output 250+250, 60 m.a., 4v., 1a, centre tapped, 4v, 2a, centre tapped, Bryce*
*H.F. pentode A.C.-S2-Pen, metallised Mazda*
*L.F. AC2-HL, metallised Mazda*
*Rectifier UU2, Mazda*

*If so, Have You Booked for the Dinner?*

R.6 reduces the voltage applied to the anode and also acts as the anode coupling resistance, the signal passing through the condenser C.11 to the phones. The tone control consists of the variable resistance R.10 and the condenser C.10; decreasing the amount of resistance in circuit reduces the higher audio frequencies.

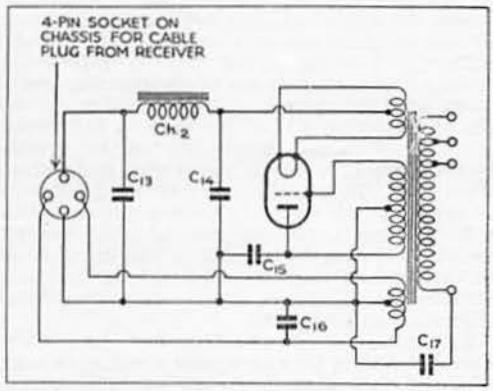



*Fig. 2*
***Connections to rectifier used for 2-valve short-wave receiver***

*The Mains Unit*

The mains unit is built on a separate aluminium chassis. Valve rectification is used, and it will be seen that the smoothing choke has an inductance of 150 henrys instead of the usual 20 or 30. It is most important that this high-inductance choke be used or mains hum will result. After the receiver was built and tested, it was found that when the set was not oscillating no trace of mains hum could be heard, but when oscillating, hum could be heard at varying intensities on different frequencies. Condensers C15, C16 and C17, connected as shown, removed this effect.

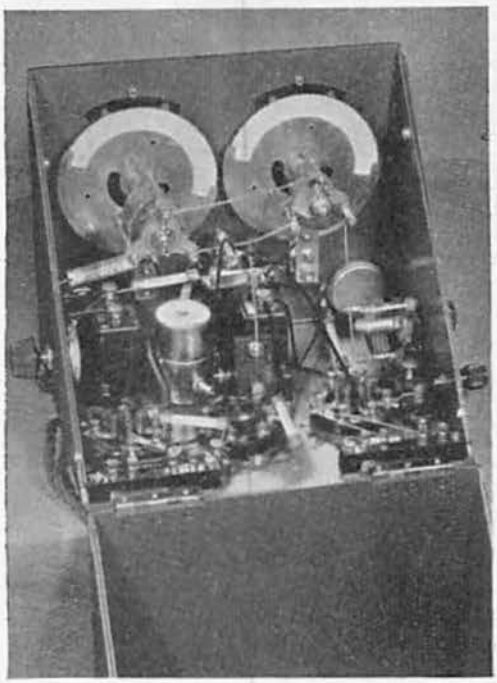
*Constructional Details*

The construction of the receiver presents no difficulties. The *Eddystone* metal cabinet is made of a very soft material and is easily drilled. The two slow-motion dials are supplied with drilling templates, which considerably simplifies the fitting. The openings for the escutcheons are made by drilling a series of holes as marked on the template, the centre is tapped out, and the two openings then trimmed up with a file. The series aerial condenser C.1 is mounted on the left-hand side of the cabinet, but its spindle must be insulated from the cabinet by an ebonite bush. The three *Ferranti* potentiometers have insulated spindles, so these can be bolted direct to the metal cabinet. If any other make of potentiometer is used it should be ascertained that they have insulated spindles, otherwise ebonite bushes will have to be fitted. All the other components are bolted down to the metal base. The earth return leads are taken to the nearest point on the chassis and earthed by bolts through the chassis. Slots are filed in the sides of the cabinet for the aerial and phone wires; a terminal bolted on the outside of the cabinet acts as an earth connection. The photographs show the layout and position of the various components.

The mains unit is built on an aluminium chassis 9 ins. long, 5½ ins. wide and 2 ins. deep; at one end a four-pin chassis type valveholder is fitted to act as the socket for the supply leads to the receiver. All the components are mounted on top of the chassis, except the three tubular condensers, these being placed underneath. The leads from the mains transformer are passed through a slot cut in the chassis and connected to their respective parts; the H.T. and valve filament centre tap are both connected to the metal chassis.

*Operating the Receiver*

It will be seen from the photographs that two



***A close-up of the 2-valve mains operated receiver showing the position of components and method of wiring.***

tuning dials are fitted. When tuning on the two lower frequency amateur bands, condenser C.3, operated by the right-hand dial, is used, whilst on the two higher frequency bands condenser C.2, operated by the left-hand dial, is used for tuning, and the right-hand dial is then used to bring the band within the tuning range of the condenser C.2.

The reaction is controlled by the bottom left-hand knob on the front panel; this knob operates the potentiometer R.8, which controls the screen voltage. The correct voltage is applied to the valve when the potentiometer is turned nearly full on, and reaction should be adjusted by the pre-set condenser C.4 until the valve is just oscillating at this setting. If the receiver will not oscillate even when the pre-set condenser is screwed right down, adjusting the series aerial condenser will remove any dead spots. After these adjustments reaction can then be controlled by the potentiometer. Reducing the screen voltage stops the

(*Continued on page* 86.)

# A ONE-VALVE PENTODE TRANSMITTER FOR 1.7 mc.

By I. J. P. James, B.Sc. (G5IJ).

THE advent of a British transmitting pentode fitted with a separate suppressor grid makes the design of a 1.7 mc. one-valve transmitter for C.W. or telephony from standard British components a practical proposition. The new pentode, an *Osram* D.E.T.8, is geometrically similar to the *Osram* PT25H., but is specially arranged for transmitting, and is fitted with a 7-pin base, the connections of which are shown in Fig. 1. It is important to notice that the view is of the valve base itself or the underside of the valve-holder.

The maker's characteristics of the valve are as follow :—

| | | |
|---|---|---|
| Filament volts | ... | 4.0 A.C. |
| Filament current | ... | 2.0 amp. approx. |
| Anode volts (max.) | ... | 400 |
| Screen grid volts (max.) | ... | 400 |
| Amplification factor | ... | 180 |
| Impedance (ohms) | ... | 28,000 |
| Mutual conductance | ... | 6.5 mą./volt. |
| Measured at : | | |
| Filament volts | ... | 4.0 A.C. |
| Anode volts | ... | 400 |
| Screen grid volts | ... | 400 |
| Anode current | ... | 62.5 ma. |
| Anode dissipation (max.) | ... | 25 watts |

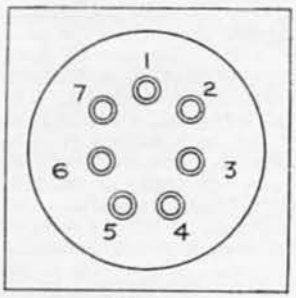



***Fig. 1.***
***Valve base connections for DET. 8 valve***
***1. Suppressor grid***
***2. Control grid***
***3. Screen grid***
***4 and 5. Filament***
***6. Blank***
***7. Anode***

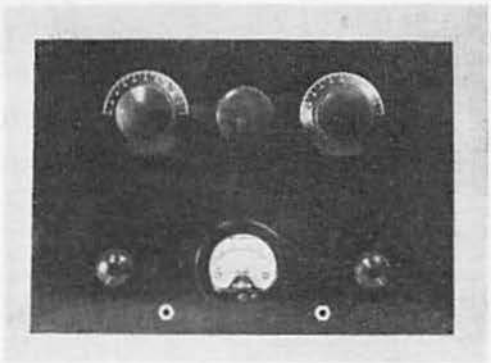
The chief advantage of the new pentode is that it can be modulated quite easily by applying the low-frequency output from the modulator to the suppressor grid. As only a small A.C. output (less than 1 watt) is needed to fully modulate the 10-watt transmitter, it can readily be seen that the transmitter is very economical in the amount of power and parts required. The quality obtainable is also comparable with that associated with the more usual anode modulation systems.

The writer is of the opinion that for a transmitter to be of any use on 1.7 mc., it should be capable of a quick change in frequency to any part of the band (which is shared with ship and commercial stations). This requirement, although not of great importance for local contacts, is an absolute necessity when distant stations are to be worked. For this reason the transmitter to be described is adapted so that it can either be crystal-controlled or self-excited at will.

*Circuit Considerations*

It will be seen from the circuit diagram that in the self-excited position the arrangement is a series-fed Hartley, provided with variable regeneration by means of the *Eddystone* Microdenser (C3). A small amount of regeneration is also used with advantage when the transmitter is crystal-controlled to counteract the damping produced by the aerial loading, thus improving the efficiency.

For C.W., the pentode is keyed in the screen grid, thus reducing key clicks to a low value. It will be found that where key-click interference is caused, it can be reduced to a minimum by fitting the usual choke, condenser-resistance key-filter. The voltage for the screen grid is obtained from a *Varley* 25,000-ohm power potentiometer, which also helps to stabilise the H.T. supply.



***Front view of the 1.7 mc. Transmitter***

*Construction*

As will be obvious from the photographs, the construction of the transmitter is quite simple, all the components being of standard make.

The chassis is built from two pieces of ¼-in. plywood, 10½ ins. by 15 ins., which form the front panel and baseboard, and two side pieces of ⅜-in. wood 10½ ins. by 4 ins. Before assembling the chassis the holes for fitting the milliammeter, valve-holder, variable condensers, etc., should be bored. The *Ferranti* milliammeter requires a hole 2 29/32 ins. in diameter, the centre being a distance of 2 17/32 ins. from the bottom of the panel. The hole for the *Clix* 7-pin valveholder should be made 1 5/16 ins. in diameter. The aerial coil L2, which is a *Q.C.C.* 3.5 mc. power amplifier coil, is mounted so that the left-hand insulator is screwed down, thus making the aerial coupling variable by turning the coil about this insulator.

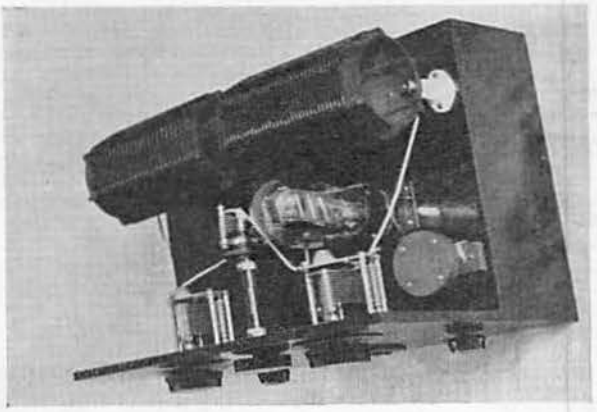
The anode and aerial coils are tuned by a pair of *Polar* 0.00025 mf. condensers, in which the plates are double-spaced. These condensers are fitted with very smooth action slow-motion dials, and are each fastened to the panel by a single hole. To make the wiring shorter and to reduce hand-capacity effects, the *Eddystone* Microdenser is mounted on an ebonite bracket and is coupled to the dial by means of a 3-in. extension rod.

A *Clix* two-socket strip, with plug, is used for changing from the crystal-controlled to the self-excited position, one socket being connected to the grid of the valve and the other being left blank. Alternatively a good quality switch could be used for this purpose.

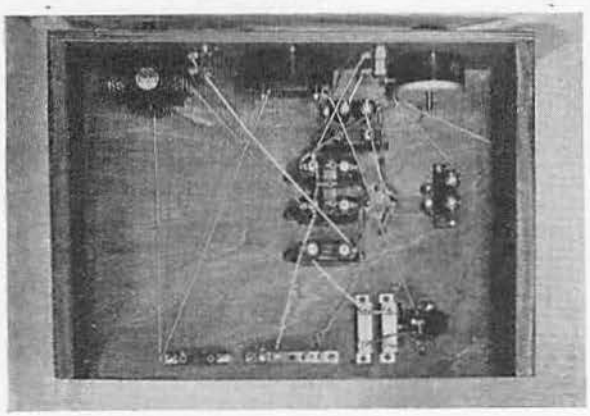
For maximum efficiency a good choke is needed in the suppressor grid; for this reason a *McMichael* choke is recommended. Another *McMichael* choke is used in the control grid, the writer not being in favour of a resonant choke in this position.

The suppressor grid is earthed through a *Dubilier* 0.002 mf. condenser and the modulation is fed into it via a *Bulgin* closed circuit jack. It is important that the condenser is connected as near to the suppressor grid as possible. Variable bias on the control grid of the valve is obtained from the *Varley* 50,000-ohms wire-wound potentiometer. *Dubilier* (500-volt working) condensers are also used to by-pass the H.T. supply to the centre-tapped *Q.C.C.* 1.7 mc. anode coil. An *Eddystone* choke (CH2) prevents any stray high-frequency currents from entering the milliammeter and power supply.

An *Eddystone* terminal saddle is fastened underneath the baseboard for the purpose of connecting the H.T. and L.T. supplies to the transmitter. By no means the least important of the components is the *Microfuse*, which is placed next to the terminal saddle in an easily accessible position. All the wiring underneath the chassis is carried out with 18-gauge Glazite, while the H.F. wiring is 16-gauge tinned copper wire covered with Systoflex insulation. Flexible wire is used for connecting the aerial coil to its tuning condenser.



***Plan view of transmitter with valve, coils, and crystal holder in position***



***Underside of chassis showing position of components and method of wiring***

*Operation*

As the transmitter uses regeneration, it is most important that a monitor should be employed in order to check the frequency, should the crystal fail to control. Of course, when the transmitter is self-excited, the use of a monitor is essential.

For C.W. operation the modulation plug is pulled out, thus causing the suppressor grid to be earthed automatically. With the valve in position and the L.T. supply connected, an H.T. voltage of about 200 should be applied initially. The grid resistor R1 should be set to maximum value and R3 to about the middle position. With crystal control, the Microdenser is set so that approximately a quarter of the capacity is used. The key is then pressed and the condenser C1 rotated slowly from minimum to maximum. Between 60° and 80° it will be found that the anode current drops from a high value to a much lower one, indicating that the crystal is now oscillating. The aerial and counterpoise (or earth) are next connected and tuned by the condenser C2 until a maximum reading is obtained in a hot-wire ammeter connected in series with the aerial. The H.T. voltage can now be increased to 400 and the transmitter tuned for optimum efficiency. The anode current must not be increased over the 25 ma. value with a 400-volt supply in order to keep within the 10-watt licence regulation. By adjusting C1 and C2 carefully it will be obvious that high values of anode current do not necessarily mean large aerial currents. Slight alterations should now be made to R1 and C3 to improve efficiency. Finally R3 is set so that the anode current is on the 25 ma. mark. As mentioned previously, it is most important to listen on a monitor when tuning the transmitter.

To change the frequency the crystal is disconnected and the capacity of C3 is increased until half the capacity is in use. The Hartley transmitter is then tuned in the normal manner. In all cases the aerial coupling should be quite loose. The aerial coil specified has been tried on several aerial systems and has suited each. If the coil should be too large, the aerial and counterpoise should be tapped on the coil. The aerial coupling must not be too loose nor must too much capacity be used for regeneration, or a spacer wave may result on C.W.

*Modulation*

The modulation is applied to the suppressor grid by means of a 1 to 1 ratio output transformer, the secondary of which is shunted by a resistance R4. The value of R4 should be between 5,000 ohms and 10,000 ohms, depending on the valve used for modulating.

*See this Transmitter at Olympia*

The *Osram* ML4 is a suitable valve for modulating and should be preceded by a stage of L.F. amplification. The suppressor grid is biased negatively to a value between 60 and 80 volts. It is impossible to give a definite value owing to the number of variable factors involved. The bias is adjusted so that the aerial current falls to half the C.W. value. Should the anode current decrease on modulation peaks, the negative bias is insufficient, and vice versa. The optimum position is midway between these two conditions and can be quickly found. When modulating, the anode current meter should not show any movement, although, of course, the aerial current will increase. A decrease in aerial current during modulation indicates a lack of negative bias on the suppressor grid. By adjusting the controls the input can again be made to reach 10 watts, although the aerial current will not be as high as formerly.

When using telephony the transmitter should be crystal-controlled otherwise distortion will result, owing to frequency modulation. The transmitter also works satisfactorily on C.W. with negative bias, but the output is not so good as with zero bias. A switch shunted by a ½ megohm resistor has been incorporated in the bias circuit to prevent the battery being shorted when the plug is inserted in the jack. On plugging in the modulation, the switch should be open. As soon as the plug is fully in, the switch can be closed. The value of the resistor is not important, but it must be fairly high.

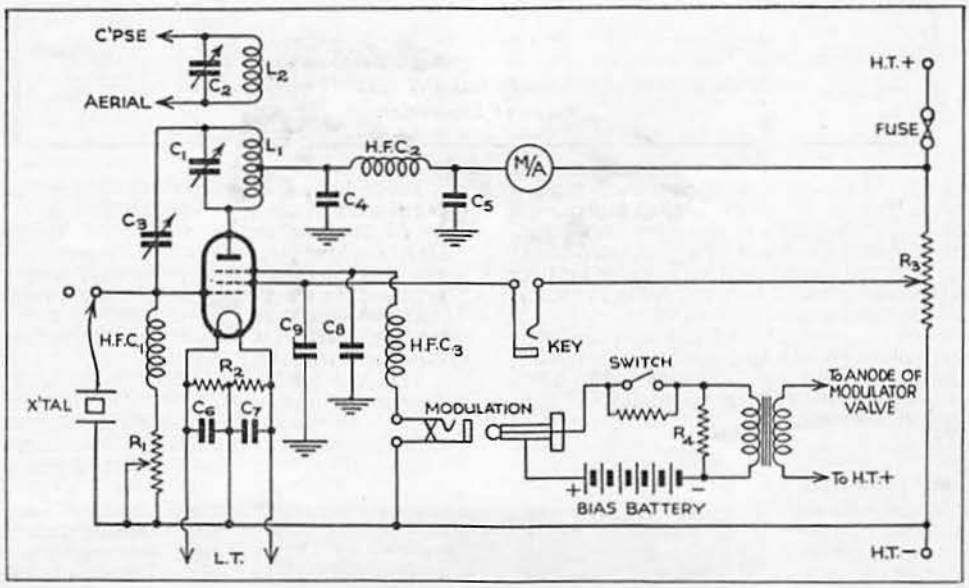



*Fig. 2*
*Circuit Diagram of 1-valve Pentode Transmitter for 1.7 mc. operation.*

*C1, C2, 000.25 mf. type C, Polar*
*C3, 40 mmf. type 900, Microdenser, Eddystone*
*C4, C5, C8, .002 mf. type 620, Dubilier*
*C6, C7, .01 mf. type 775, Dubilier*
*C9, .01 mf. type B 770, Dubilier*
*R1, 50,000 ohm, wire wound potentiometer, Varley*
*R2, 40 ohms centre tap resistance, Varley*
*R3, 25,000 ohm power potentiometer, Varley*
*HFC1, HFC3, HF chokes, Junior Binocular, McMichael*
*HFC2, HF choke, type 925, Eddystone*
*L1, 1.7 mc. horizontal mounting, 4-in. diam. P.A. coil, Q.C.C.*
*L2, 3.5 mc. horizontal mounting, 4 in. diam. P.A. coil, Q.C.C.*
*Type B, enclosed crystal holder and base, Q.C.C.*
*Chassis mounting 7-pin valve holder, Clix*
*Chassis mounting strip with 2 sockets and plugs, Clix*
*Flush type milliammeter 0-50 m.a., Ferranti*
*Open circuit jack and plug, Bulgin*
*Closed circuit jack and plug, Bulgin*
*Ebonite mounting bracket, type 971, Eddystone*
*3-in. extension spindle, type 943, Eddystone*
*2-in. black knob with ¼-in. hole, type 902, Eddystone*
*Bakelite terminal saddle, 4-way, type 996, Eddystone*
*Microfuse and holder*

*Summary*

As the circuit of the transmitter is essentially that of a power amplifier, there is no reason why it should not be used as such. The crystal should be switched out and the output from a separate crystal oscillator fed into the grid and the anode-grid capacity neutralised in the normal manner. Either automatic grid bias or, preferably, battery bias can be used.

It will be found that the circuit is also very efficient when used with triodes and ordinary pentodes, although suppressor grid modulation is then rendered impossible and the more usual modulation systems have to be employed.

It may be mentioned in passing that by increasing the negative bias to the suppressor grid until the aerial current is reduced to zero, it is possible to obtain quiescent carrier modulation (see June, 1935, BULLETIN).

In conclusion, the writer offers his sincere thanks to G2WO, of Swansea, and 2AQB, of Penryn, for their valuable co-operation in tests which led to the design of the transmitter.

# SNOWDON CALLING ENGLAND ON 56 mc.

By Douglas Walters (G5CV).

*The recent tests from Snowdon have again demonstrated that there is more in 56 mc. communication than meets the eye. We agree with the author of this article that it is well within the bounds of possibility that DX contacts will eventually be possible on these frequencies.*

INTEREST and activity in 56 mc. work reached a peak two years ago following experiments from the Crystal Palace, and since then it has apparently decreased, which is a pity, considering the fact that this band opens up a wider field for exploration and research than any other in general use with the possible exception of 28 mc.

The writer has always been firmly convinced that distances of several hundreds and, most probably, thousands of miles will one day be covered by ultra-short waves and as past experiments in which he has engaged have mostly been in aeroplanes and gliders, it was decided this time to remain on terra firma.

Because this country is not blessed with an overwhelming number of accessible mountains, Snowdon was singled out as the best site for the tests, although the banner of amateur radio had already been planted there by another 56 mc. enthusiast two years ago.

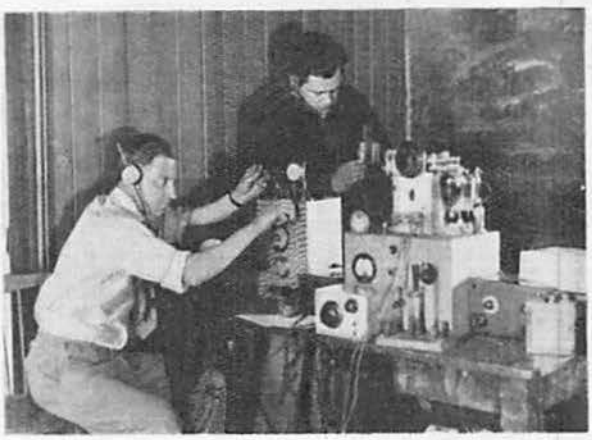
My companion was Mr. David Richards, who will be remembered as the director of all radio communications in the last Mount Everest expedition. Perhaps he came to keep in training (altitude Snowdon 3,500, Mt. Everest 29,002 feet), but in any case he travelled up in the mountain railway train!

The tests had to be cancelled on several occasions due to the inclement weather, but on June 27 it was decided to commence on the following Saturday and Sunday (June 29 and 30). Frantic efforts were made to get two 56 mc. transmitters and two receivers ready, as well as a portable directional antenna designed by 6YK, without whose help in the final rush we should never had got ready in time.

Whilst carrying out phasing tests with this portable directional aerial the woodwork snapped; consequently we left on Friday with all the gear in the car minus a beam aerial.

Before leaving London it was arranged for a full description of the tests and schedule to be mailed to 56 mc. enthusiasts throughout the country. Marchese Marconi, with whom the writer discussed the tests a few days previously, very kindly promised to co-operate, and it was learned later that two special 56 mc. stations had been erected by the Marconi Company at Chelmsford, with directional aerials for Snowdon.

The War Office and Post Office also kindly co-operated and a watch was kept on our transmissions by the Royal Engineers at Woolwich and by P.O. engineers at Dollis Hill. From each of these bodies a full report, although negative, was received.



[Daily Herald Photo.

*Mr. Douglas Walters, left, with Mr. David Richards at the Mount Snowdon 56 mc. station. The apparatus, reading from left to right, is as follows: Eddystone 56 mc. Receiver, Low-power 56 mc. transmitter, audio oscillator for Tone, behind the microphone on table. The large 56 mc. transmitter with small 3-valve receiver is in front, and on extreme right is the 2-valve speech amplifier in metal case. The small receiver was used in the Crystal Palace plane to plane and glider tests conducted by Mr. Walters some years ago.*

We arrived at Llanberis on Friday evening and the next morning loaded the Snowdon Mountain Railway with the gear. The railway authorities gave us every assistance both on ground level and on the summit, where we spent the night.

*Two-Way Contacts*

Owing to the necessity for making an impromptu directional antenna out of odd lengths of wood obtained from a new building in course of erection on the summit, the first transmissions were commenced an hour later than the scheduled time. After the third test call ('phone) 5MQ of Liverpool (55 miles) replied with a good R7 signal (I.C.W.). A 100 per cent. QSO was obtained and this helped to cheer us up.

The next QSO was with 2IN, whose gear was installed in a car near Ormskirk—about 75 miles away. This was a two-way fone QSO. My signals were apparently received on a moving coil speaker and 2IN was R8-9 in the 'phones on a three-valve receiver.

This, again, was very gratifying. So far, the only aerial used had been a semi-vertical ½-wave dipole, but the beam antenna, consisting of a single

*New 5 Metre Gear on Stand 202.*

radiator and reflector suitably phased, was put into use between 8 and 9 p.m.

Both of these aerials were slung from a roughly rigged up mast and the flex feeders were about 30 ft. long, of which at least 20 ft. were under the galvanised iron roof of the hut in which we were working.

*Land-Line Arrangements*

It should be mentioned that before we started it was arranged with the G.P.O. for the somewhat crude telephone service up the mountain side, which belongs to the Snowdon Mountain Railway, to be connected to the G.P.O. Trunk Service. The co-operation offered by the Post Office was the finest that one could possibly have wished for. The Inspector of North Wales with several assistants devoted much time and trouble in establishing a through service. The latest telephone equipment was installed on the summit, and despite the fact that tests revealed a direct " short " to earth somewhere on the mountain line we were able to speak direct with London, Cornwall and other distant parts of the country.

One of the Post Office engineers spent the whole night on Snowdon with us in order to maintain the service, but, unfortunately, the fault on the line prevented a through connection with the B.B.C., who were possibly going to relay in the news bulletin a talk from the summit of the mountain. Mr. D. Richards also spent the whole time keeping the land-line service going, and when the magneto failed to ring the exchange he achieved the desired result by flashing a 100-volt H.T. battery across the line!!!!!

The writer cannot speak too highly of the great pains which the Post Office engineers took to help in maintaining land-line communication, and as a result we were able to receive reports from numerous listeners who had heard our signals from distances of over 70 or 80 miles.

*Reports Received*

The first of these was from 6US, who, at Oswestry, was receiving our signals at good volume (80 miles). Quite a number of QSO's were made with 5MQ,2IN and 2II of Colwyn Bay, but reception was disappointing; although we were continually receiving reports by land-line of reception at Liverpool and further distances, no station further than 75 miles was heard by us.

It is interesting to note that just before we closed down at 1.30 a.m. on Sunday morning for a few hours rest a harmonic was heard of a CT2 station which was evidently working on the 7 or 14 mc. band; the full call-sign was lost. Various harmonics of commercial stations were also heard and a considerable amount of mush interference was attributed to the Carnarvon station, which could be seen only a few miles away.

Another interesting point is that heavy crashes, apparently atmospherics, were extremely loud throughout the night. Further QSO's were made on the following morning, and we closed down just after mid-day.

It was not until we arrived at the hotel in Llanberis we heard by telephone from 5JU that he had received our signals at Bristol, a distance of 140 miles.

Half an hour later came a report from 6CJ at Stoke Poges, which increased the distance to 180 miles, and finally, on returning to London, a report of 207 miles reception was received by telephone from 2NU, near Romford, Essex.

Mr. Hall (2NU) had received *both* our fone and I.C.W. signals on Sunday morning. These reports have been carefully checked and verified with the log. One interesting fact emerged from the tests —*the signal strength from all stations fell to a minimum between* 11 *a.m. and* 2 *p.m.*, a phenomenon which has been observed on several occasions during the past three or four years, and has also been observed by Mr. Dent, of the *Wireless World*. This needs further investigation.

*Equipment Used*

The equipment used consisted of two transmitters and three receivers, one of which was a standard " Eddystone" model loaned by *Webbs Radio*.

Both transmitters employed the orthodox push-pull circuit with untuned grid coil and choke modulation. The low-power transmitter used 2-volt *Osram* valves and was the same one that was used in past experiments in connection with aircraft and gliders. With an input of only 3 watts an R6 'phone report was obtained from 2IN (75 miles). The larger transmitter employed two special PX25 valves in push-pull and a PT25B as modulator, which was preceded by a two-stage battery-operated speech amplifier.

All power was obtained from large 12-volt *Exide* accumulators, which supplied both filament voltage and H.T. current from two generators—one for each transmitter.

*Conclusion*

In conclusion, the writer wishes to express his sincere thanks to all those who so kindly co-operated in the tests. He is also greatly indebted to the *G.E.C.*, who supplied the *Osram* valves, and the *Chloride Electrical Storage Company*, who supplied the *Exide* accumula-

(*Continued on page* 86).

[*Daily Herald Photo*

***Climbers and hikers helping to erect the mast for the Snowdon tests.***

# THE LOYAL RELAY, 1935

FOR the fifth year in succession we were able to hand to our patron—His Royal Highness the Prince of Wales—loyal birthday greetings on the occasion of his forty-first birthday, which was celebrated on June 23 last.

Messages were received from practically every part of the Empire, but owing to poor radio conditions between England and Australasia extensive relaying became necessary in order to get them to London in time. In this connection we wish to thank Mr. J. E. Preston (W2GOX) for his help in regard to the messages from the Victoria and South Australia Divisions of W.I.A.

Mr. F. Charman (G6CJ) had the honour of bringing in four messages, whilst Mr. Wyllie (G5YG) received three. These gentlemen and all others who assisted in making this relay a success are cordially thanked. We also wish to record our appreciations to several members who forwarded a check on messages intercepted.

The messages were handed in to St. James's Palace by our President on the morning of June 23 and the letter which is reproduced herewith was received from the Prince's private secretary on June 25.

*St. James's Palace, S.W.*
*June 25, 1935.*

*Sir,—I am desired by the Prince of Wales to express through you to the Council and Members of the Incorporated Radio Society of Great Britain His Royal Highness's thanks for their birthday congratulations.*

*His Royal Highness would also ask you to convey his appreciation to the senders of the messages from various parts of the world, which he was pleased to receive.*

*Yours very truly,*
GODFREY THOMAS,
*Private Secretary.*

*Arthur E. Watts, Esq.,*
*President,*
*Incorporated Radio Society of Great Britain,*
*53, Victoria Street, S.W.1.*

To H.R.H. THE PRINCE OF WALES.

*The President, Council and Members of The Incorporated Radio Society of Great Britain again wish to convey to Your Royal Highness their loyal and sincere greetings on the occasion of your birthday.*

(Signed) ARTHUR E. WATTS,
President.

St. John's, Antigua, British West Indies. From VP2BX *via* G5YH.
June 11, 1935.
*All Antiguans convey their heartiest wishes to their beloved Prince.*
(Signed) VP2BX.

Ascension. From VQ8A *via* G5CW.
June 22, 1935.
*Loyal and hearty greetings to His Royal Highness The Prince of Wales from the only Amateur Radio Station in Ascension Island.*
(Signed) MOORE, VQ8A.

Coburg, Victoria, Australia. From the Wireless Institute of Australia, Victorian Division, *via* VK3OC, W2GOX, and G6PS.
June 22, 1935.
*On behalf of the Members of this Division, the Council desires to extend Loyal Greetings to His Royal Highness The Prince of Wales on the occasion of his Birthday.*
(Signed) R. OHRBOM, VK3OC.

Wynnum, Brisbane, Australia. From VK4GK *via* VE5HC and G6CJ.
June 17, 1935.
*Loyal birthday greetings to Your Royal Highness from the Radio Amateurs of Queensland.*
(Signed) MACKENZIE, VK4GK.

St. Mary's, South Australia. From The Wireless Institute of Australia, South Australian Division, *via* VK5GR, W2GOX, and G6PS.
June 10, 1935.
*Loyal birthday greetings to H.R.H. The Prince of Wales from the South Australian Division of The Wireless Institute of Australia and from all Members of The British Empire Radio Union resident in the State.*
(Signed) G. B. RAGLESS, VK5GR.

Garriston, Barbados. From VP6YB and G6XQ.
June 19, 1935.
*The Radio Amateurs of Barbados send loyal birthday greetings to Your Royal Highness.*
(Signed) ARCHER, VP6YB.

Pointe a Pierre, Trinidad, British West Indies, Eastern Group. From VP4TA *via* VP6YB and G6XQ.
June 19, 1935.
*The British Empire Radio Union Members in Bahamas, Bermuda, British Guiana, Trinidad, Leeward, and Windward Islands join in sending loyal birthday greetings to Your Royal Highness.*
(Signed) TRASLER, VP4TA.

Stewiacke, Nova Scotia, Canada. From VE1BV *via* VE1EP and G5BO.
June 16, 1935.
*Birthday greetings and good wishes from all the Members of The British Empire Radio Union in the Maritime Provinces of Canada.*
(Signed) TAYLOR, VE1BV.

St. Lambert, Province of Quebec, Canada. From VE2CA.
June 22, 1935.
*On behalf of the Society members in the Province of Quebec, I beg to extend hearty birthday greetings and wishes for a long and happy life.*
(Signed) EARLE TURNER, VE2CA.

Windsor, Ontario, Canada. From VE3WA *via* G6NJ.
June 8, 1935.
*The Amateur Radio Operators of Ontario extend to Your Highness their sincere and loyal birthday greetings.*
(Signed) ANDREW, VE3WA.

Colombo, Ceylon, from The Radio Club of Ceylon and South India, *via* VU2DK and G2LR.
May 20, 1935.
*The Radio Club of Ceylon and South India and all Ceylon Members of The British Empire Radio Union send their most loyal birthday greetings to His Royal Highness The Prince of Wales.*
(Signed) KINGSTON (BERS196).

Cairo, Egypt, from SU1SG *via* G5YG.
June 15, 1935.
*On behalf of BERS Members of the British Empire Radio Union in Egypt, Palestine and Sudan, I send Your Royal Highness loyal and hearty greetings on the occasion of your 41st birthday.*
(Signed) F. H. PETTITT, SU1SG.

Hong Kong. From VS6AX *via* VS6AQ and G6CJ.
June 16, 1935.
*Members of the Hong Kong Amateur Radio Transmitting Society extend loyal greetings to H.R.H. The Prince of Wales, and best wishes for a happy birthday.*
(Signed) EMARY, VS6AX.

Irish Free State. From EI9D *via* G2NJ.
June 23, 1935.
*Members of the Radio Society of Great Britain and the British Empire Radio Union in the Irish Free State send Your Royal Highness loyal and sincere birthday greetings.*
(Signed) NOBLETT, EI9D.

Kingston, Jamaica. From VP5MK *via* VP5PZ and G2QT. No. 1.
June 13, 1935.
*Members of the British Empire Radio Union and the Radio Association of Jamaica in Jamaica, British Honduras, Turks Island, and Cayman Island, send loyal and sincere birthday greetings.*
(Signed) C. M. LYONS, VP5MK.

Nairobi, Kenya. From VQ4CRH *via* G5YG.
*The members of the Radio Society of East Africa and the British Empire Radio Union Members in Kenya, Uganda, and Tanganyika join in sending sincere loyal birthday greetings to Your Royal Highness.*
(Signed) LANE, VQ4CRH.

Perak, Malaya. From VS2AG *via* VS1AJ and G6CJ.
June 12, 1935.
*Malayan Members of the British Empire Radio Union send hearty loyal greetings to our Patron, H.R.H. The Prince of Wales on the occasion of his birthday. Malayan amateurs cherish happy recollections of his visit, and pray that he may long enjoy good health and happiness.*
(Signed) R. J. BEE, VS2AG.

Chircop, Malta. From ZB1C *via* ZB1E and G5YH.
June 11, 1935.
*All members of the British Empire Radio Union in Malta join in offering their loyal greetings and best wishes for a happy birthday.*
(Signed) L. GRECH, ZB1C,
Local Representative.

St. John's, Newfoundland. From Newfoundland Amateur Radio Association *via* VO1H, G6SX, and G2QY.
May 26, 1935.
*The Radio Amateurs of Newfoundland extend to Your Royal Highness loyal greetings on this happy occasion.*
(Signed) JAMES MOORE, President.

Dunedin, New Zealand. From N.Z.A.R.T., *via* ZL4FO.
June 22, 1935.
*Transmitting Amateurs of New Zealand extend loyal greetings on the occasion of the 41st anniversary of your birthday.*
(Signed) EDWARD, President,
New Zealand Amateur Radio Transmitters.

Lagos, Nigeria. From ZD2C *via* G5YG.
June 15, 1935.
*Loyal greetings and good wishes from all members of the British Empire Radio Union in Nigeria.*
(Signed) PHILLIPS, ZD2C.

Assam, North India. From VU2LJ *via* VS1AJ and G6CJ.
June 10, 1935.
*Members of the British Empire Radio Union desire to convey to Your Royal Highness their sincere and loyal good wishes on your birthday.*
(Signed) McINTOSH, VU2LJ.

Johannesburg, South Africa. From ZT6X.
June 13, 1935.
*Members of the British Empire Radio Union in South Africa send heartiest birthday greetings to Your Royal Highness.*

(Signed) HEATHCOTE, ZT6X.

Travancore, South India. From VU2JP *via* G5ML.
June 6, 1935.
*Members of the British Empire Radio Union in South India join with the Radio Club of Ceylon and South India in sending loyal and best birthday greetings to H.R.H. The Prince of Wales.*

(Signed) NICHOLSON, VU2JP.

Hartford, Connecticut, U.S.A. From W2DFN *via* G2ZQ.
June 22, 1935.
*On behalf of the members of the American Radio Relay League, may I extend to you felicitations on the occasion of your birthday.*

(Signed) HIRAM PERCY MAXIM,
President.

Riverhead, Long Island, New York. From W2BSR *via* VP5PZ and G6PS.
June 19, 1935.
*On behalf of members of the Radio Society of Great Britain in the United States of America, please allow me to extend to Your Royal Highness hearty congratulations on your birthday.*

(Signed) A. M. BRAATEN, W2BSR.

South Hilton, Toronto, Canada. *Via* VE3TA and G6VP.
June 5, 1935.
*Loyal greetings from Toronto.*

(Signed) FRANK COOPER.

# NATIONAL FIELD DAY IN KENYA.

BY W. E. LANE (VQ4CRH).

The Field Day from the point of co-operation from this part of the Empire was far from being a successful event. Unfortunately conditions were not all as they might have been, but nevertheless those who participated in the operations thoroughly enjoyed the night out, and the experience gained from our first outdoor event attempted in these territories will prove useful for any future occasion.

Some weeks prior to the actual week-end, a suitable location was decided upon some nine miles out of Nairobi which was situated on fairly high ground 300 ft. above the altitude of Nairobi (which is 5,460 feet above sea level), but owing to the arrival of the heavy rains and the black cotton soil which would have been under foot, it was considered advisable to change the site of operations at the last minute.

The final camp was fixed on a spot more suitable to the prevailing weather about three miles outside the town, also on high ground but with more or less a rocky surface. This site commanded a glorious view over the well-known Athi Plains, which is the famous game reserve.

At 12.00 G.M.T. on the appointed day members' cars began to arrive looking more or less like Christmas trees, being loaded up to capacity with the necessary gear, camping equipment, etc., not forgetting the rations, with all places of safety within the car allocated to liquid refreshment.

By 14.00 the whole camp had been erected (with the aid of a few native boys), and the gear assembled in readiness for the kick-off at 16.00 G.M.T.

The outfit was a T.P.T.G. with an input of 500 volts to an LS5 drawing 45 mills. The source of power was an ML generator driven from two 6 volt car batteries. The aerial, a full-wave Windom on 7 mc., was thrown up on two 18 feet bamboo poles well anchored. Receivers were Sg. V. Pen (Eddystone).

At zero hour a start was made with a test call which brought no response, but shortly afterwards, with VQ4CRL at the key, we obtained a very weak reply from a G station, but owing to the signal being R1-2 contact was not made. From then onwards until the early hours of the next morning no QSO was made in spite of everlasting calls and answering similar calls from G. The following stations were heard: G2MIP, 2HXP and 5VMP.

At 02.00 local time the ML gave up the ghost for some apparent reason which could not be located by the aid of lanterns, so the whole camp put up their shutters and indulged in a little from the bottle before turning in until daylight.

By 08.00 everything was again serene except the elusive QSO (the ML trouble having been traced to a faulty resistance) when VQ4CRL managed, with cheers and unprintable remarks, to hook SU1C at 09.35 G.M.T. CRL could only give him QSA 3 R3, and our report from him (SU1C) was infinitely worse at QSA 2 R2. However, SU1C reported conditions as foul, so our minds were more or less set at rest with the consolation of knowing we were not the only station affected.

At 10.10 G.M.T. SU1A was raised, but also not a successful contact, and apart from a further chat with SU1C by VQ4CRH no other QSO's were made. At 13.00 G.M.T. camp was struck just before sunset, as it was considered that with the prevailing conditions no useful purpose would be served by staying on until the end. Everyone was happy but disappointed, hoping that the 1936 event will prove more successful.

Owing to the rains no wild beasts appeared at the tent door, as there was apparently sufficient fodder out on the plains without seeking human bodies to satisfy their appetites, but members in camp were seriously infested with the less harmless of veldt vermin—the "tick."

Various visitors were shown around the camp, and there was keen competition amongst those off duty in the ye olde game of darts. The following were on duty during the week-end in camp:—VQ4CRL, 4CRO, 4CRP, 4CRR, 4CRH, and BERS191.

# A 100-WATT TRI-TET TRANSMITTER.

*Some Further Notes on the Modulator Unit of the 100-watt Tri-Tet Transmitter as described in May and June issues of the* T. & R. BULLETIN.

By G. McLEAN WILFORD, G2WD.

SINCE the above articles were published the writer has carried out further tests on Telephony, using the modulator as described in the original articles and the conclusion arrived at after various QSO's was that the output transformer was not matching corrrectly into the suppressor grids of the RK20's.

Having noticed that *Messrs. Varley* had advised would-be constructors that their DP6 and DP7 input and output transformers would be quite suitable for the modulator unit, a pair of these transformers were obtained and as *Messrs. Varley* suggested to the writer that *Cossor* MXP41 or *Osram* PX4 valves would also be suitable, a pair of *Cossor* MXP41's were also obtained and the modulator unit has been partially rebuilt to incorporate these new components.

Referring to the Circuit Diagram (Fig. 1) on page 407 of the May issue, the transformer T2 was removed and replaced by the *Varley* DP6.C22 and R9 and 10 were also taken out, as was T3, this transformer being replaced by the DP7. As *Cossor* MXP41 valves have 4-volt heaters a new 4-volt supply was put in for the two output valves.

R11, which had been altered from 10,000 ohms to 5,000 ohms, was put back again to 10,000 ohms.

The two MXP41 valves were individually auto biased in the conventional cathode bias way with 300 ohm Erie 1 watt resistances by-passed with 25 mf. TC.C. 25-volt working electrolytic condensers. Stations worked have been G, F3 and 8, PA, ON and EA, and in no case has the report been below R7, and at least 3 foreign and several G stations have given reports of R9 and R9+ with excellent speech quality.

This seems to prove to the writer that the fault was in the incorrect impedance matching into the suppressor grids.

The speech amplifier load current is now 55ma/s for all 3 valves, the RK20 control grid 8ma/s, screen 45ma/s and P-P plates 105ma/s, the actual input being 65 watts and the aerial ammeter showing 1.1 amps. on 7 mc., with a slight increase on modulation to about 1.15 amps. Altogether the results being obtained are in every way most satisfactory. The percentage of modulation seems to be around 90 to 100 per cent. and in no case has an overmodulated report been received. The transmitter is perfectly stable in every way.

## Valve Reviews.

OSRAM PX25A.

This is a directly-heated 25-watt output triode fitted with a four-pin base. The valve is suitable for giving a generous power output either alone or in push-pull for use in Public Address amplifiers or as a modulator stage.

CHARACTERISTICS.

| | Makers. | Measured Sample. |
|---|---|---|
| Filament Volts ... ... | 4.0 | 4.0 |
| Filament Current (amps.) ... | 2.0 | 2.05 |
| Anode Volts (max.) ... | 400 | 400† |
| Anode Current (ma) ... | — | 55 |
| Mutual Conductance (Ma/V) | 6.4* | 3.7† |
| Impedance (ohms) ... | 580* | 970† |
| Amplification Factor ... | 6.4* | 3.6† |
| Anode Dissipation (max.) ... | 25 | 25 |
| Grid Bias (approx.) ... | —117 | —96† |
| Power Output (Push-Pull), watts ... ... ... | — 32 | Not measured |
| Anode to Anode Load (Push-Pull) ohms ... ... | 2,800 | do. |

* Taken at Anode Volts 100, Grid Volts 0.
† Taken at Anode Volts 400, Grid Volts —96.

The valve will give a large power output under normal Class A conditions, but where the maximum power output is desired, " Driver Class A." should be used; this result can be achieved by loading the grid circuit with a resistance of a value sufficiently low so that the load due to grid current is large compared with it. Under these conditions, any form of automatic grid bias is debarred, and only battery bias or an eliminator of good regulation can be used. In the case of push-pull operation, the input transformer should be designed to work with loaded grids, the loading being between 6,000 and 12,000 ohms, and the output transformer should have a core area of at least 1.5 square inches, and be of the size of about No. 4 stampings. Provision should be made for varying the bias on each grid separately, and the value should be adjusted to give an anode current per valve of 55 ma. Used in the above manner, a pair of valves will give 30 watts for 5 per cent. harmonic. Due to the high mutual conductance, oscillation stopper resistances in the grids are advised.

With a view to the possibilities of use as an oscillator for 56 mc. work, the inter-electrode capacities were measured, and are given below:

| | | |
|---|---|---|
| Gride Anode ... ... | 18.0 | mmf. |
| Grid Filament ... | 16.2 | ,, |
| Anode Filament ... | 15.0 | ,, |

These seem rather high, but not out of the way if push-pull operation is used. Unfortunately, the writer had no opportunity of testing a pair in this way, but the sample was tried in a single-ended 56 mc. transmitter, and it operated quite well, except that, as was expected, some difficulty was found in coaxing it down to the band.

D. N. C.

## Learning the Morse Code

By COLONEL W. DENNIS (EI2B).

THE following method of memorising the Morse code may be found useful to beginners. It is certainly not new, being the method by which I was taught over 45 years ago!

The letters of the four " Groups " are easily memorised, and in the case of the " Reversed Pairs " it is only necessary to memorise the first letter of each pair, the " Mnemonic Word " giving the second letter.

In slow practice transmission each individual letter or number should be sent *fairly fast*, say at

*The Tri-Tet 100 Watt Transmitter will be at Olympia*

the rate of 10 to 12 words per minute, but the spacing between each letter and word should at first be at least three times the normal length, being gradually reduced to normal as the learner progresses. In this way, although more may be missed at first, the learner quickly gets to know the sound of the *complete letter* without having subconsciously to count the number of dots and dashes which make it up, and it will ultimately lead to more attention to correct spacing than that which unfortunately obtains with many amateur transmitters nowadays.

LETTERS.

GROUP 1.—1, 2, 3 and 4 dots.

| E | I | S | H |
|---|---|---|---|
| · | ·· | ··· | ···· |

GROUP 2.—1, 2 and 3 dashes.

| T | M | O |
|---|---|---|
| — | —— | ——— |

GROUP 3.—1, 2 and 3 dots and 1 dash.

| A | U | V |
|---|---|---|
| ·— | ··— | ···— |

GROUP 4.—1 dash and 1, 2 and 3 dots.

| N | D | B |
|---|---|---|
| —· | —·· | —··· |

| REVERSED PAIRS. | | MNEMONIC WORD. |
|---|---|---|
| W | G | WaG |
| ·—— | ——· | |
| F | Q | FreQ (Frequency) |
| ··—· | ——·— | |
| P | X | PaX |
| ·——· | —··— | |
| L | Y | LY (adverb ending) |
| ·—·· | —·—— | or LaY |
| R | K | RocK |
| ·—· | —·— | |
| J | B | JoB (B also appears |
| ·——— | —··· | in Group 4) |

UNCLASSIFIED.

| C | Z |
|---|---|
| —·—· | ——·· |

NUMBERS.

As distinguished from letters, these all consist of five signals, 1 to 5 commencing with dots, 1 having one dot, 2 two dots, and so on, the balance of the five signals being dashes.

1 ·————
2 ··———
3 ···——
4 ····—
5 ·····

Numbers 6 to 10 similarly commence with dashes, the balance of the five signals being dots.

6 —····
7 ——···
8 ———··
9 ————·
10 ————— or ——

With regard to stops, etc., and foreign accented letters, these must be learned separately as necessary.

## Station Description No. 45.

# W1WV

W1WV, situated at Chestnut Hill, Mass., U.S.A., is one of the best known East Coast stations regularly heard in this country, and we are indebted to Mr. Miles Weeks (of Calendar fame) for the following details of his gear. Incidentally, Mr. Weeks is an old member of R.S.G.B., and has been instrumental in introducing our work to many of his colleagues. His station first came on the air in 1927, using various types of self-excited transmitters operated from the 110 volt mains. From October, 1932, a new c.c. station has been operating, employing De Forest 510's in the final stage. The whole station is 100 per cent. A.C. operated except where dry batteries are necessary as grid bias for the crystal oscillator and as plate supply for the monitor.

W1WV has been an important traffic handling station, and in 1929-31 the operator was Section Communications Manager for the Eastern Massachusetts, area.

Early DX was carried out on the 7 mc. band and later on 14 mc., where for several years European contracts have been almost a daily occurrence. Over 350 G stations have been worked, a splendid achievement.

W1WV is an A.R.R.L. official broadcast station and transmits data of interest on 14,357 kc. on Tuesdays, Fridays and Sundays at 14.00 G.M.T. We understand that reports on the reception of these O.B. would be welcomed from B.R.S. and B.E.R.S.

During these transmissions, material is selected from the A.R.R.L. official broadcasts best suited for foreign interest and consists generally of DX notices, etc. These messages are sent QSZ at a speed not exceeding 12 w.p.m.

With the exception of 56 mc., c.w. is used for all transmissions, and 72 countries in all continents have been worked.

The station, which is located in the basement of the house, is also remotely controlled from the floor above, everything being controlled from a convenient central switchboard. Two Windom type single wire fed antennas are available depending on the frequency to be used.

The receiving gear until recent date was home constructed, but a National SW3 and an HRO have now been installed.

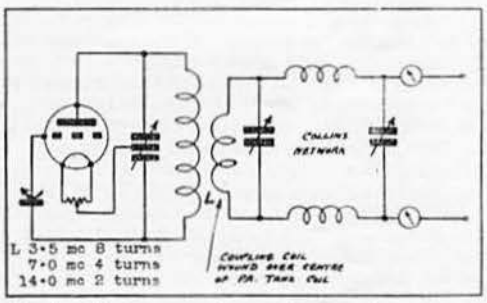
W1GSD is the portable call used by Mr. Weeks, who we learn from his QSL card, has several interesting achievements to his credit, including A.R.R.L. awards for Performance, Accuracy, Station Description, and Expedition Service. We further gather that Mr. Weeks has roamed the world in his younger days, and that he was a U.S. Information Officer during the World War.

Mr. Weeks is an ex Harvard College graduate, and an insurance broker by profession.

# BRIGHT IDEAS.—No. 2.

During a recent re-build it was decided to incorporate the Collins network in place of the more usual coupling coil, the aerial in use being a voltage-fed Zepp, with 33-ft. feeders.

After adjusting the transmitter in the usual manner the network was connected, and it was then found that the neutralisation of the amplifier was completely upset, although immediately the network was disconnected it was possible to neutralise perfectly. It should be mentioned that the amplifier was not push-pull, but a normal single-ended amplifier. If push-pull had been used it is doubtful if the trouble would have occurred.




During the course of experiments it was found that when a small coupling coil was wound over the exact centre of the PA tank coil, and the ends of this coil were attached to the network in place of the usual clips on the tank coil, neutralisation was unaffected and it was possible to tune the amplifier and network in the usual manner, the output being much greater than when the usual coupling coil and condenser was used.

The plate coils were 3½ ins. in diameter in each case, and the extra winding consists of heavy rubber-covered flexible wire, a piece of thin celluloid being wrapped around the tank coil to prevent the coupling winding slipping between the turns.

Coupling coil sizes for three bands :—

3.5 m.c., 8 turns.
7 m.c., 4 turns.
14 m.c., 2 turns.

G6US.

The importance of the coupling between the final inductance and the aerial coil is one which the average amateur is inclined to overlook. The two sketches show the construction of a holder made by the writer which will satisfy those who desire to obtain the maximum efficiency (and incidentally a better control of the impedence) in the final stage, especially on 'phone.

The components required, which only cost a few pence, are a 3-in. Meccano rack strip, a ½-in. pinion, one length of rod and two collars, the rest of the material will be found in the average "junk box."

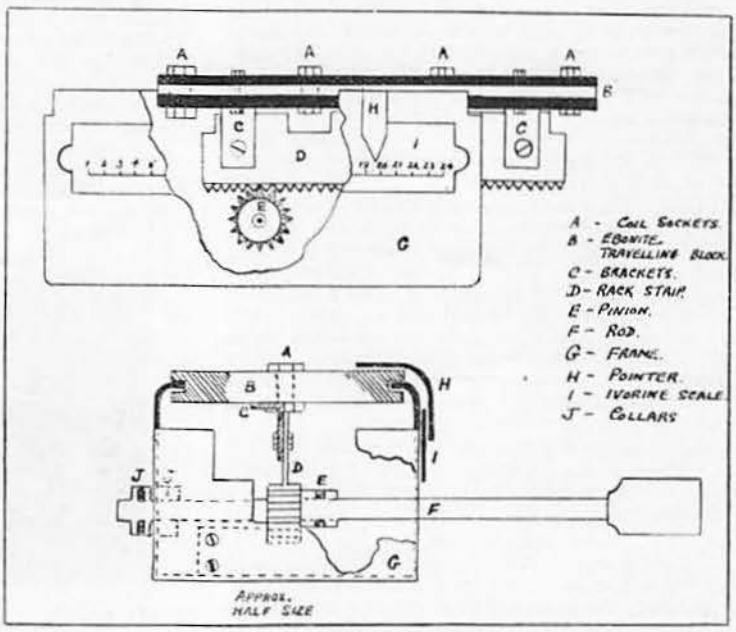
The frame, which can be made out of a piece of No. 18 gauge aluminium or brass, should be marked and cut out in accordance with Fig. 1*, bending the material as indicated by the dotted lines, and finally fastening the frame together by means of a small plate, on the inside of the frame, and four small bolts and nuts.

The travelling table is made out of a piece of ebonite ¼ in. thick by 1⅝ ins. by 3½ ins. A groove is cut along either side about ⅛ in. deep to enable the table to slide along the frame; this can easily be done with a hack saw, but if a heavy gauge metal is used for the frame it will be advisable to insert two blades in the hack saw frame to make the groove wide enough for the table to slide freely.

The rack strip is fastened to the sliding table by means of a couple of brackets, but before doing so make provision for ample clearance for the coil sockets or there will be a possibility of shorting taking place, unless sockets are used which do not project below the bottom of the ebonite. If only two sockets are used, then these can be connected to a pair of terminals fitted on the ebonite. The writer, however, prefers to fix the terminals direct on to the aerial coils as various sized coils are used.

A hole is now drilled in the side of the frame to act as a bearing for the rod. The rod, when inserted, slides on the ½-in. pinion and one collar, the other fits on to the rod outside the frame. Take care to tighten up the grub screws on the collars, and centre up the pinion.

An ivorine scale fixed on the side of the frame and a pointer on the travelling table enable the user to make notes regarding various couplings. ZT6X.




**Assembly of Coupling Device.**

*Let us have your Bright Idea.*

*See page 66

# NATIONAL FIELD DAY, 1935.

## A Win for Home Counties District—No. 8.

HIGHLY successful, sums up our third N.F.D. Probably as a result of past experience, more time and thought were given to this event than to its two predecessors, with the result that high scores and proficient operation were reported from most parts of the country.

Unfortunately the weather did not live up to that of last year, heavy rain occurring in many parts during the early hours of the Sunday morning. This did not, however, perturb those on duty during this period, because many contacts were made after midnight. The weather on the Sunday was on the whole fair and warm in the South, with some wind, but we have only heard of one temporary aerial mast collapsing, and that soon after the contest finished!

From practically every D.R. we have received enthusiastic comments which lead us to believe that the friendly competitive spirit set up between the 20 odd districts during these events is worth encouraging. There are some who feel that the event has lost much of its original significance because most of the stations are not truly portable. In answer to this criticism we can only reiterate that so long as the event enables Society members to co-operate in a useful way it does not very much matter what type of gear is used. We appreciate that a really portable event may appeal to some, but it is doubtful whether a *National* field day would be so well supported if the equipments were reduced to such an extent as to rule out the possibility of occasional DX contacts.

The 25 watt input limit for B stations necessitates the use of heavy duty accumulators and motor generators, but we are of the opinion that if an emergency arose most amateurs would endeavour to obtain the most powerful source of supply possible. Reducing the power to 10 watts would of course still permit stations to make local and European contacts, but even so it is doubtful whether many Districts would wish to be dependent upon a bank of dry batteries—the only source of supply for really portable work.

Perhaps the introduction of a scoring system may be against the best interests of this event, but we consider it would lose much of its appeal if scoring were not permitted. One or two members have criticised the method employed in so far as it affects DX working, but we should like to explain that N.F.D. is *not* a DX contest. To encourage work with B.E.R.U. fixed and portable stations a very liberal scoring allowance is made, therefore we see no real reason why the system which has been in vogue for two years should be changed.

Incidentally, the winning District, No. 8, went all out for a large number of small scoring, local contacts, a method which seems to have been adopted by several other Districts.

### *DX Working*

DX there was in plenty, although by the irony of fate very few B.E.R.U. or Empire stations were contacted. Possibly G2HXP had the best record of long distance working, their log showing contacts with VS6, VK2, VE2, ZB, SU, FM, VS1, ZS, ZT and W7. G5BDP had a remarkable run on 14 mc., working 25 U.S.A., and two Canadian stations between 19.00 G.M.T. June 1, and 03.25 G.M.T. June 2. Their best contact was with VS1AJ.

The Northern Ireland B station also had a similar burst of DX, when they worked 25 North Americans between 22.40 G.M.T. and 05.40 G.M.T. From 04.00 G.M.T. the 7 mc. band was used.

G5VMP had contacts with VS1, VU2, W6 and East Coast Americans.

The runners-up, District 7, from their B station, G5LAP, had the only contact of the week-end with CM, this on 7 mc. District 8 worked W1MX from their winning A station G6BSP, on 3.5 mc., an R3 QSA4 report being received. The only DX contacts from G5FBP, the B station, were with SU1C and ZB1C, their high combined total was thus obtained from a very large number of local QSO's. The actual totals were 86 at " A " and 78 at " B."

G6YKP and 2MIP both worked numerous N. Americans during the early morning of June 2, in some cases R7 reports being received. G5ZXP (Scottish District A) had the solo QSO with Peru (OA4M) besides contacting numerous East Coast Americans, including K4RJ. VE3KF was responsible for giving 8 points to many of our stations.

### *Local Contacts*

A glance at the table of positions will show that the 1.7 mc. band was scarcely used, only 300 points out of a total of 3,180 being scored for contacts on that band. It is difficult to give a reason for the neglect of this band unless it is due to the impression that contacts are more readily obtained on 3.5 mc.

A very large number of European contacts were made on 3.5 and 7 mc., the latter band being used exclusively at no less than six B stations. Out of 3,584 points scored at these stations 2,675 were obtained from 7 mc. contacts.

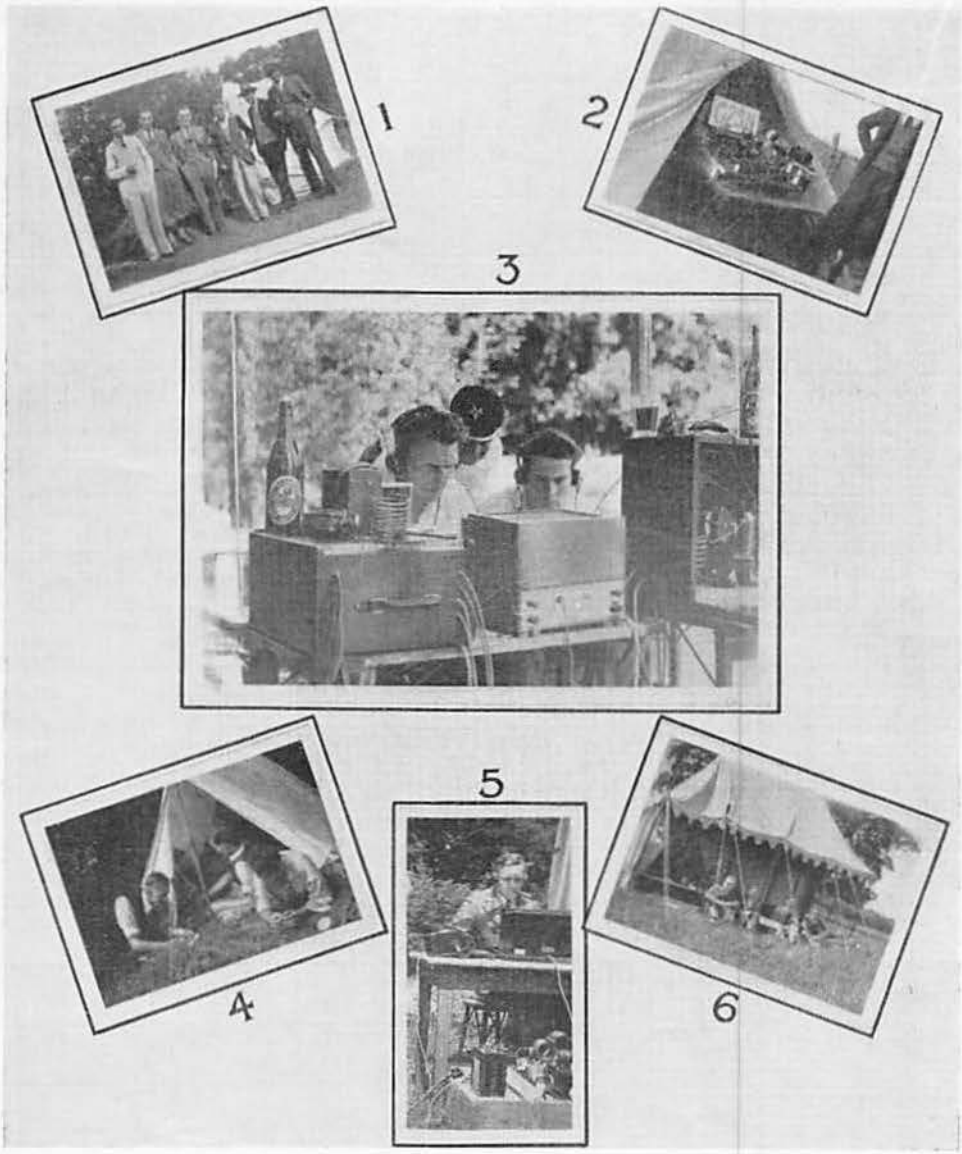
A total of 6,764 points for the week-end indicates efficiency and enthusaism.

We should like to publish a detailed description of the gear used at each station, but space limitations make this impossible. Details, however, follow of the apparatus used at the three leading pairs of stations.

***The Irish Free State Station, EI6F, at Elmpark, Co. Dublin, EI9D and EI6F operating.***

# NATIONAL FIELD DAY SCORES.

| Position | Station Calls | | Station Totals | Points scored per band | | | | District total | District |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | | 1.7 Mcs. | 3.5 Mcs. | 7 Mcs. | 14 Mcs. | | |
| 1 | G6BS | G5FB | 218<br>209 | 29 | 189 | 167 | 42 | 427 | 8 |
| 2 | G6GZ | G5LA | 203<br>206 | 45 | 158 | 196 | 10 | 409 | 7 |
| 3 | G2LR | G5BD | 175<br>217 | 14 | 161 | 65 | 152 | 392 | 17 |
| 4 | GI5GV | GI2CN | 126<br>224 | 13 | 113 | 104 | 120 | 350 | N. Ireland |
| 5 | G6RB | G2HX | 159<br>188 | 11 | 148 | 72 | 116 | 347 | 5 |
| 6 | G6WN | G6YK | 149<br>197 | 12 | 137 | 133 | 64 | 346 | 15 |
| 7 | G6OO | G5FV | 142<br>177 | 0 | 142 | 177 | 0 | 319 | 18 |
| 8 | G6SY | G2MI | 142<br>176 | 0 | 142 | 112 | 64 | 318 | 16 |
| 9 | G2AK | G5VM | 124<br>192 | 1 | 123 | 138 | 54 | 316 | 3 |
| 10 | G2OA | G2OI | 179<br>126 | 17 | 162 | 94 | 32 | 305 | 1 |
| 11 | G5CD | G5BO | 144<br>159 | 22 | 122 | 159 | 0 | 303 | 12 |
| 12 | G6QB | G6CB | 156<br>135 | 37 | 119 | 135 | 0 | 291 | 13 |
| 13 | G6UT | G6CT | 125<br>161 | 10 | 115 | 161 | 0 | 286 | 14 |
| 14 | G6IN | G5IG | 132<br>142 | 0 | 132 | 64 | 78 | 274 | Scottish "D" |
| 15 | G5QY | G6KU | 142<br>122 | 6 | 136 | 122 | 0 | 264 | 2 |
| 16 | G2DI | G5ZX | 144<br>116 | 0 | 144 | 100 | 16 | 260 | Scottish "A" |
| 17 | EI6F | EI2G | 125<br>124 | 26 | 99 | 110 | 14 | 249 | I.F.S. |
| 18 | G2SN | G5WU | 107<br>136 | 12 | 95 | 128 | 8 | 243 | 10 |
| 19 | G5AP | G6KO | 78<br>143 | 3 | 75 | 91 | 52 | 221 | Scottish "C" |
| 20 | G5WY | G5SY | 81<br>139 | 0 | 81 | 90 | 49 | 220 | 6 |
| 21 | G2XS | G2MN | 111<br>108 | 0 | 111 | 108 | 0 | 219 | 9 |
| 22 | G2II | G2II | 112<br>101 | 43 | 69 | 87 | 14 | 213 | 11 |
| 23 | G6LG | G6IZ | 106<br>86 | 2 | 104 | 62 | 24 | 192 | Scottish "B" |




## NATIONAL FIELD

*1. G2HXP, Painswick Beacon, Gloucester.*

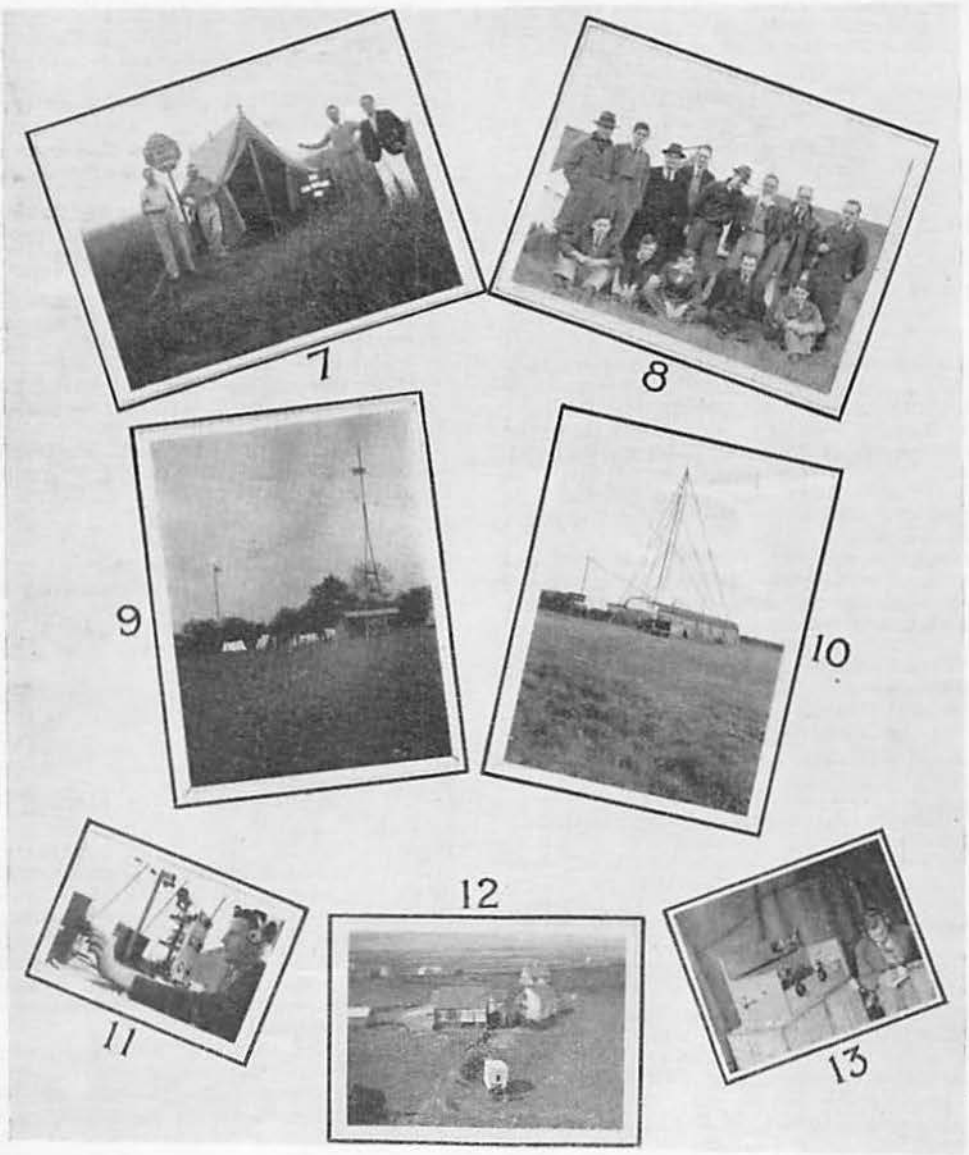
*2. G2SNP, Three Crosses, near Swansea.*

*3. SU1A, Alexandria, SU1KG on left.*

*4. XHB9K, Vevey, Switzerland, HB9K and 9AQ.*

*5. XHB9B, Basle, HB9AC operating.*

*6. EI6F, Irish Free State; EI3G, 4D, 9D, 5F.*




—— DAY, 1935.

*7. VQ4CRH, Nairobi VQ4CRH, 4CRO, BERS191 VQ4CRP.*

*8. G5FVP, Keyingham, near Hull.*

*9. G6YKP, High Wycombe, Bucks.*

*10. G5BDP, Stenigot, Lincs., vertical aerial.*

*11. G2LRP, Cranwell, Lincs., G2LR on duty.*

*12. EI2G, Irish Free State; EI9F, 2G, 8D.*

*13. G6SYP, Ashford, Kent, G2KG operating.*

DISTRICT 8.

G6BS.—Trans. CO-PA 25 watts on 3.5 and 10 watts on 1.7 mc. aerial 100 ft. end on. Rec'r 0-v-1 and 1-v-0.

G5FB.—Trans. T.P.T.G. using LS5, 500 volts from generator. Aerial 66 ft. 6 in. end-on and 33 ft. 3 in. top, Windom. Rec'r SG-v-1.

DISTRICT 7.

G6GZ.—Trans. 1.7 mc. Parallel-fed Hartley, 3.5 mc., T.P.T.G. both self-excited. Aerial 66 ft. V.F. Hertz for 3.5 added C/P for 1.7 mc. Rec'r SG-V-P.

G5LA.—No details given.

DISTRICT 17.

G2LR.—Trans. CO, BA, PA. Dry Batteries and ML generator. Aerials Zepp and Marconi. Rec'r SG-V-P and 0-V-2.

G6LI.—Trans. CO, BA, PA 12/400 volt converter. Aerial Vertical 39 ft high. Rec'r SG-V-P.

*Co-operation from Overseas.*

The Swiss amateurs again entered into the spirit of N.F.D. and are most cordially thanked for their support. In a letter, Mr. Stuber, the U.S.K.A. Traffic Manager, informs us that XHB9J obtained 78 contacts, whilst XHB9AK worked 19 British Districts.

G5LAP and G6CTP worked 10 different HB portables and they will receive a special diploma from U.S.K.A.

The R.S.G.B. will award a certificate to the operator in charge of XHB9J, which station is assumed from Mr. Stuber's report to have given the most points to British N.F.D. stations.

The report from Mr. Lane, VQ4CRH, dealing with the activities of the Kenya B.E.R.U. Group, appears elsewhere in this issue.

From Mr. Pettitt, SU1SG, we learn that six contacts were made from SU1C with British portables, G2HXP alone being worked on both bands. G5QYP was heard by them at R8 QSA5 on 3.5 mc. Contacts were also made with five non-portable G's and with VQ4, VU2 and ZB1.

The Alexandria station SU1A worked 5 G portables, also W1, SU1C, VQ4CRH and ZB1C. G2HXP was the most consistent G heard at SU1A, but in spite of numerous calls no contact was established. G5LAP, 2SDP and 6CBP were also called but not worked.

Mr. Nicholson, VU2JP, was unable to raise G from his portable station, but he contacted FB8C, VU2LS and SU1C.

In an E.L.S. message sent via ZB1E, Mr. Grech, ZB1C, informed us that 11 G portables were worked from ZB1C, the Malta N.F.D. station. The apparatus was especially constructed for the event.

Mr. Linse, PAOUB, had 16 contacts with our A stations working on 3.5 mc. His input was 1.5 watts.

*Check Logs.*

These were received from Mr. Seal, G2OC (who operated as a portable near Barton, Notts); Mr. Swinnerton, G2YS; Mr. Auchterlonie, G6OM; Mr. Powditch, G5VL; Capt. A. M. Houston Fergus, G2ZC; Mr. Williams, G2XC; Mr. Payne, G2XP; Mr. Holmes, G2VO, and Mr. Clark, BRS565.

*Conclusions.*

The Awards Committee were very gratified with the support given to this event which was conducted and carried out with great efficiency by all concerned.

The Committee were especially pleased to receive whole-hearted co-operation from the I.R.T.S., the Irish Free State amateur organisation.

They regret that no entry was received from District 4, the only British District to fail us on this occasion.

## The 28 mc. Band

The following is a summary of the more interesting items reported during the past month.

In addition to the days mentioned in the July report, G2YL heard LU1EP on June 15 and 23.

D4KPJ worked W1AVV at 15.50 B.S.T., July 9, the American's signals being R5 on 28,100 kc. G6YL heard W1AVV, LU1EP and a W3 on the same day. G2HG heard a weak LU, probably LU8BAJ, at 21.25 B.S.T., July 1.

G2MV is believed to be the first British amateur to receive a Jap on this band, J2HG being heard and called at 21.30 G.M.T., July 3.

From India, we learn that VU2BL has been heard by DE1966F (Berlin).

G6LK heard a K6 at 16.00 B.S.T., June 28, not in the morning, as reported last month.

On June 22, at 15.35 G.M.T. VK3EG heard ON4AU QSA5 R5/6 T9 on approximately 28,600kc. calling CQDX. Signals were heard during the duration of the call and lasted until 15.41 G.M.T. They were steady throughout and no noticeable fading.

Conditions for work between Malta and local European stations were excellent up to July 11, when a falling off was noticed. Skip has been short enough recently to work Scotland, Ireland and Holland from London.

G2HG.

## Radio and Motor Racing

Irish Free State amateurs had an interesting time on Saturday, July 20, when they, under the auspices of the Irish Radio Transmitters Society, kept the course of the Leinster Motor Races, held in County Dublin in Radio communication.

There were erected 4 stations on the 3.5 mc/s Band which used C.W. and 2 on the 56 mc/s band using duplex telephony. The control station was at the Grand Stand and contact was maintained at the various parts of the course.

The primary object of the Radio installation was that in case there was a serious crash at any part of the course where there was no ambulance the nearest one could be summoned by Radio; happily, however, there were no serious crashes and the chief traffic that was handled concerned cars retiring from the race and the lap speeds, also the numbers of the leading cars. It is thought that this is the first time that Amateur Radio has been used in connection with motor racing in Europe.

## A Correction.

Owing to a printer's error the date mentioned in the description of Mr. Maurice Child's station at West Norwood, published in our last issue, was given as 1920. This should have read 1912.

# RESEARCH AND EXPERIMENTAL SECTION

## MANAGER :

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

## ASSISTANT MANAGER :

Dr. G. F. Bloomfield (G5MG), c/o Mrs. Aldous, Alice Villas, Brantham Hill, near Manningtree, Essex.

## 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**
Messrs. J. N. Walker (G5JU), 4, Frenchy Road, Downend, Bristol, and A. J. Forsyth (G6FO).

**No. 3 : ARTIFICIAL AERIALS**
Mr. L. E. H. Scholefield (G5SO), 2, Balmoral Road, St. Annes-on-Sea, Lancs.

**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. Fereday (PAOFY), Abrikozenstraat, 87, The Hague, Holland.

**No. 7 : RECEIVER DESIGN**
E. N. Adcock (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.

THERE appears to be very little to comment upon at the moment. Possibly this is due to summer conditions. However, from reports received, some progress is being made, especially in the 56 mc. section, which is undergoing a complete re-organisation. In connection with this section I have been asked to put particular stress on the need for the frequent use of call signs when operating transmitters. Several times in the past one writer has heard signals, but while they were perfectly readable no identification was possible owing to the fact that the operator did not give his call sign. There are two good reasons why this is very poor practice. The first is that it is against the terms of your licence, and the second is that it is often a hindrance to other experimenters. While you may get into trouble for the first there is, unfortunately, no means of penalising you for the second.

Several contributions have been held over owing to lack of space in this issue.

G6PA.

## Best Aerial Coupling

When a low power transmitter is to be coupled to an aerial there is often great difficulty in knowing when the aerial is operating correctly, as owing to the low values of current in the circuits it is difficult to indicate them. Various methods have been employed, such as the placing of a lamp in the centre of a half wave of current in the top or pea-lamps in the feeders. These have the disadvantage that they absorb power and the adjustment is thus wrong if they are removed. Also the former is an undesirable advertisement for the station at night.

Two methods have recently been used by members of the group with success. and the second to be described is believed to be original, and is certainly very good.

For the first, a small receiver comprising a tuned circuit and a diode with a meter is placed somewhere in the garden, and is used as an indicator. The diode can be a battery triode with the grid and plate strapped, and a small aerial may be used i desired. If it is possible to bring the meter indoors on the end of a long length of flex then all the better, otherwise an assistant is required. However, in this latter case, the meter should not show a reading when the transmitter is in operation but without its aerial ; that is to say, the flex should not carry HF to the diode. A mica condenser connected across the far end might overcome trouble of this type. Aerial adjustments may be made, and also, when the aerial is tuned up, coupling adjustments may be found for a maximum reading on the meter. It may be necessary at some stage to reduce the pickup as the meter gets up to full scale. A suitable meter is one reading a few milliamps DC or less, or a sensitive galvanometer.

The second method to be described is an indoor method and uses the plate feed of the output stage as the only indicator. Consider, firstly, the case of an end-on direct-coupled aerial ; the aerial is connected to a low tap on the plate coil, and is adjusted so that attaching it only increases the feed but does not alter the tuning. That is to say, after attachment no reduction of feed can be obtained by retuning. This will put the aerial in resonance. The next step is to plot the feed against tapping points. It will be found that for the first few taps or half-turns the feed to the plate rises steadily, after which it rises more sharply, finally rising less sharply again with the highest taps. It has been found that the *correct tapping for maximum energy in the aerial is at the point where the change of feed per tap is greatest.* Below this point the aerial is under-coupled and does not load the transmitter fully. At the point of steepest rise in feed per tap optimum coupling occurs and the aerial receives most power. At higher taps than this it is over-coupled and is akin to a band pass circuit, and instead of receiving extra power it now receives reactance from the transmitter and is effectively thrown off tune. It is possible in some circumstances for it to get a little more power as the transmitter is taking more, but

the latter is past its maximum efficiency, and the aerial has lost its DX raising properties through being over-coupled and effectively off tune.

This is the case which has been tested experimentally. The simple theory, however, indicates that the method is general, and may be applied to direct tapped Windoms, or even feeders coupled to a separate tank circuit loosely coupled, and the method is so useful that it is worth further investigation on these lines. A claim has already been made that it works with a Zepp using the usual coupling circuit.

A further claim in the case of the end-fed aerial has been made, namely, that below the optimum point only Europeans could be worked, but that at the correct point DX was raised instead of Europeans. No simple explanation of this is known so far.

In the case where a separate coupling circuit is used, taps may be varied one or a half at a time, or the coupling may be increased in steps of, say $\frac{1}{4}$" at a time.

A question which arises is whether the method is applicable where the aerial is end-fed, but is not quite in tune; this is worth investigation.

The case which has been definitely established is very interesting and provides a very valuable tip for the QRP station.

The writer will be pleased to hear from anyone who has had experience of this subject, or who wishes to follow it up. He is indebted to those members of Group 9 who have made contributions to this, particularly G6PK and G2MI.

G6CJ.

## The Technique of Experimental Work.

Experimental work of any kind is conducted with the object of finding out new facts, propounding new theories and collecting data and evidence which may be of use and application in the future.

The General Post Office gives radiating permits to amateur transmitters on the understanding that they shall all carry out useful work of this type, and it is therefore the duty of every licence-holder to apply himself seriously to useful experimental research.

Unfortunately, some amateurs are too lethargic to fulfil their obligations in this respect, others fail to appreciate the terms of their licence and use it merely to amuse themselves and their friends, while a considerable proportion are anxious to do useful experimental work but do not know how to proceed. Some, alas, imagine that they are doing useful research, but if questioned as to results, have nothing of value to show.

These articles are written in an endeavour to assist those who are anxious to make the best use of their facilities but who are not sure of the best way to proceed.

*Discoveries*

Discoveries are, generally speaking, made in two ways—(*a*), by accident, and (*b*), by directed experiment. The classic discovery by Hertz of the passage of a spark across a gap in a loop of wire hanging near to an induction coil is an example of the former.

Discoveries of the latter kind may be made either by noting what occurs under a certain set of circumstances—for example, by arranging a transmitting aerial in a certain way and determining the resultant characteristics of radiation at a certain frequency; or by envisaging a certain result, propounding a theory and setting out to prove its veracity or otherwise. For example, we might be led by random observations to think that certain radiations on 5 metres travelled greater distances in darkness than in light. This becomes our theory, and we proceed to carry out a series of tests to see if the theory is correct and may be applied generally to all types of radiation at this frequency.

Unexpected results often lead to discoveries, negative results sometimes leading to something of great value. For this reason every failure of apparatus or of experiments to give the expected results should be subjected to the closest scrutiny.

*Making Plans*

Every enthusiastic amateur finds himself particularly drawn towards some branch of the vast subject of wireless transmission. Those who dabble at every phase of the subject and always follow the craze of the moment rarely make contributions of any value, and one admires the worker who limits himself strenuously to one part of the subject, one band of frequencies or one type of apparatus, determined to make some definite discovery in that direction. He usually succeeds. The resultant large accumulation of knowledge and experience which he obtains through so much detailed work prepares his mind for real discoveries.

The experimenter must then in the first place decide on that particular phase of work to which he will direct all his energies and then concentrate on that subject.

He must not be discouraged if at the start he fails to see that there is much to be done. Each experiment will suggest others and the scope of the work will undoubtedly widen out steadily as the experiments proceed. In this way all research must be carried out, the process resembling rather the tracing of a jungle path with twists and turns at every step—but with discoveries all the more frequent for this very reason and always the excitement of the unknown just ahead.

For those who are willing to accept advice in the choice of experimental work and who are prepared to pool their results, the Research and Experimental Section exists. No member of the R.S.G.B. need be short of ideas for experiments.

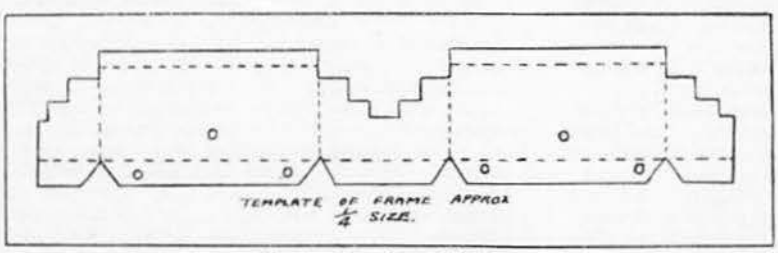



*Fig 1.—Template of Frame.*

*The Problem*

Having then made our choice, be it directional aerial arrays, stability on ultra-short waves, lunar effects, television reception, oscillator characteristics, transceiver design, to mention one or two of the hundreds of possible subjects, we must next consider what aspect of the particular problem shall first occupy our attention and must then devise suitable experiments with which to commence investigation.

At this juncture one vital step must be taken. We must make a full investigation of all previous work on our subject which has been conducted and recorded by other experimenters. We shall not necessarily accept all their results, but weigh the evidence which they have submitted and perhaps repeat some of their experiments. Facts which they appear to have established beyond dispute we can use as valuable data.

The leaders of experimental groups should consider it no less than their duty to read all available matter on the subject at which their group is working and then, having sifted this material, should indicate the exact lines on which each experimenter is to work. Unless this is done, group work is of no more value than individual work and the opportunity for collecting and correlating information on one topic is lost.

*The Value of Theory*

Unfortunately the records of other experimenters' work on a subject are not always easy to find. Standard works on wireless theory and radio communication are expensive though always worth the outlay in the long run.

The majority of amateur transmitters will do well to go back even beyond the realms of wireless and to refresh their minds on the fundamental principles of physics, particularly of electricity, magnetism, light and sound. Some may perhaps scoff at this idea, but let us consider one or two examples. Suppose an experimenter to be working on the problem of skip distance and the reflection of waves from ionised layers. What can be more valuable than a knowledge of the ways in which light waves are reflected and refracted? As the student of physics is well aware, fundamental laws of behaviour are often operative in more than one of the physical realms and even mathematical calculations often have a very general application.

Again, suppose an experimenter is studying the propagation and reception of harmonic disturbances. He will undoubtedly gain valuable assistance from studying the analagous behaviour of sound waves in the production of harmonics and overtones.

We should not hesitate then in getting down to fundamentals when seeking contributory data for the work in hand. It now remains for us to marshal the facts and decide what experiments are to be performed.

Like every other experimenter, the radio amateur must always have his note-book handy, and it is usually advisable to note the exact conditions under which any observation is made. Suppose, for example, transmissions are to be made to an observer some distance away and the only alterations to be made at the transmitting end are in the dimensions and positions of the aerial. Then obviously great care must be exercised in recording in detail the characteristics of each aerial system used. It is a mistake to trust one's memory in this type of work, and the notes themselves should be clearly and concisely set out.

This brings us to the commencement of the experiments, the procedure for which will be considered later.

G2WS.

## TRADE NOTICES.

*Lectrolinx* have recently produced a series of short wave base-board mounting valveholders, which are leg-supported.

The plate is made of the finest bakelite sheet and is intersected by four special patented air slots and is supported by a new fixing process, entirely eliminating metal.

The patent resilient sockets being slotted, break up capacity mass. The sockets and tags are integral, thus eliminating dry point contact. The supporting legs are made of ebonite with high insulating qualities.

The sockets are available with or without terminals, and are in four types, 4, 5, 7 and 9 pins. The retail prices vary from 1s. 6d. each to 2s. 6d. each.

This form of socket is particularly suited to ultra short-wave work and can be recommended to give every satisfaction.

* * * *

*Reliance Manufacturing Co. (Southwark), Ltd.*, have submitted for examination and test a sample power potentiometer. This is of the wire-wound linear type, the winding being carried on a Paxolin strip held firmly in position by means of an outer ebonite moulding. A phosphor-bronze contact assembly is employed, the contact end of the wiper being rounded, thus preventing friction and avoiding noise in operation. The bottom of the wiper is of the commutator brush type, being split in three sections to improve its point of contact with the phosphor bronze disc which carries a connection to the centre point terminal.

The ends of the wiring are terminated on to solid terminals fitted with nuts and soldering tags. An aluminium cap is supplied as a protection, and the resistance value of the winding is stamped on the face of the cap.

The windings are permanently fixed into position by elastic compound, with the result that absolute rigidity is obtained. The moving contact arm does not at any time in its travel leave the resistance, the danger of an open circuit common to many old type potentiometers being thus removed.

The sample tested was of the ½ megohm type, a value found to be correct to within the 5 per cent. limits specified.

The resistance range manufactured covers all values from 5 to 500,000 ohms, and these can be supplied graded or tapped if required. The normal power rating is 15-20 watts max., and the price varies from 9s. to 15s.

This range of potentiometer can be very strongly recommended for use in heavy duty circuits, such as large power amplifiers, high power c.w. or phone transmitters, and television transmitters.

Without question it is one of the best on the market, being scientifically designed, well made, and robust in construction.

# NEWS AND VIEWS FROM 53.

## Stand 202—Olympia

The Society have been fortunate in securing the same stand at Olympia as that allocated last year.

Members who are willing to offer their services for stand duty at any time during the Exhibition period are requested to notify the Secretary as early as possible. The duty periods will be from 10.45 a.m. to 2 p.m., 2 p.m. to 6 p.m., 6 p.m. to 10 p.m.

Provincial members who wish to pay subscriptions or order Society publications, etc., are requested to do so at Olympia or at Headquarters and not during Convention.

The Secretary will be in attendance at the stand most evenings and at certain hours each day, except August 23 and 24.

Overseas members who intend to visit Olympia on one or more occasions are invited to advise Headquarters of the day and time they will be present, in order that a list may be prepared in advance. This will enable other members to arrange meetings if desired.

Members visiting the Exhibition are warned that the Society cannot accept responsibility for goods or wearing apparel left on our stand.

The visitors' book should be signed by all attending. One corner of the stand will be devoted to a display of members' QSL cards. On arrival please hand your card in and ask for it to be pinned up to show you have been a visitor.

## Convention Dinner

Members only are permitted to attend this function, except in special cases, when the name of the intending visitor must be communicated to the Secretary not later than August 21.

## R.M.A. Exhibition.

Council regret that they are unable to supply complimentary tickets for this year's London exhibition.

We have been advised by the R.M.A. that the price for such tickets has been increased to 15s. per 20. At this price we do not feel justified in making a free distribution as has been the case in recent years.

## Secretary's Vacation

Our Secretary expects to be on vacation from August 26 to September 16. Members are asked to keep correspondence down to a minimum during that period. Normal routine matters will, of course, be handled as usual.

## Convention.

Council have decided not to publish a fixed agenda for the Business Meeting. Instead, it is intended to give a resumé of the points discussed at the Delegates' Meeting, and to deal with such matters of interest as may arise therefrom.

Members are reminded that recommendations made at this meeting cannot become operative until approved by Council. All such recommendations will be dealt with at the September meeting of that body which is due to take place on September 25.

## Publicity Posters.

The suggestion has again been made that the Society should consider issuing an attractive publicity poster for display in radio shops.

On the last occasion when this was suggested only a small number of members who are dealers expressed interest. Before placing an order, we wish to ascertain the likely demand, therefore all who are in a position to display posters are requested to communicate with headquarters.

## B.E.R.U. Representatives.

Owing to pressure of business Mr. J. W. Mavis, ZE1JE, has been compelled to relinquish his position as B.E.R.U. representative for N. & S. Rhodesia. We are pleased to anounce that Mr. R. A. Hill, ZE1JB, has offered to undertake the work in his stead.

A change in representation has also taken place in Australia, where Mr. I. V. Miller, VK3EG, has replaced Mr. Ray Carter, VK2HC. Mr. Carter has represented us for the past five years, and it was with regret we learnt, that due to increasing personal business, it had become impossible for him to continue his work.

To both Mr. Mavis and Mr. Carter we record our thanks for past services.

## Components for Radio Interference Suppression Devices.

British Standards Institution have produced a Standard Specification (No. 613—1935) dealing fully with the above subject, with the exception of devices for traction equipment.

The specification, after outlining the scope covered, gives standard ratings and certain safety requirements for general components, including condensers, resistors, R.F. inductors, L.F. high voltage inductors, L.F. low voltage inductors and fuses. An appendix deals with the principles underlying the suppression of radio interference, and suggests values of components for radio suppression devices.

The specification can be obtained from the *British Standards Institution*, 28, Victoria Street, London, S.W.1, price 2s. 2d. post free.

## Visitors to Headquarters.

Owing to increasing office work at Headquarters our Secretary will in future only be able to meet visitors by appointment or after 4 p.m. on week-days.

*Provincial and Overseas Members please note.*

## W.B.E. Certificates

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

| Name. | Call Sign. | Date. 1935. |
|---|---|---|
| W. P. Dyke ... | W7BPJ ... | May 30 |
| R. Ohrbom ... | VK3OC ... | June 4 |
| R. A. Jubb ... | ZE1JN ... | ,, 6 |
| B. Laing ... | VP5AB ... | ,, 12 |
| W. E. P. Andrew | VE3WA ... | ,, 13 |
| O. Egenes ... | ZT5R ... | ,, 13 |
| R. J. Beatson ... | VK4BB ... | ,, 19 |
| S. W. P. Henton | G5VU ... | ,, 24 |
| H. McTrusty ... | VU2BN ... | ,, 26 |
| K. S. Groot ... | OZ7KG * ... | July 17 |
| W. E. Hagarty ... | VK4WH ... | ,, 25 |
| A. T. Martin ... | G2LB ... | ,, 31 |

*First OZ award.

## Lightning Calculator.

In response to numerous requests from members and scientific organisations, we have decided to stock the Lightning Calculator which has recently been published by the American Radio Relay League at one dollar.

The Calculator is a device for rapid, accurate and simple solution of problems involving frequency inductance and capacity.

Calculators are available from Headquarters, price 4s. 6d. each, post free.

## QSL Section.

Manager: J. D. Chisholm (G2CX).

As a result of our notes last month, when we asked listening members to exercise more discretion in sending out reports, we have received only one comment from a BRS station. This was from a member who claimed that the reverse side of the picture painted last month is no better.

He has been making tape recording of various stations, and although 40 reports have been sent out with International Reply Coupons attached, only four of these were acknowledged. In such a case it certainly seems that the recipients were lacking in courtesy, when the reports are obviously of interest to every transmitter.

In actual practice I do not believe that there is another Receiving Station in the British Isles sending out such reports, so that the case quoted above does not affect the question of the usefulness or otherwise of Listeners' Reports. It boils down to the fact that the value of report cards has been so debased by indiscriminate Qsl'ling that our friend with the Tape Machine has to suffer for the misdeeds of the Wallpaper Fiend.

## R.S.G.B. Slow Morse Practices

A schedule of dates, times and frequencies of the stations sending slow Morse for the benefit of those members wishing to learn the code is 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—particularly from 7 mc., as this band may not be utilised in future unless reports confirm its utility. Stations willing to assist—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. It will be noticed in the schedule below that G5OD, of Colwyn, is now taking part in this service, and advises that if at any time his scheduled frequency is QRM, he may use a frequency of 1,800 kc. It will be noticed that no tests have been scheduled on August 25—Convention Sunday.

Schedule of Slow Morse Transmissions.

| Date, 1935 | | B.S.T. | Kcs. | Station. |
|---|---|---|---|---|
| Aug. 18 | Sunday | 00.00 | 1761.5 ... | G2WO |
| ,, 18 | ,, | 09.30 | 1785 ... | G5BK |
| ,, 18 | ,, | 10.00 | 1850 ... | G6VD |
| ,, 18 | ,, | 10.15 | 173λ ... | G5JU |
| ,, 18 | ,, | 10.30 | 1911 ... | G2JL |
| ,, 18 | ,, | 10.30 | 1927.5 ... | G5OD |
| ,, 18 | ,, | 11.00 | 7104 ... | G6PI |
| ,, 18 | ,, | 11.30 | 1761.5 ... | G2WO |
| ,, 18 | ,, | 12.00 | 7102 ... | G5GC |
| Sept. 1 | ,, | 09.30 | 1785 ... | G5BK |
| ,, 1 | ,, | 10.00 | 1850 ... | G6VD |
| ,, 1 | ,, | 10.15 | 173λ ... | G5UH |
| ,, 1 | ,, | 10.30 | 1911 ... | G2JL |
| ,, 1 | ,, | 10.30 | 1927.5 ... | G5OD |
| ,, 1 | ,, | 11.00 | 7104 ... | G6PI |
| ,, 1 | ,, | 12.00 | 7102 ... | G5GC |
| ,, 8 | ,, | 09.30 | 1785 ... | G5BK |
| ,, 8 | ,, | 10.00 | 1850 ... | G6VD |
| ,, 8 | ,, | 10.15 | 173λ ... | G5JU |
| ,, 8 | ,, | 10.30 | 1911 ... | G2JL |
| ,, 8 | ,, | 10.30 | 1927.5 ... | G5OD |
| ,, 8 | ,, | 11.00 | 7104 ... | G6PI |
| ,, 8 | ,, | 12.00 | 7102 ... | G5GC |
| ,, 15 | ,, | 09.30 | 1785 ... | G5BK |
| ,, 15 | ,, | 10.00 | 1850 ... | G6VD |
| ,, 15 | ,, | 10.15 | 173λ ... | G5UH |
| ,, 15 | ,, | 10.30 | 1911 ... | G2JL |
| ,, 15 | ,, | 10.30 | 1927.5 ... | G5OD |
| ,, 15 | ,, | 11.00 | 7104 ... | G6PI |
| ,, 15 | ,, | 12.00 | 7102 ... | G5GC |

## QRA Section.

Manager: M. Williams (G6PP).

### NEW QRA's.

G2XQ.—F. Marshall, 52, Easton Street, Easton, Portland, Dorset.
G5KL.—O. B. Kellett, "Elstree," Moor Lane, Thornton, Liverpool.
G5KV.—A. W. Leonard, 7, Wood Street, Tunbridge Wells, Kent.
G5LG.—A. W. Lister, The Church House, Bibury, Cirencester, Glos.
G5LL.—A. H. Lunn, Station House, Sutton-on-Sea, near Alford, Lincs.
G5LP.—L. F. Parker, 16, High Street, Wellingborough, Northants.
G5OD.—A. Ogden, "Rocklyn," Peulwys Road, Old Colwyn, Denbighshire.
G5ON-G5OO.—F. Bennett, 13, Commercial Arcade, Guernsey, Channel Isles.
G5TO.—J. Thorpe, 2, Norton Lees Crescent, Sheffield, 8, Yorks.

G5VC.—H. Langstaff, "Littlebourn," Glen Road, Eldwick, Bingley, Yorks.
G5WK.—F. D. Woodcock, 24, Wrose Road, Wrose Hill, Shipley, Yorks.
G5XR.—H. G. Marshall, "Penywern," Mead Road, South Hill Estate, Radipole, Weymouth, Dorset.
G6AC.—A. N. Le Cheminant, Signal Flight, E. & W. School, R.A.F., Cranwell.
G6AO.—A. Oates, 74, Warren Street, Savile Town, Dewsbury, Yorks.
G6CB.—R. L. Castle, 141, Knollys Road, Tulse Hill, London, S.W.16.
G6DT.—R. T. Dealey, 34, East Sheen Avenue, East Sheen, London, S.W.14.
G6FJ.—W. Griffin, 31, Mount Avenue, Chingford, London, E.4.
G6FO.—A. J. E. Forsyth, Westview, Appledore, Devon.
G6FQ.—W. O. Wright, 53, Wellington Lane, Hull, Yorks.
G6HN.—J. A. B. Horner, 22, Raymend Road, Bedminster, Bristol.
G6KL.—S. G. Button, 166, South Road, Erdington, Birmingham.
G6KN.—A. W. Atkinson, 40, Riversdale Road, Beverley High Road, Hull, Yorks.
G6QF.—A. M. Robertson, 61, Douglas Park Crescent, Bearsden, Glasgow.
G6UA.—G. Bloomfield, 147, Cowgate, Norwich, Norfolk.
G6WR.—W. H. Robertson, 1, Prospect Hill, Whitehaven, Cumberland.
2ADP.—S. D. Perry, 19-21, Artillery Street, Colchester, Essex.
2AGX.—W. G. Taylor, 50, Davies Lane, Leytonstone, London, E.11.
2AJG.—G. H. Johns, 11, Radway Road, Southampton, Hants.
2ALA.—A. G. Laws, Dean Road, Plymstock, near Plymouth, Devon.
2AQC.—W. A. Chittleburgh, 222, Fitzstephen Road, Dagenham, Essex.
2ARS.—J. M. R. Sutton, 15, Caradoc Street, Cwmcarn, Mon.
2ASF.—C. Holley, "Deganwy," Bridgwater Road, Dundry, near Bristol.
2AYH.—E. W. Hunt, Keyhaven House, near Lymington, Hants.
2AYS.—G. T. Stuttard, 18, Mayfair Avenue, Great Crosby, Liverpool 23.
2AZS.—A. Smith, 5, Church Street, Keighley, Yorks.
2BCY.—J. R. Dennis, 12, Romsey Gardens, Becontree, Essex.
2BDX.—R. E. Durrant, 58, Christchurch Road, Norwich, Norfolk.
2BFC.—F. Capes, 26a, Cleethorpe Road, Grimsby, Lincs.
2BGL.—J. M. Railton, 35, Priory Road, Loughton, Essex.
2BIK.—R. S. Meakin, "Dunromin," Weybridge Park, Weybridge, Surrey.
2BJS.—J. H. Shankland, "Coila," Thorn Drive, Bearsden, Glasgow.
2BLG.—I. D. Bruce, 9, Milbank Crescent, Darlington, Co. Durham.
2BNI.—J. Langrish, 23, Sedlescombe Road North, Silverhill, St. Leonards-on-Sea, Sussex.
2BPJ.—P. Johnson, 16, Poppythorn Lane, Prestwich, Manchester.
2BTI.—R. T. Beattie, 79, Wilman Road, Tunbridge Wells, Kent.
2BVN.—K. B. Roulston, c/o A. P. Lewis & Sons, Ltd., Duke Street, Burton Latimer, near Kettering Northants.

The following are cancelled: 2ARR, 2ARZ, 2AUS, 2AXQ, 2BBD, 2BGM, 2BVI, 2BXT.

## NEW MEMBERS.

HOME CORPORATES.

W. J. Munt (G6MU), 11, Bailey Road, Colliers Wood, S.W.19.
E. Shackleton (G6SN), 7, Borth Avenue, Mile End, Stockport, Ches.
I. H. Aulton (2AGV), Jesmond-Dene, Shawhurst Lane, Hollywood, nr. Birmingham.
P. H. Hardie (2ANP), Cross Ford, Linlithgow, Scotland.
H. Claughton (2ATK), Triangle, Bradford Road, Otley, Yorks.
R. H. M. Beattie (2BTI), 79, Wilman Road, Tunbridge Wells, Kent.
E. W. Thompson (2BZZ), 70, Sandgate Road, Folkestone, Kent.
A. S. Watts (BRS1889), 196, Pitshanger Lane, Ealing, W.5.
S. J. Geary (BRS1890), 3, Earlom House, Margaret Street, W.C.1.
C. F. Turner (BRS1891), 4, Hammonds Lane, Warley, Essex.
G. R. Slaughter (BRS1892), 69, Bridge Street, Gainsborough, Lincs.
J. G. Halley (BRS1893), 180, Lochee Road, Dundee, Angus, Scotland.
H. J. Self (BRS1894), 14, Fredericks Road, Beccles, Suffolk.
J. W. Clennett (BRS1895), 20, Trafalgar Terrace, Darlington, Co. Durham.
S. N. F. Parrott (BRS1896), 66, Stanhope Street, Hereford.
A. I. Matthews (BRS1897), 63, Bedford Road, Aberdeen, Scotland.
H. V. Fletcher (BRS1898), 68, Willow Road, Darlington, Durham.
P. B. Marshall (BRS1899), 524, East Prescot Road, Knottyash, Liverpool, 14.
L. Pye (BRS1900), 6, Palace Road, Aintree, Liverpool, 9.
G. T. Cummins (BRS1901), 19, Palace Road, Aintree, Liverpool, 9.
K. M. Spiller (BRS1902), Triscombe, Richmond Road, Sherborne, Dorset.
J. G. Kerr (BRS1903), 20, Glenturret Street, Glasgow, E.2.
R. G. Shears (BRS1904), 52, Lytton Road, New Barnet, Herts.
G. C. W. Addison (BRS1905), 35, Hillside Avenue, Douglas, I.O.M.
B. W. Beswick (BRS1906), Girdlestoneites, Charterhouse, Godalming, Surrey.
C. R. Shearston (BRS1907), 26, Kimberley Road, Southsea, Hants.
J. M. Cunliffe (BRS1908), Fairways, North Road, Hale, Cheshire.
D. L. Flower (BRS1909), Ilmington Manor, Shipston-on-Stour, Warwickshire.
A. J. Walker (BRS1910), "Briarfield," Perrylands, Horley, Surrey.
G. Osbourne (BRS1911), 122, Clifton Road, Darlington.
C. W. Ashton (BRS1912), 10, West Powlett Street, Darlington.
G. Wallace (BRS1913), 285, Union Grove, Aberdeen, Scotland.
G. A. Hook (BRS1914), 195, Crawley Road, Horsham, Sussex.
K. G. N. Jackson (BRS1915), Glen Elder, Stansted Road, Bishop's Stortford.
F. J. Reilly (BRS1916), 287, South Lane, New Malden, Surrey.
J. A. Drinkall (BRS1917), Cuerdale Hall, Samlesbury, Preston, Lancs.
J. Repik (BRS1918), "Cheriton," Rawlyn Road, Chelston, Torquay.
R. C. Bishop (BRS1919), 32, Craig Street, Rosyth, Scotland.
R. W. Wrangham (BRS1920), 8, Cobden Street, Eastbourne, Darlington, Co. Durham.
J. Kippax (BRS1921), 81, George Street, Blackpool, Lancs.
G. Pickering (BRS1922), 10, Chestnut Street, Darlington.
C. H. Williams (BRS1923), 66, Hampstead Road, Wallasey, Cheshire.
P. F. Peters (BRS1924), 36, Berry Road, Paignton, Devon.
Rev. S. Newby (BRS1925), 19, Clarence Road, Moseley, Birmingham.
A. J. Blezard (BRS1926), 37, Shenstone Gardens, Newbury Park, Ilford, Essex.
J. C. Cowan (BRS1927), 17, Claremont Crescent, Edinburgh, 7.
W. D. Johnson (BRS1928), "Bradmer House," Waterworks, Forest Road, nr. Mansfield, Notts.
G. F. Sutcliffe (BRS1929), Wesley Street, Southport.
F. O. Kitching (BRS1930), 305, Handsworth Road, Sheffield.
A. H. G. Slator (BRS1931), 34, Clarendon Square, Leamington Spa, Warwickshire.
J. Dermot Taheny (BRS1932), "Suncrest," Albert Road, Sligo, Irish Free State.
J. L. Whittaker (BRS1933), 20, Holly Street, Nelson, Lancs.
W. R. Worden (BRS1934), 32, Halifax Road, Nelson, Lancs.
S. P. Emmott (BRS1935), 4, Redburn Avenue, Shipley, Yorks.
A. G. Dunn (BRS1936), 10, Clifton Gardens, St. George's Road, Hull.
T. M. Lott (BRS1937), 14, Sandon Street, Falkner Square, Liverpool, 8.
R. C. Warne (BRS1938), 16, Western Place, Penryn, Cornwall.
R. A. Elt (BRS1939), 101, Bransford Road, Worcester.
H. M. Blaber (BRS1940), 9, Stainton Road, West Wimbledon, S.W.20.
G. W. Ottaway (BRS1941), H.M.S. "Scarborough," c/o G.P.O., London.
C. J. Penberthy (BRS1942), White Cross, Lidgvan, Long Rock, Cornwall.
J. M. George (BRS1943), "Rheola," Broad Walk, Caerleon, Mon.
J. T. Fletcher (BRS1944), 21, Stafford Road, Sheffield, 2.
H. Leigh (BRS1945), 20, King Street, Southsea, Hants.
G. E. Chisholm (BRS1946), 46, Woodfield Road, Leigh-on-Sea, Essex.
L. F. Coursey (BRS1947), 30, Saunders Street, Southport, Lancs.
J. A. Hay (BRS1948), 1, Stafford Street, Hull, Yorks.
H. H. Phillips (BRS1949), 132, Clare Road, Grangetown, Cardiff.
R. C. Boxall (BRS1950), "Lau Sanne," 3, St. Philips Avenue, Eastbourne, Sussex.

DOMINION AND FOREIGN.

Kunio Shiba (J2HJ), 12, Akebonoche Hongo, Tokyo, Japan.
K. S. Groot (OZ7KG), Mariendalsvej 35, Copenhagen, F, Denmark.
R. L. Cunningham (VE1AS), 19, Brenton Street, Halifax, Nova Scotia, Canada.
A. M. Crowell (VE1DQ), 60, Dublin Street, Halifax, Canada.
Miss Madeline MacKenzie (VK4YL), Fire Station, Wynnum, Queensland, Australia.
A. R. Gilding (VS1HJ), Transmitting Station, Headquarters, F.E. Command, R.A.F. Station, Singapore S.S.
Luk Yui Kwong (VS6AZ), 721, Nathan Road, Kowloon, Hong Kong, China (VS7RF).
R. A. F. Farquharson, Agra Estate, Lindula, Ceylon.
R. T. Inman (W9PTC), Riverside Drive, Beloit, Wisconsin, U.S.A.
R. S. Hope (VK7RS), c/o "The Lilacs," Friern Barnet Lane, Whetstone, N.20.
V. J. Somasundram (BERS295), Technical School, Kuala Lumpur, F.M.S.
J. E. R. Wood (BERS296), Geophysical Dept., Anglo-Persian Oil Co., Ltd., Masjid-i-Suleiman, Persian Gulf.
S. P. Ray (BERS297), H.Q. Flight, R.A.F., Hal Far, Malta.
T. Tabone (BERS298), Sda Reale 200, Hamrun, Malta.
P. Prior (BERS299), No. 11, Railway Cottages, Salisbury, Southern Rhodesia.

R. G. Street (BERS300), Station Headquarters, R.A.F., Hal Far, Malta.
F. C. Jones (BERS301), Uralikal Estate, Valparai P.O., Pollachi, S. India.
Photius Ch. Lessios (FRS34), Chalkes Street, 6, Salonika, Greece.

# CORRESPONDENCE.

## THE R.S.T. CODE.

*The Editor*, T. & R. Bulletin.

Sir,—Since the inception of the R.S.T. system it has come to my attention that there is considerable reluctance on the part of many amateurs to adopt this system. Apparently the objectionable feature to them is the signal strength scale. Why this should be so I do not know. The five-division scale is based on scientific considerations and should be adequate. However, many amateurs feel that a restriction is being imposed on them, and that they cannot give as accurate reports with a five-division scale as they can with one of nine divisions. A consideration of all factors involved, the limitations of the human ear, fading ratios, etc., shows that this is not so. The nine-point scale has been used so long that many evidently cannot get out of the habit of using it. The real reasons for the objections are psychological. An S5 report apparently does not sound as satisfying as an R9, although they, of course, mean the same.

Now if the majority of amateurs prefer a nine-division scale, then they surely should be allowed to have it. I do not believe they should feel that they are being forced into something against their will. I should like, therefore, to suggest that a change be made in the offending S-scale. This can easily be done without in any way impairing the effectiveness of the system.

Care must be exercised to prevent the signal strength scale from becoming confused with readability and audibility characteristics. These should not appear in this intensity code. The scale must be considered as purely relative, so that like reports may be obtained from observers using different kinds of receivers. The D.A.S.D., of Germany, recognising the importance of this, has for many years used such a relative scale. The R-scale is not used there in the way that we have come to know it.

The nine-point scale will of necessity embrace the same range of signal intensities as the present five-point one. It will be evident that the intensities indicated by the present 1, 2, 3, 4, 5 must correspond, respectively, to the new 1, 3, 5, 7, 9. A slight rewording of some of the definitions will be necessary, so that a smooth progression of strengths be obtained. Actually, of course, no words can exactly define the successive steps. They are given merely as aids in estimating the intensity. The scale follows :—

Signal Strength.

1. Faint—signals barely perceptible.
2. Very weak signals.
3. Weak signals.
4. Fair signals.
5. Fairly good signals.
6. Good signals.
7. Moderately strong signals.
8. Strong signals.
9. Extremely strong signals.

Those now using R.S.T. should have no trouble in adapting themselves to the change. For those favouring a five-point scale there are the key points 1, 3, 5, 7 and 9. The additional points, 2, 4, 6, and 8, will take care of those that prefer the nine steps. It is hoped that all will find this arrangement satisfactory, and that the systematic procedure and time-saving characteristics of R.S.T. will now appeal to everyone.

Very truly yours,
Arthur M. Braaten (W2BSR).

[Editorial Note.—Mr. Braaten's original article dealing with the R.S.T. Code appeared in the October, 1934, T. & R. Bulletin.]

# DX CHART No. 9

DX CONDITIONS : JUNE 15 TO JULY 15, 1935.

| G.M.T. | 14 m.c. | 7 mc. |
|---|---|---|
| 0300 | **K5** | W1 |
| 0400 | **W6** | W5 |
| 0500 | **W6** ; VP5 | |
| 0600 | **W6.7.5 ; K6 ; CM** | |
| 0700 | **W6 ; K6 ; VE4.5** | |
| 0800 | | |
| 0900 | **ZB2** | |
| — | | |
| 1500 | | |
| 1600 | **J** | |
| 1700 | **W6 ; VS1** | |
| 1800 | **W6 ; PK** ; VU | |
| 1900 | **VQ4.8** | |
| 2000 | **LU** ; VP5 | |
| 2100 | **LU ; PY ; CM ; CX** ; ZB | |
| 2200 | **LU ; PY ; VP2.6.9 ; ZB ; CM ; CX ; FT ; HI** | |
| 2300 | **LU ; PY ; VP6 ; VE3 ; K4 ; CM ; CE ; HI** | |
| 2400 | LU ; PY ; K5 | |

Peak signals from W1.2.3.4.8.9 between 2200 and 2330.

Bold type indicates strong signals.

# Empire Calls Heard.

*BERS265 (on passage Hong Kong to Portsmouth, June-July).*

*Hong Kong.*—7 mc.: vu2cq (3.5), zs6al (3.4), zt6n (4.6). 14 mc.: g6cj (3.5), 2nq (4.6), 6pk (4.6), 6qx (3.5), 6tt (3.5), 6ut (3.4), 6vp (4.5), vu2db (3.4).

*Singapore.*—7 mc.: g5cy (4.6), 2dc (5.7), 5mu (3.5), 2 rf(3.5), vk3ml (5.7), 2ow (4.6), 4rp (3.5) vs6af (4.6), vu2cq (4.6). 14 mc.: vk4ei (3.5), vs6aq (4.6), vu2ls (4.6).

*Colombo.*—7 mc.: g2av (3.5), 5jm (4.6), 2qo (4.6), 5qu (3.4), 5rc (4.6), 6td (3.4), 6us (4.6), vk2bs (4.5), 4ei (4.6), 3ml (3.4), 6mm (4.6), 4wh (5.7), 3xf (3.5), vs6aq (5.7), zl4gp (5.7), zs6al (4.5).

*Aden.*—7 mc.: g6ct (4.6), 2qo (4.6), 6tr (3.4), 2ud (3.5), vk4bb (4.5). 14 mc.: g2ic (5.7), 5sg (4.6).

*Port Said.*—14 mc.: g5cy (4.6), 6jz (4.6), 6kp (5.7), 6nj (4.5), 2nq (3.5), 2oc (3.4), 6qx (4.6), 5vb (4.6), 6vk (4.6), 5xb (4.6), zb1h (3.5).

*Gibraltar.*—14 mc.: ve2ay, 2bu (4.6), 2ie (3.5), 3kp (4.6), 3po (4.6).

# BOOK REVIEWS.

TELEVISION. By M. G. Scroggie, B.Sc., A.M.I.E.E. 68 pages, 18 diagrams and 7 plates. Published by Messrs. Blackie & Son, Ltd., London, E.C.4. Price 3s. 6d. net.

This is the latest addition to Blackie's "Technique" series, and is a business-like little production.

The non-technical public requires a simple explanation of the many principles involved in television, and a clear explanation of just what can be done with present apparatus. Also, the future outlook is, naturally, of immense interest, and though prophets in this field are not always to be accepted at their own valuation, there is a demand for a sincere, unbiased opinion.

The author has written this book to meet this demand, and in addition has endeavoured to cater for the amateur experimenter who wants to bring himself up to date in the subject.

As television methods employ principles drawn from an extraordinarily wide field in physics and chemistry, it will be appreciated that the author set himself a very difficult task. He is to be congratulated on the result, and especially on the ingenious analogies which guide the non-technical reader past many slippery places. The reader with some technical knowledge will also find such aids useful in giving him a clearer conception of the technique.

After a discussion of what television involves and the idea of scanning, the transmitting and receiving systems are briefly treated. Starting with the Nipkow disc, and passing on to the photo-cell, mirror-drum, intermediate film, Scophony system, and the Kerr cell, the next section concludes with a description of synchronisation and its difficulties.

After dealing with the cathode-ray tube and methods, the author describes some special systems. These include the Iconoscope, the Farnsworth image dissector and electron multiplier, velocity modulation, colour and stereoscopic television.

The problems in the receiver are clearly set out, and the lines of solution indicated, while a short description of the behaviour of ultra-short waves is illustrated by a map of the field strength set up in the London area by the Crystal Palace transmitter.

The author concludes with a consideration of the outlook, and gives some good advice to amateur experimenters.

The diagrams deserve a special word of praise, and as a "first book" in television it is recommended as simple, sound and sensible.

T. P. A.

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THE SHIP-SHORE WIRELESS SERVICE. By Lt.-Col. C. G. G. Crawley, R.M., M.I.E.E. Post Office Green Paper No. 12.

An official Government publication—especially when it is a "paper" of any "colour"—is not where one usually expects to find a very fascinating hour's reading with interesting photographs and maps. The illustrations are not only interesting but very artistic—a rare combination.

The paper was originally given as a lecture, and those members who have read the author's book, which I had the pleasure of reviewing some year or two ago, will not want to miss it. As Inspector of Wireless Telegraphy, the author speaks with authority, and as Lt.-Col. Crawley he blends a delightful humour with a style both fluent and informative.

It is short—all too short—occupying 17 fairly large pages; there are 28 photographs, three maps, one graph and a photographic cover.

The author confines himself mainly to the shore side of the subject, and starts with the shore stations; distress and urgency call procedure is described, and I am sorely tempted to pass on the humorous replies, from foreign ships, which the author quotes.

D.F. services and Radio Beacons come next, and an interesting map is given of the beacon stations. Then there is the medical service, which must be a great boon in cases of sudden illness in small ships.

In considering trawler radio telephone sets, the author states, "Despite many *earlier* difficulties, one of which was a tendency to somewhat lurid language, . . ." The italics are ours! Those must have been the good old days!

Traffic services, both telegraphic and telephonic, naturally are described at some length. A map of the world marked with the position of each ship "spoken to" from Britain during *one* day—some 1,472 ships—is a striking illustration of the immensity of this work. In 1934 this traffic amounted to nearly five million paid words.

Then the work of Rugby Radio is described briefly; also ship's equipment and the question of operators' qualifications.

These Green Papers are issued so that up-to-date information on various aspects of P.O. work is available to the P.O. staff. Fortunately, they are also obtainable by members of the public. If stocks permit, anyone in Great Britain or Northern Ireland may obtain a single copy free. Six or more copies will be supplied to educational authorities, etc., at a cost of sixpence per copy, post free. Single copies will be forwarded to addresses abroad for sixpence, post free. Applications should be made to Public Relations Department, General Post Office, London, E.C.1.

T. P. A.

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## News from Quetta

We have been advised by Mr. Martin, VU2BL, and also by Mr. Evenett, BERS79, that no R.S.G.B. members were injured in the disastrous Quetta earthquake. Station VU2DK was undamaged but could not be used owing to the failure of the power supply. Station VU2RE was, however, buried under 5 feet of debris.

Mr. Evenett is now located in Karachi and has been granted the call VU2EF.

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## Appreciations.

G5VO and 2APU, who have just returned from a short holiday in Holland, desire to express their thanks to the Dutch amateurs who participated in making their short stay so interesting.

# NOTES and NEWS from the 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. Judes 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), 75, Woodlands Avenue, Coombe, 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).**
Capt. G. C. PRICE (G2OP), The Mount, Pembroke Dock.

**DISTRICT 11 (North Wales).**
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)
Mr. T. Vaughan Williams (G6IW), "Malincourt," Grosvenor Ave. Rhyl, 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 (Eas 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. LIVESEY (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. JAMES HUNTER (G6ZV), Records Office, 51, Camphill Avenue Langside, Glasgow.

**NORTHERN IRELAND.**
MR. W. GRAHAM (GI5GV), 5 Ratcliffe Street, Donegal Pass, Belfast

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

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### DISTRICT 2 (North-Eastern).

THE members in this District appear to be more active than usual, despite the counter attractions of the fine weather, and more reports have been received than ever before.

All stations in the Stockton area are active, including G5XT, who has just completed a 150 watt TX, with which he hopes to WAC on phone. A tri-tet is in operation at G2FO, who finds DX easy on 14 mc., on which band also G6CV has done well. The radio room of G5QU has been made into a greenhouse and he has moved indoors, whilst G2FO is preparing for 28 mc. G6ZT reports active. A "bug key" has been made by 2BQO, which rivals commercial types. Best wishes are sent to G6YT, who has moved to London. It is hoped to keep in contact with him on 1.7 mc.

The monthly meeting of the Tynemouth area attracted a good attendance. The Cullercoats Radio Station visit has been postponed until August 18.

Reports on 7 and 14 mc. signals from G5FD are asked for, as he has just obtained his full licence. Experiments on 112 and 224 mc. are being conducted by G6AY and H.F. medical gear still occupies G6QT. Good long-distance work is being done on 10 watts by G6MK, 5QY, 2PN, 6IR, 6YL, and 6GC. A return to London has also taken place by G6FJ, whom we are sorry to lose. Reports on his 1.7 mc. signals are requested by G2YY. G2XT is temporarily inoperative.

A permanent clubroom has been obtained by the Darlington members. Gear is to be installed, and fortnightly talks given, but at present there appears to be more subjects than speakers. BRS1416 becomes 2BLG, BRS1911 is changing his mirror drum for a cathode ray outfit for television. On June 30 the whole area went out with a 56 mc. portable RX and signals from G6MF were received at R9 at 5 miles distance, but the transmissions from Snowdon on that day failed to put in an appearance. Bad weather curtailed the outing, but it is hoped to arrange another one at which some field strength measurements can be taken using directional and non-directional aerials.

The Sheffield area is rather quiet at the moment, but G2AS, 5TO, 2HQ, and 6LF are active.

Miss Booth, the sister of G2AS, has now passed her Morse examination, and is on the air. She has had QSO's with W stations. A full licence has been obtained by 2ARZ, who is now G5TO; he operates on 7 and 14 mc.

The Leeds area has been re-organised and meetings are being held regularly which have the support of G6AZ, 6XL, BRS1098, 1650, 1834, G5WQ, 6MY, and 2VC. Morse practice is being arranged, and amongst the individual members work is a class "B" stage by BRS1098, a 56 mc. RX by 1650, and an all-mains RX by 1834. Members wishing to join in the meetings are asked to communicate with BRS1834, 13, Alexandra Grove, Hyde Park, Leeds 6, who hopes to arrange an interesting programme. Some good contacts with South American and Pacific Coast stations have been made lately by G6KU and 6XL; the latter is now building a 56 mc. transmitter using copper tubing grid and plate circuits for use with a beam aerial.

Bradford area members are more or less active during the holiday period, amongst them being G6BX, 2VO, 6PL, 2DM, 6AO, 5SZ, 6KU, 2QM, 5WK, and 5VD, who is now fully licensed, and putting out some good signals from a fine new transmitter.

A short report monthly is asked for by G6KU, who wishes to keep in touch with members in the area, and an invitation is extended particularly to BRS and AA men to meet him during the coming months at the meetings of the Bradford Radio Society, which are held at Cambridge House, 66, Horton Lane, Bradford, every Wednesday, at 7.30 p.m., where an attractive programme is being arranged, which includes all branches of radio, amateur and otherwise.

## DISTRICT 3 (West Midlands).

We are very pleased to have a report from G6US, who has moved into this district, and we extend a hearty welcome to him. He states that he is active on all bands with the exception of 1.7 mc. and that he has applied for permission to use 112 and 224 mc. 2ANH is the other reporter. School exams. have prevented his reporting before, but he now plans a busy time during the summer vacation. He has designs on a S.S. Super, and the activities at G6SL on 56 mc. encourage him to activity on that band. G6PA's design of a unity inductance type as described in the June, 1934, BULLETIN is incorporated in a three-stage transmitter which 2ANH has under construction. He hopes to visit Convention this year for the first time. No other reports have been received, but the "Regulars" have been heard on the air. It is thought that the "King Pin" of the now-famous "Ocean Hoppers" is one of our district members! We extend our congratulations to G6DL on being the leading British station in the Junior B.E.R.U.

## DISTRICT 6 (South-Western).

There is very little of special interest to report this month as most of the members seem to be more interested in outdoor pursuits than being cooped up in a radio shack with the temperature somewhere near boiling point! However, some of us manage to keep going, though to a very much modified degree.

The D.R. has been working on 28 mc. for some time and has at last had a couple of contacts on the band, the first for the year. He is also quite satisfied with the performance of the S.S. Superhet on the band. He would like to have reports from others in the district regarding results obtained on 28 mc. To encourage others to try the band, he mentions the fact that he had a QSO with D4MDN with the aerial clipped on to the 28 mc. F.D. coil and no PA!

We have to record the loss of G6RP to the district. He is moving to High Wycombe, Bucks, and on behalf of No. 6 the D.R. wishes him every success in his new undertaking. District 8 can take it from us that a very keen and capable ham in 6RP is coming into their midst. As an offset to this loss we welcome to No. 6 a well-known member, G6FO. His QRA will be near Bideford, and when he has settled down we may expect increased signs of activity and interest in that locality. G5SY expects to attend Convention as usual this year, so will any member from this area who is also attending please let him know, so that he can look out for him?

## DISTRICT 7 (Southern).

District 7 meetings will start again after the summer recess with a meeting at the Hand and Spear Hotel, Weybridge, Surrey, on Sunday, September 1, at 2 p.m.

G5ZK is going well on 14 mc., using CO-FD. We welcome BRS Boothman from No. 8 District; he is now living in Maidenhead and would like to get in touch with some of the local BRS members.

The S.H.R.T.S. held a very successful 56 mc. field day on July 7, G6NZP, 2XC, and 2VH assisting on the transmitting side. It is hoped to hold a similar event in September, and those wishing to co-operate should get in touch with G6NZ. W7BLX has been visiting the Portsmouth members and has been giving them interesting details about the amateur movement on the west coast of U.S.A. 2AZX has been very busy in connection with R.A.F. duties, but hopes to resume radio work this month. He is looking forward to meeting other District members at Convention. BRS Harris has been very active with a home-built super, and turns in an interesting log of 14 mc. DX stations. Congratulations to BRS Johns on obtaining his A.A. call, 2AJG.

G2ZR sends the first report from the Isle of Wight for some considerable period. He reports excellent results with his own QRP rig, and is on the air daily on 7 mc.; G5TZ has been busy with PA work; G5UI is active when naval duties permit, and is shortly starting up on 56 mc. This should be of great help to the Portsmouth people, and we trust that we shall shortly be able to report the first 56 mc. two-way QSO between the island and the mainland. G6BUP is active when weather permits with a two-watt portable on 7 mc.

BRS Scudder, of Portland, Dorset, requires co-operation in 56 mc. experiments, and would like to get in touch with other BRS stations in the Bournemouth district who are interested in this work.

There seems to be a total lack of reports from the northern end of the district, although most of the stations are known to be active.

### DISTRICT 8 (Home Counties).

For the first time since taking office, the D.R. finds the writing of these notes a pleasure.

First of all, of course, we have won the N.F.D. Shield. Thanks are superfluous, for surely all those who helped in any way must feel they have been amply repaid for their efforts. A happy suggestion has been made that we hold a district hamfest at Cambridge to celebrate this success. More of this anon.

The outing to the Ongar transmitting station on July 7 was attended by 65 members, who were unanimous in their appreciation of the highly interesting station visit and of the subsequent gathering for tea at Epping.

Although at the time of going to press few actual reports have been received concerning the 56 mc. day on July 21, there is no doubt it has been a great success.

So many stations were on the air that it has been said that the ether in North London resembled 1.7 mc. in its Sunday best. In spite of considerable QRM between stations numerous excellent contacts were made, and District 8 thanks all its neighbours for their co-operation.

See you at Convention ?

### DISTRICT 9 (East Anglia)

Congratulations to G2MN, on the occasion of his marriage, which should be an accomplished fact by the time these words appear in print.

G5UF, whom the D.R. has visited, has now a very good receiver, which should greatly help his DX. G5UD, also visited by the D.R., contacts with great ease. G51X, in between visiting the Navy, is putting out some good 7 mc. fone, whilst G6QZ is also working on 7 mc. fone and busy experimenting on 56 mc.

G2UT, we understand, is " doing his bit " with the Navy.

Congratulations to 2BBO, who becomes G6UA; to 2AWI, who is awaiting a full call, and to BRS1709 who becomes 2ABX.

G2JS is busy on 56 mc. gear and is hoping for some outdoor contacts.

G2XS is on holiday and hopes to look up as many members as he can find in his path, and also hopes to see many more at Convention.

### DISTRICT 10 (South Wales and Monmouth).

Members will be glad to hear that G5WU is back in Penarth and doing just a little radio. He is evidently making the speedy recovery we all wished him, and we hope this will continue. Newport section held a full meeting on 18th, at which 14 were present. The Blackwood Club held two very successful Field Days with their portable transmitter G6BK. G2JL is getting excellent results with a 16 ft. aerial and G2XX is rebuilding, but is putting out excellent quality phone on 1.7. G5WU is maintaining contact with G2JM across the Bristol Channel. BRS 1855 hopes to get a three letter call and proposes doing experiments with modulating systems. G2UL has been making some alterations and at the moment is spending most of his time on 1.7mc. 2ATI is chiefly interested in 56mc. working and asks for co-operation with anyone seriously interested. The fine weather has prevented G2OP from completing his rebuild, but things are shaping well. There is no general report from the Swansea section. Will members please note that reports should reach the D.R. by 25th of each month, otherwise they may be too late for publication ?

### DISTRICT 12 (London North).

The outstanding event of the month was the 56 mc. field day held on Sunday, July 21. Although the transmitter did not go on the air until early in the afternoon, numerous QSO's were made, the best being with G6CJ, 6XM, 2AW and 5RD. Most of the stations worked reported R9 reception. The transmitter consisted of a push-pull oscillator coupled to a half-wave matched impedance aerial by means of 30 foot feeders.

The station was located in the tower of Christ's College, Finchley, some 120 feet above street level. The school is situated on the highest ground in Finchley, which no doubt accounts for the fact that continuous QSO's were possible from the time the station went on the air until it closed down at 19.00 G.M.T.

There is little else of interest to report for the month.

It is hoped that district members will visit the R.S.G.B. stand at Radiolympia, and that everyone who is in town at the time, will attend Convention.

The next meeting will be held at 7.30 p m. on September 10 at the Wander Inn Cafe, Church End, Finchley.

### DISTRICT 13 (London South).

The July District Meeting was held as usual at the Brotherhood Hall and was well supported. In order not to clash with the Radio Exhibition and Convention, the next meeting was arranged for August 8. The topic under discussion at the July meeting was District 13 Field Day, fixed for the week-end July 27 and 28. Our thanks are due to those who have assisted with arrangements.

Individual reports are more plentiful again this month. G5HF has just completed a push-pull amplifier, using '59 valves, and is trying to arrange a Collins coupler. A series of experiments have been started on 56 mc., using a push-pull transmitter with choke modulation from a PP3/250. G5JW is also active on the 56 mc. band. He was out on Epsom Downs with portable gear on July 21 but heard no South London stations. His signals were reported QSA5 by G5RD at Abbots Langley. G2GZ has been conducting a series of low power tests on 1.7 mc. and finds no difference in reports when power is dropped from 7 watts to 3.5 watts. He is rebuilding for the 1.7 and 14 mc. bands and has applied for a 56 mc. permit. G2AI is also rebuilding most of his apparatus and hopes to be on the air again in the near future. G2JB is active on the 56 mc. and 14 mc. bands. Using the latter band he has had a large number of W and VE contacts as well as a QSO with K5AQ.

G6QN continues his experiments with regard to the various advantages of self-excited transmitters as against crystal-controlled transmitters. He wishes it to be known that he only uses 'phone on the 7 mc. band as a necessity, finding C.W. communication impossible. G6QN comments on the

lack of 56 mc. signals. G5YH has been experimenting with a Franklin aerial and hopes to be on the air in the winter with a new transmitter. G2JH reports activity on 56 mc., using an Ultra-audion, but so far no contacts have been made. G5OX finds the 56 mc. band particularly quiet of late. Nothing has been heard of the North Kent stations on 56 mc. since N.F.D. G2UW is active on most bands.

We should again like to remind members of the necessity of passing on the Letter Budget within 48 hours of its receipt. There are now 34 contributors and it is therefore of vital importance that the Budget should not be kept by anyone for more than two days. So " please don't do it ! "

In conclusion, we do hope that you will all support the South London Conventionette which has been arranged to take place at the end of September. The D.R. very much regrets that, owing to unforeseen circumstances, a complete time-table is unavailable at the time of writing these notes, but full details will be announced at the August District Meeting and will appear in the September BULLETIN.

### DISTRICT 14 (Eastern).

A good number attended the last meeting of the Essex section held at BRS.1447 Laindon. G2LZP has been heard on 1.7 and 3.5mc. working from a yacht on the Crouch. G5UK reports that ZA1D on 7mc is anxious to QSO G stations nightly at 23.00 B.S.T. G5UK recently entertained G2SX who brought with him a W2.

At the East London Section meeting held at 2BDI, Chingford, only a small attendance was recorded. G6FJ is now at Chingford again and will be on the air from there shortly. Congratulations to 2ANS, of Bow, who is now G6OD ; to BRS 1605, of Loughton, who is now 2BGL ; and to BRS1531, of Dagenham, now 2BCY. BRS1627, of Tottenham, now resides in Chingford and hopes to attend our meetings. There will be no meetings in August, and QRA's are required for September and following months. Will members willing to take meetings inform their C.R. and D.R. respectively.

### DISTRICT 15 (London West and Middlesex).

As nothing definite has as yet been fixed for the September meeting, an announcement will have to be delayed until next month.

The DR and BRS1449 were the sole representatives of the District at the London Summer Outing. Those who did not take the opportunity of going missed a splendid show. Our thanks to G5FB for his efforts.

Will all members do their utmost to attend Convention, and in so doing help swell the numbers from this district ?

Our late County Representative, G6CJ, should be fêted. He came second in the British Isles in the Melbourne Centenary Contest, third in the Junior BERU., and tied for fourth place with G6VP in the Senior BERU. Congratulations to them both.

Reports have come to hand from the following : G6VP is getting R9 reports from W5, 6, and 7, with new aerial, and says efficient radiator makes all the difference. Has had ZL4AI and VQ2BM as visitors. G5ND worked his first LU, K5 and ON4CJJ. G6WN testing phone on 7 mc., and had a few contacts on 28 mc. 2BAI has constructed new power pack and electron-coupled oscillator. G6CO took portable on holiday, and also visited some ship and commercial stations. G2BY asks why everybody has gone crazy over SSS ! Tried one and still thinks his own three-valver with peaked audio stage is better. (Shall we discuss this at the next area meeting ? G6WN.)

G5LI reports activity and puts in a plea for more support to our Letter Budget. BRS1226 is busily engaged carrying out measuring tests on detectors, especially in regard to high-quality reception.

G5JL is welcomed into the district.

### DISTRICT 16 (South-Eastern).

Only reports actually received are included this month as the D.R. is on holiday. He has been reading lamp morse for a change, trying to copy the masthead-light signals at Spithead, only to find they are in code ! G6NU is rebuilding 56 mc. gear. 6VV is on 14 and 56 mc. 5FN has conducted some interesting experiments with directive arrays on 56 mc. An article will probably follow. 2SH is also on 56 mc. 6RQ has had bad luck with a new bottle. 6QC still works Western DX. 2CS is using a S.S.S. 2CM is busy on 1.7 mc. 2OV is going grey with worry over his new transmitter. BRS745 is co-operating heart, soul and ear with 5FN on 56 mc. 6VC has now finished rebuild.

G5OQ reports that as usual all are active in Tunbridge Wells ; we welcome Mr. Beattie, 2BTI, on joining the Society. 2BVO hopes to obtain his full ticket.

From Ashford, 2KJ reports that 5QL, 2JV and 2QT are active on 56 mc.

In Folkestone, 6XB quite by accident discovered that pentodes are punk when plugged in as rectifiers, and even more punk afterwards ! 6XB showed the 1934 N.F.D. film at the last meeting, which was held at 2GD. Tests were afterwards carried out in coupling a matched impedance aerial to a straight line inductance transmitter on 56 mc. All are active on 56 mc. but 2VI's dipole came down and nearly speared the gardener, who thought he had been torpedoed, and almost died of fright. 2AZM is building receivers for all and sundry and, strange to say, they all work well !

G2IZ, of Gravesend, reports that he is active.

Five metres still dominates most of North-West Kent. G2AW has worked 40 miles, while 20-mile QSO's are becoming common. 2AW and 2ML favour the no-feeder system of hoisting the oscillator up the pole with the aerial attached. 2ML suspends his TX from the top of a tall tree, and even hardened mountaineers have jibbed at his rope-ladder. Other members are slightly more conventional. G6QN, of Colliers Wood, reports that he receives 2AW, 2GB and 5LB better than he receives his own local South London stations, which is particularly interesting, as his QRA is very low-lying. North-West Kent members are on 56 mc. every Sunday from 9 a.m., using directional and omni-directional aerials, and would welcome reports from other districts.

### DISTRICT 17 (Mid-East).

It is to be hoped that all district members will endeavour to attend Convention. So many shelve


The best of modern shows—and better than ever this year. Here, in one enormous exhibition, are all the wonders of next year's Radio, while in Radiolympia's vast theatre the most popular broadcasting stars appear three times daily. See and hear Henry Hall, Geraldo, Elsie and Doris Waters, Norman Long, Leonard Henry, Lily Morris and a host of others. All in all, this is the "top" in entertainments. Be sure to save a day for Radiolympia.

*Organised by the Radio Manufacturers' Association*

the matter until it is too late to make proper provision either for their absence or their accommodation.

Reports follow: G5CY has bought a Comet-Pro. G6LH has returned to Boston after a holiday with a portable transmitter. G5FY in Grantham has experimented with Class B modulation. G5BD has worked an incredible number of W6 and W7 stations. At G6LI, the call of summer has eased off activity for the time being, but everything is ready to work at any time required.

### DISTRICT 18 (East Yorkshire).

2AJZ has been carrying out tests with his newly-acquired "A.A." apparatus; 2AUN rebuilding modulation equipment. All others report active, but Scarborough, being a seaside resort, naturally makes most members otherwise engaged. The Club meetings here, have been postponed until the Autumn. G6UJ is dividing his time between occasional bursts on 14 mc. and bowls.

The Hull members are quiet, owing to holidays. G5VO and 2APU have returned from their visit to PA, where they had a very enjoyable holiday, terminating in a visit to G2LR (Cranwell). G6WP is on holiday in Sweden, where yachting is the order of the day. The D.R. has received station visits from: G6XL, 5VD, 5VU and BRS1868, and is now busy with the local Yachting Regatta.

### Northern Ireland

A meeting of those who participated in N.F.D. was held last month at the Merrythought Café, Belfast. The following attended:—2CN, 5SQ, 6WG, 6YW, 5DU, 5UR, 2KR, 6XS, 2SP, 6TB, 2BNL, 1616 and 5GV. The question of operators for future field days was discussed at length, and it appeared to be the general opinion that only a few very good operators be chosen for each station, the remainder to be assistants. An N.F.D. committee, comprising the D.R., 5SQ and 2CN, was appointed to deal with this and kindred matters. The question of future finances was also discussed, and it was decided that each member who desired to participate in next year's event could only qualify by becoming a subscriber to an N.F.D. fund and contribute one shilling per month as and from July. The object of this fund is to eliminate the annual "scrounge" for apparatus and batteries, the latter presenting one of the most expensive problems. The first two months' subscriptions will be gratefully received by the D.R. on August 25, subsequent subscriptions to be paid on the same date of each succeeding month. Monthly reports could be forwarded at the same time.

The fifth and sixth paragraphs of G6LI's notes last month apply equally well to Northern Ireland, and would well repay a perusal.

We regret to announce that GI5MO has decided to drop out of amateur radio as he is unable to spare the necessary time. His decision will be learned with the feeling that amateur radio in GI has suffered a real loss: whenever there was any hard work to be done, 5MO could always be found "in the thick of it," and his cheery personality will be missed from our future meetings.

GI5SQ has rebuilt his transmitter, but is having trouble with a directional aerial. He and 5GV find it hard to change the landscape! In the last two months 6YW has worked 47 W7's and W6's, but has as yet been unable to capture the elusive W5. He has also worked CX, PY and LU. 5SQ informs us that 6WG is sending out a powerful signal and making plenty of contacts; the latter is soon to have his mains changed to A.C. GI2CN is also active, and has erected the aerial used by Station B at N.F.D.: his first test call with the new aerial produced three W QSO's. GI2KR, 5UR and 5QX have been heard working on 14 mc.

These notes are being penned in advance of the usual date, as the D.R. will be on holiday; any late reports will be included in the next notes.

Now, do not forget to note the 25th of each month in your diaries!

## EUROPEAN NOTES

### France.

The R.E.F. announces that the address of its offices is now 6, Square de la Dordogne, Paris, 17. The old address (17, rue Mayet) is cancelled.

This year the R.E.F. celebrates the 10th anniversary of its existence, and to mark the occasion a special number of *Radio R.E.F.* is being published. This contains a résumé of the activities of the French amateurs on the occasions of special flights, trans-Sahara expeditions, etc., and a number of interesting articles, including a report of short-wave research, details of a stroboscopic disc for controlling turntables, details of a crystal holder, a list of the world's short-wave stations, etc.

This magazine will be forwarded to those who enclose an international money order for Frs.10.

### Holland

By G6FY.

Great activity continues on the higher frequencies. On 28 mc., PA0QQ has succeeded in contacting the Argentine. On 56 mc., field days are being organised during the summer, and some interesting work has been carried out by PA0QQ and PA0MH on the design of portable directional aerial systems for direction finding receivers used in "fox-hunt" events.

The experimental department of the NVIR, under PA0KT, has developed a simple 30-line television transmitter, highly successful demonstrations of which are being staged in various parts of Holland.

PA0ZN, with an RK 20 as part of his luggage, has been cruising in the North Sea, and many excellent contacts with XPA0ZN have been enjoyed by the group at home.

### YI7RK.

Mr. J. H. Knowles (ex-YI7RK) is leaving for Egypt and hopes to be on the air from there shortly. He asks us to mention that he will be pleased to send his QSL to those who worked him as YI7RK, and failed to receive confirmation of the contact. Details of the QSO should be forwarded to him at "The Elms," Oslington, near Derby.

# Empire B.E.R.U. News.

## B.E.R.U. REPRESENTATIVES.

*Australia.*—I. V. Miller (VK3EG), P.O. Box 41, Tallangatta, Victoria. *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) 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.

*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 Transjordania.*—F. H. Pettitt (SU1SG), Catholic Club, Mustapha Barracks, Alexandria.

*Hong Kong.*—C. Emary (VS6AX), P.O. Box 391 Hong Kong.

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

*Jamaica, British Honduras, Turks Island and Cayman Island.*

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

*Malaya and Borneo.*—J. MacIntosh (VS2AF), P. and T. Dept., Perak, F.M.S.

*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.*—R. A. Hill (ZE1JB) P.O. Box 484, Bulawayo, S. 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.

## Australia.

By VK3EG.

Conditions on the 14 mc. band are excelling themselves with the result that contacts with Canada, U.S.A. and Europe have been possible under the easiest circumstances. Interference on this band during peak periods has been as bad as anything ever experienced on 7 mc., but it is encouraging to see the fullest use being made of the frequencies available.

VK2EP continues to dominate the 28 mc. band, working fone and C.W. with the U.S.A. very consistently. The work done by this station and VK's 2LZ, 4BB in particular, deserves the greatest praise.

Another outstanding feat is the accomplishment of VK3PG, who has W.A.C. on 14 mc. using an input of between 2 and 4 watts. This is real QRP.

7 mc. is very poor and well nigh useless after sunset. Many hams have recently contacted GTCP, the "Thistle Glen" now bound home for England and last heard of in Durban. This station puts out a great signal, using only 7 watts in a Hartley. I had the pleasure of many a yarn with VE5OA in Arctic Canada, he forwards information for these notes and says he is anxious to contact more G's. He is using P.P.852 in T.N.T. on 14,100 kc., operating from VEP, Royal Canadian Sigs., Camsell River, Great Bear Lake, Canada.

This month sees several local contests; a VK6 traffic test, VK–ZL test, and a challenge interzone test with New Zealand in VK2. 3.5 mc. is the main band used in these domestic trials, as it is particularly favourable at this time of the year for VK–ZL fone and C.W. work.

We all regret the resignation of Mr. Ray Carter as B.E.R.U. representative in VK. His work deserves the fullest credit and appreciation of all and he has done a great job in the way he put the B.E.R.U. on its feet in VK.

I sincerely hope that with the able assistance of our sub-representatives here I can continue the good work.

We learn from Mr. Trebilcock, BERS195, that ex VK5GO is now operating as a VK9 in New Guinea, whilst ex VK2VA is using a VR4 call in British Solomon Islands.

BERS195 also mentions that F7CGV, of Nauru, when operating on 7 mc. transmits a harmonic to VK and ZL on 14 mc. which is as loud as the fundamental. Much confusion has been caused due to this effect.

In regard to the 28 mc. contest, BERS195 states that VK2LZ, 2EP and 4BB are believed to be in the lead, the latter having scored over 1,000 points.

Both Mr. Trebilcock and Mr. Churton, of New Zealand, have received 28 mc. signals from VK4GK at R5 on the 14 mc. band.

## Canada (Second District).

By VE2CA *via* G5VL and checked by BRS1860.

The local group had the pleasure of entertaining Mr. Harry Bourne, G2KB, for two days last month; a good time was had by all. Most of the group have been on vacation, hence activity has been rather low. British 14 mc. 'phone stations have been coming over well.

## Canada (Third District).

By VE3WA *via* G6NJ.

Conditions have been very poor during the past two months on all bands and static quite heavy, even on 14 mc. As usual in summer season, numerous VK and ZL stations are heard from 03.00 to 07.00 G.M.T. VK3MR and VK3YP are the most consistent stations heard. A few European stations are also heard coming through at about this time. VE3MY reports his first G contact on 7 mc. VE3ER is using 200 watts and wishes Empire stations to listen for his 14 mc. transmissions. VE3AG, 3KF and 3TA are also active on 7 and 14 mc. ZC6FB was heard, but no contact was effected.

## Egypt and Palestine.

By SU1SG *via* SU1FS and G6TM.

Only a few of the SU stations have been active during the month. SU1AQ has been transferred to ZC, SU1FS has been on leave in Alexandria, SU1RK has been practically QRT owing to bad local QRM. SU1SG is still rebuilding and except for short test calls does not expect to be active before the end of August. During the month the first SU experimental licences were issued, the conditions of which are most unfavourable. No 3.5 or 1.7 frequency allocations are available, and 14 mc. operation is restricted to the frequencies between 14,100 and 14,300, a spot which has previously been avoided because of the American 'phone band.

The charge is £2 per year plus one shilling for each valve used. It is hoped that negotiations may succeed in obtaining a modification of these conditions, especially with regard to the frequencies allotted, as most SU's have crystals which are outside the present allocations.

Several of the group are looking forward to taking delivery of S.S. Supers about the end of August. Included in the orders there are three Comet Pros, one RME9D and one HRO.

Listening in the other night we heard G6CJ pass over, to VS6AQ, results of the B.E.R.U. contest. Sincere congrats. to SU1EC, who won first place for SU and to VS6AH and 6AQ as runners-up.

## Hong Kong

By VS6AX *via* VS1AJ and G6CJ.

Little activity has been evident locally owing to vacations. VS6AQ, 6AX and BERS273 have been away and unfortunately VS6AH is again in hospital. VS6AZ and XU8CB are rebuilding. Mr. Mehal is now BERS282.

## Irish Free State

By EI9D.

We are very pleased to welcome EI6F as a new member. The QRA of BRS 1645, Mr. F. W. Warren, is now Wine Street, Sligo, and not as previously. EI9D, 6F and 2G will attend Convention.

Reports are few this month and, although work on 56mc. continues, there is little of special interest to record, " Summeritis " has us in its grip.

## Malaya and Borneo.

By VS2AG *via* VS1AJ and G6CJ.

A Malayan " rag chew " over the air was staged at 16.30 local time, July 21, but QRM made contacts difficult. It is expected that future " parties " will take place on Sunday mornings.

The Group was very appreciative of the message of good wishes sent them recently by Mr. A. E. Watts.

Conditions on 7 mc. are improving, but QRN is still bad. RPA continues to be a nuisance in this band, as is also a mystery station, CB6A, who calls all night and works no one!

Europeans have been heard on this band, and also from 15.00 to 18.00 G.M.T. on 14 mc. Occasionally good signals have been received from Europe at the unusual hour of 05.00 G.M.T.

VS1AB is experimenting with remote doublet receiving aerials, using a long transmission line. 3AE is on 7 mc. with phone. 2AG and BERS179 are conducting aerial tests on 3.5 mc. with mobile low-power sets. 2AG is also working a new 25-watter. 1AD is obtaining good results with a 100-watt c.c. transmitter.

VS1AJ still needs Canada for W.B.E. VE stations please note.

## Northern and Southern Rhodesia.

By ZE1JB.

It is with regret that I announce the resignation (temporary, I hope) of our representative, Mr. J. W. Mavis, ZE1JE, due to pressure of business. Mr. Mavis has conducted these notes for a considerable time with great credit to himself.

Mr. G. King, ZE1JF, will be at home by the time these notes appear and will be very glad to see as many members as possible. During his absence ZE1JN or ZE1JB will act as the E.L. Station.

Mr. F. C. Whitmore, ZE1JJ, is on a six months' tour of the Union, where he will operate a portable outfit on 7 and 14 mc. under the call sign of ZT6AZP. Anyone hearing this station is requested to attempt to establish contact.

An endeavour is being made to have all stations in Southern Rhodesia crystal controlled and our efforts have met with very considerable success. I believe there are but two non-crystal stations at present. It is hoped that the Post Office authorities will in future enforce crystal control in terms of the

recommendation submitted to them by the Rhodesian B.E.R.U. Society. With one or two exceptions, all Southern Rhodesia experimenters are already, or have promised to become, members of the Rhodesian B.E.R.U. Society.

The following stations are known to be active at present, but little work can be done as conditions are far too erratic :—ZE1JB, 1JC, 1JE, 1JM, 1JN, 1JO, 1JS, 1JT, 1JU.

## Southern India.

By VU2JP *via* G6NF.

The 7 mc. band has been fair up to 12.00 G.M.T., but QRN bad after that time ; 14 mc. has been spasmodic with some QRM and QRN. QRM from VUS and VUT on 7 mc. is bad ; the matter is in hand with a view to having them moved if possible. Strenuous efforts are being made to get licences issued to amateurs in Travancore and 2JP hopes to have good news soon. The monsoon was bad and this resulted in our main power supply being cut off. The letter budget has suffered some delay, but a combined one is now in print. VU7AB may be used as a wireless sub-station post office when the telegraph line becomes damaged by elephants ! VP5PZ has been heard after a silence of three or four months ; JP is still QRX for schedules.

Mr. Reynolds, BERS248, has now been allotted the call VU2EG, but will not be active for some time due to private business.

VU2JP received a telegram from a Transmitters' Convention at Poona.

At the Poona meeting it was decided to form a local group in order to encourage co-operation in experiments. VU2BY, 2DS, 2DF, 2BP, 2LS, 2EB and 2AU attended. Messages of greeting were sent to R.S.G.B. and to VU2JP.

VU2EB is now giving morse lessons over the air at 9 a.m. local time on 7 mc.

VU2LS has been appointed Secretary of the Poona Group, and will, we understand, send in local reports to VU2JP.

## Empire Calls Heard.

*By J. V. Warner (G2WR), June,* 1935 *between* 05.00 *and* 07.00 *G.M.T. :—*

14 mc. : su1tm (4.4.9), ve4du (5.6.9), ve4vd (4.5.9), ve4wa (5.7.9), ve5iq (5.4.9), ve5kb (3.4.9), ve5nl (5.4.9), vk2yw (4.5.9), vk3mr (5.5.9), zd2c (5.7.9).

*H. S. Bradley,* 66, *Main Street, Hamilton, N.Y., U.S.A., January-July,* 1935 :—

14 mc. (CW) : g2ak, 2as, 2bh, 2bk, 2bm, 2by, 2ck, 2dc, 2dd, 2dz, 2hf, 2hj, 2ic, 2if, 2im, 2in, 2io, 2kb, 2kz, 2la, 2ml, 2mv, 2nh, 2nq, 2oa, 2oc, 2oi, 2os, 2ov, 2pl, 2ql, 2qo, 2rf, 2rq, 2sx, 2tm, 2uk, 2ul, 2vi, 2vv, 2wp, 2wq, 2xv, 2yb, 2yd, 2zq, 2zu, g5ab, 5am, 5bd, 5bj, 5bo, 5bp, 5by, 5cv, 5fa, 5fn, 5fv, 5hb, 5hc, 5jt, 5ju, 5kg, 5kj, 5kn, 5kt, 5la, 5ma, 5mp, 5ni, 5pp, 5qf, 5rx, 5so, 5sr, 5sz, 5tw, 5ud, 5uf, 5us, 5vb, 5vl, 5vm, 5vn, 5wp, 5wt, 5wup, 5wy, 5wz, 5xa, 5xb, 5xv, 5yg, 5yv, 5yy, 5zx, g6ag, 6am, 6ay, 6bs, 6cj, 6ds, 6gf, 6gn, 6gs, 6gn, 6ir, 6jq, 6kp, 6ku, 6lf, 6lk, 6my, 6nb, 6nf, 6nj, 6ns, 6ot, 6oy, 6pk, 6ps, 6py, 6qb, 6qq, 6qx, 6rb, 6rh, 6rs, 6to, 6uf, 6uj, 6wu, 6xl, 6xn, 6xq, 6yu, 6zs, 6zu, gi2kr, 5qx, 5ur, 6tk, ei1t, 2d, 2g, 3g, 5f, 5g, 6f, 7f, 8b, 8d, 9f.

14 mc. (Telephony) : g2ak, 2dv, 2mv, 2nh, 2pl, 2rf, 2xv, 2zp, g5bj, 5by, 5cv, 5hb, 5jt, 5ml, 5ni, 5qc, 5vb, 5vl, 5xa, 5yv, 5yy, g6ag, 6dl, 6fs, 6gf, 6li, 6py, 6qs, 6rv, 6xq, 6xr, vo1p, vo1i, vp3bg, 3mr, 5is, 5pa, 6cs, 6mo, 6my, 6nw, 6tr, 6yb, 9r, vk2ep, zt1r.

*By G6KL Birmingham, during July, on* 14 *mc. :—* vk2qz, 2wh, 3rf, 3rz, z1ljg.

## W9XAZ.

The Kilocycle Club of Milwaukee, U.S.A., transmits a programme of interest to amateurs through the *Milwauhee Journal* Radio Station W9XAZ every Saturday. The frequency used is 31.6 mcs. and the input 500 watts. The programme commences at 18.00 G.M.T. and concludes at 19.30 G.M.T.

Reports are welcomed from R.S.G.B. members, and these should be addressed to The Kilocycle Club, c/o The Milwaukee Radio Station W9XAZ, Milwaukee, Wisconsin, U.S.A.

## Noises Off.

It has, for some time, been the practice of foreign broadcasting stations to transmit interval signals consisting of chimes, cuckoo calls and the like, as a means of identification—even we, nowadays, suffer from " Bow-Bell-itis."

We have noticed of late, however, that some of our members, with true individuality, have hit upon the same idea. In this case, however, the purpose is not quite so clear.

With a view to supplying the " end " to justify the " means " we suggest that whilst they are taking the trouble to hit (and, alas, occasionally, miss) gongs or bells as a prelude to either blowing into the mike or jumping around closing and opening switches, they might arrange to turn the practice to a useful purpose.

For instance, they might use the pernicious habit to indicate their QRA's by suitable characteristic sounds. A Sheffield Ham might strike an anvil ; Liverpudlians might invest in a ship's syren ; our friends from Glasgow might cut a record to " shout the odds." Possibly the QRA of one North Country location, not 100 miles from Huddersfield (one has to be so careful in these days of libel), would be made clear by the striking of three balls (pardon, we mean bells). We have no doubt whatever that if our Burtonian friends drew corks in front of the mike before and after each transmission, their shacks would prove of " absorbing " interest to their friends.

On the other hand, perhaps their time would be more suitably employed in getting on with the job.

**EDITORIAL.**—(*Continued from page* 43.)

The work involved in organising Convention and our stand at Olympia is considerable; especially difficult is our task of premeditating the wishes of our members who desire to be present at the social functions. To assist us in obtaining this information we have made a special price for those who reserve accommodation for the Dinner in advance. If it is *your* intention to be present, a penny postcard will save us considerable trouble.

As usual our stand at Olympia will be the meeting place of all amateurs. The features this year will be a display of new amateur-made apparatus, and the publication of a third edition of "A Guide to Amateur Radio." We do not propose commenting upon this publication at this stage, but would remind all members that it has been enlarged to 100 pages. The price, however, remains at 6d., a sure proof of our faith in the quality of the production.

**TWO-VALVE RECEIVER** (*Continued from p.* 46)

receiver oscillating. The bottom knob on the right-hand side of the front panel is the volume control R.9, and the control fitted on the side of the cabinet at the right is for tone control purposes.

A single wire aerial can be connected to terminal A or, if loose coupling is required, to terminal B, with C and E connected together; or if a transposed feeder aerial is used, the feeders are connected to B and C: the connection between C and E is then removed.

The completed receiver is of a pleasing and compact design which will have a definite appeal to the enthusiastic radio amateur. Good results were obtained on the various wavebands and the absence of hum made the receiver a pleasure to handle.

**MOUNT SNOWDON CALLING ENGLAND—** (*Continued from page* 51).

tors from their Carnarvon agents. Both firms gave the fullest possible co-operation and help.

We attribute the success of these experiments to the very kind help given by everybody concerned, including "Harry" and his colleague on the summit of Snowdon, who were never happy unless carrying heavy accumulators or attempting to scale precipitous rocks with a sang-froid and utter disregard for danger which appears to be a characteristic of the Welsh people.

In view of certain criticisms of these tests that have reached the writer, he would like to emphasise that they were of an entirely private nature and not financed by any newspaper, firm or other concern.

He would also state that another English amateur has disputed this record distance, but whereas his transmissions in 1933 were heard over a distance of 195 miles, signals from G5CV were heard over 207 miles.

Further experiments of a somewhat similar nature are contemplated before the end of the year and those who care to co-operate will receive full details if they send a postcard to G5CV with their name and address; this card should be addressed c/o The Radio Society of Great Britain, 53, Victoria Street, London, S.W.1.

*The writer is convinced that a super-regenerative receiver, at least in the form we know it at present, is quite unsuitable for DX reception, and that a properly constructed superhet in conjunction with a frequency stabilised transmitter provides the only solution to the problem of long-distance communication on the ultra-short wavelengths.*

To all those who co-operated in these tests, or intend to listen for future transmissions from 5CV, we conclude with "CUL *ULTRA-SHORTLY*."

## EMPIRE CALLS HEARD

*W6EAK, from May* 1 *to June* 5, 1935:—

G2cl, 2in, 2od, 2pl, 5qy, 5nd, 5vh, 6yl, 6nj, 6rv, 6cj, 6lk, 6qx, zb1x, su1sg, 1aq.

## STRAY

J. H. Hemingway (BRS1834), 13, Alexandra Grove, Leeds 6, is anxious to see his town on the "map" again. Will all members interested in arranging local meetings get in touch with him?

SEE YOU AT 202

AND AT

CONVENTION

# EXCHANGE AND MART.

## RATES.

**Private members' advertisements 1d. per word, minimum 1s. 6d. Trade advertisements 2d. per word, minimum 3s., cash with order. First line, if desired, will be printed in capitals. Copy to reach 53, Victoria Street, or the Advertising Manager, Parrs, 121, Kingsway, W.C.2. not later than the 1st of the month preceding date of publication.**

"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.

BRS.1754 would like to get into communication with a Member who can supply particulars etc., of the construction of a Morse recording apparatus —DYER, 52, Glenloch Road, Hampstead, N.W.3.

COMING TO CONVENTION?
STAY at "Derfel," 59, Abermarle Road, Beckenham. Frequent trains to Town (20 minutes). Terms moderate. Highly recommended by member.

CRYSTAL GATE SINGLE SIGNAL SUPERHETERODYNE. Chassis; six a.c. valves, mounted crystal (less power supply). £10 cash.—Inquiries, FORD, 79, Hawthorn Way, Cambridge.

McMURDO SILVER 5B. Almost new. Complete with crystal filter. Loudspeaker and Auto Transformer. First remittance secures. £17.10.0.—G2IN, 6, Denmark Road, Southport.

QSL'S AND LOG BOOKS.—You want the best—then write.—G6MN, Worksop, for samples and prices.

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