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CONTENTS

LESSONS FROM CAIRO

AT the end of a month of rumours no doubt our readers breathed a little more freely after studying the interim report which our President hurriedly prepared for the April issue. As far as home members are concerned, we realise that most of them honoured their licence by refusing to repeat the absurd stories which reached them from abroad, but at a time when the I.A.R.U. delegates were striving to hold every amateur allocation it was disturbing nevertheless to learn of their existence.

The first lesson of Cairo must surely be to learn to ignore rumours.

Let us now consider how the changes will be likely to affect us in Great Britain. With the 1.7 Mc. band unaltered, we are hopeful that the present state of affairs will continue, namely, the full band available with power limited to 10 watts. The 3.5 Mc. allocation presents a conundrum, due to the decision to take away 50 kc. in "our" half of the band. Assuming that we shall be given 50 kc. elsewhere, the question may well be asked "where"? From 3,740 kc. to about 3,840 kc. the R.N.W.A.R. have first claim, which leaves available the channel 3,850 to 3,940 kc. if we allow a 10 kc. tolerance at each end. As this portion of the band has no "doubling" value, it would seem that any channel would be just as suitable as another for amateur work. We must wait and see.

We come now to 7 Mc., the band which we foreshadowed might be attacked. Repeatedly we have drawn attention to the danger of not fully occupying the channel from 7,200 to 7,300 kc., and although this has not officially been commented upon, we have reason to believe that the smaller amount of activity in the "non-doubling" section has been observed by certain people outside the amateur movement. The decision to allow broadcast stations to share this channel with amateurs seems to be unworkable, for although the congestion between 7,200 and 7,300 kc. has not been so great as in the other part of the band, it is nevertheless severe even for amateur stations, which are forced to work under conditions which commercial and Government stations would consider impossible.

The decision to allow amateurs to continue to use the full width of the present 14 Mc. band will be welcomed everywhere, as will be the news that 28-30 Mc. is to remain as at present. It is a little early, perhaps, to say too much about 56 Mc., but we are quite confident that our licensing authorities will keep to their agreement and allow us the full use of that band. The lack of European support for the continuance of amateur activities on this and other bands provides a further lesson and shows clearly that unless every amateur organisation is prepared

(*Continued on page* 658)

Combined Super-het Adapter for 28-60 Mc and Preselector Unit

By A. O. Milne (G2MI).

Introduction.

THE apparatus about to be described serves two purposes, as indicated by the above title. Before proceeding with constructional details, a few general remarks will not be out of place.

The designer was asked to produce a unit which would provide the following facilities :—

1. A superheterodyne converter which would cover the frequencies between 28 Mc. and 60 Mc., and which would work into any type of superhet or straight receiver, provided it has at least one R.F. stage.

2. A preselector for use on the 7, 14 and 28 Mc. bands which can be added to an existing receiver.

The design which has been evolved, fulfils these conditions in a satisfactory manner, and the constructional work entailed is well within the capabilities and resources of the ordinary amateur. No doubt a more complicated outfit with band-switching could have been produced with the aid of a lathe and other expensive equipment, but as few of us have access to tools of this kind, it was thought so be unfair to employ anything but the usual items to be found in every amateur's shack.

General Construction Notes

A self-contained power supply was considered to be essential, as it is unlikely that the power pack of the existing receiver will be capable of providing an extra 18 mA of high-tension and 3 amps. of heater current.

Saving of space dictated a valve rectifier, a *Hivac* MR1 and a special mains transformer, made by *Premier Supply Stores* to give 250-0-250 volts. 30 mA, 4 v. 3A and 4v. 1A.

Two 4 μF. electrolytic condensers and a *Premier* 30mA, 30 Henry choke form the supply unit ; the terminal board of the choke was removed and leads were attached so that this item could be housed under the base-plate. The disposition of the other components is clear from the photog.aph, Fig. 3.

The set is contained in an aluminium box, the dimensions of which are given in Fig. 2. Although this size is about the minimum possible, the measurements need not be adhered to too strictly as they were quoted, mainly to ensure that the unit would match the appearance of the main receiver at the writer's station.

The box was supplied, to specification, by *Messrs. A.C.S., Ltd.*, of Bromley. The front panel and base plate, together with the subsidiary screens and all the components form one complete unit, which slides into the box, as shown in Fig. 2, thus permitting easy accessibility for maintenance purposes. The external connections, which are brought out through holes drilled in the back of the box, number five. Aerial, Earth, Preselector, Converter Coupling Lead, and Mains. The converter lead must be screened, to prevent second channel interference at the intermediate frequency, which is 2 Mc. This is very important, especially if the reader happens to live near GWW ! The preselector connecting lead should not be screened as this tends to cut down signal strength.

Only two controls appear on the front panel, the main tuning dial and a switch ; the latter being in series with the heater of the TH4A frequency change to enable this valve to be switched off when the unit is being used as a preselector. The top of the box is hinged at the back and this allows easy access to most of the components and also to all the coils, etc., whilst the unit is in use.

Circuit and Construction

The circuit consists of a Radio Frequency amplifier employing one of the special " television " range of valves produced by *Messrs. Mullard* ; the TSP4, which is a pentode having a mutual conductance of 7.5, and provides a very large stage gain at frequencies of the order of 50 Mc. This stage forms the " Preselector " and could, if the reader so wished, be built and run as a unit by itself, should the converter not be required.

The TSP4 is capacitatively coupled to a *Mullard* TH4A. triode-hexode frequency changer, the intermediate frequency output constants of which may be settled by the individual constructor to suit his own particular case. In the present unit it was decided to employ an I.F. of 2 Mc. as the station receiver will not go below 1.5 Mc. The owner of a " Broadcast " superhet or straight TRF receiver could employ whatever I.F. he liked, and design the anode circuit of V2 accordingly. If possible, a frequency above 1.7 Mc. is advisable as this rules out practically all image interference and ensures that amateur signals will not appear more than once on the tuning dial.

Great care has to be taken to ensure short leads and all by-pass condensers and de-coupling condensers, etc., are returned to the *Cathode* of the associated valve ; this is most important. The cabinet should be earthed but on no account should leads be taken to the nearest convenient point on the metal work as, at these high frequencies, two points on a sheet of metal are not necessarily at the same R.F. potential.

Special care has been taken in the preparation of Fig. 1 in showing exactly how the unit should be wired and it is emphasised that this layout should be carefully followed.

The valves are mounted horizontally because in both cases (as the grid is brought to the top cap), in designing the screens, it has to be remembered that all points in the circuit at the same level of amplification should be confined within the same screening compartment. Fig. 1 shows how this is done ; the dotted lines represent screens, and each space has been numbered to make the layout clear. No. 1 holds the oscillator section of V2 ; No. 2 holds the grid circuit of V2 and the anode circuit of V1 ; No. 3 houses the aerial coil and grid circuits of V1. Section 4 isolates the anode circuit of the hexode, which is tuned to the intermediate frequency. No. 5 holds the power pack and No. 6 represents all sub-baseboard wiring.

Reference to Fig. 2 shows how the screens have to be drilled and slotted and if this is not done by the makers of the box, it will be wise to carry out this preliminary work first. The general details of construction should be quite clear from the diagrams and photographs, so it is proposed to concentrate on the important features where special care is required, rather than provide the reader with a screw by screw description of assembly.

It will be noted that the metallising on V2 is connected to cathode, care must therefore be taken to insulate the metallising from the screen through which the valve projects. A few turns of rubber tape does the trick nicely. In the case of the R.F. valve, the metallising is earthed so this does not matter.

The mounting of the band-set condenser, C5, in the oscillator compartment calls for some ingenuity, to avoid long leads ; it will be seen from the photograph that this is soldered directly across the tags of CC, the tuning condenser. Owing to the large frequency range to be covered and to the difficulty of accurately tapping the coils, it was decided to shunt the condenser across the whole of the coil. This works out quite satisfactorily in practice and the amateur bands are nicely spread over practically the whole of the tuning scale.

The coil sockets are mounted directly above their associated tuning condensers, the support, which is also the electrical connection, being made from $\frac{1}{8}$ in. by 3/16 in. copper strip bent to shape.

Space limitation makes it necessary to slot the main screen to take the fibre disc of the dial movement ; care must be taken to see that this is free to move through the full extent of its travel without fouling other apparatus and wiring.

The switch for changing to preselector working is mounted in compartment No. 2, and consists of an *Eddystone* coil base, type 1051, mounting two

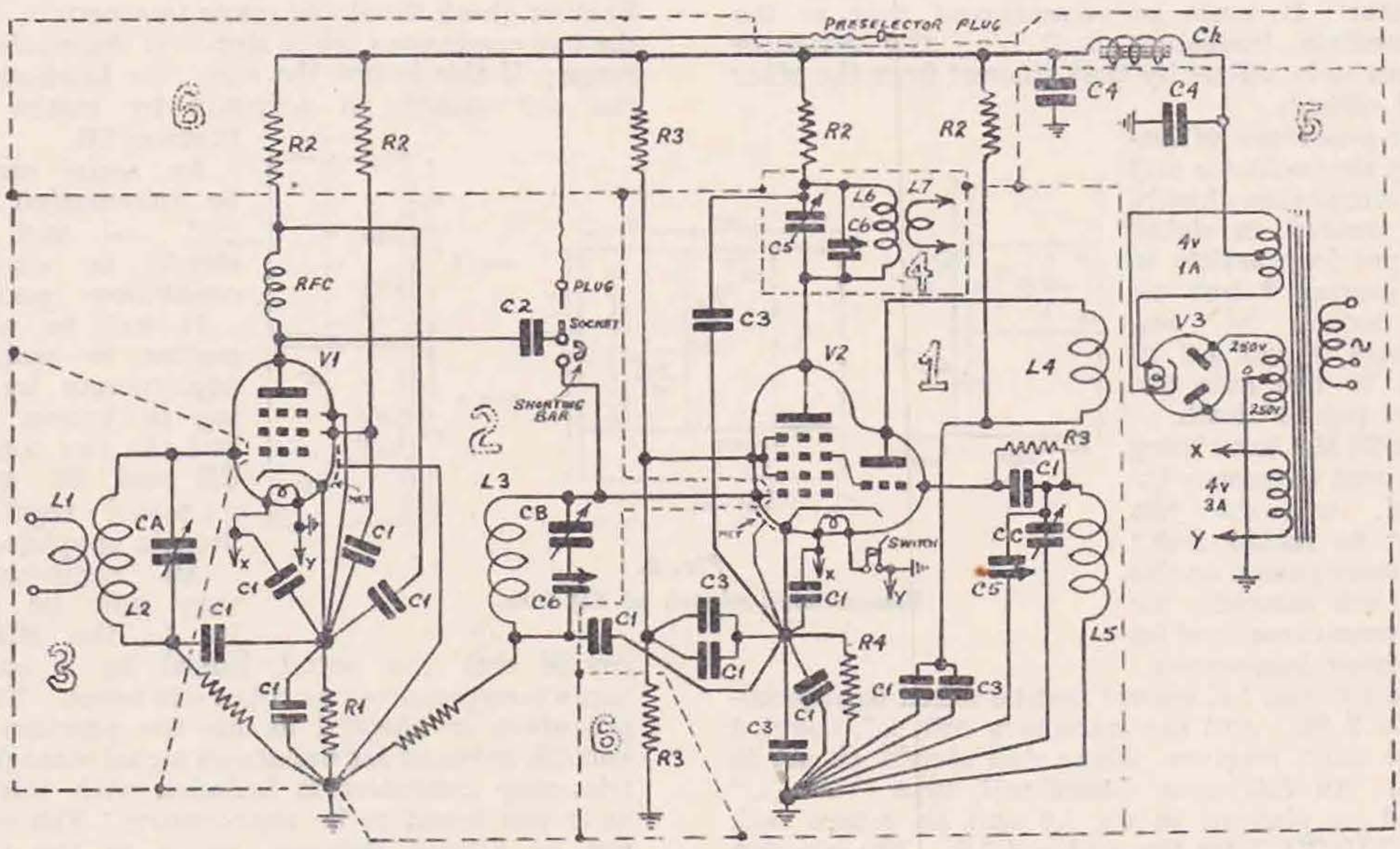


Fig. 1.
General Circuit Diagram.

CA, CB and CC—.00025 μF., Eddystone.
C1—.002 μF., Type 690W, Dubilier.
C2—.00005 μF., Type 690W, Dubilier.
C3—.01 μF., Type 691, Dubilier.
C4—4 μF., Electrolytic, Type F2910, Dubilier.
C5—50 μμF., Microdenser. Eddystone.
C6—Ceramic Pre-set, Eddystone.
R1—260 ohms, 1 watt, Type F, Dubilier.
R2—15,000 ohms, 1 watt, Type F, Dubilier.
R3—50,000 ohms, 1 watt, Type F, Dubilier.
R4—375 ohms, 1 watt, Type F, Dubilier.
R5 (see note)—100,000 ohms. 1 watt, Type F. Dubilier.
L6—4-pin Coil, Type ACWO Eddystone.
V1—TSP4 Valve, Mullard.
V2—TH4A Valve, Mullard.
V3—MR1 Valve, Hivac.

Other Components.

1 R.F. Choke, Type 1010, Eddystone.
1 Dial, Type 1070 Eddystone.
3 Adjustable Insulated Brackets, Type 1007, Eddystone.
2 Flexible Couplers, Type 1009 Eddystone.
1 4-pin Valve Holders, Type 949, Eddystone.
2 7-pin Valve Holders, Type 1075, Eddystone.
6 Frequentite Bases, Type 1051, Eddystone.
4-turn Ultra S.W. Coils, ULCA, Type 1050, Eddystone.
3 8-turn Ultra S.W. Coils, ULTA, Type 1050, Eddystone.
2 3-turn Ultra S.W. Coils, ULCO, Type 1050, Eddystone.
1 4-pin Standard Valveholder, Clix.
1 Mains Transformer, Premier Supplies.
1 30-Henry Choke, Premier Supplies.
1 Aluminium Box, A.C.S.
1 Toggle Switch, Bulgin.

Note.—The two resistances not designated in Fig. 1 are Dubilier 100,000 ohms, 1 watt type.

terminals and a shorting bar (see Fig. 2). One terminal is also provided with a socket made from an old valve " leg," and this is mounted opposite a hole drilled in the main screen.

The 2 Mc. coil is tuned by a 40 μμF. condenser. C5, with a ceramic 30 μμF. (C6) condenser in parallel. A hole is drilled in the front panel to give access to the adjusting screw of C5 and this may be set by means of a screwdriver.

The aerial terminal is insulated from the box by a paxolin bush, and the earth terminal is screwed to the metal-work.

Some of the clearances are rather small in the assembly and patience with carefulness is the watchword.

Lining Up

For initial lining up, the flexible couplers between the three tuning condensers CA, CB and CC, should be slackened off so that each condenser may be rotated independently.

The first circuit to consider is obviously the oscillator. It must be remembered that as the intermediate frequency is 2 Mc., the oscillator requires to be off-set by that amount from the other tuned circuits.

The procedure of lining up the oscillator and other circuits has already been treated in detail in a previous article in this Journal, * but for the benefit of new members it will not be amiss to run over the salient points afresh.

The 28 Mc. band being the lowest frequency involved, will be the easiest to tackle first; experience gained on this band will simplify the adjustments required for the higher frequencies.

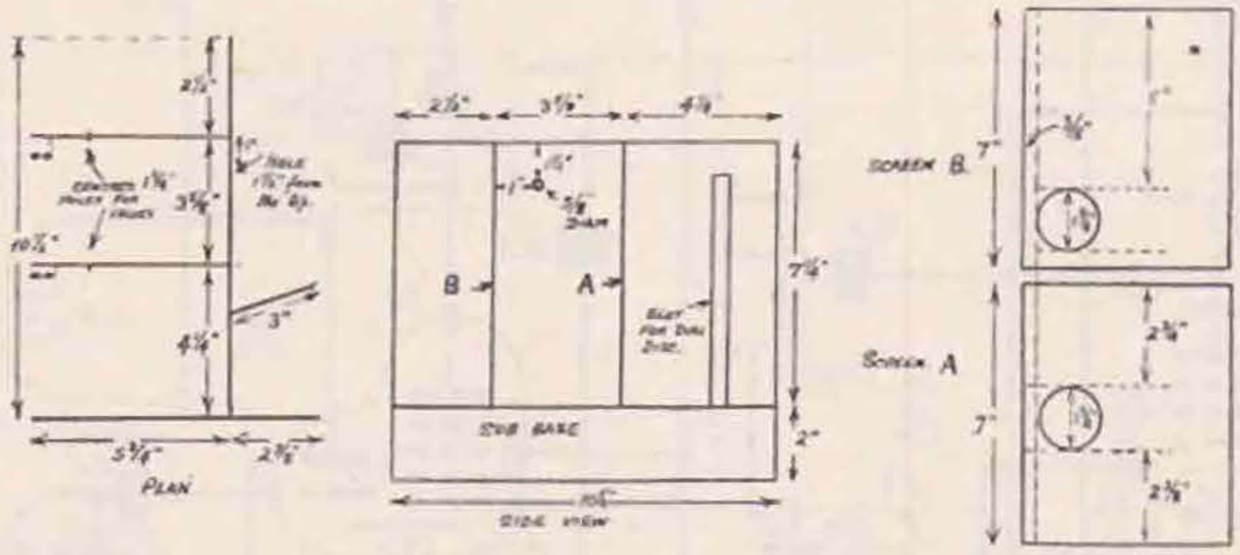


Fig. 2.
Dimensional sketch of the box.

The I.F. coil L6, should first be tuned to approximately 2 Mc., and the secondary coil, L7, coupled to the main receiver, whose dial should be set to 2 Mc. An *Eddystone* 4-turn coil, type " ULCA," should be plugged in for L5 and an 8-turn coil, type " ULTA," for the grid coil L3. The reaction coil L4 is a three-turn coil which may require a certain amount of careful positioning to give the correct degree of feedback without causing self-oscillation.

The crystal oscillator of the transmitter will come in useful at this point and the 28 Mc. harmonic should be found and checked by means of an absorption wavemeter, the greater the number of crystals available, the better, and naturally the owner of edge-of-band crystals is at an advantage. Set Condenser C5 (which is in parallel with L5), to maximum with the blade of a screwdriver and tune round with condenser CC until the harmonic is located, now check that it really is the right one by means of the absorption wavemeter; then by readjustment of C5, locate the signal in its estimated correct position on the dial, assuming full coverage for the band. Repeat the operation with the other crystals until a curve can be drawn showing the approximate coverage of the tuning range. This will enable adjustments to be made if necessary to the band spread condenser C5, to locate the band within the limits of the dial scale. Up to this point, it is not necessary to connect an aerial to the unit as the signal due to the crystal oscillator is bound to be very strong.

When the oscillator is finally set, the next circuit to be tuned-up is the Hexode grid circuit. The C.O. harmonic should again be tuned in and C.B. rotated until the signal is peaked to its maximum strength. The position of the vanes with respect to the oscillator condenser, should be noted and if they are not in line, it will be necessary to alter the spacing of the coil L3 until, by readjustment, the two condensers coincide. In the writer's case, quite a large amount of manipulation of L3 was required, the turns being widened out considerably. Unfortunately a six-turn coil is too small and no seven-turn coil is available in the standard range. Further check should be made to ascertain whether the two condensers are in step over the whole tuning range; if this is not the case, the band-spread of the coil should be adjusted by means of the trimmer C6.

An aerial may now be link-coupled to the grid coil and signals should be audible, conditions permitting.

It will be an easy matter to make final adjustments by listening to known signals, and the two condensers CB and CC may be ganged together by flexible couplers.

An eight-turn coil may now be plugged in to the R.F. grid circuit and the aerial, linked by a couple of turns interposed between the coil turns. The same procedure is adopted as for the previous circuit and CA is tuned for maximum signal strength. No trimming condenser is included with this circuit as it was found to be unnecessary. The coil need not be altered because, owing to the low loss character of the circuit, the stray capacities are small. Satisfactory tracking of the tuning condenser was made possible by removing one plate and carrying out minor corrections by slightly bending the outermost vane. The tuning peak is quite sharp and it is well worth while to take care in tracking this circuit properly.

Before declaring the circuit open, it is advisable to trim up the L.F. circuits by a touch on C5 across L6, for maximum efficiency.

The Alexandra Palace transmissions on 41.5 Mc. present very little difficulty as it is only a question of peaking each circuit to maximum efficiency rather than concerning oneself with band-spread.

The coils required are as follows :—

L2. Four turns slightly pressed together.
L3. Four turns slightly pressed together.
L4. As before.
L5. Three turns widened out considerably.

* " See " The Design of an All-Mains Crystal Gate Receiver," page 188, November, 1936.

The 56 Mc. Band

The 56 Mc. band calls for the same technique as the lower frequencies, tempered with a reasonable amount of extra care and patience. The harmonics from a crystal oscillator may be used as before but special care must be taken to identify these as the right ones, the co-operation of a nearby amateur station using a crystal controlled transmitter, is invaluable. As the three-turn coil is the smallest obtainable, it is advisable to experiment with some home-made coils made of stiff copper wire, before rebuilding a standard coil. The necessity for doing this would not arise if it had not been desirable to keep the oscillator circuit high-C in the interests of stability, and probably a standard coil could have been used; the extra trouble, however, is well repaid in the resultant stability of the unit on all bands. It was found that a one-turn coil covered a band from 56 Mc. to about 58.2 Mc. with the condenser padding as before.

The whole band cannot be accommodated with one coil unless the builder is content to tolerate a much more cramped band and consequent difficulty with tuning. The grid and aerial coils are three turns each, manually adjusted for band-spread.

Trouble was experienced on 56 Mc. with modulation hum, but this was considerably reduced by the addition of two .001 μF. condensers across the mains with the centre connection earthed and two similar .001 μF. condensers, one across each side of the H.T. winding on the transformer. The effect is only noticeable on 56 Mc. and it was negligible after the above precautions had been taken.

The Preselector

As already mentioned, the R.F. amplifier may be used as a preselector on the 7 and 14 Mc. bands in conjunction with the existing receivers.

The change-over is effected by removing the converter lead from the aerial terminal of the main receiver and inserting the preselector lead. The small shorting bar should be disconnected from one terminal on the ceramic holder already described, and the preselector plug inserted in the valve socket which is connected to the condenser from the R.F. valve anode circuit.

The coils are wound on formers 1 in. in diameter and 2 in. long. Paxolin, ceramic or good quality ebonite will all serve quite well.

The 14 Mc. coil consists of 12 turns of No. 30 enamelled wire close wound and the aerial coupling is by means of about four turns wound over the earthy end in the form of a link, one end being left free and the other being connected to the aerial.

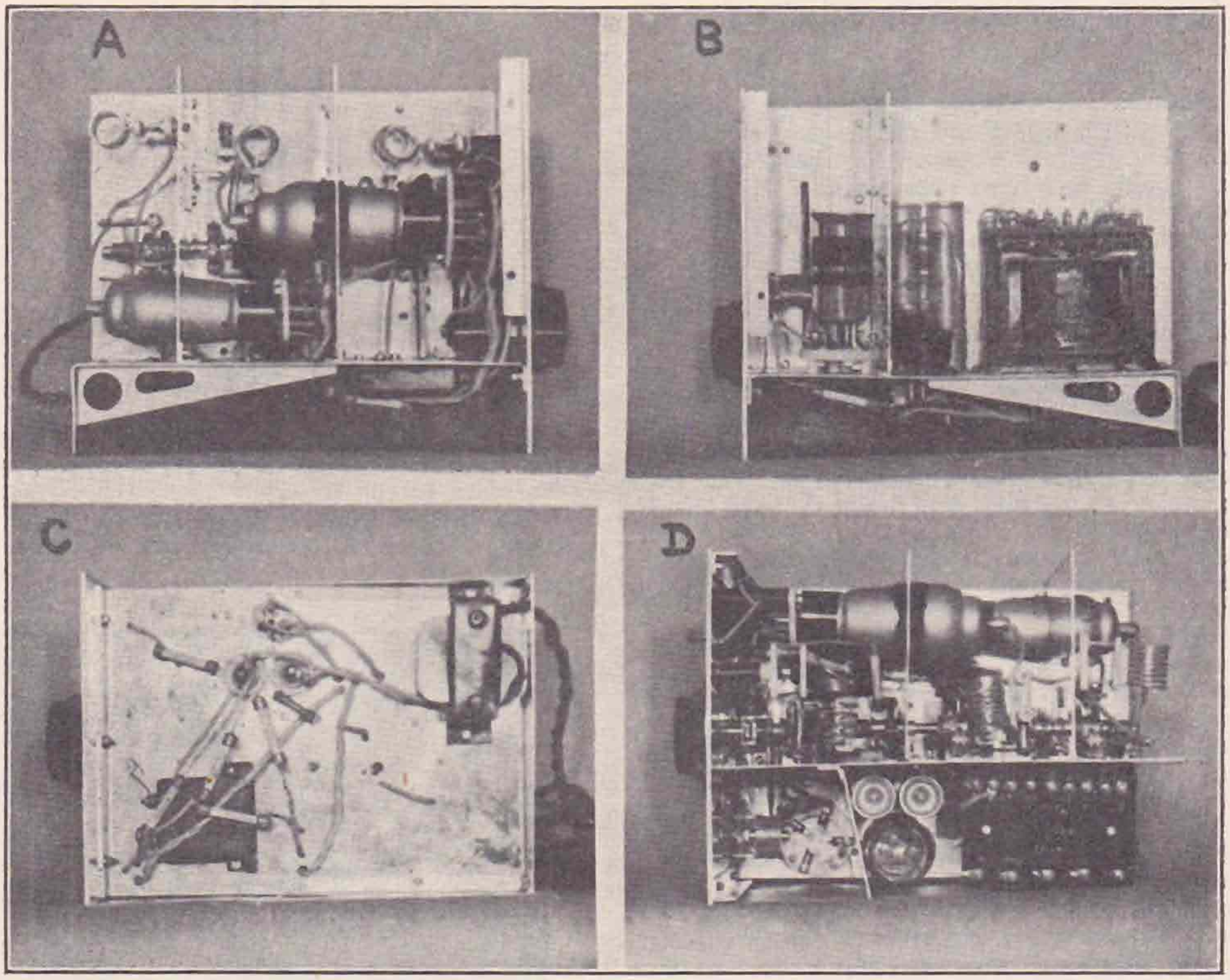


Fig. 3. Photographs of the Pre-selector.

A. Side view showing valves and coils.
B. Side view showing IF coil and power supply.
C. Underside showing smoothing choke
D. Plan view giving general layout.

An optimum point exists for the best coupling and the turns may be pushed towards the grid end of the coil until the circuit shows signs of instability, then, after the necessary adjustment, the whole may be given a coating of " Durafix " to maintain the spacing.

The peak on the 14 Mc. band is very marked and it will be found to increase signal strength and signal to noise ratio as well as reducing image interference in a most remarkable manner. It will be necessary to readjust the tuning condenser for maximum signal strength about every 50 Mc., on the 14 Mc. range.

The 7 Mc. coil has double the number of turns and an extra two turns of aerial coupling, but tuning is considerably flatter owing to the much higher L/C ratio. If the unit was designed for operation down to 28 Mc. only it would be possible to increase the capacity of the main tuning condenser which in turn would enable the preselector to operate satisfactorily on frequencies lower than 7 Mc. As it is, the tuning would be too flat to serve much purpose.

It will be realised that the R.F. amplifier and frequency changer stages could quite well be built independently of each other where economy is of paramount importance. The frequency changer stage is quite effective without the amplifier, but with the type of valve used the R.F. stage is well worth the extra cost and trouble involved.

On the other hand, the R.F. amplifier could be built as a single stage preselector to a receiver which already covers the ultra high frequency bands.

The unit has been working satisfactorily for some months at station G2MI and the results have fully justified the design. Nothing has broken down and no trouble has been experienced. It can be confidently recommended to the amateur fraternity as a very useful piece of apparatus.

The approximate cost of the unit is £8.

Revolving 56 Mc. Aerial

The sketch illustrates the beam aerial for use on 56 Mc., designed and built by Dorothy Hall (W2IXY). The transmitter with which it is used consists of a long line oscillator having two type 45 valves in push-pull, with 22 watts input, and the results since the aerial was erected have been excellent.

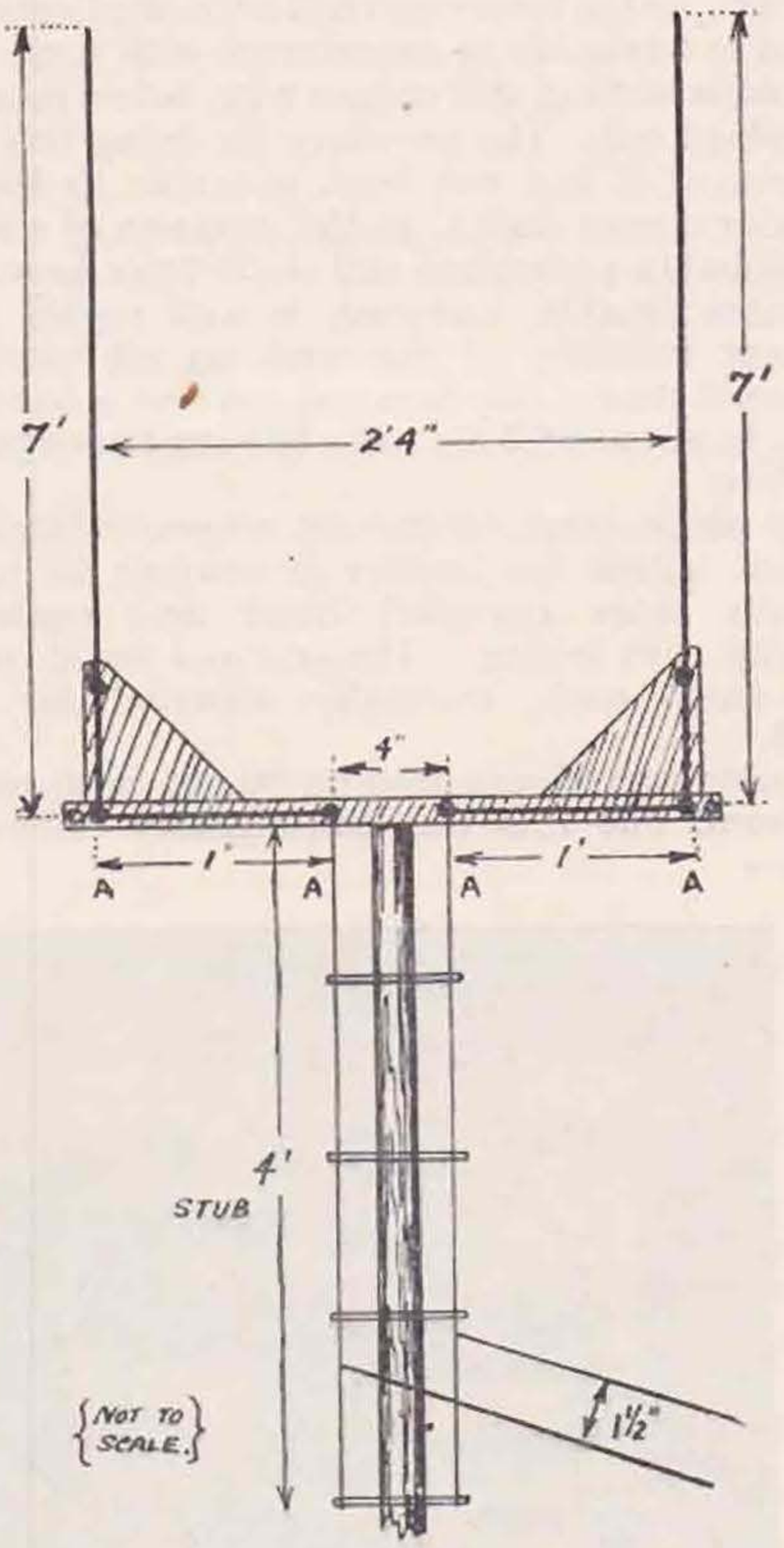
Miss Hall states that the power gain is very good, and a turn of the array would bring an S2 signal up to S9 or *vice versa*. Using this aerial at a height of 35 ft., a range up to 60 miles is obtained.

The two half-wave aerials are made of ½-in. aluminium tubing supported on 2-in. stand-off insulators, six of which are used at the points indicated " A " in the diagram, in order to obtain mechanical stability. The cross-beam is made of 4-in. by 2-in. timber, with a hole in the middle to allow of a bearing being made. An old bicycle wheel hub can probably be pressed into service for this part, and it should not be difficult to arrange a smooth bearing to enable easy rotation.

Two holes are made at the ends of the wooden beam and thin rope threaded through so that the whole array can be revolved from a distance.

The stub is made of 14 S.W.G. wires spaced 4 ins. apart, the bottom ends being shorted across. The transmission line consists of two No. 18 S.W.G. wire spaced 1½ ins., but, if desired, a 70-ohm line may be connected a few inches either side of the centre of the shorting bar.

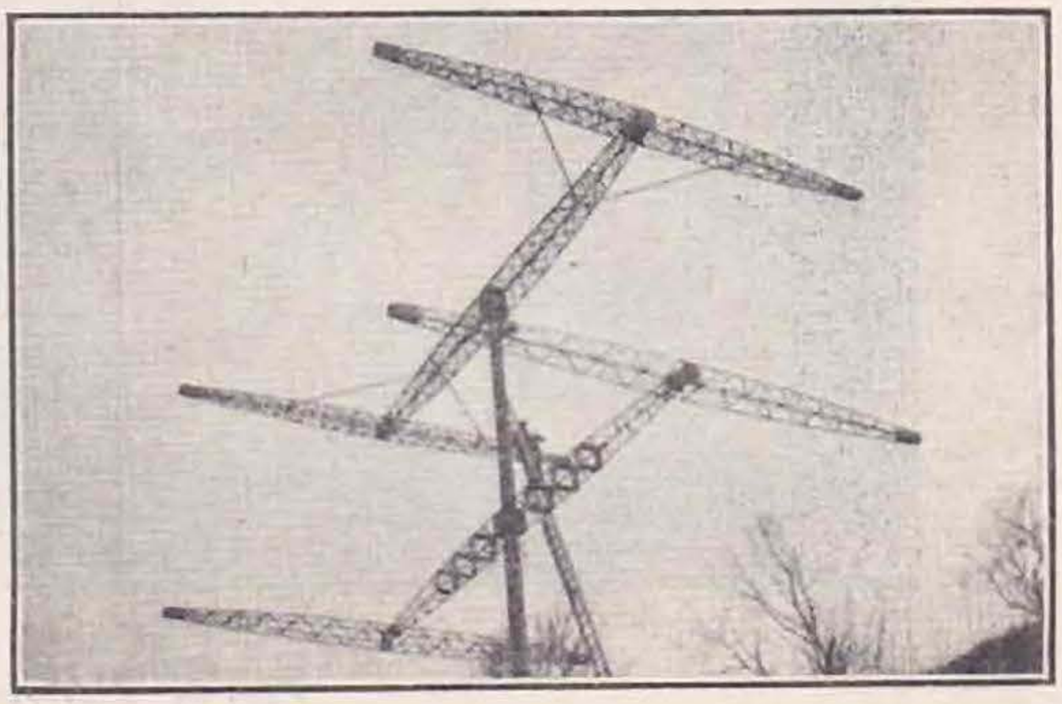
The correct tapping point for the higher impedance transmission line should be determined by experiment, a distance of 12 ins. from the shorting bar being suggested for a start.



This type of aerial, in which both radiators are directly energised out of phase, is bi-directional in the plane of the tubes.

The writer will be interested to learn of the results obtained by members who erect this aerial.

G5JU.



The rotating beam used by GM6RG.

Superhet Oscillator Tracking

By J. K. Todd (G2KV).

THE writer recently had occasion to acquire data for correct oscillator padding capacitances for unusual I.F.'s. No figures could be found, whilst the articles examined were rather difficult to unravel. It was decided, therefore, to work them out from first principles, and the results are passed on to readers as it is thought they will remove one of the major difficulties in designing any special superhet.

"Why do we use Padding?"

Before proceeding with the formulæ, it might be advisable to give a brief explanation of the reasons a padded oscillator is necessary. We will assume that we have two circuits to be used for the signal and oscillator frequencies. The signal range is to be from 30 Mc. to the value corresponding to max. capacitance of the signal tuning condenser, which for simplicity we can take to be 15 Mc., giving a 2 : 1 tuning range. In nearly every case too, the oscillator tuning condenser is of the same type as that used in the signal circuit and this we will also assume; for the example, the I.F. is to be 10 Mc.

The frequency-dial reading curves of Fig. 1 have been drawn straight line. It does not matter what they are in practice as the abscissa scale can be altered to obtain a straight line without affecting the validity of the argument.

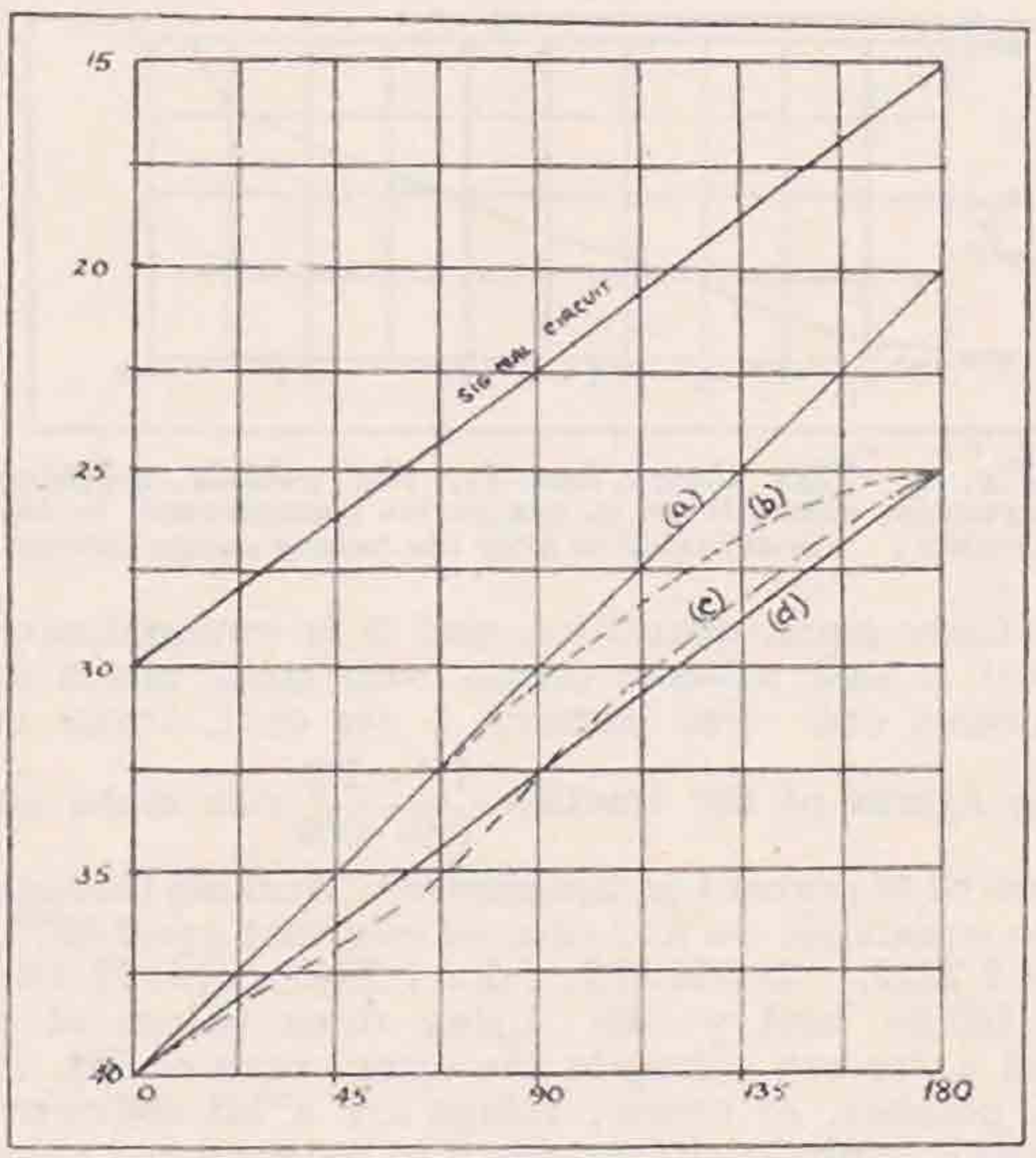


Fig. 1.—Curves showing principle of padding the oscillator. Signal circuit and (a) are the tuning curve of unpadded circuits, (a) being that of the oscillator, which is at a higher frequency than that of the signal. Note that both have a 2 : 1 tuning range.

(b) is similar to (a) except that a fixed condenser has been connected in series with the oscillator tuning condenser.

(c) follows from (b) when a condenser is connected in parallel with (c)'s combination.

(d) is the ideal curve.

The signal circuit inductance is adjusted so that 0 and 180° on the dial correspond to 30 and 15Mc. respectively (the tuning condenser and coil was for simplicity sake assumed to give a 2 : 1 tuning range). The oscillator inductance is then adjusted to give 40 Mc. at 0° on the dial. The 2 : 1 tuning range obtained with that condenser then means that 180° corresponds to 20 Mc. The curves are drawn in Fig. 1 and called signal circuit and (a) respectively. We can see that perfect tracking is obtained at 0 on the dial, but is 5 Mc. wrong at 180°. The first thing to do clearly is to put a condenser in series with the oscillator tuning

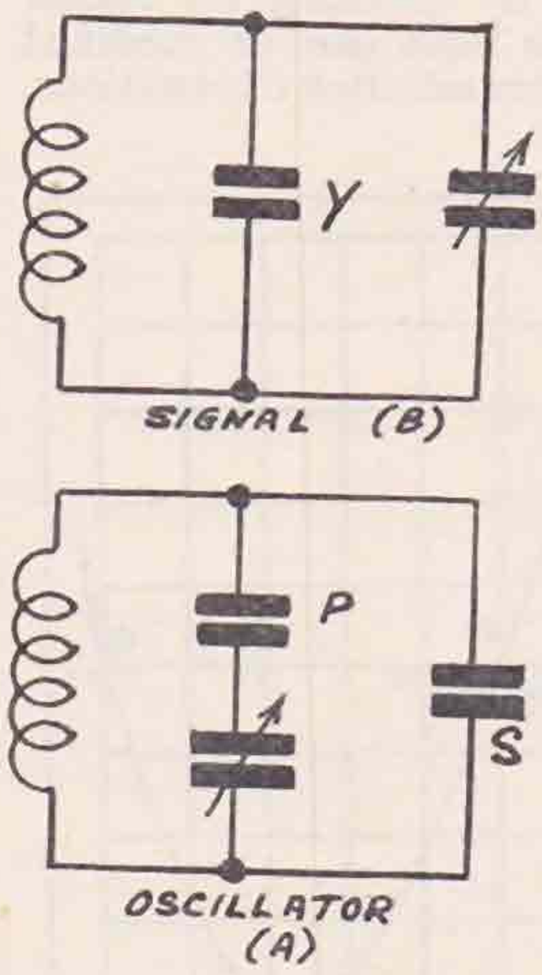


Fig. 2.—Normal circuits for tracking. (a) the oscillator tunes to a higher frequency than that of (b), the signal circuit.

condenser. If the right value is chosen (a) is bent over at the top to (b) giving perfect tracking at 0 and 180° on the dial, but it is still 2 Mc. off in the middle. By putting a condenser in parallel with the tuning and series condensers and suitably adjusting their values, curve (c) can be obtained which should be compared to the ideal curve (d).

The reason why the curves are of the specific shapes shown will be clear if it is remembered that a series condenser flattens out the curve at high capacitance values, and a parallel condenser does so at low capacitance values and that the nett result then is of an " s " shape.

Of more academic interest is the fact that this triplet tracking can be obtained with the oscillator at a lower frequency than the signal circuit in two ways. First by padding the signal circuit instead of the oscillator circuit, as mentioned later, and secondly by using an oscillator tuning condenser of considerably greater value than that used in the signal circuit; but trouble must occur when the signal frequency is higher than but near to the I.F. and such a condenser is rarely used in practice.

The next section shows how to calculate the values of padding condensers restricted to the case where the tuning condensers are all of the same type.

Calculating Capacitances for Padding

As is usual with such calculations, some degree of accuracy must be decided upon to see how much approximation is allowable without cheating! The easiest calculations result if it is assumed that the variable condensers have zero minimum capacitance, and to substract from the shunt capacitance so calculated the real effective minimum of the condensers. Such an assumption, though hardly appearing very invalid, gives values of the series capacitance widely differing from the optimum. In the example given later, the error is 30 per cent. Something better is indicated.

The ideal data to work from is that the set, using condensers with a maximum and minimum of so many μμF should tune over a specified band width giving perfect tracking at three stated frequencies, using a given I.F. Such an analysis though quite simple, produces equations which are very long. However, by crediting the reader with a little intuition, the data can be modified to require a very much shorter selection of equations.

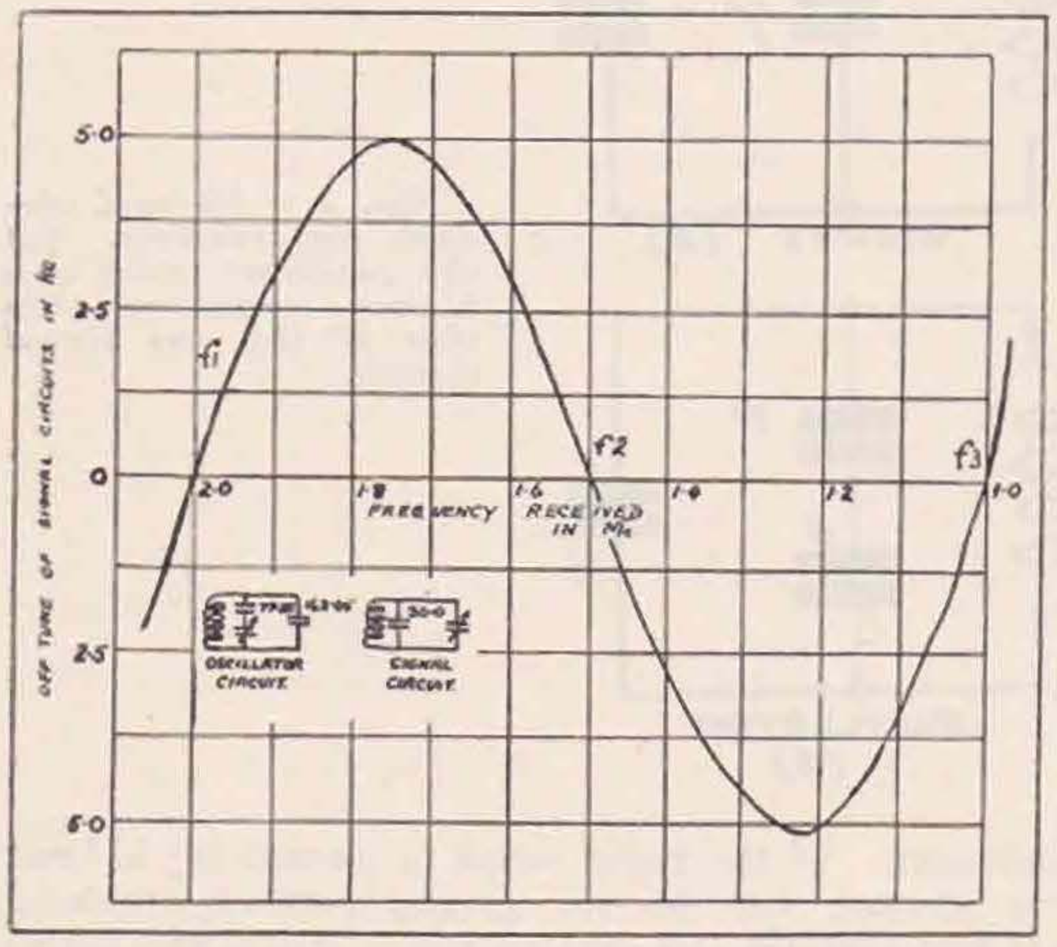


Fig. 3.—This curve shows the typical errors obtained with properly adjusted tracking circuits and is actually the error from the circuits calculated in the example.

The new data is as follows :—The set using the given condensers must have perfect tracking at f_1, f_2, and f_3 Mc. The condensers having a capacitance a at f_1 and c at f_3.

f_1 is the highest of the three frequencies and a is therefore smaller than c.

It is up to the reader to choose the values of a and c. The I.F. is f.

It is well known that the circuits of Fig. 2 can give perfect tracking at three frequencies. An error curve such as shown in Fig. 3, is obtained with their use. It is clear that the least overall error will occur when the outer two " perfect " frequencies are near to, but not actually at the band edges. It is, therefore, necessary to choose a and c to be near the minimum and maximum capacitances, a being nearer the minimum than c is to the maximum. A fairly good guess has been made in the example given. The equations have been split up to save space, and it is merely necessary to work them out in turn. They are :—

$$m=\left(\frac{f_2}{f_3}\right)^2\times\frac{f_1^2-f_3^2}{f_1^2-f_2^2}$$

$$x=\left(\frac{f_1+f}{f_3+f}\right)^2$$

$$b=\frac{c-a}{m}+a$$

$$k=\left(\frac{f_3+f}{f_2+f}\right)^2\times\frac{f_1+f_3}{f_1+f_2}\times\frac{f_1+f_2+2f}{f_1+f_3+2f}\times\left(\frac{f_2}{f_3}\right)^2$$

$$p=\frac{c-bk}{k-1}$$

$$s=\frac{pc/(p+c)-xpa/(p+a)}{x-1}\qquad y=\frac{cf_3^2-af_1^2}{f_1^2-f_3^2}$$

where f_1, f_2, f_3 are the three frequencies for perfect tracking in decreasing order, f is the I.F., c and a are the capacitances of the variable condensers corresponding to f_3 and f_1 respectively : m, x, and k are merely constants (for any particular case) and b, as a matter of interest, is the capacitance corresponding to f_2, p and s are the required series and shunt capacitances in the oscillator circuit.

An Example

Suppose the condensers are variable from 12 to 160 μμF. Choose a = 15 and c = 150. Let f_1 = 2.00, f_2 = 1.50, f_3 = 1.00 and f = 8.5 (all in Mc. It does not matter what the units are so long as they are all the same). Now here must be said a word or two about the accuracy of working out. It is absolutely essential to use logs . . . preferably 5-figure ones. The equations are, unfortunately, chiefly of the form of the quotient of the difference

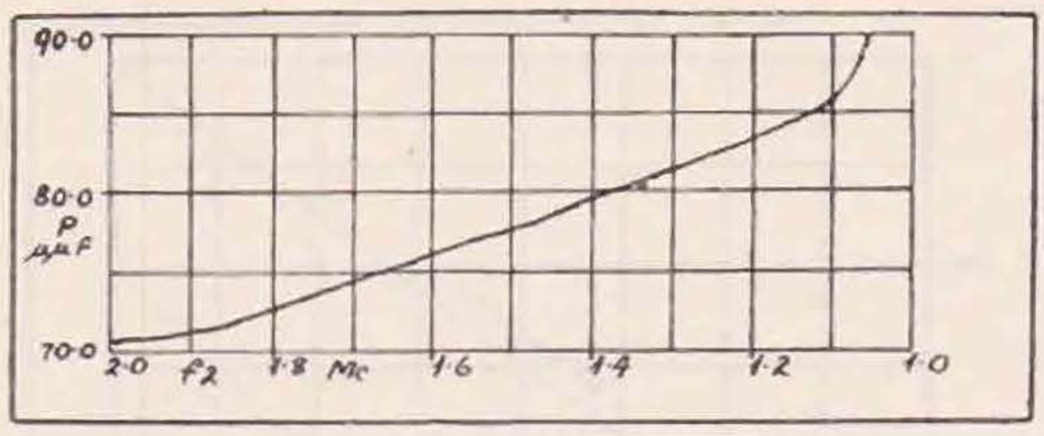


Fig. 4.—This shows how f_2, the middle tracking frequency, depends on p, the series capacitance, in the example : s is adjusted to keep the tuning range correct.

of fairly equal quantities, and it is extraordinary what a vast mistake occurs with small errors in working out. For instance 1 per cent. errors in the figures of the fraction $\frac{1.1-1.0}{0.9-0.8}$ can make an error of 46 per cent. in the answer! Working through the equations, we find successively that m = 3.8571, x = 1.2217, b = 50.000, k = 1.7840, p ÷ 77.550, s = 162.05, and y = 30. Using these values of p and s, we can calculate the error curve of Fig. 3. In practice, of course, things are a bit different. First it is obviously necessary to reduce s and y by the amount of stray capacitance across the circuit (excluding that of the variable condensers which have already been taken into account). Secondly, it is usually out of the question to get p and s exactly right. So that the only compromise is as follows :—work out p (accurately) and use the nearest available value ; substitute that value into the equation for s and use a trimmer slightly above the value so calculated (less, of course, the strays).

When the set is working, adjust the inductance against the trimmer so as to keep 0 on the dial at the desired frequency, and see where 100 (or 180°) comes. If the wavelength is not enough, reduce the trimmer and increase the inductance and vice versa. Although this is the only compromise possible, it is not satisfactory as f_2, the middle perfect frequency, rapidly changes for small variations in p. The idea of working out the value of s from the available value of p, keeps f_1 and f_3 fixed (*i.e.*, nearly the tuning range), but the position of f_2 is very sensitive to the value of p. Fig. 4 shows f_2 plotted against p, using the data above (or rather, as much as possible). It will be seen that f_2 can easily pass f_1 and rapidly approaches f_3, but does not actually pass it till p=228 μμF. It therefore seems preferable to use, if necessary, a higher than optimum p. Unfortunately this is not necessarily true. Fig. 5 shows error curves with p 65 and 100 μμF, and in spite of the triplet for 100 μμF, the overall error is worse. It seems that error curves will have to be drawn for any particular case to determine the optimum. It is absolutely necessary to use at least 5-figure logs for the error curves. With a simple capacitance meter, it should be possible to adjust p to within 3 per cent. from a fixed air model, and this tolerance would keep f_2 between 1.66 and 1.34 Mc. and leave the overall error low.

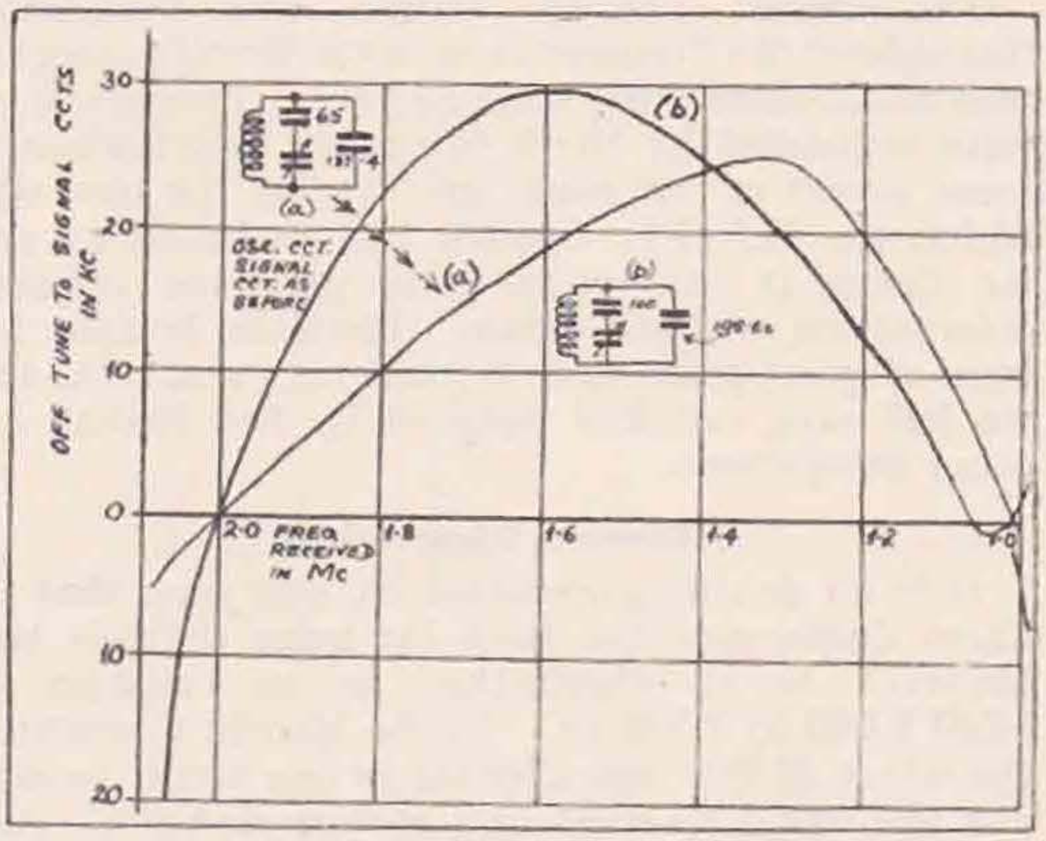


Fig. 5.—This shows the tuning errors for the example when p is incorrect; (s again is adjusted to keep the tuning range correct.) p should be 77.55 μμF. and the curves are for values of 65 and 100 μμF.

If, for instance, at u.h.f., it is more convenient to work the oscillator circuit at a lower frequency than the signal circuits, the same equations can apply if −f is substituted for +f. Unfortunately, however, the results are useless since p must be negative. But by changing over the functions of the circuits, *i. e.*, Fig. 2 (*a*) is the signal circuit and 2 (*b*) the oscillator circuit, three point tracking can be obtained again. The same equations apply without change of f's sign, but f_1, f_2 and f_3 must be chosen so that f_1+f, f_2+f and f_3+f are the signal frequencies for perfect tracking. Thus if we require to tune from 60 to 28 Mc. with an 8.5 Mc. I.F., then f_1 in the formulæ is 60−8.5=51.5, f_3 is 28−8.5=19.5, and f_2, as chosen (say 44−8.5=35.5). The value of y, the shunt capacitance of the now oscillator circuit might turn out to be less than the least strays possible, in which case it would be necessary to restrict the tuning range.

A SILENT KEY

MR. W. A. ANDREWS (G5FS).

IT is with profound regret that we record the death on April 28, 1938, at the early age of 47, of Mr. W. A. Andrews, B.Sc., of Bristol.

"Billy" Andrews, by which name he will always be remembered by his hundreds of friends, was Superintendent of the Merchant Venturers' Technical College, Bristol, and was lecturer in wireless and head of the Chemistry Department in the Faculty of Engineering.

Educated at Rugeley Grammar School, Stafford Grammar School, and Birmingham University, he held the degree of B.Sc. and was also an A.I.C. and M.I.Rad.E. Recently he was appointed a director of Messrs. Wigmore & Co., mineral water manufacturers, Bristol.

Mr. Andrews had an adventurous war career, occupying the first aeroplane to cross the German lines carrying wireless gear. He was promoted to Captain on the field and received the congratulations of many prominent people. He was responsible for the Type A microphone used for aerial wireless communication.

Mr. Andrews held a transmitting licence in pre-war days and his interest in radio matters continued unabated after hostilities ceased. He was always pleased and ready to impart his considerable knowledge or lend his apparatus to those who were lacking in either. In past years his signals had been heard in all parts of the world, but in recent months he had been concentrating on 56 Mc. work.

He will be especially missed in his own town, where his interest in local R.S.G.B. matters brought him into prominence. He was instrumental in arranging many important visits to places of scientific interest, and the success that attended the R.S.G.B. stand at the first Bristol Radio Exhibition was in a very large measure due to his personal efforts. The fine lectures and demonstrations so frequently a part of Bristol Conventionettes were his work for the benefit of Amateur Radio.

He was fortunate in having a sympathetically scientific wife who holds the degree of M.Sc., by whom he is survived with three sons and a daughter.

Amateur Radio has lost one of its greatest pioneers and many of us a close personal friend.

Surrey Radio Contact Club

At the April meeting of this go-ahead club a demonstration of modern American-made gear was given by Mr. Pickard (G6VA), of *Webbs Radio*. Several commercial receivers and transmitters were displayed.

A comprehensive summer programme is being arranged, details of which can be obtained from Mr. K. W. Drummond, 7, Hill Close, Riddlesdown, Surrey.

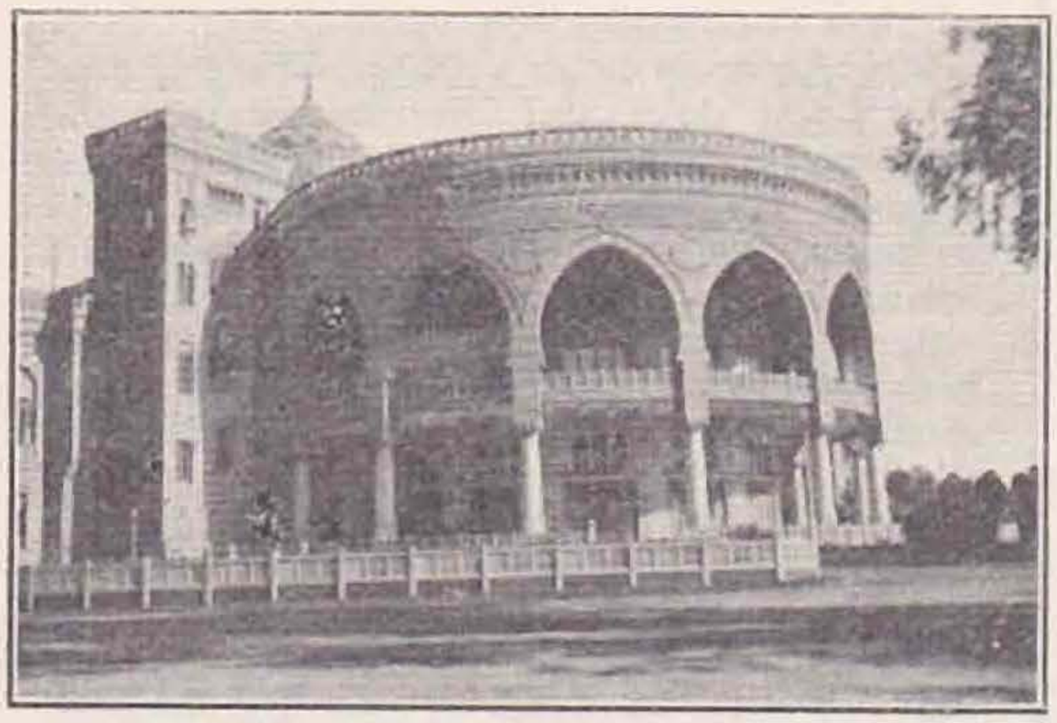
The Cairo Conference

By Arthur E. Watts (G6UN).

IN the last issue of the Bulletin an interim report was hurriedly prepared because it was felt that members would be anxiously awaiting some authentic news regarding the decisions made at Cairo. Although, as was mentioned at the time, the frequency allocations were not then officially agreed, it seemed almost certain that no fundamental changes would take place at the Plenary Sessions. That view has been confirmed and we are now able to give the final position as affecting radio amateurs.

Appreciations.

Before commencing a detailed account of the Conference I should like at this early juncture to record my very warmest thanks to all who were so kind to Mrs. Watts and myself during our visit to Egypt. From the moment we arrived at Port Said up to the time Mr. Frank Pettitt (SU1SG) said good-bye to us on board the s.s. *Patria* at Alexandria, we felt completely at home and among real friends. Those who have been abroad since becoming amateurs will, I feel sure, know how gratifying it is to find a hand of welcome extended



Heliopolis Palace Hotel.
The meetings of the Technical Sub Committee No. 1 dealing with Frequency Allocations took place on the first floor of this part of the Hotel. The ground floor is the dining room.

by those who have the same interest, that of Amateur Radio.

It would require several pages of this Journal to set out in detail the many interesting incidents of our trip, but mention must be made of the dinner so kindly given to the I.A.R.U. delegates and Council members of the Experimental Radio Society of Egypt by H.H. Prince Abdel Moneim (SU1AM), the patron of the E.R.S.E. In Prince Moneim the amateurs in Egypt have a very good friend, and one who understands their problems, because he himself is an amateur.

It was a great pleasure to meet during our stay such well-known amateurs as Messrs. Marsh (1WM), Pettitt (1SG), Moens (1RO), Manns (1JM), Wimbush (2TW), Chorlian (1CH), Disteche (1RD), Bourne (1HB), and Keating (SU1NK). Each in his own way contributed in no small measure to the happiness of our visit, and opportunity is here taken of registering our sincerest thanks.

Procedure

During the early days of the Conference, Mr. Warner (Secretary, A.R.R.L.) and the writer worked in close collaboration, being joined some few days later by Mr. Paul Segal. Many hours were devoted to discussions and plans made for dealing with any proposal likely to affect our welfare. The opportunity was taken each day of contacting (informally when possible) the official delegates of our own and other countries. Frequently this had to be done between Sub-Committee meetings, and when awkward problems arose, it often became necessary to " buttonhole " seven or eight delegates. In this way we were able to place before them our views, and without question these interviews were largely responsible for the understanding which invariably resulted.

It was with great pleasure that contacts were established with the delegates from Canada, Burma, Eire, India, South Africa, Australia, New Zealand and Southern Rhodesia, all of whom were very friendly, as were the delegates from many of the foreign countries represented.

The closest possible liaison was maintained throughout the Conference with the British delegates who at all times were most helpful. Frequently we were requested by them to supply information on some aspect of our work, and due to the care with which the R.S.G.B. Council had prepared its case for Cairo, it was possible to give the requisite information without delay. That the Society had been at great pains to arm itself with real facts was, we feel sure, not lost sight of by the British and other delegations.

General Observations

It is no doubt appreciated by everyone that the Cairo Conference has been far more difficult than Madrid. As an illustration, let us consider the band 2,000 to 3,500 kc. In the Madrid Convention the whole of this was allotted as one band throughout the world to fixed and mobile stations. As a result of the Cairo Convention, in the European Region it is split up into 16 smaller bands, and in other regions into four smaller bands. In some parts of the spectrum the changes are not great. Frequencies up to 200 Mc. have been allotted to various services, whereas it will be remembered that at Madrid the only bands above 28 Mc. were the two bands 28-30 Mc. and 56-60 Mc. allotted to Amateurs and Experiments. The chief difficulty was to find space for aircraft and broadcasting.

Amateurs everywhere should note that all our bands were subjected to proposals from some Governments who would not have been averse to taking part, and in one case the whole, of a band away from us. It should also be appreciated that the position in Europe is very different from the rest of the world, as the activity of the various services is far greater than anywhere else.

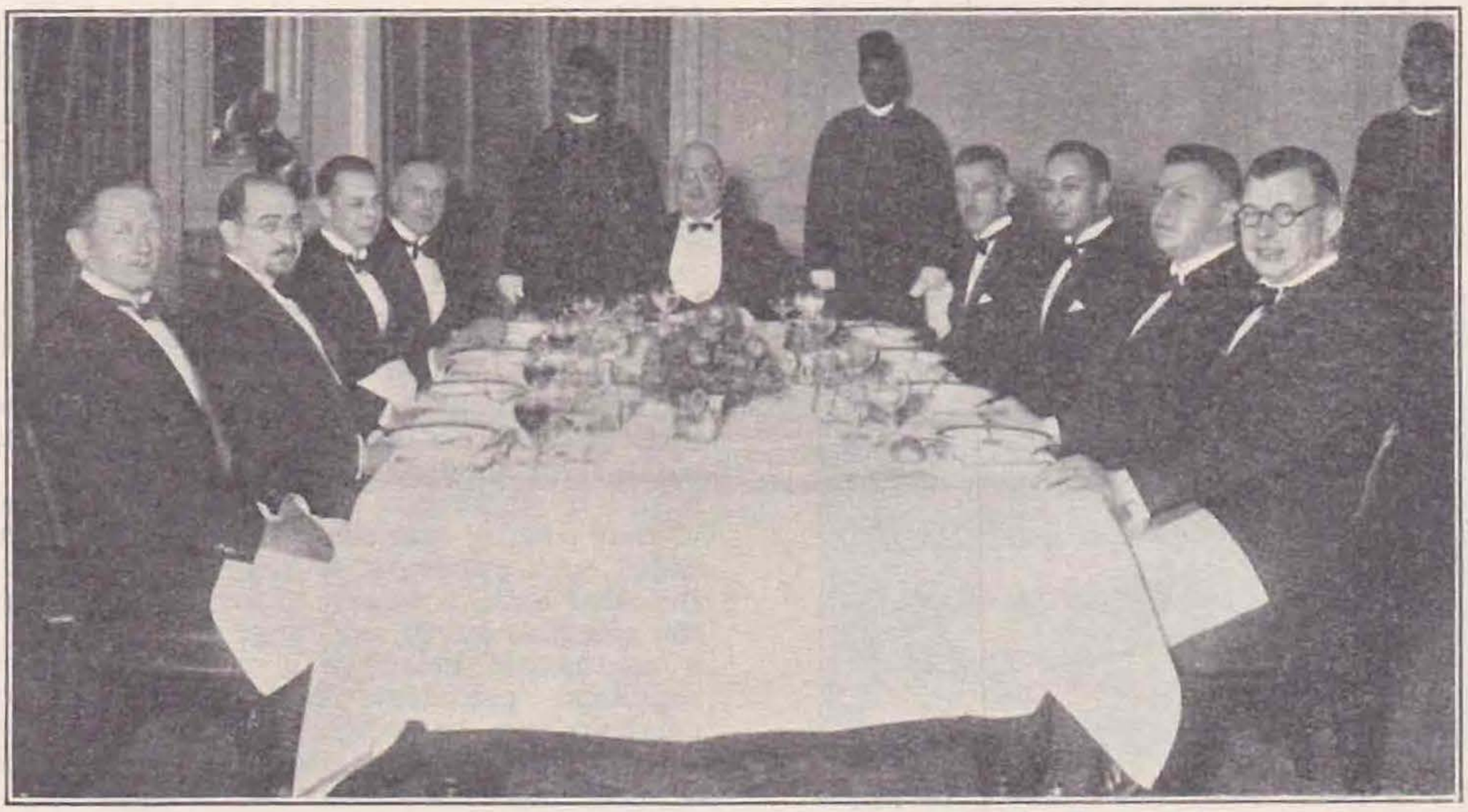
The responsibility of representing the Amateurs at Cairo was a heavy one and the work involved was hard and tiring. No one need have any doubts as to the wisdom of the Amateurs being repre-

sented, and it is necessary to say that it is important that the Amateurs of *every* country should obtain the closest contact with their authorities so that they may have the fullest support possible at the next conference which takes place in Rome in 1942.

To return to the frequency bands, we need not comment further regarding 1.7 and 3.5 Mc., except to say that both went through several stages and changes before the final result was achieved.

The 7 Mc. band caused a great deal of trouble and it was only after very protracted discussion that the sharing of 7,200-7,300 kc. with broadcasting was agreed as a compromise, part of the agreement being that no proposals affecting the 14 Mc. band would be proceeded with.

being removed from the table in the 56-60 Mc. band. This very band you are considering covers a portion of Television. May we remind this sub-committee that it was an Amateur, a member of the Radio Society of Great Britain, Mr. Campbell Swinton, who, as long ago as 1908, stated clearly the manner in which television could be achieved, and in fact it is on the lines he laid down or indicated that British Television is being transmitted to-day. We Amateurs feel that it would be a very poor tribute to his and our work that at the first time a band is allocated for television to take that band as such from Amateurs. We feel that we have earned the right to remain there and we feel that it is our duty to say that Amateurs in Europe



CAIRO CONFERENCE

Complimentary Dinner given by H.H. Prince Abdul Moneim, SU1AM, to the I.A.R.U. Delegates and Council Members of E.R.S.E.

Left to right: F. H. Pettitt (SU1SG), P. M. Segal (A.R.R.L.), W. E. Marsh (SU1WM), A. E. Watts (G6UN). H.H. Prince Abdul Moneim (SU1AM), K. B. Warner (W1EH), E. M. Chorlian (SU1CH), R. E. A. Disteche (SU1RD), and G. Moens (SU1RO).

The 56-60 Mc. band would have remained allocated to Amateurs in the frequency table on a shared basis but for one country. In view of its importance, we reprint here the statements put in on behalf of the I.A.R.U. regarding this and the 112 Mc. band.

Statement Made by Mr. A. E. Watts at Sub-Sub-Committee No. 5 *Meeting on March* 8, 1938.

"I am not speaking on behalf of the Amateurs of Great Britain at this moment because the delegate of my country has already expressed his agreement to the band 56-60 Mc. appearing in the table as shared by Amateurs. I am speaking for the Amateurs in all the western countries of Europe. On their behalt, we ask that the 56-60 Mc. band be retained in the table for Europe as shared by Amateurs. We understand that there is only one country which up to now has not agreed to this, and we are sure we are voicing the opinion of the Amateurs of that country when we say that they would not wish to be in the invidious position of their country being responsible for the Amateurs could not be satisfied with a footnote which is in the nature of a derogation.

"We earnestly hope, therefore, that European countries will agree to our request, as those countries have already the right not to allow Amateurs to use the band if they so wish. We accordingly suggest having Amateurs in the table for this band and to add the following footnote:—

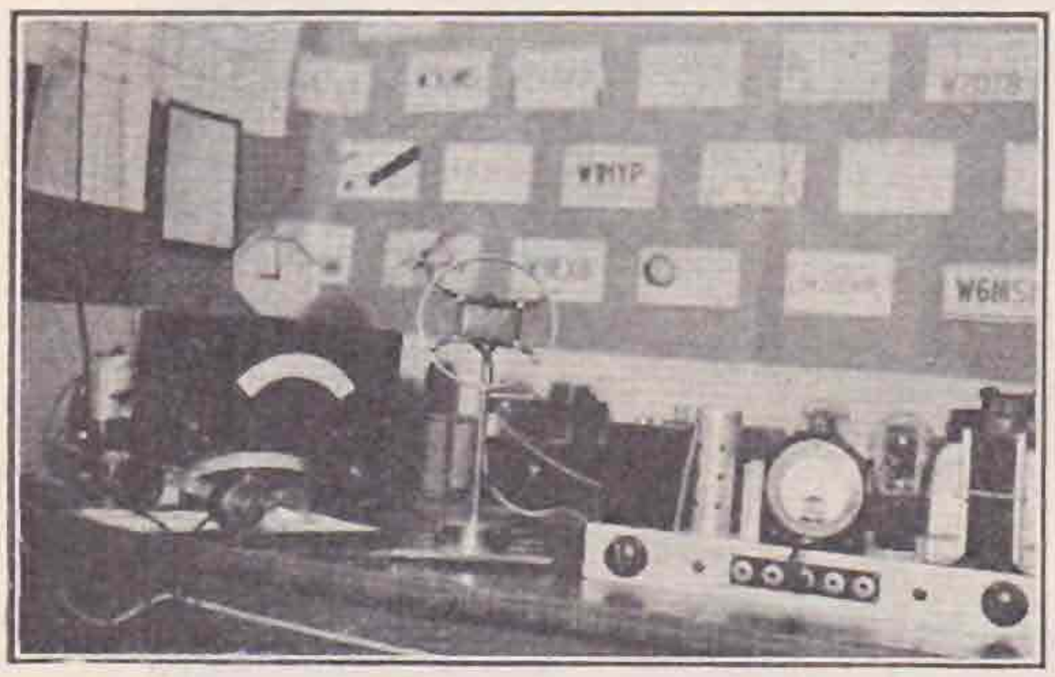
"'These stations (i.e., Amateur), when permitted by an administration, shall not cause interference to the television service and low-power stations in the same band in other countries.'"

N.B.—This statement was made at the time when we understood it was the intention not to put Amateurs in the table for any part of the 56-60 Mc. band, but to cover the whole by footnote.

Statement Made by Mr. Segal at Sub-Committee Meeting on March 16, 1938.

"The International Amateur Radio Union wishes to express its views with regard to a portion of the suggested allocation of frequencies which has been given you by Sub-Committee No. 5.

"I refer to the allocation specified in the frequency ranges 56 Mc. to 58.5 Mc. and 112 Mc. to 120 Mc. In these ranges the sub-sub-committee report makes no provision for amateurs by name in the table of allocation but provides merely by a note that on a permissive and tenuous basis the administrations may authorise amateurs to use these bands upon the development of circumstances that are comprised within the meaning of the French word *eventuellement*. In other frequency ranges the committee has dealt fairly and adequately with the needs of amateur radio, and for this we express appreciation. The striking of the word 'amateur' from the allocation table in the range 56 Mc. to 58.5 Mc. is a departure from the traditional use of these frequencies by amateurs, which has been recognised in the present Regulations. The refusal to place the word 'amateur' in the table for the range 112 Mc. to 120 Mc. is a departure from the traditional method of allocation observed until now, which method has been to assign amateurs to harmonically related, modest ranges of frequencies as new portions of the spectrum are opened up for definite allocation.



SU2TW of Cairo. From this station G6UN had frequent contacts with the British Isles.

"In this connection, the sub-sub-committee report imposes this departure only in the European region. For other regions of the world the amateur allocation has been adequately made in accordance with the practice which has prevailed until now and in pursuance of what we regard as a provident and far-seeing plan for the development of radio communication.

"Since the limitations of the report apply to the European region only, I have now to speak only on behalf of the amateurs of Europe. Before making my declaration, I must point out to you the character of the International Amateur Radio Union.

"The Union is a federation of thirty-two national amateur radio societies in the principal nations of the world. Its purposes are the promotion and co-ordination of two-way experimental communication between the amateurs of the various countries, the effecting of co-operative agreements between the various national societies on matters of common welfare, the advancement of the radio art, the encouragement of international good will and the promotion of allied activities. The amateurs of the world operate more than 70,000 radio stations, more by far than all other types of radio stations altogether.

"To a certain extent, this vast number of radio stations must be represented at conferences like this by spokesmen of their own selection, since sometimes the administrations represented are preoccupied by problems of the commercial radio circuits they operate to the possible exclusion of the interests of radio-amateur citizens of their several countries. To this extent, the International Amateur Radio Union carries a heavier burden than associations of stations which are themselves operated by the several administrations and hence have many spokesmen.

"Addressing myself to the action of the sub-sub-committee in placing the amateurs of Europe into an equivocal type of authorisation, so far as concerns the ranges 56 Mc. to 58.5 Mc. and 112 Mc. to 120 Mc., it is my purpose to bring about before Sub-Committee No. 1 a complete clarification, if possible, of the motives which led to the action of the sub-sub-committee in order that the affected amateurs may, if they wish, learn the reasons for the treatment they have received.

"There are certain axioms that may be accepted without question.

"The first of these is: The placing of amateurs in the allocation table, whether upon an exclusive basis or a shared basis, imposes no obligation on any country to allow its amateurs to use the band specified. Thus, the placing of amateurs in the table of allocation in no manner interferes with the national or internal policy of any country with regard to whether or not there shall be amateurs in that country and with regard to the extent to which such amateurs, if any, may operate. On the other hand, a request to remove amateurs from the specifications of any range of frequencies upon a continental basis, or a request that certain conditions precedent must be attained before amateurs can be assigned to any range of frequencies, is a direct interference with the freedom of action of all the countries in the region.

"The second axiom is that in the range of frequencies under consideration there is ample space for all services now conducted and immediately in prospect, and that there are no reasons of radio-frequency congestion why amateurs should be further restricted. Such frequencies as are used by non-amateur services in the 56 Mc. neighbourhood are so used upon a shared basis and no data were furnished the sub-sub-committee tending to indicate in any way why this cannot be continued. Of course, no problem of congestion is in existence or prospect in the neighbourhood of 112 Mc.

"From these two axioms we must come to the corollary that there is no reason from the international standpoint, which is to say from the treaty-making point of view, why the amateurs of Europe whould be forced to "sit below the salt" in the 56 Mc. range and be inadequately provided for in the 112 Mc. range.

"This is substantiated by the attitude taken in general by the membership of the sub-sub-committee. I believe I correctly repeat the expressions of the delegation of Great Britain, as well as that of Germany, that they were quite willing to have the amateurs included in the allocation table. The U.S.S.R., also of the European region, made a definite proposal that the lower-frequency range under consideration be made exclusively amateur and experimental. The delegations of the United

States of America and of Australia, while not concerned geographically, lent their good offices by recommending to their European colleagues that the amateurs be continued in the table.

"Only one delegation expressed an insistence upon the restriction which was effectuated. This insistence was so persistent that the other members of the sub-sub-committee finally acquiesced.

"To what was this insistence due?

"As the motive was expressed by the responsible delegate at the time of discussion, he stated that there may be countries where the internal law was such that the placing of the amateurs in the allocation table rather than in the footnote might require an administration to make the frequencies available to its amateurs.

"While no details of the law in question were offered to the sub-sub-committee, it can be assumed as implied, that in one European country, the administration is bound by law to assign to amateur stations such frequencies as are made available to amateurs by international agreement. Now, if any member of such an administration feels unwilling that the amateurs of his country should have the use of the frequencies in question, if he feels himself personally out of sympathy with the provisions of the domestic law of this country, what is he to do? Shall he obey the law? Shall he by ordinary means seek to have the law of his country changed to suit his wishes? Or shall he come to an international conference and insist that the allocation of all Europe shall be changed so that he can avoid the implications of the laws of his own country?

"To ask these questions is to answer them.

"Yet this is the only condition which has resulted in the action of Sub-sub-committee No. 5 concerning the table and the footnote.

"Let it not be said that the needs either of television or of the low-power services have brought about the result.

"Concerning television, that service does not now use the bands which are shared by the amateur stations. Should television experiments now being conducted develop to the point where more television frequencies are needed, there is ample room elsewhere than in the amateur band between 56 Mc. and 58.5 Mc. It has been by no means shown that television can be used successfully throughout Europe on these frequencies. Mutual interference between television stations is destructive of picture quality. The researches of amateurs which have been published in the scientific journals show that at certain seasons there is substantial distance range for transmissions in the neighbourhood of 60 Mc., and we respectfully suggest that should the countries of Europe attempt to establish permanent television services in this range and use the powers approaching twenty kilowatts which are absolutely essential for high-quality television, they will find disastrous mutual interference even when the users are not in adjacent countries.

"As for the low-power service, no data are available as to what it comprises. We are told only that low-power services are services using powers of one kilowatt or less. No qualitative or quantitative data were offered before the sub-sub-committee, and we are therefore secure in saying that no need has been shown which would require any drastic action against the amateurs who have been developing and are continuing to develop these frequencies.

"It is unwise, we think, to curtail the oldest radio service in favour of services which do not now even exist, and it is not necessary to do so upon a basis affecting all of Europe because of the requirements of the internal law of one country."

* * *

We feel that Amateurs *should* have remained for technical reasons, in the frequency table and that television should have been placed above 60 Mc.

Regulations (Operating)

There are no alterations under this heading (see April BULLETIN), but three additions of minor importance :—

(*g*) QRK? now means: "What is the readability of my signals (1 to 5).

(*h*) QSA? now means: "What is the strength of my signals (1 to 5).

(*i*) Whilst the morse code does not appear in the Regulations, it was agreed by the Radio and the Telegraphic Conference to use in future for the period .—.—.— and for the comma ——..——

Frequency Allocations

European Region.

(*a*) 1,715-2,000 kc. remains as now as far as amateurs are concerned, *i.e.* shared with fixed and maritime mobile services.

(*b*) 3,500-3,635 kc. shared with fixed and mobile stations.

3,685-3,950 kc., 3,635-3,685 kc. and 3,950-4,000 kc. have been allotted to services not open to public correspondence and aeronautical services respectively.

We have been assured that we shall not lose a 50 kc. channel, but it will be given to us elsewhere in the band.

(*c*) 7,000-7,200 kc.: Amateurs.
7,200-7,300 kc.: Amateurs and broadcasting.

(*d*) 14,000-14,400 kc.: Amateurs.

(*e*) 28,000-30,000 kc.: Amateurs and experiments.

(*f*) 56,000-58,500 kc.: Television and low power stations.

NOTE.—Administrations may authorise amateurs to use the band 56-58.5 Mc.

58,500-60,000 kc.: Amateurs, experiments, low power stations.

NOTE.—Low power stations are those using less than 1 kW.

We have been assured that we shall retain the use of 56-60 Mc. in Great Britain.

(*g*) 112,000-120,000 kc.: Low power stations. Administrations may authorise amateurs to use the band 112-120 Mc. It is doubtful whether we shall be allowed to use this band, but if not, we shall probably be given space elsewhere.

The European Region is defined in practically the same terms as in the Madrid Convention, and includes the Western part of U.S.S.R., and the territories bordering the Mediterranean, except parts of Arabia and Saoudi Arabia.

Other Regions.

(*a*) 1,715-2,000 kc. (*a*) Amateurs; (*b*) Fixed; (*c*) Mobile.

(*Continued on page* 658)

Recent Development in Short Wave Transmitting Valves*

SELDOM nowadays are transmitting valves designed for service on long and medium wavelengths only, and hence most normal types to-day are suitable for the short wave band covering 100-15 metres.

Special types are of course necessary for the ultra-short wave band, 10-1 metres, and for centimetre waves, principally because seals of larger current-carrying capacity are required at these higher frequencies, and also because it is essential to have short leads within the valve to reduce their inductance. This is a point of equal, if not greater, importance than a desirable reduction of inter-electrode capacity and of associated leading-out conductors.

In the ordinary short wave class, type PZ1-35 is now available at a more reasonable price. This is a 35 watt anode-dissipation rated pentode with long-life oxide coated filament giving an output on C.W. telegraphy of 40-50 watts on 20 Mc. to 2 Mc. with an anode voltage of 1,000 volts. The drive power required is very low, being of the order of 1 watt.

A smaller pentode PZO5-15 rated at 15 watts anode dissipation on 500 volts delivers an output of 15-20 watts on frequencies up to 20 Mc., and requires very low drive power indeed, 0.1 watt being sufficient under Class C conditions with or without anode plus screen modulation. Both the above pentodes are fitted with 4-volt filaments.

Also in this class is the TZO5-20, a very conservatively rated triode, which is retained as a reliable valve for frequencies up to about 20 Mc., especially as it makes a good frequency doubler possessing a fairly high amplification factor and high mutual conductance. Large-scale production of this type during recent years has made a much lower price possible.

The Mullard PZO5-15, a useful R.F. Pentode up to 20 Mc.

The Mullard TY1-50, an efficient Triode up to 150 Mc.

More interest is, however, displayed to-day in ultra-short wave valves, not only in amateur but also in commercial and Government circles. Already available in the *Mullard* range are types TY1-50, PVO5-15 and PV1-35. As the designations indicate the former is a triode and the latter two are pentodes.

These pentodes are very satisfactory on frequencies of 25-55 Mc., but efficiency falls off rather seriously above 56 Mc. The triode, however, is still reasonably efficient up to 150 Mc. and does not appreciably fall off in output until over 200 Mc., although where required small outputs can be got

* Communicated by Transmitting Division—*Mullard Wireless Service Co., Ltd.*

on frequencies up to about 400 Mc. Their use at such frequencies is then becoming uneconomical, and special valves mentioned later on are preferably employed.

The chief features of these ultra-short wave valves are summarised in the table below.

Type	Fil. Volts	Fil. Curr.	14 Mc. Anode Volts	14 Mc. C.W. Output	14 Mc. Approx. Drive Power	56 Mc. Anode Volts	56 Mc. C.W. Output	56 Mc. Approx. Drive Power	112 Mc. Anode Volts	112 Mc. C.W. Output
TY1-50	7.5	3.25A	1250	75W.	5W.	1250	65W.	10W.	1000	45W.
PVO5-15 *	12	0.4A	500	15/20W	0.2W.	500	15/20	up to 1W.	—	—
PV1-35 *	12	0.9A	1000	75W.	1.5W.	625	32W.	2W.	—	—

* Indirectly heated cathodes.

For transmission on frequencies above 112 Mc. smaller valves of reduced electrode capacity and lead inductance (and unfortunately lower power rating) become essential and development is proceeding on two types of triode to meet present requirements.

One of these is similar to, but larger than, the well-known "Acorn" triode and is intended for outputs of some 8-6 watts on frequencies of 200-500 Mc., while the other will be on rather more conventional lines resembling the TY1-50 in general construction but of lower power rating, the output being 10-4 watts over a frequency range of 50-400 Mc.

Of more interest to the amateur generally, however, are two further valves in development which will be specially suited to 56 Mc. operation, viz., a modified construction of the TZO5-20, with the anode lead out to a top terminal, suitable for voltages up to 800 v., and a larger version of this valve to be rated at 60 watts anode dissipation for voltages up to 1,500 v.

Trade Notices

Holiday & Hemmerdinger, Ltd., 74-78, Hardman Street, Manchester, 3, have recently issued a comprehensive 20-page catalogue dealing with speech equipment, microphones, and loudspeakers. Details of their re-winding service are given, together with a price list of Triad American valves. The catalogue is available free of charge from the above address.

* * *

The 1938 edition of the Eddystone Short Wave Components list contains a brief description of many new lines including two new Transmitting Condensers Type 1101 (.0002) and Type 1102 (.0003). These have a peak flashover voltage of 3,000 volts, insulation being provided by DL9 High Frequency mouldings. A new split stator condenser Type 1087 is also available for ultra-short wave work. This condenser has a peak flash over voltage of 3,500 and the capacity of each section is 6-27 $\mu\mu$F, which in series gives a capacity of 1-10.5 $\mu\mu$F and in parallel a capacity of 12-54 $\mu\mu$F. The new high voltage Microdensers with capacities of 18$\mu\mu$F (Type 1094) and 60 $\mu\mu$F (Type 1093) are especially suitable for ultra-short wave transmitters and receivers, where space is at a premium. Both are tested up to 3,500v peak.

Miniature Precision Finish Dials Types 1097 and 1099 are available with a direct drive. The former is a smaller edition of the 1077 Dial and has a $2\frac{3}{8}$" white metal scale with black filling. The price is 4s. The popular type 1099 is priced at 2s. For those in need of a larger dial the 1098 is available at 4s. 6d. This has a 4" scale, is made in satin finish aluminium with clearly marked divisions, and is fitted with a $2\frac{1}{2}$" fluted control knob.

Readers are invited to write to *Stratton & Co., Ltd.*, Eddystone Works, Bromsgrove Street, Birmingham 5, for a copy of this valuable booklet.

The 1938 edition of the *Raymart* catalogue is to hand, containing a full description of their products. Among recently introduced lines we find various types of insulators ranging from feed-through bushes made in Ceramic to highly glazed feeder spreaders for 600 ohm transmission lines. The former fills a long-felt want, being specially suitable for all classes of H.F. work. They can also be used for mounting components where it is essential that these be adequately insulated from the chassis. Type FTS has a drilling for a 4BA screw and retails at 2,d. the 2BA size, Type FTL, costs one penny more.

The feeder spreaders are light in weight and are claimed to be free from appreciable losses even when exposed to atmospheric conditions. The spreaders retail at 4d. each and are listed as Type FS.

Feed through insulators Type FT1 of the double cone type are also available price 8d. each. Height above chassis is $1\frac{3}{8}$" and $\frac{3}{8}$" below. Insulation is provided for up to $\frac{1}{2}$" baseboards. The insulators are filled with two cork washers and have 2BA threaded rods with nuts.

The address of the *Raymart Manufacturing Co.* is 44, Holloway Head, Birmingham 1.

* * *

Messrs. A. F. Bulgin & Co., Ltd., Abbey Road, Barking, Essex, have sent us for review a sample of their Miniature 2-Pole Plug and Socket, list numbers P105 and 106, respectively. These are especially suitable for small apparatus and in all cases where space is limited. The plug is made from polished bakelite and is fitted with two $\frac{1}{8}$-in. diameter resilient pins at $\frac{1}{2}$-in. centres. The cable in use is tip-soldered to the pins. The socket members carry two tinned sockets with integral tags primarily for chassis mounting. The plug is listed at $7\frac{1}{2}$d. and the socket at $4\frac{1}{2}$d.

An "Octal" Cable Plug, List 112, has just been placed on the market made to international octal standards. Multi-strand cables are, in practice, connected by tip-soldering. The plug is fitted with a screw-on bakelite cover and sells at 1s. 6d.

The 1.7 Mc. Contest, 1938

By C. J. Greenaway (G2LC).

JANUARY 9—00.01 to 12.00—12 hours only—but how they flew! Never before have there been so many British stations working on the 1.7 Mc. band in a twelve-hour period. The writer logged over 150 G stations who were active, either as competitors or were there to give the others a few points.

The eulogistic remarks which appeared in the report on last year's contest apply equally to this. Opinions are unanimous in this respect and many entrants state that they consider this event is the most enjoyable of any for which they enter.

A record number of 73 entries were received and from a perusal of the calls it will be seen how wide is the interest. Both new members and old hands, the comparatively unknown and the DX men all being represented.

The station submitting the highest score was disqualified under Rule 15, consequently our congratulations go to Mr. R. W. Rogers, G6YR, of Southport, Lancs, who is placed first with a score of 73. Mr. Rogers is well known as a keen participant in these contests, but hitherto he has never reached the highest position, although he has in the past been placed several times within the first three in receiving contests.

Second place is shared by Mr. H. J. M. Box, G6BQ, of Gravesend, Kent, and Mr. G. Russell-Lee, G6GL, of West Kirby, Cheshire, with 71 points each. Mr. Box was placed first in last year's contest.

G6YR was using a CO-BA-PA, with four crystal frequencies available; receiver 1-V-1, battery operated; aerial, 67 ft. top, N-S direction, with counterpoise, parallel tuned.

G6BQ used a CO-PA; receiver SG-V-2, battery operated; aerial 100 ft. series-tuned Marconi with direct earth.

Order of Merit.

No.	Call.	Location.	Score.	No.	Call.	Location.	Score.
1	G6YR	Southport	73	35	G6VD	Leicester	41
2	G6BQ	Gravesend	71	38	G5OH	Broadstone	40
2	G6GL	West Kirby	71	39	G2XP	Ilford	39
4	G6WY	Beckenham	70	39	G5TO	Sheffield	39
4	G8CS	Bexleyheath	70	41	G2CD	Seven Kings	38
6	G2LC	Leigh-on-Sea	67	42	G6YP	Greenford	37
7	G2ZP	Yeovil	65	43	G5KT	Bristol	35
8	G5JU	Bristol	64	43	G8NL	Whitefield, Manchester	35
9	GW5OD	Llandudno	62	45	G6KP	Morden	34
9	G5RI	Hexham	62	45	G6LF	Sheffield	34
11	G2MI	Hayes, Kent	61	45	G8CT	Blackwood, Mon.	34
12	G2HW	Darwen	60	48	G2UJ	Tunbridge Wells	33
13	G8AB	Loughton	59	49	G2DU	Oxford	32
14	G5IL	Chalk, Kent	57	49	G8GG	Blackpool	32
14	G8NV	Golders Green, N.W11.	57	51	G2XC	Portsmouth	31
				51	G5TN	Weston-super-Mare	31
16	G5PR	Horam, Sussex	56	51	G8ML	Cheltenham	31
16	G5WW	London, N.2	56	54	G6NN	Barnehurst	30
16	G6XL	Calverley, Leeds	56	55	G6CS	E. Greenwich, S.E.10	29
19	G6LM	Chippenham	54	56	G5KV	Tunbridge Wells	26
20	G6GM	Holsworthy	53	57	G2ZZ	Poplar, E.14	25
21	G2QN	Blackburn	51	57	G5XJ	nr. Oldham	25
22	G8NF	Prestwich	50	57	G6GH	Boston	25
23	G2NJ	Peterborough	49	60	G5HB	Holgate, York	23
23	G6VC	Northfleet	49	60	G5IJ	Ealing, W.5	23
23	G8BD	Portsmouth	49	62	G8TR	Warrington	22
26	G6QM	Hornsey, N.8	47	63	G2JL	Newport, Mon.	21
27	G2DF	Warrington	46	63	G2XT	Morpeth	21
28	GM5ZX	Glasgow, S.1	45	65	G2GG	Newbury	20
29	G6CT	Westcliff-on-Sea	43	65	G5HS	Thame	20
29	G8GI	Sleaford	43	65	G6UT	Little Hallingbury	20
29	G8MW	nr. Alfreton	43	65	G8RT	Laindon	20
32	G5PX	Ashton-under-Lyne	42	69	G2GZ	London, S.E.1	19
32	G6GR	Northwood	42	69	G6GN	Bristol	19
32	G8WF	Royston, Yorks	42	71	G5JL	Hayes, Mdx.	16
35	G2WS	Ilkeston	41	71	G5UH	Bedminster Down	16
35	G5OY	Newcastle	41	73	GM2OX	Aberdeen	14

G6GL's rig consisted of a P.P. CO using two 47's ; aerial 66 ft. Zepp NE-SW direction, and receiver a Hallicrafter 1937 super Skyrider.

General Comments

Comments and criticisms are always welcomed by the Awards Committee. This year they have been carefully analysed and a résumé of the most interesting points follows :—

Operating

The standard of operating as in previous tests was very high and it was indeed a pleasure to hear some of the signals after listening on 7 Mc. and other bands. There were, however, a few criticisms, or rather suggestions, to improve efficiency. Unduly long calls, short periods of listening for replies, not enough use of " break-in " and not waiting to ascertain whether the station being worked had received the report (which, incidentally, cost several stations a point or two) are all prejudicial to a high score.

The possession of several crystals or the careful use of the E.C.O. was found very helpful and those who took a trip to the comparatively empty H.F. end of the band were well rewarded.

Conditions

As a whole conditions were poorer than in 1937. Most entrants reported the complete absence of Continental stations. The only contacts with stations outside the British Isles were those affected by G5QY, 8AB and 8NF with OK1DL and by G5TO with HA8H. Although the contest coincided with the Transatlantic 1.7 Mc. Tests not a single W signal was logged. During the preceding week a number of stations outside the British Isles and Europe had been contacted but conditions deteriorated towards the week-end.

An interesting effect was noticed by the majority of stations between 04.00 and about 06.00 when all signals showed an abnormal decrease in QRK. This coincided with a general increase in noise level in most instances caused by charged rain or sleet.

QRM did not seem to bother many operators, and in this connection our thanks go to those 'phone stations who so kindly postponed their tests during the contest. There were only one or two cases where isolated 'phone stations caused severe local QRM. But in four instances the harmonic of a commercial ICW station caused trouble. Trawler QRM was conspicuous by its absence.

Operating Hours

As is usual after a contest, criticism centres around operating hours and scoring. Each year the Awards Committee feel that in shortening or adjusting the hours they are a step nearer general accord. It seems that daylight operation will have to be curtailed to meet the wishes of stations in the North and remote parts who are unable to hear many signals in daylight. This theory is not borne out by G6YR's log, as he was able to contact 11 stations between 10.00 and 12.00. Nevertheless, in formulating rules for further contests the Award Committee will bear this in mind and if curtailing daylight operation will increase entries from GM, GW and GI, no doubt this will be done.

Conclusion

We heartily congratulate the winners and sincerely thank all those who, regardless of their score, returned their entry forms to Headquarters. It is very gratifying to know that this contest is so popular and gives enjoyment to so many. May this enthusiasm help to enlarge the throng, using the " top band " in readiness for another record-breaking contest in the near future.

We also record our thanks to all members who forwarded check logs when requested to do so by Headquarters. Their co-operation proved of the very greatest value to Council and the Tests Committee.

D.A.S.D Contest

This year's D.A.S.D. Contest will take place during the four week-ends of August, commencing at 12.00 G.M.T., on Saturdays and concluding at 24.00 G.M.T. Sundays.

The contest is similar to the 1937 event, the object of a G entrant beng to score points, firstly by working DX, and secondly, by obtaining an additional score, and a multiple, by relaying to a German or Danzig competitor the details of his DX QSO's. The multiple is determined by the number of D and YM districts worked (maximum 20).

Competitors may use all amateur bands and must include DJDC in any test calls. A six-cypher number must be exchanged during all DX QSO's, the first three characters being the R.S.T. report and the other three the number of the QSO 001, then 002, etc.

Diplomas will be awarded to the G, GI, GM, GW competitor with the highest score, and two awards if there are five or more entrants in each zone.

There are no entry formalities but members who propose to enter for the contest should obtain a copy of the rules and an entry log form from R.S.G.B. Headquarters.

East Essex Low Power Contest

The following members have stated their intention of taking part in the above Contest, which will be held from May 22 to 28 inclusive : G2KH, 2LC, 2SO, 2UK, 5XI, 5VQ, 6CD, 6CT, 6IF, and 8RT.

Reports on transmissions from these stations during the above period will be welcomed, and all reports will be acknowledged.

The bands used will be 7 and 14 Mc. The H.T. supply for each transmitter will consist of one 120-volt standard H.T. battery.

Reports should be sent to the individual stations direct, or addressed to G2LC, 24, Percy Road, Leigh-on-Sea, Essex, from whom details of the Test may be obtained. (This Contest has not been sponsored by the Tests and Awards Committee, as it is of local concern only.—Ed.)

Leicester Amateur Radio Society

We have been informed by the Secretary of the above Club that they have arranged to hold a D.F. Field Day on June 19, using a hidden portable transmitter working on the 1.7 Mc. band.

Full details can be obtained from Mr. T. Cribb, 55, Knighton Drive, Leicester.

New Belgian Society President

We are advised that Mr. R. Verstrepen, ON4AA, has been elected President of Reseu Belge.

Broadside Radiations

By "Mr. Justice 'G'."

"HOIK" was hardly the word. By dint of pushing, heaving, hauling, swearing, grunting and perspiration Mr. Justice "G's" rotating pigeon puzzler is now in place. As the sun went down on our labours the warders and Constable Urcher retired to discuss the technical aspects of the installation. Two hours later the barman from the *Knob and Dial* was seen rolling a barrel of stout down the village green. Since it obviously had been borrowed from the *Key and Kilocycle* at the other end of the village we assume that the discussions were most productive.

The pigeons weren't the only puzzled ones. In the early dawn Mrs. Bonglesock (the justice's cook, housekeeper-cum-valve smasher) read the Riot Act to the effect that "Do the wash I will but I don't hold with no newfangled contraptions and hang your shirts and socks on that 'ere drying rack I flatly won't—just think what the vicar would say if he saw your pink pajamas hanging up opposite the church."

After breakfast the gardener: "Mr. G. what with the drought and the black-spot your roses never will climb all over that new pergola you and them jailors put up yesterday."

Lastly our village blot Mrs. Sharpchatter rang up to know when the garden party was to take place. Being assured no party was contemplated she hung up in deep disgust mumbling that since I had the marquee half put up there was something afoot. Some day I shall ask that woman to hold the tank coil of the final while I push the key—yes we use primary keying here.

Now to sterner things!

Since all law-abiding self-respecting hams are eligible to membership in the *vigilante* committee the bench thinks it advisable to draw up a list of indictable offences within the jurisdiction of this Court. These offences cover a wide range of crime and are of varying gravity. Members of the *vigilantes* are requested to use their own judgment in their choice of suitable punishment deciding each case on its local merits as best known to them.

Offences in Category A.

Vicious misappropriation and contamination of the ether.—This crime is very prevalent. Offenders are given to the persistent and wilful use of the DX frequencies for trivial and unimportant local communication. Their transmissions are directed to fellow offenders within a highly localised area. Their transmissions deal with all matters *not* relating to amateur radio research. A frequent accessory to the crime is the wife, girl friend or visiting pork butcher who add their totally illegal inanities to the whole. These offenders should bear in mind that a higher court is set up to deal with this flagrant disregard of the terms of their licence. The operation of a wireless station must be carried out by the duly licensed operator and no mention is made on the said licence permitting exception to be made for the blonde flame of the moment or for the uncle home on leave from Patagonia.

Assault and battery on the person of The King's English.—In spite of the fact that trial of these cases would bring forth the verdict of "guilty but insane," it is still a crime in the eyes of the amateur community to use, adopt or imitate a false or unnatural form of speech. The commonest offence is a childish attempt to emulate the twang of our W friends. These attempts are singularly inaccurate and are not appreciated by the aforesaid W's. Did it ever occur to these dimwits that the transatlantic operator probably likes working G's because he hears a traditional and appealing usage of the language which he knows in a different form. The negation of one's own personality and custom assumed by this cheap imitation is a mental aberration that it would require a competent psychologist to explain. Another form of this offence is the adaption of a "Fraitfully reefained, quaite pukka, when aye was at the Varsity dontcher know" tone of voice. This offence, thank heaven, is not common, and the perpetrators thereof are swiftly subdued by their brother hams, who, as a community, are magnificently devoid of swank. This bench would encourage the most forceful and direct action in similar cases without interference from or reference to the law.

Wilfully Negligent Operation and Control of the Station.—This crime takes a wide variety of forms. The most prevalent is heavy over-modulation causing splash, rattle and slosh all up and down the bands. Offenders should be quietly told of their shortcomings and given an opportunity to put things right, since, in many cases, this state of affairs results from lack of technical knowledge, improper monitoring equipment or plain stupidity. If, however, after several warnings, the condition still exists, drastic steps should be taken. The subsidiary crimes are: key clicks, wandering frequency and heavy harmonic radiation.

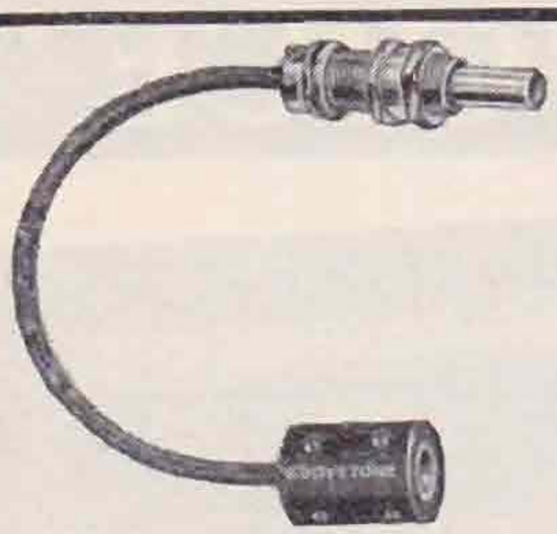
Offences in Category B.

Attempted Suicide while Temporarily Insane.—When these unfortunates are discovered they should be given cooling drinks. It should be gently but firmly pointed out that volts do bite, and that No. 26 D.C.C. wire laying loose on the table is not the best standard specification conductor for a thousand volts. If the patient is sufficiently rational he may appreciate that the insurance people might boggle at paying his widow for his dunderheadedness, and that the fire underwriters take a serious view of unfused, semi-insulated and totally unprotected high-tension wiring.

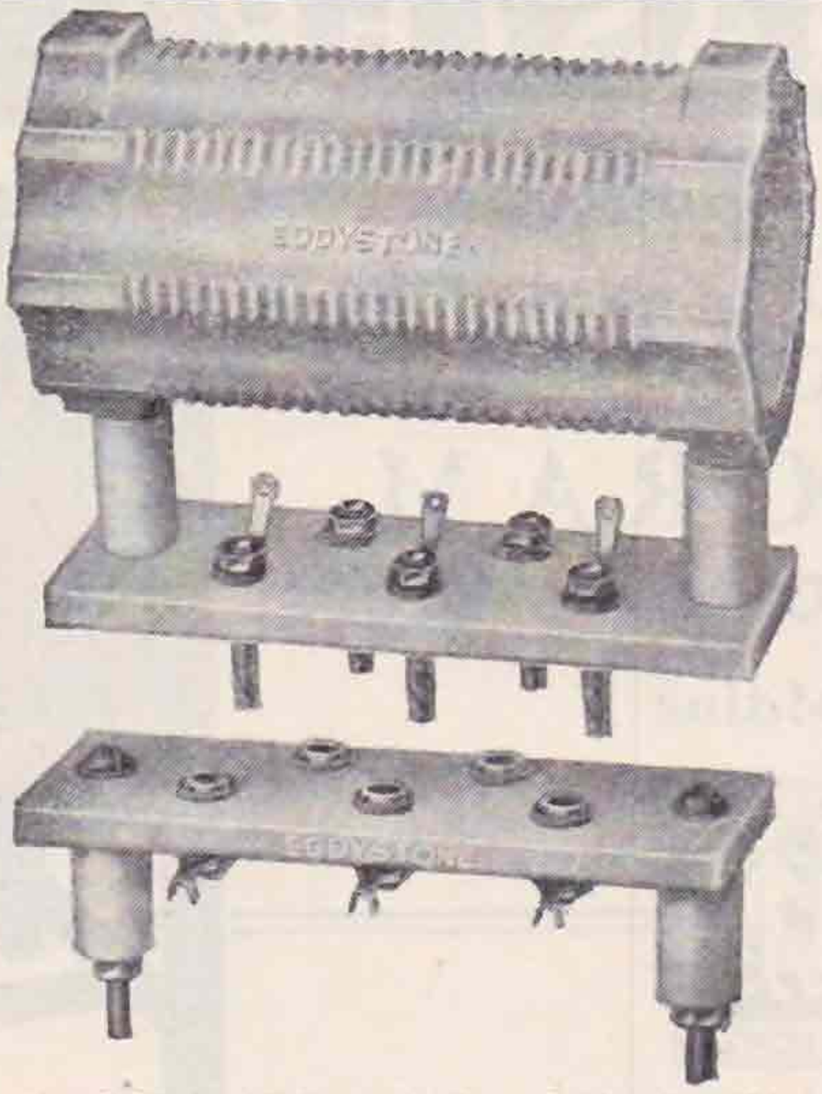
Lecturing under False Pretences.—This is a particularly heinous act. These individuals instruct those whom they assume (mark the word: *assume*) to be far less brilliant than themselves. The tragic part of it is that the instructee has been known to follow their advice to his own cost and concern. It should be borne in mind that much good data (who said "dope"—what a word!) *is* given over the air. It is, however, simple to

(*Continued on page* 658)

For Outstanding Performance



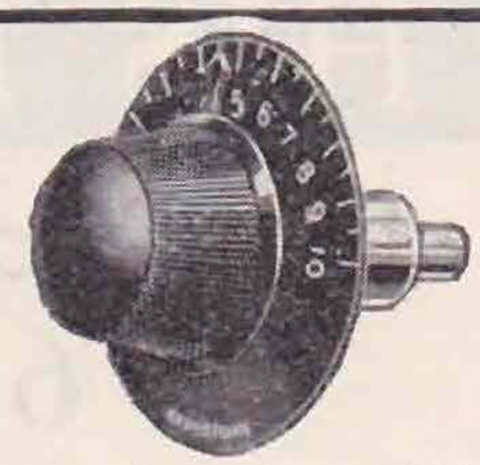
FLEXIBLE CABLE COUPLER
Cat. No. 1096.
For front panel control of awkwardly placed components. Will drive through 90 deg. perfectly. One hole fixing. For ¼" Spindle. Price **3/6**



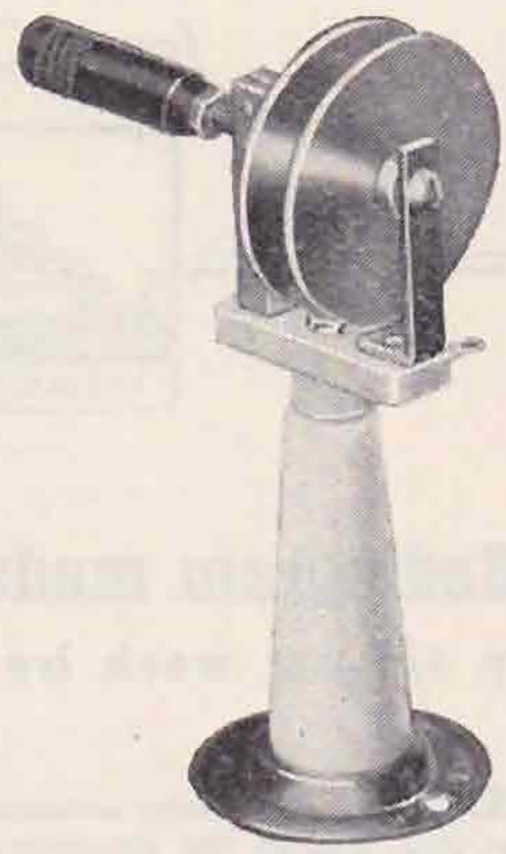
FREQUENTITE LOW LOSS FORMER
Cat. No. 1090.
Ideal for Amateur transmitters. Former size 5" x 2½", spiral grooves take 26 turns of wire up to 12 gauge. Winding data supplied with former. Price **4/-**

FREQUENTITE SUB-BASE.
Cat. No. 1091.
For mounting former No. 1090. Can be used as base for self-supporting inductances. Power plugs ensure positive contact. Price **3/6**

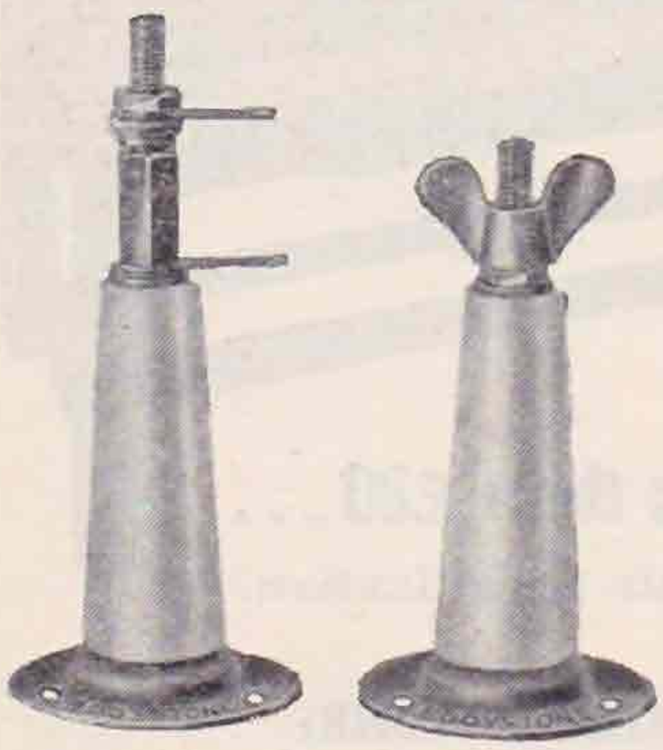
FREQUENTITE BASE. Cat. No. 1092.
For mounting former with sub-base. Heavy-duty power sockets for sound electrical connection to former. Price **3/9**



SLOW MOTION DRIVING HEAD. Cat. No. 1012.
Very useful for Transceivers and Ultra Short Wave Receivers. With 9-1 reduction ratio. Price **3/-**



NEUTRALISING CONDENSER.
Cat. No. 1088.
For H.F. circuits using low-capacity triodes. Maximum voltage 2,000 volts D.C. Capacity variation 1-8 mmfd. Frequentite pillar insulator mounting, insulated adjusting knob. Price **6/6**



FREQUENTITE PILLAR INSULATORS
Ideal for mounting inductances, formers, meters, etc. Tested to breakdown voltage of 30,000 volts.
Cat. No. 1049 (wing-nut fitting) Price **1/6**
Cat No. 1095 (2BA Plug and Socket fitting) Price **1/8**

HIGH-VOLTAGE MICRODENSER.
Highly efficient. Soldered brass vanes. Constantly maintained capacity ; very low minimum 3 mmfd. DL9 insulation. ¼" spindle extended for ganging. Peak flashover voltage 3,500 volts. Easy to gang—capacity matched within 1 per cent.
Cat. No. 1094. 18 mmfd. Price **3/9**
Cat. No. 1093. 60 mmfd.
For crystal oscillator plate circuit, buffer amplifier, tank tuning. DL9 insulation. Price **4/6**

PRECISION DIAL. Cat. No. 1077.
For high-grade equipment. White metal 4" scale with machine-cut markings. For ¼" spindle. Price **6/9**

PRECISION DRIVE.
Cat. No. 1085.
An instrument type driving movement with slow-motion ratio of 6-1. Vernier indicator allows accurate readings to one-tenth of a division. For ¼" M or FM fitting. Price **15/-**

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London Service :
Webb's Radio, 14, Soho St., Oxford St., W.1.

EDDYSTONE SHORT WAVE COMPONENTS

To The Editor

LISTENERS' REPORTS

We present this month the views of prominent overseas members. Space limitations prevent the publication of the many letters received from Home members.—Ed.

To the Editor, T. & R. Bulletin.

Dear Sir,—I have just received the March Bulletin, and commencing from the adverts. inside the front cover, I settled down to a pleasant half-hour, which no doubt would have been realised, had not a feeling of sadness pervaded my soul upon reading the lengthy groan of Mr. P. W. Moores.

It will probably be found that the majority of Mr. Moore's reporters, correspondents, or "pests," whichever he prefers to call them, are youngsters who will be staunch supporters of our Society and amateur etiquette to-morrow, and who are now obtaining a kick plus "auto-QRM" out of their one, two or three-valvers. They are no doubt proud to report upon the efforts of one with whom they now number themselves, instead of spending their time listening to the more powerful and regular foreign broadcasts.

I wonder if Mr. Moores could be induced to pay a round of visits to the homes of his reporters, for the purpose of experiencing the welcome which would most certainly be extended to him and to witness the pride and happiness with which his card as well as others will be displayed and shown to him? So why deny these young lads and girls and even older people the joy they obtain from the privilege of being amateurs of any description?

There may be many cases in which Mr. Moores' reporters' cards and coupons have only been secured with great difficulty and perhaps at some sacrifice. Yet thoughtlessly the cards are consigned to the wastepaper-basket and the coupons confiscated!

I would go so far as to say that it is not wrong to foster the "Reporters' Movement," because it has its advantages, and constructive criticism would be more worthy of an amateur of Mr. Moores' standing. No one can deny that the hours spent listening to amateurs throughout the world is a far better way of spending one's time than roaming the streets in bad company, or that these small reporting activities can lead to big things in the lives of these young enthusiasts.

I should imagine it would have been a simple matter for Mr. Moores to have announced occasionally that reports were not required except from those stations with whom he was in regular contact. This I feel sure would have relieved him of his evident burden.

Perhaps my own case has been even more alarming than that of Mr. Moores and probably more expensive and tedious. AC4YN is the only amateur station in Tibet, and at no time can I sign AC4YN without having the ether crammed with local and "DX" calls falling over one another for a QSO and the inevitable request for my card. In addition I receive letters and cards of all descriptions, together with all kinds of coupons from every part of the globe, reporting upon my transmissions, and many of these are fictitious reports designed to secure a card from the Tibet Zone for the obvious purpose of securing a certificate by false means. Others have asked for two cards, and requests for complete sets of Tibetan postage stamps are now becoming the order of the day. In spite of these inevitable consequences of being an amateur in Tibet, I have dealt with them in my own way, and of course in the correct way, as would be demanded from an amateur desiring to see fair play, and perhaps with a better amateur spirit than that now displayed by Mr. Moores.

Finally, I would suggest that Mr. Moores and others of the same thought obtain a copy of the March issue of *QST*, wherein will be found an article written by I. L. Tilden, K6PGQ, and for which the League has awarded him a first prize. It is entitled "I Don't Want QSL from W's," and it will be noted that the spirit of this article has the full support of the A.R.R.L., and doubtless that of thousands of amateurs throughout the world.

Yours sincerely,
R. N. Fox
(AC4YN, ex-VU2DR).
Wireless Officer, "VUQ,"
British Political Mission,
Lhasa, Tibet.

To the Editor, T. & R. Bulletin.

Dear Sir,—I agree with everything that ZE1JA says in his letter published in the March issue.

Personally, I prefer to remain QRT to DX than to answer listeners' reports at the rate of 500 per month.

I sigh for those pre-war days when DX was half a mile or so and QSL cards were not thought of.

Yours, etc.,
S. A. Pegrume (VQ4CRE).

To the Editor, T. & R. Bulletin.

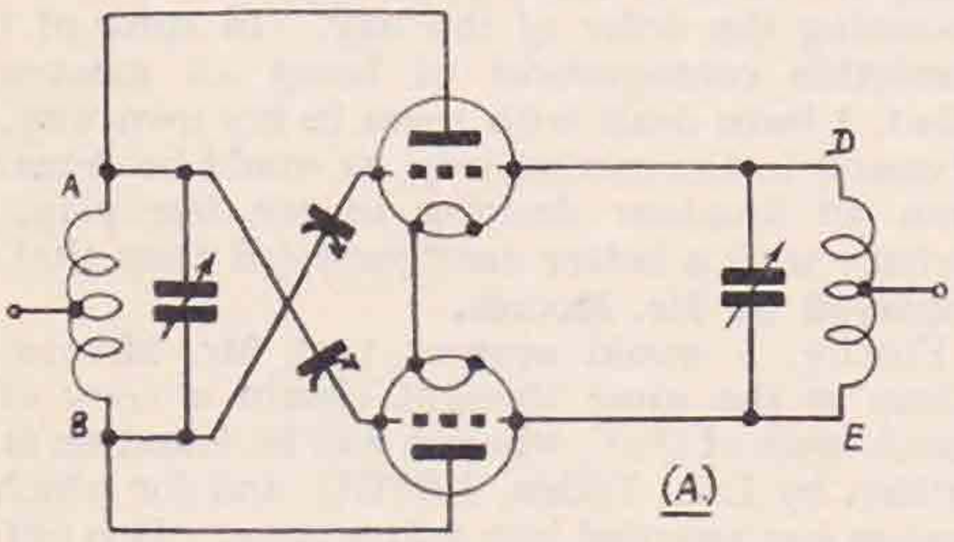
Dear Sir,—I have read with considerable interest the letter written by ZE1JA which appeared in the March Bulletin, and would like to say that I am in complete accord with the views expressed therein. As an amateur in a country where there are only five active stations I am literally flooded out with listeners' cards, 95 per cent. of which are of no value. Up to date I have religiously replied to all cards which were accompanied by a prepaid coupon, but I cannot continue. The time involved in replying to these cards is enormous. In many cases the reports received are from listeners using broadcast receivers, and in these cases the reports are completely useless. Much of the trouble is due to Listeners Clubs which promote competitions, etc. Personally I cannot see why a transmitting amateur who is desirous of spending his spare time in experimenting with his gear should be automatically expected to participate in these competitions and waste a lot of time thereby. It is up to the Listeners Clubs to devise other methods. After all the receiving section of the BERU contest does not entail verification by QSL cards of stations heard.

Yours faithfully,
F. J. Mustill (XZ2DY).

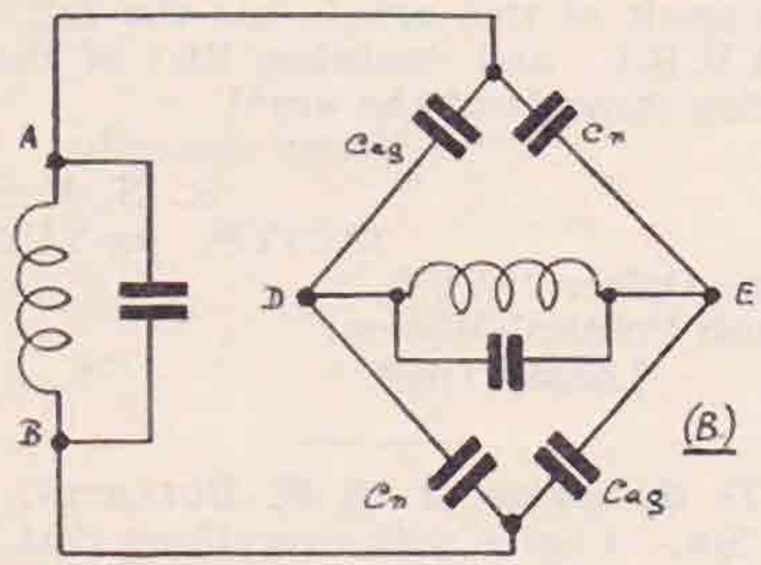
NEUTRALISING PUSH-PULL CIRCUITS

To the Editor, T. & R. Bulletin

Dear Sir,—On page 416 of the February issue it is stated that a push-pull circuit requires neutralising condensers of only half the capacity entailed in a single valve amplifier.



(A)



(B)

If, however, the neutralised push-pull circuit be re-drawn (Fig. 1B) to show the balance of capacities, it will be seen that each neutralising condenser balances in effect the anode-grid capacity of one valve. Thus, whether a single valve be employed, or two valves in push-pull, the neutralising capacity will be the same, neglecting slight differences due to the wiring.

Yours sincerely,
B. W. F. Mainprise (G5MF).

CONTINUOUSLY VARIABLE C.C. OSCILLATOR

To the Editor, T. & R. Bulletin.

Dear Sir,—From the replies received to my letter concerning the above subject, it appears that clarification of the idea is necessary as some misapprehension apparently exists in the minds of your correspondents, who have, in fact, merely amplified one of the limitations mentioned in my letter and therefore no new light has been thrown on the problem.

It is clear that the suggested system, provided that nothing is lost by way of stability, is an extension to the method of using a crystal with a variable gap holder, but giving a much greater range of control.

There appears to be some confusion as to the way in which the system operates. It is actually desired to extract a continuously variable output, which is equivalent in receiving practice to a variable intermediate frequency. The *stability limitations* were dealt with in my original letter, *i.e.*, " . . . *the considerations* such as oscillator voltages, couding systems, pulling of oscillators, etc., *which apply to the super-het mixer apply equally well. . . . etc.*"

The real problem lies in the choice of suitable CO, ECO frequencies and in ascertaining the relative voltage amplitudes from these two oscillators which will give crystal-controlled stability. Further, these two frequencies must be so chosen that only the desired frequency combination appears in the output of the mixer. For use on 7 Mc., a CO frequency of 5 Mc. and an ECO frequency of 2 Mc. (variable) would appear to be suitable, as both the fundamental frequencies and harmonics thereof, as well as the difference frequency of 3 Mc., are all sufficiently far removed from the sum frequency of 7 Mc. to present no complications.

It will be obvious that there should be no difficulty in building a stable self-excited oscillator for 2 Mc. operation.

Finally, as an example of the degree of stability obtained with frequencies of this order, using self-excited oscillators, I would draw your correspondent's attention to all well-designed super-het oscillatory systems, an investigation of which should clear up any doubts they may have as to the stability factor (percentage oscillator drift appearing in the IF frequency) of low-frequency self-excited oscillators.

Yours faithfully,
I. B. Clark (2BIB).

C.W. VERSUS PHONE ON 56Mc

To the Editor, T. & R. Bulletin.

Dear Sir,—After reading G5LB's reply to my letter in the March issue, I feel a further comment is required to correct a mistaken impression. I was very interested, and indeed surprised, to get his views on the subject and I am sure he has missed the point of my letter.

I am the last person on earth to say that G5LB and the other C.W. users are impeding experimental work! They have done great service in the past and we all hope they will continue to do so in the future. What I object to is the impression they give that C.W. users are in a class above everyone else. I was careful to state that for propagation study C.W. is probably superior to telephony, but that is where it ends.

With regard to G5LB's remarks on signal strength, I would like to point out that very little experimental work can be carried out with a signal below R5, owing to the difficulty of measuring it without very expensive equipment, which most amateurs have not available.

The " battle " of C.W. versus Telephony will go on for ever, but I think our main argument can be traced down to our respective definitions of the word " experimental." If an amateur hears a signal and spends an evening trying to improve it by fiddling with receiver, aerials, etc., does that constitute experimental work? In my opinion the answer is " No." That sort of work may be described as " operating experiments," or simply " operation."

Experimental work is done by setting a specific problem and then proceeding to investigate it in a definite and orderly manner, preparing graphs and tables wherever necessary.

I hope I have now made it clear that I have no wish to suppress C.W., but I do very earnestly wish to boost telephony.

The question of standardisation of construction is a technical detail which only time will settle, although I still adhere to my original statement.

Yours sincerely,
HARRY R. HEAP (G5HF).

ANOTHER DELLINGER FADE-OUT?

To the Editor, T. & R. BULLETIN.

DEAR SIR,—The following notes made during the Easter Holidays may be of some interest to your readers.

My QRA (Yeadon), practically in the centre of Britain, just half-way from John o' Groat's and Land's End, is 700 ft. above sea-level and well situated as a receiving station. The receiver in use is a Sky Challenger.

At 08.55 on Good Friday, April 15, I called "Test" and received a reply from G8FI at S8. A similar report was received from him. Conditions remained excellent until 09.25, when, during his transmission, he faded from S8 to zero within two minutes. I called him three times, thinking he had gone over to me, but obtained no reply. I then searched 7 Mc. for another contact, but found the whole band completely dead. A similar state of affairs existed on 1.7, 3.5, 7 and 14 Mc.

I then suspected a fade-out and continued searching all the bands continuously until I heard G signals beginning to come through faintly again at 11.00. Signal strengths built up till 11.25, when things become more or less normal again, but QSB appeared more than usually prevalent till 16.00.

During the whole period the barometer remained quite steady, but at 09.30, coinciding with the start of the fade-out, the temperature dropped ten degrees within five minutes and remained down till the end of the fade-out at 11.00, when it rose ten degrees within a quarter of an hour. I do not know if any other stations observed the same change in temperature at the time.

The following day produced the magnetic storm, when conditions were poor and only one G station was heard all day.

Yours faithfully,
W. KIRKLAND (G8FP).

An Unusual Coupling Circuit for a Single Button Carbon Microphone

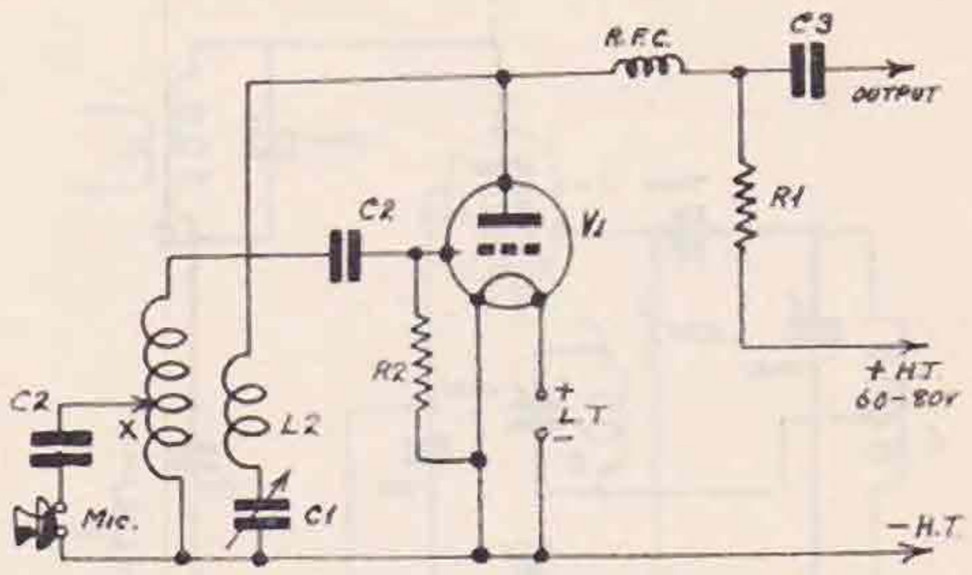
By J. B. PARKE, D.Sc. (GI8PA).

The normal transformer method, by which a carbon microphone is coupled to its associated equipment necessitates an energising current of anything up to 50 mA., with the result that slight arcing takes place between the granules, leading to hiss. The diagram illustrates a method by which this large energising current can be reduced to very small proportions. It will be observed that the apparatus consists simply of a small oscillator, which is also a detector of the leaky grid type.

The microphone is tapped across a portion of the grid coil and on speaking into it, modulation of the output from the oscillator takes place. The resulting modulated radio frequency currents are rectified by the valve and passed to the speech amplifier in the normal way. It will be appreciated that the condenser, C_1 must be increased in capacity until the valve is actually oscillating.

It is very unlikely that any radiation will take place from the apparatus, but in any case there is nothing to prevent the unit being screened in a metal box.

Using this method of coupling only a few micro-amps. pass through the microphone, and also the microphone transformer, thus a well-recognised source of hum pick-up, is eliminated.



This circuit has been given an extended test at the writer's station, and, using a single button P.O. type microphone, reports of very satisfactory quality have been received. Comparative tests between the transformer method of coupling and that described have invariably indicated a marked improvement in quality with the latter.

The Tetron Oscillator

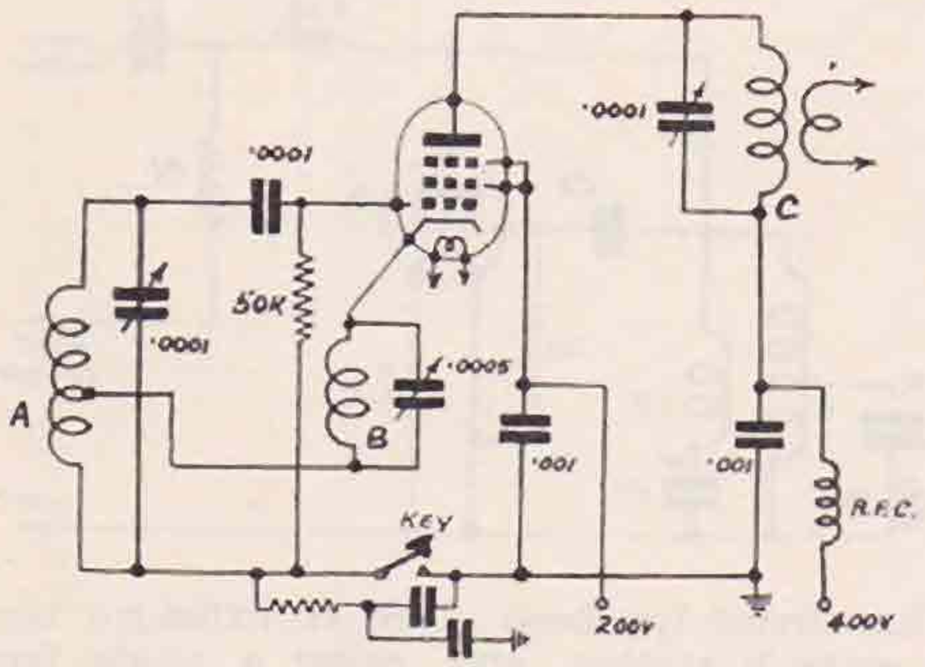
By C. J. PEACH (ZB1P).

IT might appear retrogressive, in these times of almost universal crystal control, to discuss forms of control where the frequency is determined other than by a quartz crystal. Approximately 99 per cent. of the amateur fraternity use C.C., and those who do not, use the other types of control either because C.C. is too expensive, or because they prefer the more flexible master oscillator.

Crystal control is expensive, in that, although an actual crystal is cheap, one is limited to a single frequency, and to obtain the same amount of operating efficiency that master oscillators provide, one must have several crystals. In these days one can seldom get through a contact without someone either jamming you, or jamming the man you are working, and for that reason alone, to the amateur whose pocket is his problem, self-oscillators provide a solution. They enable one to operate a station at maximum efficiency, and the 10-watt man can slide into a position where his signals can be heard.

The majority of people who use self or master oscillators adopt the electron coupled type, because it is more stable, for reasons here assumed as being known to the reader. A straight ECO begins to be tricky above 5,000 kc., unless one is blessed with a Type 802, in which case one will have no difficulty in using it at 7 Mc., with grid and anode circuits in resonance, and, providing the filter is good, obtaining a note whose characteristics are exactly similar to a crystal oscillator. The average person, however, who uses ECO cannot afford an 802, and the usual procedure is to use an ordinary audio frequency tetrode or pentode, tuning the grid

circuit to half the frequency desired in the anode circuit. Then the anode circuit has little effect upon the frequency of the grid circuit, and the note is very stable and clean cut. Of course, the output falls, and one normally has to include an extra sub-amplifier to regain the power lost at the expense of stability. The "Tetron" overcomes this disadvantage, and to the best knowledge of the writer, the circuit is original.



Circuit and operating details of the Tetron Oscillator.

Short "B." Tune A to f/2.
Tune C to f for max. grid current in next stage.
Tune B to f/2—x kc. until grid current rises to the working value.
Retune A and C for correct frequency and max. output respectively.

The following readings were obtained using a Type 59 with 500-v. on the anode, 200-v. on the screen, link-coupled to a Type 46, with a grid leak of 1,000 ohms. No potential was applied to the anode of the 46.

System.	Frequency.	Grid Current.	Equivalent Power.
ECO Doubler ...	7 to 14 Mc.	12 mA.	.144 watt.
"Tetron" ...	7 to 14 Mc.	28 mA.	.676 watt.
"Tritet" ...	7 to 14 Mc.	27 mA.	.729 watt.

The note is very stable in operation, and the procedure is merely to tune the grid circuit in the normal fashion (with the cathode condenser shorted) to the approximate frequency, following this by rotating the cathode condenser until the grid current in the next stage rises to a maximum upon tuning the anode circuit to resonance. Re-tune the grid to the exact frequency, and the "Tetron" is ready for use. It should be mentioned that a separate supply to the oscillator is advantageous, and does away with thump on keying. Break through can be obtained by keying in the grid leak and H.T. negative return as shown. There will be no arcing across the key normally, but to prevent it do not earth the centre tap of the filament transformers—clickless keying should result. The writer will be pleased to hear from members using 6L6G and 802s who decide to incorporate this idea in their existing oscillators.

Stray

ON4AU is anxious to arrange schedules on 14 Mc. with ZS, VU or VS for Four-Band Trans-Continental Contacts. He has recently worked VE1EA and ZL4DQ on 3.5, 7, 14 and 28 Mc.

His normal frequencies are 14,040 and 14,390 kc.

The United States of America

We are frequently asked by members who are endeavouring to qualify for the A.R.R.L. (W.A.S. Worked all States award) for a list of the United States of America.

We give below a list, together with the name of the Capital of each of the 49 States.

State.	*Capital.*
Alabama (Ala.)	Montgomery.
Arizona (Ariz.)	Phœnix.
Arkansas (Ark.)	Little Rock.
California (Cal.)	Sacramento.
Colorado (Colo.)	Denver.
Connecticut (Conn.)	Hartford.
Delaware (Del.)	Dover.
Dist. of Columbia (D.C.) ...	Washington.
Florida (Fla.)	Tallahassee.
Georgia (Ga.)	Atlanta.
Idaho	Boise.
Illinois (Ill.)	Springfield.
Indiana (Ind.)	Indianapolis.
Iowa (Ia.)	Des Moines.
Kansas (Kan.)	Topcka.
Kentucky (Ky.)	Frankfort.
Louisiana (La.)	Baton Rouge.
Maine (Me.)	Augusta.
Maryland (Md.)	Annapolis.
Massachusetts (Mass.)	Boston.
Michigan (Mich.)	Lansing.
Minnesota (Minn.)	St. Paul.
Mississippi (Miss.)	Jackson.
Missouri (Mo.)	Jefferson.
Montana (Mont.)...	Helena.
Nebraska (Nebr.)	Lincoln.
Nevada (Nev.)	Carson.
New Hampshire (N.H.)... ...	Concord.
New Jersey (N.J.)	Trenton.
New Mexico (N. Mex.)	Santa Fe.
New York (N.Y.)	Albany.
North Carolina (N.C.)	Raleigh.
North Dakota (N. Dak.) ...	Bismarck.
Ohio	Columbus.
Oklahoma (Okla.)	Oklahama City.
Oregon (Oreg.)	Salem.
Pennsylvania (Pa.)	Harrisburg.
Rhode Island (R.I.)	Providence.
South Carolina (S.C.)	Columbia.
South Dakota (S. Dak.) ...	Pierre.
Tennessee (Tenn.)	Nashville.
Texas (Tex.)	Austin.
Utah	Salt Lake City.
Vermont (Vt.)	Montpelier.
Virginia (Va.)	Richmond.
Washington (Wash.)	Olympia.
West Virginia (W. Va.)... ...	Charleston.
Wisconsin (Wis.)	Madison.
Wyoming (Wyo.)	Cheyenne.

As far as we know, no British Isles amateur has qualified for the W.A.S. award, Nevada being the elusive state for many of our leading DX men.

June Bulletin

Owing to the Whitsun holidays it is anticipated that the June issue will be published a few days later than usual. Members are asked to note this fact, thereby saving Headquarters time in answering queries concerning non-delivery.

Magnetic Storms

By John Sinclair (BRS. 40)

IN an Editorial published some months ago it was suggested that the time would perhaps not be too far distant when the Society's Experimental Groups could give an intelligent forecast of radio conditions during a specific period.

Just after the big magnetic storm on Easter Saturday, April 16, we noted in a national newspaper that the authorities at Greenwich Observatory had been able to warn the G.P.O. in advance of the possible dislocation of telephone communication during the Easter week-end. We have no definite knowledge of the system in operation at Greenwich, but it would appear that *their* "intelligent anticipation" was based first on their own observations of the sun's face, and second on the advice they had received from such bodies as the Radio Research Board.

Some few years ago Dr. Dellinger, of the Bureau of Standards, Washington, made public the results of observations which he had made of fade-out periods, and formulated the Dellinger theory that these take place roughly at 54-day intervals. Since that time many observers have reported Dellinger effects but no British amateur has, as far as we know, attempted to place on record a comprehensive account of British Isles observations.

In the current issue our Experimental Section Manager has given a summary of the fade-out effects recorded at the time of the Aurora Borealis display no January 24, 1938, but since then from our own observations we know that at least two more fade-out periods have occurred.

It will be noticed from a perusal of the article mentioned that a display of the Aurora was reported from the U.S.A. on October 3, 1937. The next recorded display was on January 24, 1938, a *period of* 113 *days* later. Those who took part in the A.R.R.L. Telephony Contest will recall that DX conditions between Europe and the U.S.A. went to pieces on March 22, a period of 57 *days* after the January "wipe out."

We should be most interested to discover whether a fade-out occurred around December 1, for if this did happen it would seem to show that the phenomena may occur at intervals of 57 days.

The magnetic storm on April 16-17 occurred only 25 days after the collapse of conditions on March 22, which on the face of it bears no relationship with the three previously recorded instances of intense solar activity, but we believe that if sufficient observations can be taken it will be found that even this fade-out period occurred at some definite cycle of time.

There is one most interesting phenomena which should be recorded at this stage. We refer to the fact that on the evenings preceding and following magnetic storms, South American amateur stations are heard in Great Britain at very high signal strengths, but except on very rare occasions it is impossible for a British Isles station to contact them. This effect has been noticed by numerous London stations and it would be interesting to discover whether the South Americans are able to hear any European signals at these times.

Invariably during the periods of the magnetic storms North American signals fall off completely, which would seem to indicate that the conducting medium is in a state of low ionisation between Great Britain and the U.S.A. Why South American signals come across the South Atlantic at such enhanced strength is we suggest, a problem which, should be tackled by the amateurs of Europe and South America.

So far reference has been made to 14 Mc. only, but it is perhaps desirable to make some brief mention of 7 Mc. conditions.

From observations made during fade-out periods, it would seem that conditions are more affected during daylight than at night. On Good Friday, as a case in point, the 7 Mc. band was practically "dead" throughout the morning hours, opening up in the afternoon and evening for contacts throughout the British Isles.

Recorded Fade-out Periods or Periods of Poor Conditions.

October 3, 1937	}	113 Days.
January 24, 1938	}	57 Days.
March 22, 1938	}	25 Days.
April 16, 1938	}	

Forecasts.

May 18, 1938 — July 14, 1938.

Nature's Problems

Summing up, the following problems seem to have been set us by Nature for solution :—

1. Can we intelligently anticipate, with the co-operation of members possessing astronomical knowledge, when DX conditions are likely to fall off ?
2. Can we advance any information which will enable us to prove the theory that fade-out periods occur in cycles ?
3. If so, what are the time intervals ?
4. Can we discover why strong South American amateur signals are received in Great Britain during fade-out periods ?
5. Why is it almost impossible for European stations to contact South American stations at those times ?

We believe that the Society would be making a valuable contribution to existing knowledge if a concentrated effort could be made to solve the above problems. As a start we would suggest that every member who has kept a full log for the past few years should make an examination of his entries with a view to recording all instances of definite fade-out periods. Such information should be prepared in concise form and forwarded to the Society's Experimental Section Manager.

Details of contacts with South America during these periods should also be tabulated, whilst members with astronomical knowledge should, we feel, give us the benefit of their advice.

* *QST* December, 1935, and January, 1936.

Bibliography

A new Radio Transmission Phenomenon,	Q.S.T.	Dec., 1935.
New Cosmic Phenomenon, by J. H. Dellinger	Q.S.T.	Jan., 1936.
The Dellinger Effect.	T. & R. Bulletin.	March, 1936.
,, ,, ,, ,,		April, 1936.
Dellinger Again		May, 1936.
Cosmic Notes		July, 1937.
Fade-out Observations at Riverhead, N.Y., U.S.A., by A. M. Braaten, W2BSR		Sept., 1937.

Appendix

During the Conference held in Washington, D.C., on April 28, 29 and 30, 1938, between the International Scientific Radio Union (American Section) and the Institute of Radio Engineers, several important papers, bearing on Magnetic Storms, Radio Fade-outs, etc., were presented.

Paper No. 3, which dealt with *Observations on Sky Wave Transmissions on Frequencies above* 40 *Mc.*, gave the results of daily observations at Riverhead, N.Y., on European 40-45 Mc. transmitters. Field strength measurements were made on English, French and German television signals, and the multipath propagation of the B.B.C. video channel was observed optically and the difference in path length determined.

Paper No. 4 dealt with the *Regular Characteristics of the Ionosphere Through Half a Sunspot Cycle.* The paper showed that the increase of solar activity from the sunspot minimum of 1933-34 until the present time has resulted in large increases in the ionisation of the upper atmosphere. During this time the ionisation densities of the E layer have increased by a ratio of about 1.55 to 1 and those of the F_2 layer by about 4 to 1.

Paper No. 5, which dealt with *Radio Observations in Puerto Rica,* summarised observations conducted on different frequencies between 42.5 Mc. and 16 kc. Numerous examples of the Dellinger fade-out phenomenon were found with an occasional increase in field intensity at low frequencies (18 kc.) accompanying these phenomena.

Paper No. 6, presented by Dr. J. H. Dellinger and others, dealt with *Ionosphere Disturbances Associated With Sunspot Activity.* Three distinct types of irregularities associated with high solar activity were described: (1) Sudden ionosphere disturbance; (2) prolonged periods of low layer absorption; and (3) ionosphere storms. The paper described the effects noticed under each of the three conditions. (1) Sudden disturbances are manifested by short, abrupt radio fade-outs, and frequently by perturbances of terrestrial magnetism and earth currents. They consist of sudden intense ionisation in the lower ionosphere, particularly below the E layer, and are caused by bursts of ultra-violet radiation from an eruption on the sun. (2) Prolonged periods of low layer absorption are similar to sudden disturbances, except that their beginning, as well as the recovery from them, is gradual and they last a long time, several hours or more. They are caused by a non-eruptive type of ultra-violet solar radiation which lasts longer than the bursts of radiation causing the sudden disturbances. They are similar in respect to being a day-time phenomenon, the effects being greater at lower than at higher latitudes. (3) Ionosphere storms consist of a diffusion and turbulence of the upper ionosphere, especially of the F_2 and night F layers. They occur both day and night, and are more severe at the higher latitudes. These storms are of the type usually associated with terrestrial magnetic storms.

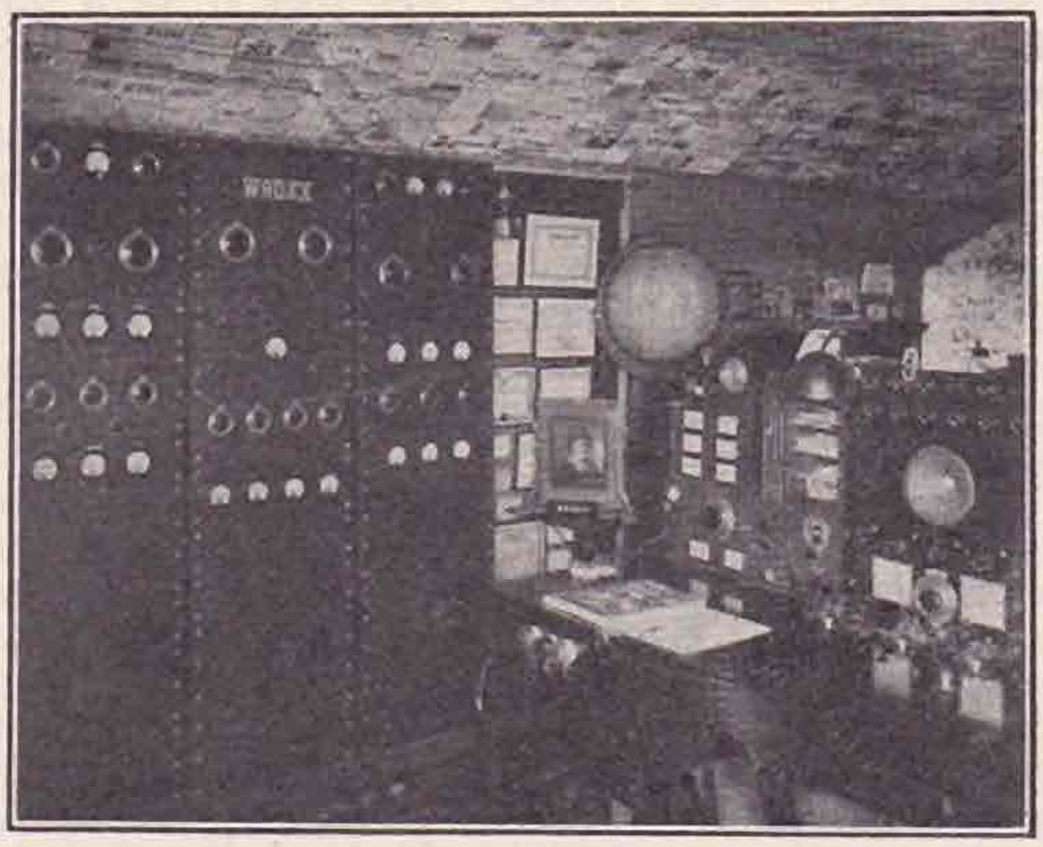
Paper No. 7 had a direct bearing on the subject of this article, and dealt with the *Investigation of Radio Fade-outs at the Department of Terrestrial Magnetism of the Carnegie Institution of Washington.*

Data for the fade-out on July 31, 1937, were analysed for possible effects in the several regions of the ionosphere. It is concluded that there is no evidence of change in either the F_1 or F_2 regions. A slight increase in virtual height and maximum ion-intensity of the E region is apparent just after the fade-out, which is sufficient to account for the destruction of the normal E region reflecting boundary. The evidence presented indicates that the effect occurs primarily below the 100 km. level where the waves are absorbed, because of an intense ionisation in a region of high collisional frequency. Absorption of the ionisation from the sun, responsible for the fade-out, must be negligibly small in the F_1 and F_2 regions to account for the stability of these regions during the period of the fade-out.

Paper No. 10 dealt with the *Periodicity of Ionosphere Storms.* Attempts have been made from time to time to predict the occurrence of ionosphere storms from a theory based on the 27-day rotation period of the sun. While statistical analysis has shown a tendency for the related magnetic storms to occur at periods averaging around 27 days, this re-occurrence is not definite or exact enough either in time or intensity to be made the basis of or prediction for either magnetic or ionosphere storms. A 27-day re-occurrence chart of ionosphere storms during recent years shows that predictions made on this basis have little value.

* * *

We are indebted to the organisers of the joint meeting for the information given in this Appendix.



W9DXX—Chicago.
Mrs. A. Bourke's new station.

Experimental Section

By A. M. H. Fergus (G2ZC).

General

A PAMPHLET concerning R.E.S. was sent out in the April T. & R. Bulletin to all members of the R.S.G.B. Members and prospective members are asked to study the Rules carefully, as these have been drawn up not only for their benefit, but also with a view to obtaining efficient results, and any deviation there from may only lead to delay or confusion. To give a case in point, the pamphlet states that application for membership should be addressed to 53, Victoria Street and not direct to the Experimental Manager, yet applications are already being sent to the latter. A system of filing has been instituted and it will be obvious that an application sent to any address but the one given must be sent back to London, thus causing delay.

From reports received from the G.M.'s, it seems clear that the less experienced members should be reminded that R.E.S. is not an Information Bureau. Matters dealing with R.E.S. will always be welcomed but, for other information, the R.S.G.B. offer expert advice through "The Technical Information Bureau" and "The Helping Hand" articles. This point is stressed now and members should take careful notice that such matters addressed to either G.M.'s or G.C.'s will not be replied to. G.M.'s will, however, welcome problems having a direct bearing on the subjects which their Groups are interested in, and if these warrant investigation, members will be asked to study them.

Bulletin Notes

Members of R.E.S. are reminded that Notes regarding procedure and general policy will appear monthly, where the whole membership is concerned. Group or Section Notes will be dealt with by the G.M.'s or G.C.'s. It may seem absurd to suggest that members ought to read R.E.S. Notes, which are prepared principally for their benefit, but from the fact that questions have already come in as to what the discs are for, it would seem that some members do *not* read the Bulletin. To those members who have made enquiries, reference should be made to Page 549, para. 2, in the April issue, as well as to the pamphlet sent out to all R.S.G.B. members last month.

Aerial Group

This group now consists of 48 members. A questionnaire has been sent to all members, with a view to finding what particular work each has an interest in, and from which the G.M. will be able to allocate groups. Will those members who have not yet replied please do so at their earliest convenience, as the G.M. is anxious to get his groups started? It is suggested that those who do not hold radiating licences could do a great deal of useful work with "beam" and "refector" systems for reception. Groups are being formed of Group and Individual members and the following subjects are under review: Direction finding, End-on, All-band omni-directional, beam, reflector and vertical aerials, physical theory, effects of fading and light density.

The G.M. wishes to thank all those who have sent him interesting letters and who have replied to his questionnaire, and regrets that he cannot reply to everyone in person owing to pressure of time and work. Their problems will come under review once definite groups have been formed.

Propagation Group

Groups "A" and "B" of the 28 Mc. group are very active and regular reports will start next month.

G6FU has been appointed G.C. of the Barometric Group and G2XC G.C. of the 56 Mc. Group. Other groups are being formed.

Transmitter Group

The G.M. has sent circulars to all members, and wishes to thank all those who have replied. They will be notified in due course as groups are formed, and those who have not yet replied are asked to do so at their early convenience. It has been impossible to reply individually to each member, but the G.M. is very grateful to all members who sent in useful suggestions, which will receive attention. Groups are now in process of formation, and these will be made up according to the frequency bands, in which members are interested.

Membership Notes

Membership adhesive discs have been posted to all members of R.E.S. Without these discs, old R.E.S. Certificates are valueless.

Calibration of Commercial Stations

BRS265 has sent in a list of commercial station frequencies from 6,927 to 29,940 kc. which he has checked and calibrated. The list is too long to publish, but it is available to any R.E.S. member who may wish to use it for check purpose, if they will state the band in which they are interested.

Aurora Borealis

Reports to hand have been sent to the G.M. of the Propagation Group. These will be available to Groups studying this and subjects having a bearing on conditions.

Members are requested to send extracts from their logs which show any peculiarities for April 16, 1938. These should include band observed and all points noted that differ from "normal." Added value will be given, if the data covers a few days prior to and after that date.

Membership

The following alterations have taken place during the past month :—

Group Members (new) : D. Crouch, BRS2917 (R), J. Cymerman, BRS3101 (A-P), D. W. Flavell, 2CGD (A-P), W. F. Holford, G5NG (T-P), Dr. D. G. Kennedy, G8KY (A-T).

Individual Members (new) : W. T. Gould, BRS3025 (A-P), J. McDermott, 2AHH (A), J. M. R. Sutton, GW2NG (A-T), G. L. P. Zech, GM8TT (P). C. R. Chick is now G3JF (ex-2CSX).

Resignation.—J. B. Longridge, 2BNM (P).

Under paragraph 2, R.E.S. Rules, W. B. Bennet, 2BDA, relinquishes membership of Aerial and Propagation Groups, retaining member ship of Transmitter and Receiver Groups.

Aurora Borealis

SUFFICIENT reports are to hand to show that the period of the Aurora Borealis display (January 24, 1938), coincided with altered radio conditions.

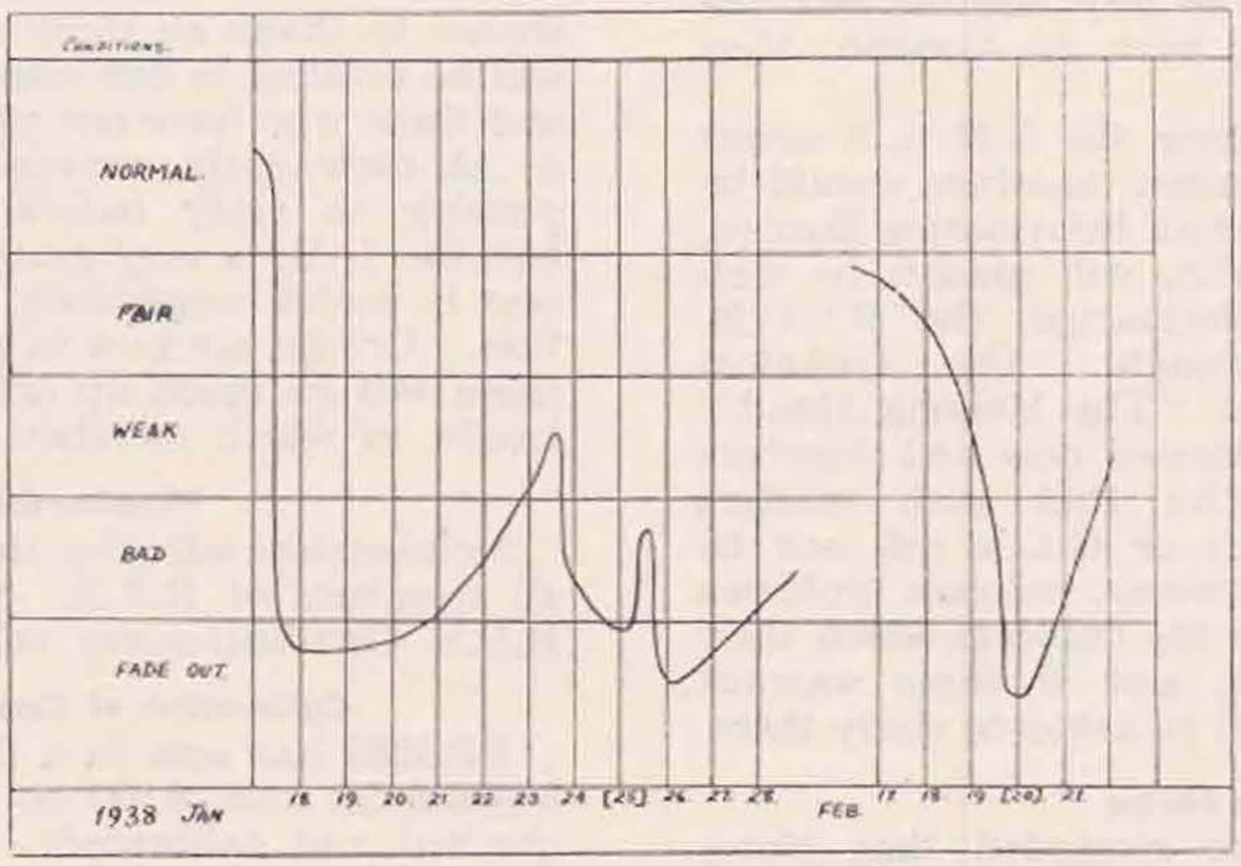
As the majority of the reports follow much the same trend, it has been decided to take an *average* of the results, except in cases where unusual phenomena were noted, and to show these results in graph form, as being possibly the easiest method of demonstrating what *did* happen on the various amateur bands.

It is felt that no useful purpose would be served in recording all the individual reports received, but the extracts given are brief summaries, and may be of general interest. It will be recognised that as the reports covered many aspects, from the actual reproduction of sunspot data at different stages during a period, to D.F. bearings taken on stations whose true bearings were already known, we had a vast amount of data from which to extract.

Members who sent in detailed logs which are not specially mentioned, will understand that such are omitted simply because other reports showed identical conditions, which are included in the general report.

The following are a few brief extracts :—G5JH observed from 8 to 3.5 Mc., while G6YL gave period report covering the 3.5 Mc. band. Echo, high speed fading, and fluttering were noticed, and bearings taken on some of the medium band broadcast stations, showed a D.F. error up to 25° West from true bearings. G5JH sent in many reproductions of sunspot pictures, which space does not allow of publication. 2AGQ (16 to 3.5 Mc.) noted rapid fading. G2TR observed that conditions were more like "summer" as regards reception from the U.S.A., and several members (G2NJ, 2CQY and G2UP) noticed that on 14 Mc. there was no DX, but that Scottish and Irish stations were audible at a time that they have never before been heard. BRS2977 heard no European or African stations, but overheard one U.S.A. amateur ask another, where the European signals had got to, showing that Europe had faded out in the U.S.A.

It is difficult to state whether the 56 Mc. band was "dead" due to the Aurora or to "normal" conditions, so the fact is merely noted from four reports, but two others are more definite, one stating that stations normally heard were inaudible. Several reports on the 28 Mc. band are much more definite, one being from G5BM, who was in communication with G6DH. When the band went "dead," they tried to QSO on 56 Mc., but were unsuccessful. G2XC observed flutter, but no DX, and his log for October 3, 1937, shows a similar flutter, when an Aurora display was seen in certain parts of the U.S.A. Several members report on a high background noise, some describing it as a "hiss." 2AZX and BRS1173 both noticed that 7 and 14 Mc. were very quiet for two days after the Aurora display. G6DH reported that 28 and 56 Mc. went "dead" with violent and rapid fading on 14 Mc.



Aurora Borealis
Graph showing average behaviour of wireless signals on Amateur Bands.

Summary

With the exception of the long wave B.B.C. Droitwich station, and the possible doubt as to effects on 56 Mc., all bands observed between these limits (1.7 Mc. not being reported upon) were affected, the chief points noted being very rapid fading, echo, flutter, and even complete fade-out. From the observations taken prior to, and after the display, we may assume that conditions were abnormal, and it would now be interesting to examine the matter from the point of view of the relationship between the Aurora, sunspots, and wireless conditions. If the Aurora is due to sunspots, why should wireless signals be unduly affected, and why should certain sunspot conditions make the Aurora possible at one period, and not at another? Owing to the divergence of opinion as to what sunspots really are, the subject becomes the more interesting, and it is to be hoped that publicaton of these brief notes will encourage R.E.S. members to study the phenomena, and to let us have notes of practical or theoretical findings. If we take the above results as fact, the next step is to answer the question "Why?"

G2ZC.

Reports Wanted

G3AI (London, E.7) on his 7 and 14 Mc. C.W. signals. All reports will be acknowledged.

TECHNICAL ENQUIRY BUREAU

The service is free to members except that a nominal charge of 6d. per query is made to cover clerical and postage expenses.

The Rules governing the service are :—

1. Questions must be written legibly and concisely on one side of the paper.
2. A sixpenny postal order must accompany each question.
   The postal order must be made payable to the R.S.G.B., and the letter addressed to Technical Enquiry Bureau, R.S.G.B., 53, Victoria Street, London, S.W.1.
3. The service is only available to fully paid-up members of the Society.

Contemporary Literature

By L. Fryer (GM2FR).

A Tuned Loop for 80 and 160-Metre Reception. (John P. Tynes, W6GPY.) (*Q.S.T.*, April, 1938.)

An interesting article describing various experimental loop aerials, and the results obtained on the 160 and 80-metre bands.

* * *

Some Practical Aspects of Speech-Amplifier Design. (Dana H. Bacon, W1BZR.) (*Q.S.T.*, April, 1938.)

A practical discussion on the choice of valves, components and circuit design for obtaining wide frequency response and low hum level.

* * *

Putting the Harmonic Generator to Work. (John L. Reinartz, W1QP.) (*Q.S.T.*, April, 1938.)

The author gives further details of his "Harmonic Generator," described in *Q.S.T.* for July, 1937. The unit described in the present article uses two 6L6 valves and with two crystals covers 3.5 to 28 Mc., with a choice of two frequencies on the 7 and 14 Mc. bands, details being given for a four-band transmitter using an 814 valve as final amplifier.

* * *

The Construction of Television Receivers. (Marshall P. Wilder, W2KJL.) (*Q.S.T.*, April, 1938.)

The author gives the basic circuit details and a preliminary outline of two experimental models which are the outcome of an extended period of experiment.

The simpler of the two circuits is a three-stage T.R.F. receiver with diode detection, followed by two stages of video amplification and a double-diode synchronising impulse separation circuit.

The second receiver is a modern high-fidelity unit using a super-het R.F. section, and a viewing tube employing electro-magnetic deflection.

* * *

Shock-proofing The Transmitter. (L. C. Waller, W2BRO.) (*Q.S.T.*, April, 1938.)

A description of a novel tank-circuit arrangement and miscellaneous suggestions for reducing danger of injury from high voltages, the writer's study of the subject being the result of a shock from a 1,250-volt anode supply.

* * *

A Crystal-controlled 5 and 10-Metre Portable. (Frederick F. Sylvester, Ex-W2ACU, and Edwin F. Dillaby, W1DWY.) (*Q.S.T.*, April, 1938.)

The authors describe a three-tube transmitter for mobile work.

The transmitter uses a type 6J5GT valve as triode oscillator with a Bliley 10-metre crystal; the crystal oscillator is capacity coupled to a HY60, which works as a doubler-amplifier on 56 Mc. and as a straight R.F. amplifier on 28 Mc. The modulator being a single 6V6G.

* * *

A Dual-purpose Communication Receiver. (R. K. Budge and Kenneth Jowers.) (*Television and Short-wave World*, April, 1938.)

A description of a six-valve receiver covering the 10, 20 and 40-metre amateur bands, all the commercial short-wave channels, and the medium and long-wave broadcast bands.

Provision is made for a di-pole input circuit and the receiver has many points to comment it to amateurs. It may be home constructed or can be obtained completely wired and tested from a well-known firm for 11½ guineas.

* * *

The "Q" Antenna System. (H. W. Stewart, G2CY, and E. W. Pickard, G6VA.) (*Television and Short-wave World*, April, 1938.)

An interesting article on the "Johnson 'Q' Antenna," and its use both for receiving and transmitting.

Tables of line impedance and tube spacing figures are giving.

* * *

A Crystal Oscillator and Frequency Multiplier. (Kenneth Jowers, G5ZJ, and Malcolm Harvey, BRS1636.) (*Television and Short-wave World*, April, 1938.)

This is the first of a series of articles dealing with the design of a multi-stage transmitter.

The section described uses a 6L6G as a crystal oscillator in a Tri-tet circuit, which operates with either a 40 or 160-metre crystal, followed by a TZ.20 as amplifier.

* * *

A Single-stage 10-watt Transmitter. (*Television and Short-wave World*, April, 1938.)

A description of a single-stage exciter which can be used as a low-power transmitter or as the exciter stage in high-powered outfits.

The unit uses a 6L6G as a crystal oscillator and will provide a comfortable 10-watts of carrier power.

* * *

A New Club

Mr. R. B. Webster (G5BW), Steetley Holme, Upper Willingdon, Eastbourne, informs us that as a result of his letter published in the March issue a First-Class Operators' Club (F.O.C.) has been formed. Its object is to encourage and maintain a high standard of operating on the amateur bands. A committee has been appointed and is already at work.

There has been a remarkable show of interest if the letters received by the organiser are anything to judge by It is expected to publish a list of members in an early issue of this Journal.

Members requiring further information are requested to communicate direct with Mr. Webster, enclosing a 1½d. stamp for reply.

Strays

ZL4GM is looking for G contacts on 14 Mc. C.W. (14,268 kc.) and 28 Mc. phone between 0700 and 0800 G.M.T. and 1800-2000 G.M.T. This station always QSL's, therefore, if any G has failed to receive his card he should write direct.

* * *

Mr. Ritson informs us that his call sign is still being pirated on 7 Mc. Members are asked to note that G5RI does not work on this band.

National Field Day, 1938

WE publish below a full list of call signs and locations of the 100 official British Isles stations taking part in the above event.

All official British portable stations will call "Test N.F.D.," and will suffix their calls with the letter "P." Members of the Society who wish to operate private portable stations during this event are asked to suffix their calls with the letter "P," but to prevent confusion with the official stations they should refrain from calling "Test N.F.D." We recommend that the operators of these private stations either reply to "Test N.F.D." calls or send "Test Port."

The rules for N.F.D. were published in the March issue of this Journal.

District.	Call Sign.	Site of Station.	Bands to be used. Mc.
1	G2HW	Blackburn Golf Club, Revidge, Blackburn.	1.7
	G2OA	Heswall Football Ground, Glegg Arms, Gayton, Heswall, Cheshire.	3.5
	G5MS	Wildings Farm, Heyhouses, St. Annes-on-Sea, Lancs.	7
	G2OI	Grants Tower Farm, Walmesley, near Bury.	14
2	G5VD	Top of Bank, Thurstonland, near Huddersfield.	1.7
	G6MY	Finsdale Quarries, Britannia Road, Morley, near Leeds.	3.5
	G5KM	Field behind Medlam Farm, Pogmoor, Barnsley.	7
	G2JY	Field belonging to G5HK, opposite "The Sportsman's Inn, Lodge Moor, Sheffield.	14
3	G6KR	Farm belonging to Mr. Pearce, Weeping Cross, Cross Houses, near Shrewsbury.	1.7
	G5ML	Dirty Gap Farm, Burton Green, near Coventry.	3.5
	G5BR	Moneymore Farm, Canwell, near Sutton Coldfield.	1.7
	G5VM	Harrison's Farm, Church Lane, Yardley, Birmingham.	14
4	G2WS	Crich Stand, Crich, near Matlock, Derbys.	1.7
	G5KG	Coxmoor Golf Links, near Sutton-in-Ashfield, Notts.	3.5
	G6VD	Owston, a small village between Melton Mowbray and Uppingham, Leics.	7
	G2IO	Meadow Farm, Kirklington, near Southwell, Notts.	14
5	G5JH	Mr. P. Davis' Farm, New Road, Bristol Road, Hardwicke, Glos.	1.7
	G5UH	Southlea Farm (Mr. Watson), Pensford, near Bristol.	3.5
	G6RB	The Monument (Mr. H. Ayliffe), Hawkesbury Upton, Badminton, near Chippenham, Wilts.	7
	G5BK	Major Morse's Mink Farm, Leckhampton Hill, Cheltenham, Glos.	14
6	G5AK	Near the Wellington Monument.	1.7
	G6RF	Near Shaugh Prior.	3.5
	G5SY	Near Haldon Racecourse.	7
	G6GM	Holsworthy (Featherlands Farm).	14
7	G6NA	Stoke Hill Farm, Stoughton, Guildford.	1.7
	G6NZ	Messrs. Briggs & Sons' Field, Builders, London Road, Purbrook, Portsmouth.	3.5
	G6LK	Mr. Holt's Farm, Cranbrook, Farley Green, Surrey.	7
	G5AO	Nash's Farm, Junction of Southcote and Circuit Lanes, Reading, Berks.	14
8	G5PA	Astell's Field, Hangers Wood, Bromham Road, Stagsden, Bedford.	1.7
	G5JO	Mustill's Mill, Swavesey, Cambs.	3.5
	G2UQ	Mr. F. M. Odams' Field, Dogsthorpe, Peterborough.	7
	G6WA	Mr. Anderson's Hill Farm, Houghton Road, St. Ives, Hunts.	14
9	G8FL	Kimberly Road, North Walsham.	1.7
	G2MN	The Rectory, North Tuddenham, Dereham, Norfolk.	3.5
	G6TI	Reavell's Sports Ground, London Road, Ipswich, Suffolk.	7
	G8DD	Whitehouse Farm, Blundeston, near Lowestoft.	14
10	G2JL	Penyrheal Farm, Wentwood, near Newport.	1.7
	GW5KJ	Higher Lanes, Mumbles, near Swansea.	3.5
	GW8CT	Plas Farm, Gordon Road, Blackwood, Mon.	7
	GW5BI	Ridd's Farm, Lavernock, near Penarth.	14

District.	Call Sign.	Site of Station.	Bands to be used. Mc.
11	GW5OD	Hafoddty-Bennett Farm, 8 miles south of Colwyn Bay.	1.7
	GW5OD	Hafoddty-Bennett Farm, 8 miles south of Colwyn Bay.	3.5
	GW5TC	Hafoddty-Bennett Farm, 8 miles south of Colwyn Bay.	7
	GW5TC	Hafoddty-Bennett Farm, 8 miles south of Colwyn Bay.	14
12	G5UM	Welwyn Heath, Welwyn, Herts.	1.7
	G5WW	G.P.O. Stores Dept., Sports Ground, Barnet Gate, Arkley.	3.5
	G6PI	Oulton Crescent, Potters Bar, Middlesex.	7
	G2AI	Mote Mount Park Farm, Mill Hill, N.W.7.	14
13	G2CX	Westerham Heights Guest House, Westerham, Kent.	1.7
	G2GZ	Edgebury Green Lane, Eltham, S.E.9.	3.5
	G2UX	Dulwich Hamlet Football Ground, Champion Hill, S.E.	7
	G2WV	Westerham Heights Guest House, Westerham	14
14	G6LB	Fairmead, Bicknacre, near Chelmsford	1.7
	G6UT	Rookwood Hall, Abbess Roothing, near Ongar.	3.5
	G8AB	The "Rainbow and Dove," Hastingwood Common, near Harlow, Essex.	7
	G5UK	Thundersley Glen, Thundersley, Essex.	14
15	G6WN	Rush Green Farm, Rushy Green, Denham, Bucks.	1.7
	G5VB	Pond Farm, Wisley Hut, Ripley, Surrey.	3.5
	G6PR	Berry Farm, Wexham Street, Stoke Poges, Bucks.	7
	G6CJ	Berry Farm, Wexham Street, Stoke Poges, Bucks.	14
16	G2MI	Hayes Place Estate, Hayes, Kent.	1.7
	G2UJ	Rowden Farm, Frant, Sussex.	3.5
	G5FN	Burham Downs, near Rochester, Kent.	7
	G5JZ	Barn Farm, Brightling Needle, near Dallington, Sussex.	14
17	G5XL	Red Hall Farm, Bracebridge Heath, Lincoln.	1.7
	G8FC	Field adjacent to Cranwell Aerodrome.	3.5
	G6AK	Roger's Farm, North Thoresby.	7
	G6GH	Old Hall Close, Baumber.	14
18	G6OO	Top Field, Garrowby Hill, Yorks.	1.7
	G6OO	Top Field, Garrowby Hill, Yorks.	3.5
	G8KU	Oliver's Mount, Scarborough.	7
	G2XA	Southwold Farm, Elloughton, E. Yorks.	14
19	G2YY	Near Berwick Hill, Berwick-on-Tweed.	1.7
	G5XT	Manor House Farm, Yarm Road, Stockton-on-Tees, Durham.	3.5
	G5WZ	Little's Farm, Whiteless, S. Shields.	7
	G5RI	Low Eshells Moor, Hexhamshire.	14
Northern Ireland	GI5HV	Knockinagh Farm, Cloughfern, Whiteabbey, Co. Antrim, N.I.	1.7
	GI5SJ	Lily Bank Farm, Gilnahirk, Co. Down.	3.5
	GI5UR	Craigantlet, Holywood Hills, Co. Down.	7
	GI5QX	Windmill Hill, Portaferry, Co. Down.	14
Scotland: A & E	GM8PM	Temple House, Baldernock, near Torrance, Stirlingshire.	1.7
	GM5ZX	Temple House, Baldernock, near Torrance.	3.5
	GM8AH	Parklea Farm, Carmunnock, Renfrewshire.	7
	GM6MS	Lickprivick Farm, East Kilbridge, Renfrewshire.	14
B	GM2OX	Coull House, Aboyne, Aberdeenshire.	1.7
	GM5LF	Post Office, Netherly, by Stonehaven.	3.5
	GM6BM	Oldtown Farm, Aboyne, Aberdeenshire.	7
	GM6IZ	Culter House Estate, Peterculter.	14
C	GM6RI	Logie Pert, near Montrose.	1.7
	GM5WT	Downiebank Farm, Monikie, Angus.	3.5
	GM8MN	Forneth Farm, Fowlis Wester, By Crieff.	7
	GM6KO	Harecairn Farm, Monikie, Angus.	14
D	GM2SP	Hillend, Lothcanburn, Edinburgh.	7
	GM6XI	Kirkhill Park, Penicuik, Midlothian.	14
F	GM6RV	On Sheriffmuir, 4 miles from Stirling.	3.5, 7 & 14
G	GM6RG	Over Whitley, Selkirk.	1.7
	GM6RG	Over Whitley, Selkirk.	3.5
	GM8NW	Over Whitley Farm, Over Whitley.	7
	GM8RV	Over Whitley Farm, Over Whitley.	14
H	GM8MQ	Dunearn Hill, Burntisland, Fife.	7
	GM8KR	Dunearn Hill, Burntisland, Fife.	14

List of Overseas Portables Overleaf.

Overseas Portables

The following is a list of the official Swiss portable stations taking part in N.F.D. :—

Call-Sign.		Location.
HB1C	...	Bütschelegg.
HB1L	...	Randen.
HB1V	...	near Geneva.
HB1X	...	near Zurich.
HB1AA	...	Yacht, lake of Murten.
HB1AD	...	near Berne.
HB1AL	...	Napf.
HB1AQ	...	Grandvaux.
HB1AU	...	near Wallisellen.
HB1AW	...	near Geneva.
HB1BB	...	near Biel.
HB1BM	...	Bucheggberg.
HB1BS	...	near Basel.
HB1BT	...	near Biel.
HB1BW	...	Bölchen.
HB1BX	...	Raimeux.
HB1CE	...	near Zurich.
HB1CF	...	Randen.
HB1CI	...	Stokera.
HB1CN	...	near Geneva.
HB1CV	...	near Berne.

Mr. Stuber advises us that a few other portable stations may be operating ; these can be identified by the letter used in the call. All HB portables use the figure 1 whilst fixed stations employ the figure 9.

The U.S.K.A., with their customary kindness, will present diplomas to the five British Isles portable stations working the most HB portables.

* * *

Mr. Holden (VO1H) informs us that the following Newfoundland stations will probably be operating as portables during N.F.D.: VO1H/P, 1J/P, 1W/P and 4Y/P.

The Newfoundland Amateur Radio Association will be running their own N.F.D. at the time fixed for our own Contest.

* * *

We understand from Mr. W. E. Marsh, SU1WM, that the Alexandria Experimental Short Wave Club will be running a portable station during N.F.D. They will operate on 14 Mc. and also on 7 Mc. if QRN permits. The call sign will be SUIA and the frequencies 14,375, 14,200 and 14,080 kc.

* * *

The following private portables will be operated during N.F.D. :—

G6US ... ... near Oswestry.
GW6AA ... Cefndu (1,200 ft.) near Colwyn Bay.

W1WV

Mr. Miles Weeks, W1WV, has sent us a list of 135 British Isles stations who have failed to QSL contacts with him. We cannot publish the call signs, but would ask those who have been in communication with W1WV to send him a card if they have not done so already.

Valve Review

EDISWAN ESW20.

The ESW20 is a directly-heated triode valve intended as an equivalent of the American Taylor T20, and is manufactured by *Messrs. The Edison Swan Electric Co., Ltd.* The valve, which is priced at 17s. 6d., has the anode brought out to a top screw terminal and is fitted with a 4-pin UX base.

Characteristics.	*Makers.*	*T.20*	*Sample*
Filament watts ...	7.5	7.5	7.5
,, current (amps)	2.0	1.75	1.95
Anode dissipation (max. watts)	20	20	—
Anode volts (max.) ...	800	750	—
Anode current (max.)(mA)	75	75	—
Amplification factor ...	22 *	20 *	20†
Mutual conductance (mA/v.)	1.7 *	2.5 *	1.2†
Impedance (ohms) ...	12,500 *	8,000 *	16,700†

*Conditions not stated.

† Measured at anode volts 600, grid volts – 12.

Characteristic curves were taken of the sample and they were found to agree reasonably closely with the makers' published curves, although the anode current was generally rather lower in the case of the sample.

No curves of the T20 were available for comparison and no point would be served by publishing the curves taken. At maximum anode volts 800 cut off is at approximately – 35 volts.

Interelectrode capacities.		*T20*	*ESW20*
Grid to anode	μμF	4.8	6.0
Anode to all other electrodes	,,	5.4	7.2
Grid to all other electrodes	,,	10.8	14.0

These figures show that the interelectrode capacities of the ESW20 are rather higher than that of the T20 but not high enough to involve any difficulty. Tests made at 28 Mc. comparing the valves as a driven P.A. showed that the output and the efficiency of the ESW20 is almost exactly the same as the T20 but re-neutralising when the valves are interchanged is required due to the difference in grid-anode capacity. Also slightly more driving power is required to give the same grid drive with the sample, due to the higher grid input capacity.

It may be mentioned that the ESW20 is fitted with a black moulded base and not ceramic, but in view of the fact that the high-potential anode is brought out to the top of the bulb this is of no practical consequence.

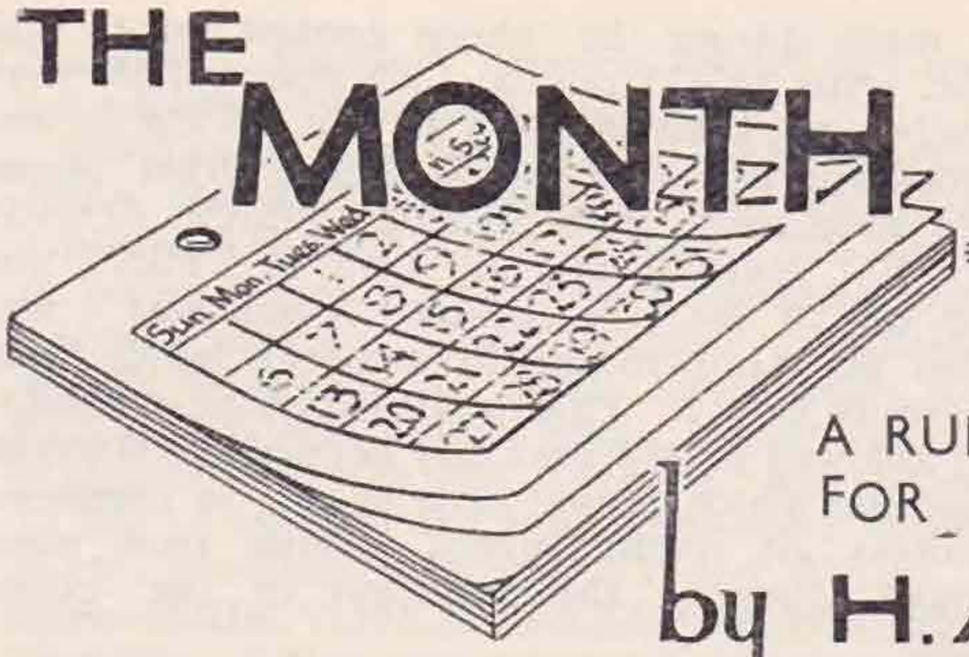
It can be taken that the ESW20 is a satisfactory equivalent of the T20 for all purposes and will give equal results providing that the necessity for re-tuning and re-neutralising is borne in mind.

D. N. C.

Ham Movements

Gilbert Pollock, VK2XU, operator of one of the best known of all Australian 14 Mc. phone stations, is leaving for England with his wife on June 11. This is Mr. Pollock's first trip "home" for 15 years, and we have no doubt he will receive a warm welcome from the many British Isles amateurs he has contacted whilst in VK. Bon voyage and good luck, o.m.

THE MONTH ON THE AIR



A RUNNING COMMENTARY OF RADIO CONDITIONS
FOR THE MONTH OF . . . . . APRIL, 1938

by H. A. M. WHYTE (G6WY.)

IT would appear that most of the well-known DX men of the world spent the entire month of April writing up their contest logs and making out hundreds of cards. At least, we hope that is what they did, because there is a most noticeable tendency to-day for participants in contests to refrain entirely from sending in any log at all. The excuse used is that they were not entering (we wonder), and when they found their score to be below someone else's, they could not be bothered to spend hours compiling a neat log. They then discovered that they had worked several dozen or hundred stations and were faced with the prospect of more hours of work in writing the necessary cards. Their spirit weakened and the cards were not made out, and so the fellow at the other end is likely to wait indefinitely for the card that would give him a new country or even a new continent. This is poor amateur spirit.

Some participants compromise: they have a card printed with very little detail and add less in ink; the result is a bare confirmation (better than none at all we admit) of a contact on an unspecified band at an unspecified time on an unspecified day. One well known G (who ought to know better) sends some of his cards just addressed to the recipient *with no report, date, or time*, and "tnx for QSO" written on the bottom. Oh yes; he even forgot to mention whether the contact was on 'phone or CW. We suppose that a criticism of this type will mean that he will stop sending cards entirely, but we do ask everyone to consider: does such a card serve any useful purpose scientifically, or is it any use for claiming a certificate? The whole idea of the confirmation is to supply data on apparatus used, power, aerial, etc. Fancy not filling in the report or the band used!

We have with us this month the two champion receiving stations of the British Empire. One is known well already, BERS195, Eric Trebilcock, of Northern Australia; the other is 2AOU, Martin Bourke, of Jersey, C.I. Let us compare their results side by side. BERS195 logged a greater number of separate stations in one month (March) than he had ever received before—1,524 individual calls in 90 countries, and the number of entries in his log totalled 2,500! His best weekly effort was 874, and during the month he added VR6AY, VP2LA (St. Lucia), ZK2AA (Nuie I.), K6BAZ-6 (Howland I.), TF3B on 14 Mc. to bring his grand total of countries heard to 156; he is missing on Zone 2 for "HAZ" and made a record "HAC" by hearing them all in 6 minutes on March 29 between 22.35 and 22.41 G.M.T. March 26 was the best day in his experience for years with British phones audible at S8-9. And now 2AOU,-VR4AD (Br. Solomon Is.) brought his grand total of countries heard to 141 and he asks BERS195 if he has received VK9DM whom he heard on HF14? He has had news from the genuine VP8B, who states that he ceased operation in 1936. This explains why those who worked VP8B in the 1937 B.E.R.U. contest have been unable to get a card; however, a new one, VP8D, was heard on HF 14, and it is hoped that he will prove genuine. 2AOU clears up the mystery surrounding VP3TEST and suggests that this must be VP3NV heard on 28 Mc. 'phone in Georgetown. This is most probable because many G stations call "NV" for "TEST," so why shouldn't he call "TEST" for "NV," it's a fair enough guess, isn't it? Other noteworthy DX heard in Jersey includes K4DRN (Virgin Is.) LF 14, J5CC 14400, VS7GJ (phone), CR7AC, AK, AU in the American phone band and VP2AB whom 2AOU suspects as doubtful, but this is the new call of VP2CD who should have changed it years ago, as the true prefix for Antigua is "VP2A." Trebilcock supplies the news that K6BAZ-6 was heard to tell W6QD that K6DSF is on Baker I., K6NVJ on Jarvis I., K6HCO on Canton I., K6HCO on Enderbury I., and K6TE is back again on Wake I., working hard on 14 Mc. DX Century Club aspirants, please note!

And now for individual "bests." G6XL asks if VO8D is a new district of Newfoundland or Labrador? He was worked on 7 Mc. He also heard VR4AD calling F3MN at 08.25 G.M.T. on 14300 (approx.). G8CV heard XU6LN 14090, VS1AI 14085, VQ2JC 14100, FB8AA 14020, and worked on 'phone, VK3KX, VQ4KTB and on 28 Mc. 'phone ZL3DJ. Is this the first G-ZL 'phone QSO on 28 Mc.? VU7AR was a new one raised on 28 Mc. CW. He objects to being called a "crafty" station in using 490 V. for an input of 10 watts with the final biased to three times cut-off! We quite agree, it is a very efficient system, but don't let that bias slip! G6ZO, "the ever-open ear" of the HF bands sent in a terrific list of DX. New countries worked were: VQ2FJ 14040, FI8AC 14400, ZE1JI 14380, ZC6AQ T6, XU6LN 14100, VQ4KTF 14060 and XR7E 14000 on April 11. Other DX worked includes VU's, VK's, PY's, ZL's, U9's, ZS's, J2KG, PK1MF, VE5MZ, and W6NGD (Ariz) for a new state. The best heard but not worked included VP6TR and VP2AB (phone), VQ2 JC 14080, 2CM 14180, HI2W 14180, HI2W 14040, XE1AG 14010, KA1MM 14070, PJ3CO 14290, XU8MY, 6MK (HF 14), 9MK 14210,

8MR, HH2X 14080, HI6Q HF. VP3TEST or NV states he has not yet obtained his fully licensed call, and will not QSL until he does; he admits he is practising morse. Other stations of interest heard were: HK4EA, 3AL 14100, HH4AS 14380, VP7NT 14400, UXK5KJ (QTH: Pohöd), OA4U 14370, HH2B (YL 'phone), YV2CU 14400 (now believed to be in Curacao and not Venezuela), ST2M calling G6TD, and FA3ZY working YJ2KC but ZO was unable to hear the YJ. Full QRA of HI6Q: Cap Francisco Yanes, Ciudad, Trujillo, Rep. Dominica. He heard an obvious pirate—LZ1ID with T1-3 note calling G's, but no one worked him, except G5CV who couldn't get any sense out of him at all.

G6YR "the other open ear" worked CT2BM 14390, CM8MC HF 14, 2AF 14400, CX2AF 14360, J2KG 14100, VQ2FJ 14036, FI8AC, J5CC, PK1MF, XU8BN 14010, and heard OQ5AA 14060, K4DRN 14005, VQ2JC, HI6Q, K6BNR 14390, 6OQV 14035 and others. Does ZS3F QSL? This question is on many lips just now. The answer is that he has sent a small batch to RSGB, but a very small one, so we live in hopes that he will complete his obligations!

G5GN remarks on the quantity of XU stations active just now. He has worked XU6LN, 8LS, VQ2FJ 14036, PK1MF, FI8AC, J2JJ, 2KG, 5CC and ZC6AQ. He uses only 500 volts. G2HJ is most sarcastic about a QSO he had with "EA8B." The "bird" admitted he was a pirate, not in Canaries but about 1500 Kms from England; the number of "Hi's" used by him made 2HJ imagine that he must be convulsed with laughter at such fun! G2ZR heard "G1VE" (calling G2YY) YI2BA, and a new VQ4-4CHS, and of course, VQ4KTF; everyone has heard or worked him and he sends cards *via* air mail which reach us in five days. G6YL confirms (as does SU1WM) that TF5C used to QSL in 1935, but we con't seem to get the cards now. G6CJ worked MX2B during the A.R.R.L. Contest and obtained the following QRA:—Box 23 Mukden, Manchukuo. For BERTA claimants—ZS4L 14330.

GI6TK corrects us about Cocos Is. We should have said Caicos Is. (with Turks Is.) being 600 miles from Costa Rica, we must blame W2IXY who wrote Cocos Is., which are, of course, in the Indian Ocean. 6TK claims to have worked W1, 2, 3, 4, 5, 6, 8, 9, VE1, 2, 3, XE1A and K4DTH on 3.5 Mc. during the CW contest in March. W6GRL was worked on four bands for the first FBTOC with W6 from Europe. As soon as 6TK gets the necessary confirmation of these amazing contacts we will let you know. He asks if the QSO with XE1A was the first 3.5 Mc. XE/G contact? K4 was worked some years ago by G6LI. XU8MY (Box 685, Shanghai) and XU8LS (Box 575, Shanghai) were new ones worked. GI6TK heard (but did not work) J2KG, 2JJ, 2NX, XU8RL, 8AG, 9MK, VP7NT, 7NC, VU7AR (on 28 Mc.), FY8AA T4 14400, CX9CB and K7EWZ. All the above was done with a 4 valve TRF receiver and "All World Two," and a single T20 in the final.

And now for some 'phone feats. G6BW of "Churchill, England," using 50 watts, had a splendid 100 per cent. one hour contact with K6MVV on 28 Mc. on March 18 to be followed by another on April 1. 256 contacts in 25 zones were made during the 'phone contest on 14 and 28 Mc. with 18,475 points. All districts W were contacted on both 28 and 14 Mc. VU2CQ was recorded and his voice played back. Other 'phone QSO's were made with VE5OT, TI2AV, CO7VP, 7CX, 5EO, K4ECO, and on April 10 VP3NV was raised on 28 Mc. A curious "black out" was noticed on April 15 on all amateur bands from 08.43-09.10 G.M.T. This happened quite suddenly; to be followed on the next day between 05.00-09.00 by another which caused bells to ring in telephone exchanges all round Bristol. These took place 27 days following the fade out of the 'phone contest.

W2IXY comes next with some quick-fire news from New York. VP9G is looking for G's daily at 23.00 G.M.T. on 14280—VK3DH using an indoor aerial was received at S6 in U.S.A.—VP1DM in Br. Honduras, the only VP1 active on 'phone, operates daily at 03.00 G.M.T. on 14360. W7BME was heard to call GM5NW—result ND. PK1MX and 1JR are heard regularly in N.Y. at 10.30 G.M.T. April 1 and 2 were the best days recently for contacts with W6, 7 and K6, 7 and VK. G2TR (25 watter) is reported as the loudest G in Australia and G2NA was heard at S8 by VK3KU. Some Japanese 'phones are active between 08.00-09.00 G.M.T., but regulations preclude operation outside these hours. VR6AY continues his schedule with W2IXY (much to the annoyance of Europeans who stand by in long queues) and states that the time taken for a card to reach Pitcairn I. from Br. Isles is about 5 weeks, therefore 10-12 weeks may be expected to be a reasonable time for a reply to be received. And talking of VR6AY reminds us that one of the few days he listened for Europe was April 13, when we know he worked G6CL, X2AI, 5BJ and HB9J. G6NF was another Londoner to contact this station earlier in the month. Referring to our remark last month, G5IV writes to say he did not work VR6AY. Even at ½d. per unit, G6WY is very badly out of pocket with the wasted "juice" in calling Pitcairn, but he managed to work HK3LDC (as did G6CL), XE2BJ, CO2JJ, VQ4KTB, VU2CA, YV5AK and VK's on 'phone, but is chasing new countries on CW again after such a lapse from the ranks of the brasspounders. We want to know if ZA1CC and ZA1CK (both "spitch" on 14 Mc.) are genuine?

Continuing with 'phone DX, GM2UU reports working 216 W/VE's in the Contest using 14 Mc. only, contacting all zones except W7 and VE5. Other worthy QSO's include HC1JW, HK3LDC (Box 28, Bogota), VU2LL, 2DR, PK1ZZ, YV, CO and VK. U3BX in Moscow is the first Russian 'phone he has worked or heard. 2UU, in common with many others has noticed that the yacht "Valdora" now uses G2FR instead of G4FR. DX heard includes VP3AA, TI2LR, OA4AI, VS7GJ, XE2FC, 3AR, OA4C, CX2AK, KA1ME, FI8AC, FB8AH, K7AOE, XE1GK and XZ2EZ, all on 14 Mc. 'phone.

We regret to learn from an official bulletin of an American Radio Club that a certain well-known British phone station in the Midlands offered over the air to pay for some radio apparatus bought from a W2 with I.R.C.s. This G announces that he does not want SWL reports, but is bound to receive a large number even so. They want to

know why American listeners should pay for parts for a British 'phone station ?

Good news from Gibraltar. We have found that ZB2A and ZB2B are genuine, and we are now in a position to send cards to them. No QRA's can be given, however, as they are operating under the strictest secrecy. The Archbold expedition will shortly be leaving for Dutch New Guinea to study flora and fauna. Their 'plane, which will be radio equipped with the call KHAHX, will operate on 14,420 kc. most of the time, although it is proposed to run schedules with W6LYY and WHD. G3GU raised U9BK, VQ4KTF and XU9MK, good work with 10 watts. Other rare stations heard were XU8HM, 6LN, 8BN, 6MK, 8LS, KA1AA, PK1AI, YI2BA, VK7LZ, and ZC6AQ who is quite genuine, his QRA appearing in the current call book. 3GU has worked 26 countries and all continents except S. America. Who will be the first G3 W.B.E./ W.A.C. ? BRS3255 of Gt. Yarmouth, reports VU2XC ? XZ2EZ, VS7GJ and TG9AA, while 2689 of Giffnock, Renfrewshire, heard all continents in two hours and ten minutes ; they were in order : VK3WL (17.30 G.M.T.), VK2JO, XU6MK, ZS1AN, VU2DE, U9BK, VQ4KTF, CR7AC, etc. An O-V-1 was used.

Ex-G2TR now in Gold Coast has sent a list of calls heard, which appears elsewhere in this issue ; he finds reception conditions very difficult on 7 Mc. owing to intense QRN. He hopes to be active with a Harvey transmitter about the second week in May. ZD4AA's QRA was given incorrectly before, at least the name of the operator should be F. A. W. Byron, P.O. Box 250, Accra ; the transmitter is relatively low-powered and can be used for 'phone or CW. BRS3003, of Coulsdon, Sy. using an O-V-Pen, has been concentrating on 28 Mc. and was rewarded with ZA1CC and FI8AC, the former announced he was in Tirana, Albania. We hope so too ! Other DX heard on 'phone was KA1CS, 1HS, 1BH, 1ME, VE4ZK, 5ACN and VU2DR. ZS1BV and 2AF were new calls from S. Africa. BERS209 at Meerat, India, received K6MOJ and was rather suspicious as K6 has never been heard before ! ZC6AQ and YV5AK produced new ones for him while G3BK and G3BS are the first G3's he has heard.

From Italy we learn that our DX friend I1IR was married on April 21. But before this event put an end to his DX activities he worked HC1JW for his first HC and heard FI8AC, VR6AY (on CW !) W7EOI (Montana), K6TE (Wake I.) and HCAC (heard daily). He also wants information about THOR ? Good luck I1IR. 2BNL, of London, S.W.11, heard VP9R who puts a wonderful 'phone signal through at about 23.30 G.M.T. and G2JK also in S.W. London worked UXK5KJ. G5MP tells us that W2CQB is mobile aboard an American ship bound from Liverpool to Mexico. He was worked on 28 Mc. 2ATI, of Stoke, reports again, having received FR8VX, XZ2EZ, VE5ACN, FB8AH, and K7FBE on 14 Mc. 'phone and on 7 Mc. CW, MX2B working ON4AU at 21.45 G.M.T. on Feb. 5. Other 7 Mc. DX includes VU2FV, JA2A, YV4AX, XE3AC, K7COI and he has received cards from K7PQ, K6OKI and W7EST, while on 14 Mc. VP8D 14395 was heard working W's at S4. W8PWU who concentrates on 3.5 Mc. DX reports the usual G calls heard at contest time as well as ZL1DC, 2FR, 3AY and 4AF.

Aerial Adjustments

By F. Booth, (G8FO)

Amongst those amateurs in whose sphere of activity lies the comparison and development of aerials, there are no doubt quite a number who when working on an awkward site have experienced some difficulty in estimating and checking long measurements over streets and roofs, etc., when changing the position and distance of supporting masts or holdfasts on chimneys. The writer overcame this trouble by the construction of the following very simple device :—

A piece of wood must be obtained ½ in. thick and 1½ in. wide, and this should be cut to exactly 12 in. long and the ends accurately squared up. Two pieces of thin cardboard are now cut each 1½ in. square. A pencil line should be drawn along one side of each square ½ in. from the edge. This will leave a rectangle 1 in. by 1½ ins. Take one piece and in the exact centre of the rectangle cut a slot 1 in. long and ½ in. wide. (Care and a sharp knife are necessary to get this just right.) Diagonal lines are now drawn across the corners of rectangle on the second piece to find the centre, and a pin hole is made at this point. The two cardboards must now be blackened with ink, and can be fastened in position by two drawing pins pushed through each into the ends of the stick in such a manner that the pin hole at one end is in line with the centre of slot at the other end.

We now have a very simple form of "Focal Plane Sight" which is capable of giving an included angle of 1 in 12 when used with the slot horizontal, and an included angle of 1 in 24 using the slot in the upright position. To test this let us put two thin chalk marks on a wall say 66 in. apart, now place the eye to the pin hole and holding the stick so that the 1 in. slot is horizontal, walk backwards until both chalk marks are just visible at the sides of aperture. The distance from the wall to observer will now be 12 times or 66 feet. Reverse the slot to the upright position and go back still farther taking another sight as before, when the distance will be 24 times or 132 feet, and so on.

To measure an unknown distance between two points, stand at one end and take a sight on a single mark using the slot horizontal, get an assistant to make a second mark in line with the opposite edge of the aperture, now measure the distance between the two marks, and multiplication by 12 will give the unknown distance. Turn the slot the other way round and take a second sight from the first mark, if this gives a third mark in the centre of the other two the sighting is correct and the resulting measurement will be found to be sufficiently accurate for the purpose.

This simple tool will obviate much unnecessary shifting, and running up and down ladders with long measuring tapes, especially if the station operator has to do a lot of the work single-handed.

Sales Dept.

Liberal quantities of A.R.R.L. Handbooks, 1938 edition, are now available, price 5s. 6d. post free.

As the demand for the Summer edition of the Call Book will, we anticipate, be very large, we would recommend members to order their copy *now*.

D.R.'s Conference

A meeting between the Council and the Society's District Representatives took place at the Florence Restaurant, London, on Sunday, April 10, 1938.

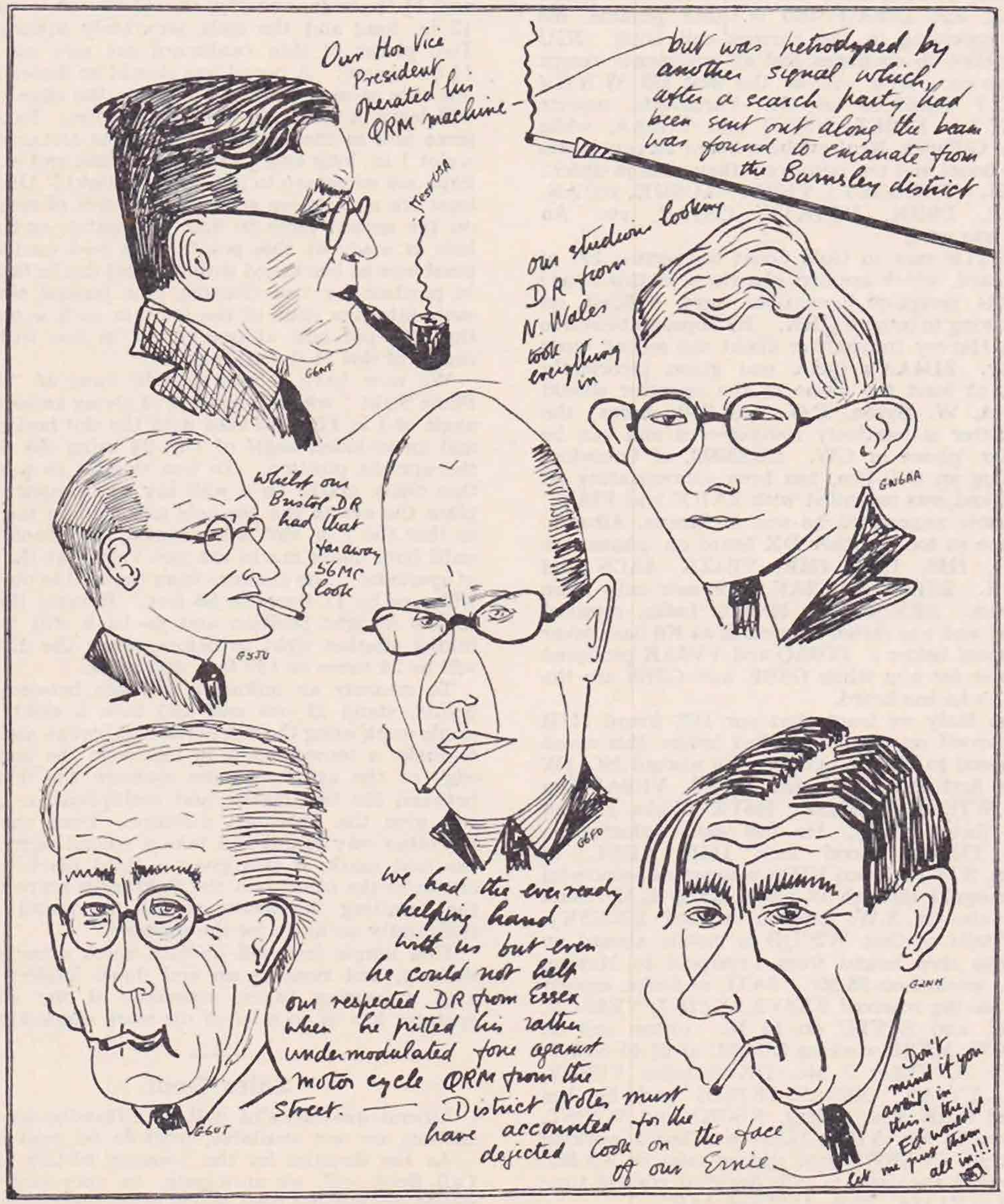
The following were present :—

Mr. A. E. Watts (G6UN) (in the chair).

Council.—Messrs. F. Charman (G6CJ), J. D. Chisholm (G2CX), H. A. M. Clark (G6OT), A. D. Gay (G6NF), J. W. Mathews (G6LL), A. O. Milne (G2MI), and H. A. M. Whyte (G6WY).

D.R.'s.—District 1, J. Noden (G6TW) ; District 2, L. W. Parry (G6PY) ; District 3, V. M. Desmond (G5VM) ; District 4, G. W. Slack (G5KG) ; District 5, J. N. Walker (G5JU) ; District 6, W. B. Sydenham (G5SY) ; District 7, E. A. Dedman (G2NH) ; District 8, G. A. Jeapes (G2XV) ; District 9, H. W. Sadler (G2XS) ; District 10, A. J. Forsyth (G6FO) ; District 11, D. S. Mitchell (GW6AA) ; District 12, S. Buckingham (G5QF) ; District 13, J. B. Kershaw (G2WV) ; District 14, T. A. St. Johnston (G6UT) ; District 15, H. V. Wilkins (G6WN) ; District 16, W. H. Allen (G2UJ) ; District 17, W. Grieve (G5GS) ; N. Ireland, T. P. Allen (GI6YW) ; Scotland, James Hunter (GM6ZV).

Staff.—Mr. J. Clarricoats (G6CL) (Secretary), and Miss A. M. Gadsden.



Mi-impressions of the D.R.'s Conference held in London on April 10, 1938.

The object of the Conference was to examine matters of general interest and to exchange ideas. The Conference also provided an excellent opportunity for the D.R.'s to meet the executive officers of the Society, and to discuss with them matters concerning the general welfare of the membership in their District.

Business Transacted

(1) Mr. Watts outlined the decisions reached at the Cairo Conference and explained each new proposal.

(2) The Council were asked to inform the G.P.O. that it is believed power in excess of licence is being used by many amateurs.

(3) The Council were asked to request the G.P.O. to specify in general a probationary period for new licensees of 6 months for telegraphy operation. They were also asked to request the G.P.O. to automatically grant permission to use telephony at the end of the probationary period.

(4) It was considered that the present method of advising members of off frequency operation was satisfactory. It was suggested that non-members be similarly warned.

(5) It was agreed that slow morse practices should in future be confined to the 1.7 Mc. band.

(6) It was agreed to ask Council to consider running the Senior and Junior B.E.R.U. Contests concurrently during a nine days' period in February, awarding the Junior Trophy to the 25-watt station scoring the highest number of points. It was agreed to suggest that the contest period should extend over two week-ends but the hours of operation should be limited.

(7) It was agreed that each D.R. should make his own local arrangements to meet postage and incidental district expenses.

(8) It was agreed not to extend by any appreciable amount the space used for " The Month on the Air " feature.

(9) It was agreed to draw the attention of T.R.'s to the special circular issued in December, 1937, setting out the type of material required for District notes.

(10) It was agreed not to organise a Telephony Contest.

(11) It was agreed that the Council should be asked to consider the desirability of re-introducing the name of a seconder to the application form for membership, and also ask them to consider whether it would not be good policy to ask each applicant to forward a personal letter indicating the type of radio work in which he or she is interested.

* * *

Many interesting discussions took place on each of the 14 Agenda items discussed, and it is certain that the exchange of ideas has proved of considerable value both to the D.R.'s and to the Council.

The Conference, which began at 10.25 a.m., concluded at 5 p.m.

Empire Calls Heard.

In view of the fact that a very large percentage of the operators of the overseas stations whose calls appear in Empire Calls Heard lists are not readers of this Journal, we feel that no useful purpose is served by publishing such information.

As from the July issue we shall only publish Calls Heard lists of British Isles stations submitted by members *resident outside Europe and Northern Africa.*

D. A. G. Edwards (G3DO). February to April, 1938.

14 *Mc. 'phone:* Ve4jm, 4wj, 5acn, 5ef, 5ga, 5ha, 5ny, 5ot, 5vo, vk2xu, 3kx, 3wa, vp6mr, vq2ca, 4ktb, 4qtk, vr6ay, vu2ca, 2cq, 2fv, 2ll, xz2ez, ze1ja, 1jr, zs1ax, 2af, 5cl, 5tl, 6w.

January to April, 1938.

14 *Mc. C.W.:* Ve4adg, 4bd, 4wb, vk2ade, 2adv, 2ah, 3ex, 3iw, 3ns, 3qk, 4wl, 5bh, 5kj, 5wk, 5zx, 7cm, 7qz, vq2fj, 4cri, 4ktf, vu2ed, 2eo, 2fv, ze1jg, 1ji, zd1aa, zl1dv, 1mr, 2cv, 2iy, 2la, 2mo, 2ou, 2ow, 3ap, 3ax, 3gr, 3kg, 3kx, 3ky, 3lq, 4ck, 4fk, 4fv, zn2aa, zs1ah, 1co, 2ah, 2av, 4l, 5bs, 6aq, 6as,6 dm, 6dy, 6eo, 6eq, 6j, 6p, 6am, 6c, 6u.

* * *

BERS209, 3rd Indian Div. Sigs., Meerat, United Provinces, India.

Between April 6-11. Receiver 1-V-1.

14 *Mc. C.W.:* g2pl (559), 2nn (459), 2wp (569), 2qo (579), 2fz (348), 3bs (559), 3bk (569), 5hh (568), 5ri (347), 5an (569), 5th (589), 6rs (559), 8pc (469), 8qf (269), 8sp (248), gm6hz (578) 8um (578), ze1jg (579), 1ji (559), 1jn (589).

* * *

Ex G2TH, at Accra, Gold Coast, January 21 and 23.

7 *Mc. C.W.:* g2du (349), 5uy (349), 5gj (459), 5lp (349), 3cc (339), 6pr (349), 8ab (349), 8gl (449) 8pt (359), gm8at (559).

* * *

BERS195, Telegraph Station, Powell Creek, North Australia. March, 1938:—

7 *Mc., C.W.:* G3gx (54), 5lh (55), 5lp (56), 5nd (44), 5qg (5 5/6), 5tp (56), 6yz (55), 8dr (55), 8jj (44), 8kp (5. 6), 8pq (54), 8rn (44), 8sy (56), gm6rv (56), gw6yj (55).

14 *Mc., phone:* G2cg (56), 2ak (55), 2na (58), 2qt (55), 5cv (55), 5dr (56), 5rv (56), 5ml (59), 5vm (57), 5zg (56), 6dl (57), 6ba (56), 6ll (56), 6vx (56), 6wu (56), 6xn (56), 6xr (56), 8qc (46), 8ks (56), gw5od (55).

14 *Mc., C.W.:* ei2m, 3l, 4l, 5g, 6f, 6g, 7f, 8b, G2by, 2dh, 2dn, 2fz, 2hi, 2ik, 2io, 2jt, 2ju, 2kh, 2ku, 2lb, 2lu, 2ma, 2mi, 2nn, 2oa, 2pn, 2qb, 2qo, 2ri, 2so, 2tp, 2uv, 2ux, 2vo, 2wv, 2xc, 2xd, 2xn, 2yj, 3bs, 3cb, 3cn, 5ac, 5an, 5bd, 5bq, 5by, 5dr, 5dw, 5gi, 5gq, 5ha, 5iu, 5ja, 5jf, 5jm, 5ju, 5lp, 5my, 5nd, 5no, 5ob, 5pj, 5qi, 5rv, 5to, 5tw, 5tz, 5us, 5vb, 5vn, 5vu, 5wp, 5xc, 5xd, 5yu, 5zt, 6bq, 6bs, 6cj, 6dl, 6ds, 6dx, 6gb, 6gh, 6gm, 6gn, 6hl, 6iu, 6kp, 6ku, 6ks, 6li, 6lj, 6lr, 6mc, 6om, 6oy, 6pb, 6pd, 6pr, 6rs, 6rj, 6td, 6ti, 6ty, 6vp, 6vx, 6wb, 6wy, 6xl, 6xp, 6xq, 6yg, 6yr, 8ap, 8ar, 8az, 8dq, 8dr, 8fl, 8fz, 8gc, 8gl, 8go, 8ha, 8hh, 8hn, 8if, 8il, 8im, 8ip, 8iw, 8it, 8kb, 8kh, 8ks, 8nh, 8nm, 8nx, 8ob, 8og, 8oh, 8pc, 8pi, 8pl, 8pv, 8ql, 8rd, 8ri, 8rq, 8tc, 8td, 8ty, 8ud, 8ug, 8uk, 8uq, 8wv, gi5aj, 5nj, 5qx, 6xs, gm2di, 5yn, 6bm, 6hz, 6ko, 6kh, 6md, 6nx, 6xi, 8at, 8fb, 8hp, 8kq, 8mn, 8mq, 8pm, 8sv, 8vl, gw2ng, 2xz, 3ax, 5od.

(Full report upon application.)

Reports Wanted

GW3GL (Conway) on his 7135 and 7110 kc. c.w. and phone transmissions. All reports of interest will be acknowledged.

More About Faraday Shields

W. F. Holford, M.A. (G5NG).

When using oscillators handling over 50 watts on the bench, where other apparatus subject to pick-up had also to be used, some means were required to minimise this interference without boxing in each piece separately. Small shields for the actual coils were found quite effective for the purpose, and so an attempt was made to construct the transmitters on similar lines, using wooden panels, backed with thin copper foil, screening only between stages.

This design enabled a compact piece of apparatus to be made which could be exhibited and demonstrated with a minimum of effort, and as it turned out giving a greater degree of efficiency in construction and performance.

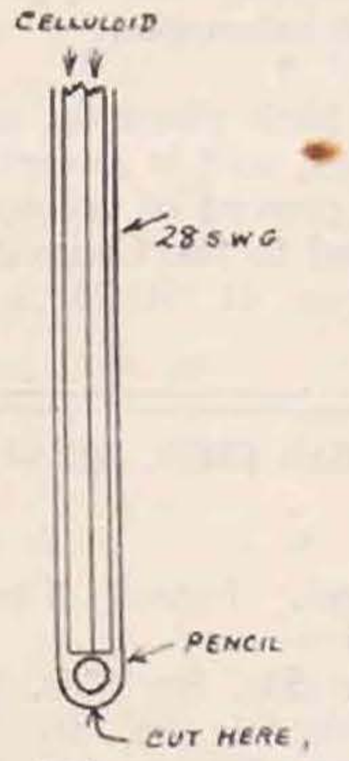


Fig. 1

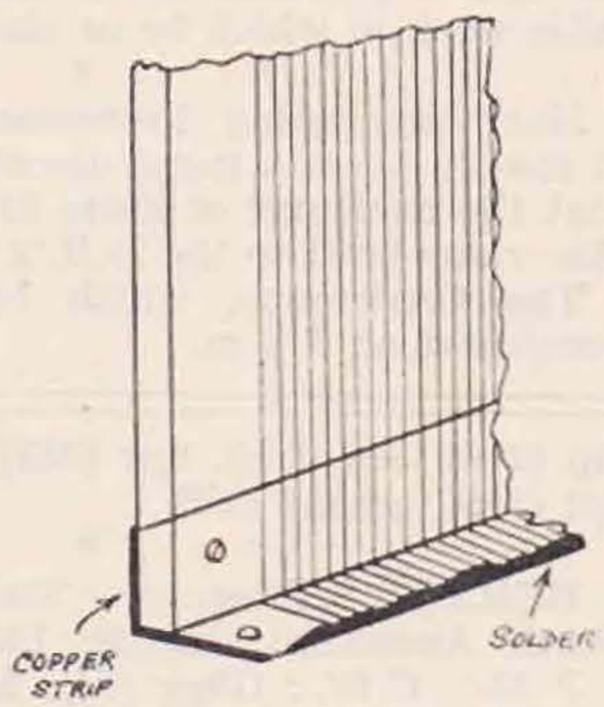


Fig. 2

The text-book shield of rods of No. 12 gauge wire is not easy to construct, and is somewhat clumsy. The following pattern was found to stand much more handling, and makes a much neater job.

Clear celluloid 3/32 in. by 5 in. by 4 in. was made the standard size, and two sheets were placed together for winding with 28-gauge enamelled wire, spaced about 1/16 in. The wire was put on over a pencil along one edge, so as to leave long ends for soldering (Fig. 1). Both sides were painted with clear celluloid solution stopping just short of top and bottom. This was left over-night to dry ; the pencil was then slipped out, and wire ends cut at top and bottom, leaving two screens. The long ends where the pencil had been were scraped clean and tinned, and this proved a quicker job than was expected. A piece of 20 S.W.G. copper sheet, 5 in. by ½ in., was bent along its length at right angles for mounting by means of small bolts and nuts at the corners. This was tinned liberally along one flat, and the ends of the wires were easily sweated on. It was, however, found necessary to keep the wire ends just short of the copper, so that the iron really had a bearing on the copper strip. If this is not done, the copper gets too hot for the celluloid, and not hot enough to solder (Fig. 2). By fixing the bolts very loosely at first, buckling can be avoided, and even 1/16-in. inflammable celluloid has been treated in this way. Non-flam. can now be obtained quite reasonably, and has since been substituted.

These screens can be fixed to any kind of base with 6B.A. nuts and bolts at either end of the copper strip, in any position, or at any angle by bending the strip. With copper foil backing to a plywood base, no trouble has been experienced in earthing to the nearest point ; but with steel bases and usually with aluminium, bus wire earthing or a common point is necessary.

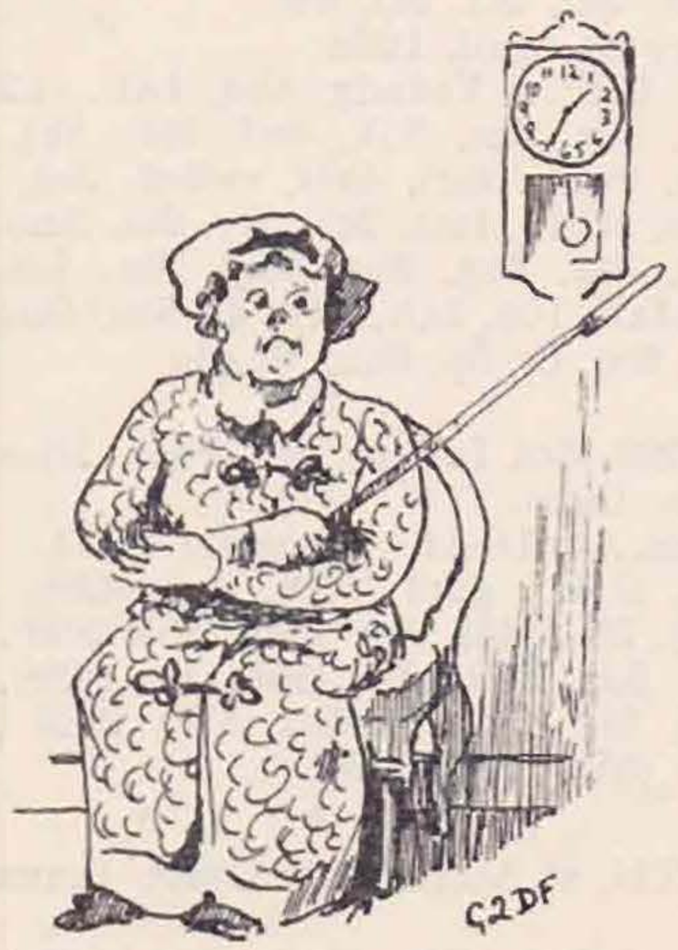
As screens are usually required near coils or condensers at high D.C. potential, it is an additional advantage to have the screen itself insulated.

The following application to 56 Mc. work may be of special interest.

A three-stage driver is built on a plywood chassis, 18 in. by 9 in., backed with thin copper foil. Meters, key, modulator, and bias supply are plugged into closed circuit jacks on the front. All A.C. and D.C. leads are below, all R.F. leads above the chassis. Small air-spaced transformers of silver-plated wire are supported on insulators only 5 in. apart. Leads are short, but fields overlap appreciably.

With a pentode C.O. the odd harmonic came through more strongly than the even ; and the output was adjusted to put 300 Ma. into 100 ohms. at 42 Mc. from the 28 Mc. F.D. With transformer coupling as before, and the output tuned to 56 Mc., one-third of the output was still on 42 Mc. Capacity coupling in the second F.D. was a little better, but the aim had been to avoid mica condenser losses throughout for the power loss at these frequencies is quite high.

A standard 5 in. by 4 in. screen between stages has made it possible to use transformers with an untuned grid coil outside the plate coil, and with a 3-ft. lead to a sensitive monitor fairly close to the transmitter lead, no trace of a 42 Mc. harmonic can be found. The 21 Mc. harmonic can be just detected under these conditions.



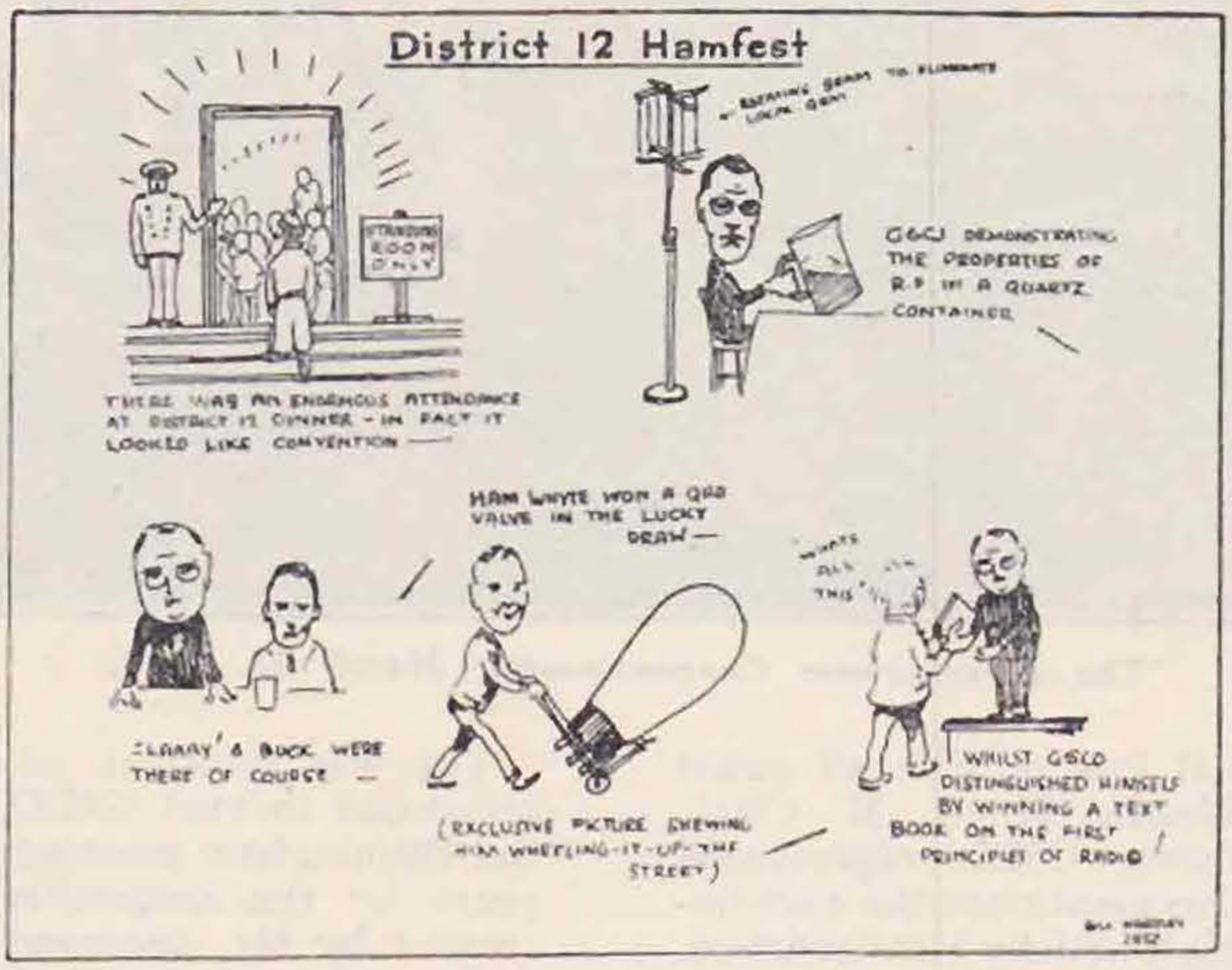
Late for Sked.

London Meets at Barnet

By A District 12 T.R.

NOT so many years ago, as older members will recall, several remarkably successful hamfests were held at Pinoli's in London. They did a tremendous amount of good in fostering acquaintance between amateurs all over London. But as the membership increased, the four London districts started to hold their own individual functions, and since those old Pinoli days there has been no occasion (apart from Conventions) at which all the London members could meet together. Indeed, as G6CL said in his speech, the bridges over the Thames might be a hundred miles long instead of a hundred yards, judging by the amount of contact there is between the London R.S.G.B. districts.

Well, on April 12 those bridges were perceptibly shortened when District 12 (North London) held its first hamfest. For it was much more than mere "local" event: members from every London district were present—lots of them, not just ones or twos. Among the hundred or more amateurs who assembled at the Salisbury Hotel, Barnet, were several Council members, all the members of the R.S.G.B. Guide Committee, four YLs (including the one and only G2YL from far Surrey) and the only two H.A.M.s in the country —H.A.M. Whyte (G6WY) and H.A.M. Clark (G6OT.) Towards the end our President Mr. Arthur Watts, (G6UN) arrived, and a regal fanfare could not have done him more worthy justice than the outburst of applause that greeted his entry.



But we are going on too fast. Let's take things in their proper order.

Knowing what amateurs are once they get talking, the organisers got the dinner going prompt to time—8 p.m.—in the upper room of "The Salisbury." In due course came the first toast by that televisionary expert, "Ham" Clark (G6OT), who, proposing "The Society," commented on the importance of amateur quality as well as amateur quantity. And he wasn't referring to L.F. reproduction there, either!

Our Secretary (G6CL) replied to this toast, as was only right and fitting. He gripped his audience with an account of the almost insuperable difficulties met by the I.A.R.U. delegates to the Cairo Telecommunications Conference, and he described the debt British amateurs owed Mr. Watts, who, though a much-preoccupied business man, went out there to uphold the amateur banner. At this point G6UN, detained by a business appointment, arrived, and "the gang" gave their President and fellow District member a right royal welcome.

The climax of the evening was reached, when a "swindle" (or raffle, to you) was held. Apparatus contributed by trade friends and members found its way *via* "lucky number" tickets to the eager hands of a score or more fortunate members. One of the YLs collected a gang condenser; the very next number announced won for its holder a tuning dial, and very appropriately that also went to a YL. They'd better start a station in partnership to use the two!

Other amusing incidents were the presentation of an enormous dummy valve to "Ham" Whyte, with cries of "Push it down the street, Ham" and the difficulty with which G5CD was persuaded to own ticket No. 66—he was so deep in a technical argument that he had forgotten about his ticket. Then came the *pièce de résistance* (which does not mean "piece of Eureka wire"). This was a T20 valve, presented by G2NO, to be raffled at 6d. a ticket, the proceeds to help pay for the dinner (for which the admission price of 3s. had proved too reasonable). Many hearts beat faster when this draw was made, and Sid Howard's must have nearly QRT when he won the tube, which will make a useful addition to "G8 To-morrow Yesterday."

Back to the more serious business then, with G2WV from South London giving the toast of "North London." He threw out a very practical suggestion for getting the Metropolitan members together—why not hold a London Conventionette in the winter? he said. Many good ideas have come from South London. Perhaps this will prove to be another.

G5QF, commonly known as "Buck," for 10 years the local D.R., replied, and described the growth of the district from a few scattered members to a present roll of 220. Then came a toast to "The Visitors" from G2AI, ably replied to by G6WY, and last, but not least, a short address from Arthur Watts himself, who described some of the details of his trip to Cairo.

So with "Auld Lang Syne" the proceedings terminated—though personal QSOs lasted long after 11 p.m., when the "DX travellers" had to drive off. Roll on 1939 and the next North London Hamfest—and thanks, G2AI and G8TY, for making this first one such a success.

The Birmingham Conventionette

Sunday, March 27, and no snow *this* year ! Those who journeyed to Coventry for the 1937 P.D.M. must have been pleasantly surprised to find warm sunshine awaiting them on arrival in Birmingham for the annual gathering of District 3 members.

The Hope and Anchor, Edmund Street, was again the venue, and in accordance with tradition, the hour before lunch was devoted to rag-chewing, whilst the time-honoured cry, " What's yours " was audible at good strength from all corners of the commodious smoke-room.

Lunch, at which 44 members and friends did justice to the bill of fare provided, was followed by a *brief* business meeting, we say " brief," because Clarry and his black book were far away across the Irish Sea, telling the good folk of Eire all about English Ham radio. Messrs. H. A. M. Clark, G6OT, and J. W. Mathews, G6LL, represented Council, and in short speeches mentioned the more important matters recently dealt with by Headquarters.

The D.R., Mr. V. M. Desmond, G5VM, who presided, thanked the company for their support, and made a few suitable remarks concerning District activities.

A welcome visitor was Mr. F. G. S. Wise, ex G5CF, who, armed with cameras of various sorts, proceeded to obtain photographic records of the gathering at work and at play.

N.F.D. plans were discussed by the T.R.'s for Birmingham, Sutton Coldfield, and Coventry, especial attention being drawn to the fact that each site chosen can be reached without great difficulty.

During the afternoon a colour film taken by G5NI during his visit to the U.S.A. was shown. The excellence of the gear used by many of the American amateurs depicted was commented upon by everyone present.

The Birmingham Conventionette, March 27, 1938.

Tea was informal, after which a party of 18 proceeded to visit G3DO. Thus ended another of the Birmingham meetings made famous over many years by the hospitality and genial atmosphere created by Mr. Desmond and his colleagues.

In the County of Broad Acres

A very successful and enjoyable P.D.M. took place on April 24, at the Windmill Hotel, York, when 84 members from a wide area gathered together for their annual reunion, and to meet G6PY and G6CL.

The proceedings started with informal discussions, followed by lunch. A brief recess gave everyone an opportunity to walk along the old Roman walls of the city, close by, where a cine film was taken by G6XL. After this came the business meeting. The D.R., G6PY, opened by welcoming the guests, and thanked the T.R.s for their support during the past year. After the usual introduction, our Secretary gave an hour's talk, dealing with many aspects of amateur radio, including the Cairo conference, licence regulations, British transmitting valves, contests, etc. His talk was greatly appreciated, after which, by a unanimous vote, the D.R. was asked to convey to Mr. Watts, G6UN, the District's heartiest thanks for the fine work he and his colleagues did for us at Cairo.

After the meeting, tea was taken, and small groups discussed all those things dear to the amateur. This continued until about seven o'clock, when farewells began to be made, and members started to drift away slowly, to homes far away for the majority. Thus ended another very interesting and successful annual event.

EMPIRE CALLS HEARD

BRS1066, February 21, 1938, to April 23, 1938 ; Rcvr. I.V.2.

14 *Mc. C.W. :* Ve2fg (5.6), 3aej, 3hq (5.5), 3ug (5.5), 3vu (4.4), 3wa (5.7) ; ve—4adb (4.4), 5abi (4.5), 5abu (4.5) ; vo3x, vp2ab (5.7), vp2bx (4.4) ; vk—2ade (5.6), 2dg (5.6), 2eo (5.6), 2fm, 2gv (5.5), 2va (5.5) ; vk—3bg (5.5), 3cx (5.5), 3iw (5.6), 3ns (—), 3qk, 3vf ; vk—3vq (3.4), 3wo (5.6), 3xn (5.5), 5js (4.4), 5jt (5.5) ; vk—51w (5.5), 5wk (5.5), 7cm (5.6), 7qz, 2adv, 2nq ; zl—1fe (5.6), 2ou (4.4), 4ck (4.4), 4fv (4.4) ; zs—1an, 6ck, 6dm, 6eo.

14 *Mc. Phone :* Ve—1gp, 5ot, vp4ga, vk2xu, 3kx, 3wa.

7 *Mc. C.W. :* Ve—2ac (5.6), 2bt (4.5), 3adz (5.7), 3agp (4.5), vp2la (5.7), vp7nt (5.5).

Figures in brackets denote R.S. code.

THE 28 Mc. BAND

By Nelly Corry (G2YL).

FOLLOWING the precedent of former years DX conditions were good for the first eleven days of April, but later the band went "ten-metre-ish," as BRS25 aptly describes it, and there was a decline in the number of signals heard, particularly from the U.S.A. At times the band appeared to be completely dead, at others only a few stray Southern Hemisphere signals were audible, and at others West Coast W's came through when the band seemed otherwise deserted.

In spite of the deterioration in conditions, signals from at least 47 countries were heard during the month, and the band was sometimes open at unusual hours. On March 30, between 21.50 and 22.35 G.M.T., W7BRU worked G6YL and G6XL, and W6DUC was heard by BRS25. Conditions on April 9 and 10 encouraged G6DH to burn the candle at both ends, as he logged South Americans up to 23.45 G.M.T. and worked FB8AA at 05.55 G.M.T. the next morning. He also heard ZS6T at 05.45 G.M.T., but could not work him till 06.30 G.M.T.

The intense solar and magnetic activity in the middle of the month undoubtedly upset 28 Mc. conditions, and the "hissing phenomenon" was heard on April 7, 15, 24 and 29. On the morning of April 15 it was heard at 08.41 G.M.T. by G2XC and G6DH, and was immediately followed by a severe fade-out on all frequencies from 3.5 to 30 Mc.

Twelve different stations in Oceania were heard during the month, in KA, K6, VK and ZL. VU2FV recently counted 30 stations answering a CQ from KA1AP, so anyone failing to raise him at his first attempt should not be unduly discouraged! G2MV and G6BW worked K6MVV on 'phone several times after March 27, and BRS3179 heard K6OQE. On the morning of April 3 conditions were particularly good and ZL3DJ was worked by G2MV, 2XC, 6DH and 8CV; ZL4DQ by G6DH; and VK5KO by G2XC and 8CV. Other stations heard were ZL2DS, VK2AG, 2UD, 3ZZ, 4HR and 4RY.

Asiatic signals included J3EK and VU7AR worked by G6DH, J2CE and VS7MB heard by G2XC, XU6LN heard by G6YL, and several U9's and VU's. VU2FV has recently had amazing results with a QRP transmitter in a box 6 ins. by 6 ins. It consists of a T.P.T.G. using a PM254, and with an input of 1 watt he worked 11 stations in D, F, G, I, OK and SP, receiving an average report of RST 568. During an hour's ragchew with G6YL on March 29 he was QSA 5 even when using only $\frac{1}{2}$ a watt, and later he called and raised OK3TW with only $\frac{1}{4}$ watt! He uses a matched impedance aerial with reflector, and will appreciate and acknowledge any reports on his 'phone signals. African stations were heard on at least 20 days in the month, and FB8AA, ZE1JJ and ZS1AH were particularly consistent. SU1CH and SU1RO and several CN's came through well on 'phone, and CT3AB was worked by G6DH, and VQ2FV heard by G6YL. Further south four ZE's, ZS2J and six stations in Johannesburg were logged.

There are still a good number of South American stations audible and C.W. stations reported were CX1FB, LU3DH, LU7AZ, PY1AJ, PY1AZ, PY1DJ and YV5AA, while 'phones included CE3DH, LU1DJ, LU4BC, PY5AG, VP3NV (inadvertently reported as VP3MB last month), and YV5AK. Most of the active Central America and West Indies stations used 'phone, but HR4AF, K5AN, VP2AT and several K4's could be worked on C.W. 'Phones heard included HI2T, HI3M, HI7G, HR5C, TG9AA, TI2FG, TI2RC, VP6MR, VP6YB and six K4's. Stations in all districts of U.S.A. and Canada were worked during the month, but latterly signals from W4, 5 and 6 predominated. W2CQB Mobile, in the s.s. *Pancraft*, bound from Glasgow to Mexico, was worked by G5MP, 6DH and 6YL, and W6BOY Mobile was also active.

Europeans in 14 countries were heard at various times, but probably we shall hear them more often and at greater strength in the next three months than we do at present.

The following are thanked for their very useful reports:—G2MV, 2XC, 5MP, 6DH, 6QZ, 6YL, GI6TK, BRS25, BRS3003, BRS3179 and VU2FV.

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28 Mc. Summer Tests

Do conditions on 28 Mc. really go as bad as many think during the summer months, or is the paucity of signals partly due to lack of activity? It is realised that many amateur transmitters often look round the band, hear nothing, and, in consequence, do not even switch on their transmitters. If, on the other hand, they give a call, a reply might be forthcoming from another similarly placed amateur.

Investigations on this problem are being carried out between the dates of May 1 and September 18, by G6BW ("White Orchard," Churchill, Somerset), GM6RG (Galashiels, Scotland) and G6VK (19, Alexandra Road, Uplands, Bristol 3), with the co-operation of many DX stations in W (nearly all districts), VE, TI, HI, XE, VK, VQ, VU and K6.

C.W. and telephony transmissions on frequencies between 28270 and 28460 kc., will be made daily by the British stations according to the following schedule. Note that times are G.M.T.—add one hour for B.S.T. and deduct 5 hours for E.S.T.

Sundays—1000, 1200, 1400, 1600, 1800, 2200.
Mondays—1230, 1330, 1500, 1800.
Tuesdays—As Mondays, and also at 2100.
Wednesdays—1320 only.
Thursdays—As Mondays, and also at 2200.
Fridays—As Mondays, and also at 2000.
Saturdays—1400, 1600, 1800, 2000.

Each transmission period from G6VK, GM6RG and/or G6BW will be of three minutes, followed by three minutes' listening, then one more transmission of three minutes, and another listening period.

Intelligent reports, giving accurately the exact time, RST., QSB., weather, barometric pressure, phase distortion, etc., will be appreciated, and should be sent during June, July and August to G. A. Clayton (BRS3214), Winscombe, Somerset. Such reports will be acknowledged by a special QSL card, for which no reply postage is required.

Reports by listeners in G should be sent direct to the station concerned.

It is hoped to publish in the next issue a complete list of stations co-operating, together with their schedules. In the meantime latest information is available from G6BW, 6VK, GM6RG, or W2IXY.

G5JU.

THE 56 Mc. BAND

By L. G. BLUNDELL (G5LB). *

APRIL again brought a universal cry of "no score" from the contest stations, but there are certainly no signs of any decrease in activity or interest because of this fact. Actually, apart from contest interest, activity is still on the increase, both transmitting and receiving, and it seems likely that when DX of any form comes along there may be a "slice of cake" for everybody! However, appetites have again been appeased to some extent by the "array" of local and semi-local conditions during the last few weeks, and there is a general liveliness noticeable, due, no doubt, to the coming summer conditions and possibility of some European or extra-European contacts.

For the present the "up to about 100 miles" results still top the bill.

G2HG finds the hours of 22.00 to 23.00 still producing signals from 6QZ, of Norwich, at intervals, this station being heard on the 6th, 22nd and the 26th. The average strength is only S2, but signals are readable except for frequent QSB to zero. The schedule with 6FL, of Long Stanton, Cambs, has been frequently interrupted by periods of bad fading with echoes, the signals also being generally weaker. On the 1st of the month, HG logged 6GO, of Rugby (86 miles), at 569 and on the 4th broke ground in another direction by working 2UJ in Tunbridge Wells, Kent. No fewer than 26 different stations were heard during the month, the majority being also worked.

A check on the "highest frequency" signals heard is supplied by G2XC (Portsmouth). It appears that no "indirect" signals have been observed above 31 Mc. recently, and even 28 Mc. has been poor at times. Contacts continue between 2XC and stations in Sussex, Surrey, Berks, and the home county.

G8CV, in Farnham, Surrey, reports plenty of local activity and a strange 'phone signal logged on April 16 at 20.00. The operator was thought to be speaking rapid French, but as no call sign was heard, it is open to some doubt.

G6YL continues work with 5QY and has been running a schedule with GM6SR, but without success so far. Schedules are required with C.W. stations in South and South-West England—see end of these notes for times, etc. A 28 Mc. QSO with FA8IH revealed that that station is still putting out CQ calls on 56 Mc.

In Norwich, G6QZ finds conditions promising for a contact with London, as on the 26th signals certainly due to 2HG were logged. Unfortunately low QRK and fading prevented QSO at the time. "Unlabelled" signals on hitherto barren frequencies in the band also indicate a change in conditions.

From the West, G5JU reports the "First ever" contact across the Bristol Channel between Bristol and Newport (Mon), where G6FO was first operating a portable on a nearby hill. The test was made on March 20, and a peculiar fact was that contact was not made until the schedule had been running an hour, and then both signals were "coming and going" at a steady S5. What was happening in the first hour no one knew! Subsequent tests with beam aerials gave promise of true "house to house" contacts, and following the erection of simple beams at both "fixed" addresses, contact was effected on April 3 with signals S7 each way—Excelsior!

BRS2601, in Ewell, Surrey, reports a fluctuation in mush level during the month, with certain pronounced effects on local and semi-local signals. For instance, on the 14th, 2OD was 449 instead of a normal 599. 6FL heard for the first time on the 16th. During the period 22.00 to 23.00 on the 18th, 2HG was a "wipe-out" signal. On the 24th a series of CQ's was logged at 12.45 B.S.T. on about 56.6 Mc. Signal faded right out before a call sign was given, but a few minutes later a signal was again heard on that frequency giving a call partly identified as H?1?. Unfortunately the signal was not heard again.

So much for this part of the world. There is known to be a fair degree of C.W. activity in the U.S.A., but again only one Contest report is available from that country. This again is from W9NY, who, in spite of most consistent activity (he has been active several times each and every day since January 1), finds results very disappointing, working only three local stations during March.

British stations please note: W9NY is active at the hours of usual activity in this country—i.e., 18-19.00, 20-24.00, and week-ends nearly every hour between 15.00 and 21.00. For the burners of "midnight oil," W9NY's activities often take place at such times as 01.00, 03.30, 04.00-04.30 and 05.00. All above times *G.M.T.*

ZS5CD reports keen activity on this band by various stations in the S.A. Division 5. However, only local work is apparently attracting interest as, according to 5CD, portable work with transceivers is the present *modus operandi*.

G6YL reports reading in the Swedish journal *QTC* that SM5SN is in daily operation with automatically keyed C.W. on 56.72 Mc. between the hours of 07.30 and 16.00 *G.M.T.*, and is anxious for reports and QSO.

British Schedules

G6FU, 7, Elthruda Road, Lewisham, London, S.E.13, is putting out C.W. calls every day at 21.00 and 21.15 B.S.T. Reports wanted from any distance. Frequency is 56,292 kc.

G6YL, "Acton House," Felton, Northumberland, requires C.W. schedules with stations (transmitting or receiving) in South and South-West England between May 12 and 31 at the following hours:—

10.30-12.30	B.S.T.	Daily *except* Sundays.
13.30-14.00	,,	Daily, including Sundays.
16.30-17.00	,,	
19.00-19.30	,,	
20.15-21.00	,,	
22.15-23.00	,,	

The frequency in use at 6YL is approximately 57.3 Mc. Will stations willing to make schedules during the above times please write direct?

G2IN, 116, Cambridge Road, Southport, Lancs, requires schedules at any time of the day (or night), and is available for specially arranged tests between the hours of 08.00 and 10.00 and 20.00 and 23.00 B.S.T. C.C. telephony and tone code will be used on a frequency of 58,128 kc. G5ZI, also in Southport, will be active at the above times. This station can be reached *via* G2IN.

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* *Reports other than contest entries must reach G5LB, 22, Piquet Road, Anerley, London, S.E.20, not later than the 28th of the month. Contest entries must be sent to H.Q.*

European Activity

As a reminder, and bearing in mind that summer "short skip" conditions are approaching, the following European and extra-European stations are active on 56 Mc.: F8CT, FA8IH, OH7NC, OH7ND, OK1AA, OK1AW, ON4AP and ON4AU. *Please do not forget to include a code word or group in your test calls—see head of second column, p. 521, of March issue.*

Stop Press

Mr. W. E. Davies, of the Belfast Y.M.C.A. Radio Club Station GI6YM, advises that J3FJ is now active on 56 Mc. with C.W. at 0200 and 0900 GMT daily. Frequency is 56.8 Mc. with an input of 500 watts to a pair of Eimac 100th's in the final. All transmissions are crystal controlled.

SM5SN, near Stockholm, is putting into daily operation an automatic transmitter working on 57.2 Mc. Schedules are solicited between 0730 and 1600 G.M.T. Crystal control will be used.

56 Mc. Relay Tests

All who have apparatus working on the 56 Mc. band are invited to co-operate in an attempt which will be made on Sunday, July 24, to relay test messages of a technical character from end to end of the country by means of a chain of stations both home and portable.

The event is being organised by Mr. W. A. Scarr (G2WS), Heanor Road, Ilkeston, Derbyshire, who asks that all who are interested (both transmitters who are licensed for 56 Mc operation and BRS. who have receivers working on the band) shall notify him not later than June 10 of their willingness to co-operate. Needless to say the success of the event will be largely determined by the number of offers received.

Those willing to take part should write to G2WS without delay, stating whether they will be operating as listening stations or also as transmitters. Details of power available and types of transmission will also be useful and each transmitter should state whether he is able to operate as a portable station if required.

It is proposed to arrange for test messages to be originated at different times from various stations on a pre-arranged schedule.

Suggestions in connection with the event will be welcomed and full details of the schedules will be published in the July BULLETIN. So book the date and drop a card to G2WS NOW!

56 Mc. Annual Field Day

With reference to the notice published in the April issue, we wish to advise members that it has now been decided to organise a 56 Mc. N.F.D. on July 3, 1938. This reversal of decision has been brought about because several prominent members interested in 56 Mc. operation have written to Headquarters stressing the value of an *organised* national field day event.

The Field Day will be confined to those transmitting members who have either a permanent 56 Mc. portable permit or one of the special summer portable permits mentioned in our last issue.

The event will take place between the hours of 10 a.m. and 8 p.m. (10.00 to 20.00 B.S.T.) and the following rules must be adhered to:—

1.—Stations must be installed in the open air and at a *fixed* point inside the radius covered by the station portable licence.

2.—The input to the valve or valves delivering power to the aerial must not exceed 10 watts.

3.—Contacts may be made with home and portable stations operating on 56 Mc.

4.—Stations must be equipped with frequency-measuring apparatus or the transmissions must be frequency stabilised by means of a crystal.

5.—The station call must be suffixed by the letter P.

6.—The event is only open to fully paid up members of the R.S.G.B. and a declaration must be signed by the entrant stating that the terms of his licence have been strictly adhered to.

7.—Entrants must apply to Headquarters not later than June 25 for an official log sheet.

8.—Certificates of merit will be awarded to the operators of the three stations submitting the best logs and technical descriptions of the gear used and observations recorded.

9.—Council reserve the right to amend or alter these rules at any time prior to the commencement of the event and their decision will be final in all matters connected with its operation.

10.—All entries must reach Headquarters by Monday, July 18, 1938.

* * *

In conjunction with this event and to encourage observations by B.R.S. and non-transmitting members, certificates of merit will be issued to the operators of the three portable receiving stations submitting the best entries judged on the basis of Rule 7 above.

* * *

It should be clearly understood that this is not a competition and points will not be scored for contacts. Awards will be made entirely on the basis of Rule 7.

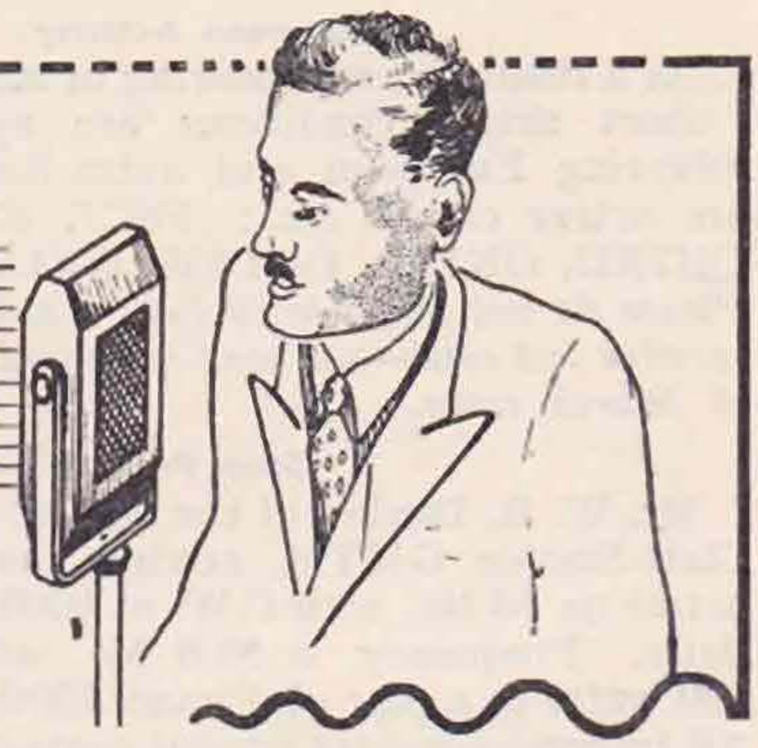
Members taking part in the event should in their own interests advise Headquarters not later than June 1, so that a list of call signs and venues can be published in the June BULLETIN.

TRADE NOTICES

Wingrove & Rogers, Ltd., Mill Lane, Old Swan, Liverpool, makers of the well-known Polar Condensers, have for long held a high position in the amateur radio component market. Strongly recommended types for those in need of well-made, robust and efficient transmitting condensers are the short wave types E single (.00016) and two-gang (2×.00016 μF.). Made with solid brass vanes and spindles and embodying a unique type of bearing, these condensers can be relied upon to give lasting service in low power transmitting stages. Frequentite is used for the supporting brackets.

British N.S.F. Co., Ltd., Waddon Factory Estate, Croydon, are manufacturing a full range of resistors and tubular condensers. All standard resistance and capacity values are available at strictly competitive prices. Samples tested show that the values are well within commercial limits. N.S.F. condensers and resistances are frequently specified in constructional articles published in this journal.

HEADQUARTERS CALLING



Convention

Plans are being made to organise a record Convention this year. The dates are September 1, 2 and 3.

This year the Society will be celebrating its 25th anniversary, having been formed as the Wireless Club of London in July, 1913.

In giving early advice of Convention we hope that Colonial members due to come home on leave will be able to make arrangements in advance to attend. Already many prominent British Empire members are in England on leave and several have promised to be present. Provincial members are also asked to keep the dates in mind.

Last year 274 members attended the Annual Dinner; this year we hope to exceed that number, but in order to avoid the inconvenience caused last September by many members failing to book until the day, it has been decided to institute a new method whereby only those who have *reserved and paid for their tickets in advance*, will be able to join the main party. An overflow of those not reserving will be arranged elsewhere in the building.

Arrangements are being made for several visits of great interest, and full details of these will be published in an early issue.

The essential requirement at the moment is to reserve the dates.—*September* 1, 2, 3.

R.M.A. Exhibition

The Society will, as in previous years, run a stand at the forthcoming R.M.A. Exhibition at Olympia, which will open on Wednesday, August 24, and end on September 3.

Members willing to do stand duty are invited to communicate with Headquarters, whilst offers of well-made gear for display will be carefully considered.

25-Watt Permits

Members applying for 25-watt permits should note that a delay of some weeks is likely to occur between the time their name is recommended to the G.P.O. and the licence is issued. Members on being recommended will receive advice from Headquarters immediately after the Council have met on the second Tuesday in each month.

Radio Antenna Handbooks

Due to delays at the publishers we regret supplies of the Radio Antenna Handbook have not yet come to hand from America.

Headquarters

We would remind members that the normal hours of business at Headquarters are from 9.30 a.m. until 5.30 p.m. Mondays to Fridays, and from 9.30 a.m. until 12 noon on Saturdays. Certain members appear to be under the impression that the offices are open until 7 or 8 p.m. in the evenings, and on Saturday afternoons.

Members wishing to meet the Secretary on business matters are urged in their own interests, and in the interests of the Society, to make an appointment, preferably for 1 p.m. or after 4 p.m.

It would greatly assist the routine work at Headquarters if members would "spread over" their correspondence as much as possible. Invariably the correspondence on Mondays is three or four times greater than on other days, whilst on the morning after a Bank Holiday it reaches much higher proportions.

Co-operation in respect of the matters mentioned above will be appreciated.

Air Raid Precautions

We have been informed by the G.P.O. and the Home Office that the use of radio has not been contemplated in connection with Air Raid Precautions.

Members joining the A.R.P. organisation should mention and ask for a note to be made that they are interested in radio, in case it should be decided at a later date to introduce radio into the scheme.

American Phone Bands

From the February issue of QST, we learn that as a result of decisions reached at the recent Habana Radio Conference, amateur 'phone stations in Latin America may, when authorised, operate between 7050 and 7150 and between 14,100 and 14,300 kc. The latter band will also be available to Canadian and Newfoundland 'phones, whilst U.S. stations will, as hitherto, operate between 14,150 and 14,250 kc., at least until December 31, 1939.

We understand that the whole of the 1.75 Mc. band is open to 'phone in both North and South America, at the discretion of individual administrations, but the nations represented at Habana have agreed that, in the 3.5 Mc. band, only the frequencies between 3,800 and 4,000 kc. are to be available for 'phone.

The new agreements as applying to Latin America become effective on July 1 next.

B.E.R.T.A.

A number of members have submitted claims for the new British Empire Radio Transmitting Award, the rules for which appeared in the April issue.

It is hoped next month to illustrate the certificate, and to publish a first list of holders.

W.B.E. and H.B.E. Certificates

The following W.B.E. and H.B.E. certificates have been issued :

Name.	Call Sign.	Date.
W.B.E.		
R. E. Trebilcock ...	VK3TL	Mar. 2, 1938
T. M. Yule	ZU6C	,, 9 ,,
H. J. Gratton ...	G6GN	,, 12 ,,
R. E. Herbert ...	G2KU	,, 15 ,,
G. A. Jeapes ...	G2XV	,, 23 ,,
K. W. Harbridge ...	G2KH	April 7 ,,
F. H. Cooper ...	G2QT	,, 7 ,,
J. Simons	ON4AW	,, 14 ,,
T. de Putron ...	G8MF	,, 20 ,,
E. Williams	G2HI	,, 20 ,,
H. B. Lambert ...	G8QL	,, 23 ,,
F. McAinsh ...	GM8MN	,, 23 ,,
H. B. Sumner ...	G5AX	,, 25 ,,
J. Hum	G5UM	,, 27 ,,
28 Mc.		
R. Palmer	G5PP	Mar. 1 ,,
A. G. Parker ...	G6QZ	April 20 ,,
G. Brown	G5BJ	,, 27 ,,
Telephony.		
L. Gregory	G2AI	April 13 ,,
L. W. Parry ...	G6PY	,, 27 ,,
A. E. Brookes ...	G6VK	,, 29 ,,
H.B.E.		
C. J. Greenaway ...	BRS1011	Mar. 7 ,,
	2BWP	,,
	G2LC	,,
R. Palmer	2BIU	April 2 ,,
	G5PP	,,
H. F. Hamilton ...	BRS3179	April 7 ,,
S. W. P. Henton ...	BRS521	April 19 ,,
	G5VU	,,
E. R. Westlake ...	BRS46	April 27 ,,
	2ARP	,,
	G6KR	,,

R.S.G.B. Slow Morse Practices

Details will be found below of the slow Morse practices organised by the Society for those members wishing to learn or improve their code. 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—by telephony. A telephony announcement will also be given at the commencement of each test to assist those interested in tuning in the sending station.

At the recent meeting of D.R.s in London it was decided to discontinue sending on the 7 Mc. band owing to QRM. It is emphasised that reports will be appreciated and are desired, in order to ascertain useful range and numbers utilising the service. If, however, a reply is desired, a stamp should be sent. Will stations in areas not at present served offer their services to Mr. T. A. St. Johnston (G6UT), "Normandale," Little Hallingbury, Essex. (Telephone : Bishops Stortford 785). Slow Morse practices are now confined to the 1.7 Mc. band. The QRA of G8PZ who has joined in the tests, is Mr. S. D. Perry, 19-21, Artillery Street, Colchester, Essex.

Schedule of Slow Morse Transmissions.

	B.S.T.	kc.	Stations.
Mondays ...	2315	1741	GI6XS
Tuesdays ...	2215	1792	G8PZ
Wednesdays ...	2315	1741	GI6XS
Thursdays ...	2115	1930	GW5OD
	2215	1792	G8PZ
Sundays ...	0930	1792	G8AB
	1015	1920	G6VC
	2115	1930	GW5OD

NEW MEMBERS

Home Corporates

W. W. Barnes (G2FI), 30, Crichton Avenue, Wallington, Surrey.
D. Willacy (G3BC), 4, Morecambe Street, Morecambe, Lancs.
E. F. Read (G3GF), 26, Hillside, Little Thurrock, Grays, Essex.
R. Sykes (G3HI), 21, Aviary Grove, Armley, Leeds, 12, Yorks.
R. Newsham (G3HK), 44, Regent Street, Nelson, Lancs.
C. J. Moore (G3IN), 13, Fairfield Road, Saxmundham, Suffolk.
W. F. Mudford (G6BK), 3, Albany Road. Blackwood, Mon.
D. B. Bradley (G6HV), 89, Brandling Street, Roker, Sunderland.
G. S. Samways (G6OH), "Chilcombe," Greville Park Road, Ashtead, Surrey.
D. H. Barbrook (G8AN), 38, Bixley Road, Ipswich, Suffolk.
A. J. Grover (G8CU), 29, Dalesview Road, Ipswich, Suffolk.
H. Turner (G8VN), 7, Lawrence Road, Eastlands, Rugby, Warwicks.
W. C. F. Taylor (2AOB), 2, York Crescent, Shore Road, Belfast, N. Ireland.
D. Blizard (2AOS), 23, Childwall Valley Road, Childwall, Liverpool, 16.
R. Booth (2BAZ), 8, Rose Place, Bullough Park, Accrington, Lancs.
W. C. Green (2BKG), 27, Clark Street, Stourbridge, Worcs.
G. E. Morris (2CAH), 42, St. Michael's Road, Coventry, Warwicks.
E. A. Oliver (2CZB), 66, Deeplish Road, Rochdale, Yorks.
E. F. Prior (2DBX), 8, Alwyne Road, Canonbury, London, N.1.
J. Machent (2DGV), 17, Lincoln Avenue, Levenshulme, Manchester, Lancs.
W. D. Andrews (2DHM), 5, Steep Street, Chepstow, Mon.
E. M. Brown (2DHO), "Brixton Mount," Plashyfryd Terrace, Holyhead, N. Wales.
A. H. Hillman (2DLL), 9, Regent Square, Penzance, Cornwall.
R. Dale (2DNG), 181, Wheeler Street, Lozells, Birmingham, 19.
C. F. Biggs (2DQO), 86, Lordship Lane, Tottenham, N.17.
K. Hinch (BRS3274), 11, Kingston Villas, Northgate, Cottingham, near Hull, E. Yorks.
W. Wright (BRS3275), 8, Golf Road, Aboyne, Aberdeenshire.
F. W. Fletcher (BRS3276), 3, Burgh Wood, Banstead, Surrey.
F. A. Moyle (BRS3277), "Kilworth," Maresfield, Sussex.
G. D. Dixon (BRS3278), 49, Onslow Parade, Gregagh, Belfast, N. Ireland.
G. W. Peacock (BRS3279), c/o 50, Bank Street, Galashiels, Selkirkshire.
A. G. McHardy (BRS3280), 1, West End Terrace, Winchester, Hants.
D. A. G. Waldock (BRS3281), 3, Broomfield Hall, Sunningdale, Berks.
J. W. Park (BRS3282), 111, Park Lane, Darlington, Durham.
C. G. Middle (BRS3283), 50, Ashley Down Road, Horfield, Bristol, 7, Glos.
G. B. Alberry (BRS3284), 228, Ipswich Road, Colchester, Essex.
G. R. Moon (BRS3285), 12, Arley Park, Redland, Bristol, 6, Glos.
L. J. Ralli (BRS3286), Beaurepaire Park, Basingstoke, Hants.
R. F. Stanbridge (BRS3287), 185, Church Street, Woking, Surrey.
C. Sharratt (BRS3288), 22, Devon Road, Blackburn, Lancs.
J. Watkins (BRS3289), 31, Upper Lime Street, Gorseinon, Glam.
R. D. Walmsley (BRS3290), Gedding House, near Bury St. Edmunds, Suffolk.
W. H. Walker (BRS3291), 48, Stacey Road, Cardiff, Glam.
N. Turner (BRS3292), Oakmount, Monks Risborough, Aylesbury, Bucks.
S. W. Punnett (BRS3293), 75, Firle Road, Eastbourne, Sussex.
J. McKelvie (BRS3294), 92, High Street, Cowdenbeath, Fife.
F. C. Marchant (BRS3295), 42, Holmes Avenue, Hove, 4, Sussex.
R. C. Jennison (BRS3296), 28, Park Drive, Grimsby, Lincs.
H. E. Fozard (BRS3297), 39, Greenfield Avenue, Surbiton, Surrey.
J. B. Hudson (BRS3298), 2, Brookside, Cambridge.
J. W. Gough (BRS3299), 17, Slad Road, Stroud, Glos.
D. B. Black (BRS3300), 16, Edina Place, Edinburgh, 7, Scotland.
E. Gould (BRS3301), 16, Tasker Road, Sheffield, 10, Yorks.

(*Continued on page* 658.)

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).
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. G. W. SLACK (G5KG), "Inglenook," Racecourse Road, Mansfield, Notts.

DISTRICT 5 (Western).
(Hereford, Wiltshire, Gloucester.)
Mr. J. N. WALKER (G5JU), 4, Frenchay Road, Downend, Bristol.

DISTRICT 6 (South-Western).
(Cornwall, Devon, Dorset, Somerset.)
Mr. W. B. SYDENHAM (G5SY), "Sherrington," Cleveland Road, Torquay.

DISTRICT 7 (Southern).
(Oxfordshire, Berkshire, Hampshire, Surrey.)
Mr. E. A. DEDMAN (G2NH), 75, Woodlands Avenue, Coombe, New Malden, Surrey.

DISTRICT 8 (Home Counties).
(Beds., Cambs., Hunts and the towns of Peterborough and Newmarket.)
Mr. G. JEAPES (G2XV), 89, Perne Road, Cambridge.

DISTRICT 9 (East Anglia).
(Norfolk and Suffolk.)
Mr. H. W. SADLER (G2XS), "The Warren Farm," South Wootton, King's Lynn, Norfolk.

DISTRICT 10 (South Wales and Monmouth).
Mr. A. J. FORSYTH (G6FO), 29, Stow Park Avenue, Newport, Mon.

DISTRICT 11 (North Wales).
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)
Mr. D. S. MITCHELL (GW6AA), "The Flagstaff," Colwyn Bay, Denbighshire.

DISTRICT 12 (London North and Hertford).
(North London Postal Districts and Hertford, together with the area known as North Middlesex.)
Mr. S. BUCKINGHAM (G5QF), 41, 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 (Eastern)
(East London and Essex.)
Mr. T. A. St. JOHNSTON (G6UT), "Normandale," New Barn Lane, Little Hallingbury, Bishops Stortford.

DISTRICT 15 (London West).
(West London Postal Districts, Bucks, and that part of Middlesex not included in District 12.)
Mr. H. V. WILKINS (G6WN), 81, Studland Road, Hanwell, W.7.

DISTRICT 16 (South Eastern).
(Kent and Sussex)
Mr. W. H. ALLEN (G2UJ), 32, Earls Road, Tunbridge Wells.

DISTRICT 17 (Mid East).
(Lincolnshire and Rutland.)
Mr. W. GRIEVE (G5GS), "Summerford," New Waltham, Lincs.

DISTRICT 18 (East Yorkshire).
(East Riding and part of North Riding.)
Mr. W. A. CLARK (G5FV), "Lynton," Hull Road, Keyingham, E. Yorks.

DISTRICT 19 (Northern).
(Northumberland, Durham, and North Yorks.)
Mr. H. C. D. HORNSBY (G5QY), "Newlands," 105, Kenton Lane, Newcastle-on-Tyne, 3.

SCOTLAND.
Mr. JAMES HUNTER (GM6ZV), Records Office, 51, Camphill Avenue, Langside, Glasgow.

NORTHERN IRELAND.
Mr. T. P. ALLEN (GI6YW), 62, Balmoral Avenue, Belfast.

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

DISTRICT 1 (North-Western)

The important item this month is the Provincial District Meeting at Southport on Sunday, May 22, see full particulars on another page. The success of this meeting depends upon everyone in the District. We hope to break all previous records this year, so please book the date *now*.

Bury.—The regular monthly meeting was again held at G2GA and a full attendance recorded. Several members are building portable gear for N.F.D., so the local station will be fully equipped for this event.

G8NL expects to have a portable station in operation in Scotland during the first week in June. 2BGF hopes to have a radiating licence very soon. 3CJ, 8QS, BRS3008, 2ANA and 2GA are also active.

Burnley.—Members are keeping in contact by means of station visits and most of them are active. 8TD has erected a new aerial to contact S. America for WAC, 2RB has been on 1.7 Mc., 5ZN is still experimenting with the W3EDP aerial, 2BFB and 2DKR are busy with the code practice, BRS2951 has applied for his A.A. licence and both 8OA and 8FI have recently completed new transmitters.

Manchester.—An attendance of 37 was recorded at the last Manchester meeting, when G8NL described a push-push 56 Mc. transmitter and the difficulties met with in its construction. At the close of the meeting a junk sale was held, which realised £1 for N.F.D. funds. Some very fine gear was disposed of and many bargains were available.

The 56 Mc. schedule every Friday night at 22.00 is going well and some very interesting data is being collected from these tests. More co-operation is invited, however, and it is proposed that a chain of 56 Mc. stations be set up covering Lancashire. 3HO, of Irlam, has joined this group and other volunteers are wanted.

G6YL states that she is arranging some 56 Mc. C.W. tests to start in May—particulars and times of transmissions can be obtained from 6YL or 2OI.

BRS3242 (ex 2ARI) has joined this group and has renewed his application for a radiating permit. 5YD is contemplating going mobile on 56 Mc.

2ARC is busy building the N.F.D. transmitter. An offer to lend a good communication receiver for the field day (battery operation) would be appreciated and through the kindness of 6OM we are again provided with power supply.

The following stations report active :—2WQ, 2BCX, 2AXH, 2ARC, 2BC, 2BDA, 2OI, BRS3228, 2LK, 3AH, 3BV, 3DA, 3HO, 5YD, 5WR, 5NV, 5OZ, 5KL, 8BI, 8JS, 8NL, 8PW, 8VU, 6OM, 2BMG, 2CXP, BRS3242, 3DH, 2RA, 6TL, 2DH, 3DC, 8NF, 2PBJ, 8QS, 5CH, 5HF and BRS3174.

Blackpool and Fylde.—The Blackpool and Fylde Short Wave Radio Society held their annual meeting on April 7 and the executive officers were re-elected. It was decided that meetings should be held on the first Thursday of each month during the summer.

NORTH-WESTERN PROVINCIAL DISTRICT MEETING

SUNDAY, MAY 22, 1938,

at

SCARISBRICK HOTEL, LORD STREET, SOUTHPORT

Assemble	12 noon
Lunch	1 p.m.
Business Meeting	2.30 p.m.
Tea	4.30 p.m.

Inclusive charge 5s. All reservations to Mr. J. Noden (G6TW) not later than May 18.

The N.F.D. site has been settled as Marton Moss at the back of St. Annes and the transmitter will be CO-PA 6L6-T20. Two generators have been obtained. The transmitter is under construction from parts provided by various members, 2CWW in particular being a veritable gold-mine for gear.

Individual activity is high. 2CUI is now G3IC, 2CQQ is 3IM and both are busy on 7 Mc. 2YO has been heard on 7 Mc. C.W. frequently and would welcome a report at intervals. G3DJ, 5MS, 6VQ, 8AK, 8GG, 8TI and 8NU are all on 7 or 14 Mc. G5SO is on the air as EP5SO from his Eastern location and we hope to contact him on 14 Mc. No reports have been received from the receiving membership and so again—a P.C., please, at intervals

Blackburn.—Four new members have joined the group and two meetings have been held since the last notes were published. At the first meeting a lecture was given on Power Packs by G2HW and further lectures are to be given on transmitters and receivers. Thanks are expressed to 8JA and 2DJD for the use of their respective stations for the last two meetings. At the second meeting N.F.D. was discussed.

Congratulations to BRS3134 on becoming 2DKL and to 6BH (and his ex-YL) on their marriage. 8JA, 2PB and 2BAZ are rebuilding ; 2AQI, 2AFA, 2AXH, 2CSC, CNQ, 2CGK, 2DJD, 2DKL, 2DAD, 2DHJ, 2DFO, BRS3136, 3172 and 3248 are busy with morse. Future meetings will be held at the T.R.'s. address until the accommodation becomes too small. 6GY of Sunderland attended one of the meetings and any other amateur who visits Blackburn will be made welcome.

Liverpool.—A welcome visitor to the last meeting was ex-VK5AP. Arrangements for N.F.D. were again discussed.

G2OA was among the first to claim the new B.E.R.T. Award.

No individual reports have been received and the T.R. will be pleased to have a card from any member who has anything of particular interest for publication.

DISTRICT 2 (North-Eastern)

Barnsley.—No news is to hand and the T.R. would like members to send in reports whether active or not. G6PY has tried out a new system of keying which may interest others.

Halifax.—Work on 56 Mc. occupies the time of most members, and on May 29 anyone in the surrounding Districts who is interested in this band is invited to take part in a series of tests being arranged on that day. The following are active on 56 Mc. :—G5DF, 5QS, 8GM, 2ABC, 2AKO, 2BNI, 2DGK, 2CKH, 2CMP, and 2CYM.

Sheffield.—Members are asked to give assistance with the N.F.D. station which will be operated from the field next to the Three Merry Lads, Lodge Moor. The following are active :—G2JI, 2LT, 3FN, 5HK, 5TO, 6LF, 8JP, and BRS2973. Best wishes to 2DCO, our latest member.

Huddersfield.—An interesting meeting was held at G8OF to arrange N.F.D. details. The site is the "Top of the Bank," Thurstonland, and members not already included should contact 5VD if they wish to take part. We are sorry to bid farewell to 8KY and 8QT and wish them luck. The letter budget shows increased local activity, but takes a long time to make the circuit.

Leeds.—Best wishes to Mr. Brooks, BRS3249. BRS2349 is now 2DOV and is building his transmitter. 2CZK is also active.

Bradford.—Meetings at local stations are to be held again, and it is hoped that they will be well supported. The first took place at G6XL on May 7, when a selection of R.S.G.B. films was shown. Best wishes to a new member, Mr. Macdonald.

DISTRICT 4 (East Midlands).

A very successful meeting was held in Mansfield on April 24, when about thirty members were in attendance at the Swan Hotel. We wish to record our sincere thanks to Mr. James and Mr. Lyme, technical experts on the staff of *Messrs. Whiteley Electrical Co., Ltd.*, for their interesting lecture and demonstration on the manufacture and performance of loud speakers. Mr. Lyme spoke about the mechanical side, explaining in great detail how the different parts are made and the many difficulties that have to be overcome. Mr. James then dealt with the electrical and acoustic side, demonstrating his words with actual speakers on test, an audio oscillator and a high quality receiver. At the business meeting which followed, the D.R. spoke about the D.R.s meeting which took place in London recently, this in turn was followed by a general discussion about District affairs.

Members were interested in receiving details of the forthcoming Cambridge meeting, and it is hoped that many District 4 members will attend.

It was agreed to protest against the decision to cancel the 56 Mc. N.F.D. (We learn now that the event is to be organised.—D.R.).

It was decided that a District Contest should be arranged somewhat on the lines of the B.E.R.U. Junior Contest. A trophy exists in the District and is waiting to be won. The T.R.s. are asked to form themselves into a committee and discuss the lines on which this contest shall be run.

Ilkeston.—G2WS announces that a 56 Mc. transmitter and receiver will be in operation throughout N.F.D. from the same location as the 1.7 Mc. station, and a continuous watch will be kept for signals on this frequency.

Mansfield.—The next local meeting will be held at the Swan Hotel, Mansfield, at 3 p.m. on Sunday, May 29. As this will be the last until the Autumn, the T.R. would appreciate the attendance of the Worksop group, to discuss and complete final arrangements for the operation of the 3.5 Mc. station, G5KGP. It is essential that every member taking part should be familiar with his allotted task.

At the last meeting members from Huthwaite, Mansfield, Sutton and Warsop were present. G8OM reports active and is engaged on directive aerial experiments.

Mapperley.—The morse practice section continues its activities and it was decided to hold the meetings weekly instead of every fortnight, on Sunday evenings at 6 p.m. The meetings take place in rotation at the QRA of each member attending. Stations active are: G6DS, 6FP, 8UI, 2ARN, BRS2987, and 2399. Others are rebuilding. There are now three stations active on 56 Mc.

Northants.—Affairs in this part of the District are going with a swing and all members appear to be active. 2AWW, of Wollaston, is troubled with the H.T. problem and he would like to hear from any member in the District who can give him information about generators operated from accumulator supply. His address is the Gas House, Wollaston. The following report active: 2CTZ, 2AWW, 2CSH, 2ABH, G6BF and G5LP.

S.O.S.—Members who have or know of any high tension generators operating from either a 6 v. or 12 v. supply, and are in a position to lend them for use during N.F.D., are asked to communicate with the D.R. as soon as possible. Any reasonable hire charge will be paid.

Next District Meeting.—The next District meeting will be held at the Trent Bridge Hotel, Trent Bridge, Nottingham, on May 22 at 3.30 p.m. A talk is to be arranged.

FORTHCOMING EVENTS

May 18.—District 14 (East Essex Section), 8 p.m. at 2DDL, 12, Tudor Gardens, Leigh-on-Sea (near Popular Road House).
" 22.—District 12 (London, N.), 7.30 p.m., at the Orpheum Cinema, Finchley Road, N.W.11.
" 22.—North-Western P.D.M., 12 noon, at Scarisbrick Hotel, Southport. See separate announcement.
" 22.—District 4, 3.30 p.m., at the Trent Bridge Hotel, Trent Bridge, Nottingham. Talk to be arranged.
" 24.—District 14 (East London section), 7.30 p.m., at G8AB, "Tree Tops," 35, Priory Road, Loughton.
" 25.—*District 15, 7.30 p.m., at G6VP, "Holmlea," 12, Ferrers Avenue, West Drayton, Middlesex.
" 25.—Scotland "A" and "E" Districts, 7.30 p.m., in room "A," Institution of Engineers and Shipbuilders, 39, Elmbank Crescent, Glasgow.
" 25.—Scotland "H" District, 7.30 p.m., in District clubroom, Bank Street, Kirkcaldy.
" 26.—District 13, Area meeting 8 p.m., at Brotherhood Hall, West Norwood.
May 27.—District 14 (Chelmsford Section), "Hamfest," 8 for 8.30 p.m., at "Running Mare," Galleywood, Chelmsford. Tickets 2s. 6d., from G6LB, 85, High Street, Chelmsford. Cars meet at Chelmsford Station at 7.30 p.m.
June 1.—S.L.D.R.T.S., 8 p.m., at Brotherhood Hall, West Norwood.
" 1.—*District 1 (Manchester Section), 7.30 p.m., at Brookes Café, 1, Hilton Street, off Oldham Street, Manchester. Talk by G5YD.
" 2.—District 14 (Colchester Section), 7.30 p.m., at G8PZ, 19-21, Artillery Street, Colchester.
" 3.—District 12 (Welwyn), at G2HK, 44, Eldefield, Letchworth.
" 3.—District meeting in Cambridge.
" 8.—Scotland "H" District. Details as above.
" 12.—District 19, 6.30 p.m., at G2LD, 4, Priors Terrace, Tynemouth, Northumberland.
" 15.—Scotland "H" District. Details as above.
" 23.—District 10, 8 p.m., at Globe Hotel, Duke Street, opposite Castle, Cardiff.

* Sale of disused apparatus at these meetings.

DISTRICT 5 (Western).

At the last Bristol meeting it was decided that as the use made of the club rooms at Bridge Street did not warrant the expense of their upkeep, it would be better to close them down. This has therefore been done, and future meetings will be held at Carwardines Café, Baldwin Street. The date and time (7.30 p.m. first Thursday in each month) remain as before. Bristol members are asked to show their interest in local affairs by

attending, whilst visitors are, of course, very welcome.

The T.R. is glad to see that the Bristol membership is slowly increasing, and asks that reports be sent to him by the 20th of the month. Offers of assistance during N.F.D. will be appreciated.

Local members were very deeply grieved to hear that Mr. W. A. Andrews (G5FS), one of Bristol's pre-war licensed amateurs, had been taken seriously ill, and his death on April 28 was a shock to all.

G8DX, of Bath, has succeeded in receiving 56 Mc. C.W. signals from G6VF, 5JU and 6FO, the latter being nearly 40 miles away. He will be transmitting on this band soon.

G2IW is building a new speech amplifier and modulator, whilst 8JQ is making a field strength meter. G8HW has returned to Bath from Colchester and is active.

G6BW and 6VK are taking part in some unusual 28 Mc. tests this summer, details of which will be found elsewhere in this issue. G6BW sends in a most interesting report, which, for reasons of space, must be much curtailed. He succeeded in recording phone from K6MVV, and sent it back at once. It was received perfectly and the QSO lasted 56 minutes. G6BW is using, amongst others, a "V" beam aerial, with 360 ft. of tuned Zepp. feeders—and it works! Visitors are very welcome, but please write or phone beforehand.

G5UH has a new transmitter on 1.7 and 3.5 Mc. and intends erecting a better aerial. G6GN has raised a lot of DX on 14 Mc., including J. Others active include G2IK, 8TC, 6RB, 8WW, 6VF, 5JU, 6MZ, and 3HN (who is congratulated upon receiving his full call). G6WL paid the town a visit during Easter.

Cheltenham.—G5BK, 5BM, 8DA and 8DT recently visited G5ML and enjoyed inspecting his fine station. G6ZQ, 8LB and 2AQO report.

DISTRICT 6 (South Western).

Arrangements are now practically complete in District 6 for National Field Day. See elsewhere for sites and calls. All members willing to pull their weight are invited to take part, and are asked to get into touch with the respective T.R.s.

Taunton.—At the meeting on Sunday, April 10, there was an attendance of thirteen. Discussion centred on the approaching P.D.M., and final arrangements were also made for N.F.D. Ten members offered their services for the latter.

Exeter.—The usual meetings have been held, and have been well attended. Owing to indisposition, the T.R. was unable to attend the last meeting, when a discussion arose as to the advisability of reducing the meetings to one per month during the summer months. The question of changing the day of the week was also considered.

North Devon.—Owing to the indisposition of the T.R., the usual monthly meeting did not take place, but all stations report active.

VS6AH (brother of G6GM) is now home on furlough, and it is hoped that all members will have the pleasure of a personal QSO before he returns to Hongkong.

During the month under review the T.R. received a very welcome visit from the D.R. (G5SY), who, during his brief stay, was able to meet some of the N. Devon group personally, and over the air, from G3BO. (Thanks very much for a very pleasant time.—D.R.)

Torquay.—The last meeting of the season was held at G5SY on April 21, when eleven members were present.

Congratulations to G3ID, 3JD, 2DPP and 2DSQ, all of whom have taken one more step up the ladder of fame.

Plymouth.—The monthly meeting was held on Friday, April 29, at 2CYJ's QRA. The D.R. was very pleased to be able to attend and enter into the general discussion which ranged from aerials to the old question, "commercial *versus* ham-constructed" receivers.

DISTRICT 7 (Southern).

The recent D.R.s. conference decided that the present form of district notes occupies far too much valuable space in the BULLETIN, due to the publication of much redundant matter. A study of recent notes will reveal that No. 7 is one of the worst offenders in this respect, and from next month the D.R. intends to edit the notes carefully and all useless matter will be deleted. This may prove unpopular with some members but is undoubtedly for the general good. There will be no June monthly meeting due to N.F.D.

Reading.—At the April meeting of R.T. and R.S. 24 members were present and two visitors, VQ2AC and G8TH from Stockport. 8MS is in Bristol and wishes to get in touch with local amateurs. 8NG has had a 56 Mc. report from Laingdon Hills, Essex (65 miles). G5TP, 6MO, 2GG, 2IT, 2YB, 5HH, 6CU, 6GT, 8KJ report active. Next meeting May 18, Y.M.C.A., Reading.

Malden.—The local group is very active, and members wishing to attend meetings should enquire from 2DOP, 51, High Drive, New Malden. BRS 2760 is now 2DOP, and BRS2716 is 2DOK. 3DZ, 2BNS, 2CZG report active.

Croydon.—We welcome two new full calls in the area, G2FI and G3IG. G3IG has opened up on 14 Mc. and has worked a number of Europeans, but has receiver trouble. G2FI is working on a temporary rig, and has raised several continentals on 14 Mc. G2DN, who is situated rather in a valley with an E-W aerial, is finding difficulty in raising DX on 14 Mc., although he has done extremely well on 28 Mc. G8TB is experimenting with a T20 PA, and getting out with a very nice note. G2MV with his usual modesty does not tell us much of his own achievements, but to keep a sked with Hawaii for a number of days is no mean feat. G2KU and G5XH are rebuilding, whilst G5HI is active.

Reigate.—A crystal register has been started by G8KI, and members are kindly asked to consult this before obtaining new crystals. G8HH is being heard well by W5's and W6's, using a W3EDP aerial. G6JF is obtaining good results on his portable TX, on 7 Mc. G8KI, 8MP and 5LK are active. 2BGN has landed in PY and has met several amateurs.

Portsmouth.—At the March meeting of the South Hants. R.T.S. G6NZ gave a talk on early radio. An ancient coherer and magnetic detector proved still capable of reception. Visitors from Southampton were welcomed, and 2XC and 6NZ paid a return visit to 8DM and gathering. BRS3182 is leaving for three months' cruise. 2AWC designing portable mast. 8LO has been portable on 7 Mc. 2XC observed hiss and fading phenomena. Local activity continues high, with N.F.D. in sight.

Guildford.—The contest season concluded, activity in this area seems to have fallen to a low level. However, the number of reports received is well up to average, i.e., NIL! From observation the following are active:—G3HH, 6LK, 6YZ, 8IX, 8LT, 8UG. G6LK and 6NA are building the 7 Mc. and 1.7 Mc. N.F.D. stations respectively.

Bournemouth.—Welcome to G2TR, who has just moved into the area. He is active on 14 Mc., using a beam aerial system. Rig consists of 6L6G into 6L6G and Eimac 35T as Final. Plate modulation used with G.E.C. carbon microphone. G3BM claims to be the first G3 to get over the Pond on phone. He works on an average about 60 American phone stations per week, many on schedule. Now trying out modulation equipment. (We should like a full description of your 10 watt station.—Ed.) G8KX, G5PB, and G2NS all active as usual. 2DNF and 2DKY are building. The T.R. visited BRS2719 and found him very well advanced, his power pack ready, and the bench all fitted up with switch gear, etc. He has a very good 28 Mc. RX. G5MU and G2TZ visited G5OH. G5OH has two half waves running in phase, and also a vertical 14 Mc. aerial fixed on a 55 ft. mast. New modulator using two Taylor 203Z tubes in Class B almost completed. Will members please pass on their news to G5OH, the new T.R., at his business address, 26, The Triangle, Bournemouth?

DISTRICT 8 (Home Counties)

District Representative.—G. A. Jeapes (G2XV), 89, Perne Road, Cambridge.

Town Representatives:

Cambridge.—L. W. Jones (G5JO), "Mella Loona," Leys Road.

St. Ives.—C. D. Whaley (G6WA), "Danum," Ramsey Road.

Peterborough.—W. Carter (G2NJ), 1, Gladstone Street.

Bedford.—H. R. Jeakings (2AWH), c/o Jeakings and Son, Mill Street.

Thirteen members attended a District meeting at the Fitzroy Arms, Cambridge, on April 8, at which many matters were discussed, such as NFD, slow morse practice transmissions, etc. These discussions were followed by a junk sale of goods, kindly provided by G8SY. These sales prove to be a good means of maintaining the District fund at a working level as goods are sold without reserve and 50 per cent. of the proceeds are entered into the fund.

Most district stations are active, but reports of notable matters are conspicuous by their absence. G5JO has completed a modulator using two DA100 valves in class AB, and getting 200 watts of measured audio. 2XV has at last contacted VR6AY, after sitting on his frequency for a total of over 40 hours. 5DR is getting out exceptionally well on 14 Mc. 'phone. 2CQU has passed his morse test. 2UQ is building a new modulator. 2NJ is running a 30-ft. horizontal aerial in conjunction with a 36-ft. vertical, and finds results excellent on 7 Mc. Other stations known to be active are 3DY, 5NP, 8FF, 8SY, 5DQ, 5BQ, 2PL, 5OV, 8ST, 3BK, 6VA, 5PA.

The next District meeting will be held on June 3, at 8 p.m. sharp, at The Fitzroy Arms, Fitzroy Street, Cambridge, and please remember that *all are welcome.*

DISTRICT 9 (East Anglia).

Activity seems very high everywhere in the District, and the following reports have been received:—

Ipswich.—The weekly meetings are still being well attended, and progress is being made with the N.F.D. gear. Offers of "man-power" for the hand-driven generator are wanted, as most members seem notoriously backward in this direction. G8AN has rejoined the ranks, is licensed for 28 and 56 Mc., and would appreciate co-operation on the latter frequency. Welcome to two new members, 8CU, who is adorning his garden with a Franklin broadside array for use on 14 Mc. with controlled carrier; and also 3IN, of Saxmundham, who is active on 7 Mc. with suppressor grid modulation; 6TI has erected a W3EDP aerial, and is very well satisfied with it; 8IS, after a spot of bother with his PA stage, is active again on 7 and 14 Mc; 2JD has moved into his shack, and has offered the loan of his masts for N.F.D.; 2DT is still on 7 Mc. with grid-bias modulation and BCL interference; 8MU reports working GM6RG *via* VO1I on 28 Mc., using voice-controlled carrier, and is now experimenting with automatic modulation control; 8KB has forsaken 7 Mc. for the wide open spaces of 14 Mc.; 2AN still receives cards from stations he has never worked, and the matter has been reported to the G.P.O.; 8AG is QRT at present owing to building operations; 2CWZ and 2CBX are apparently running neck and neck for the Morse test; while 2CBW is experimenting with the 6DH ultra-short receiver.

Norwich.—G2UT still active on 14 Mc. DX 'phone, but was unable to raise anything during the recent "dud" period; G2MN has now completed the N.F.D. transmitter, using 6L6 valves; 5IX has purchased a generator for power supply at his new QRA, he is also QRX on most bands; 8VW has been holiday-making, but is now back and active again; 6QZ has acquired a portable motor-generator, and is constructing a portable crystal-controlled 56 Mc. transmitter. We regret to learn that G8IY is giving up ham radio, and has sold most of his gear. The weekly meetings, held at 2UT's shop, still continue to be well supported.

Great Yarmouth.—BRS3255 sends in the report this month. A local radio society has been formed, and is fast gaining members. Morse instruction is being received by 2BND, BRS3255, 3256, 2999. Mr. F. Bell, of Gorleston-on-Sea (BRS2404), has unfortunately been ill, we wish him a speedy recovery.

Lowestoft.—5QO is active on 56 Mc., and has been making some alterations in the layout of his shack. He finds that two metal 6L6 valves give good RF output when used in a long-lines circuit on 56 Mc. 8DD has left the town and gone North for business reasons. We wish him the best of luck in his new venture. 2CWO is getting a neat little motor-generator ready for installation on his boat.

Beccles.—2CTR has constructed a pre-selector for use with his Sky Chief receiver, and finds it very satisfactory; 2AFC is building a new power-pack for his transmitter, and hopes to be on the air shortly. 2CRN, of Bungay, has completed a new outside shack.

Outlying Districts.—G8WI, of Orford, is active on 7 Mc. CW, and has erected a W3EDP aerial with improved results. He is shortly planning to rebuild, using American valves throughout. 8FL,

of North Walsham, is very active getting gear ready for NFD; and 5UF, of Cromer, is testing out a new rig.

The 56 Mc. beam between 6QZ, of Norwich, and 5QO, of Lowestoft, continues to operate satisfactorily. Both stations are using horizontal W8JK beams, the power at 6QZ being 20 watts, and at 5QO 9 watts. Both beam aerials are rotatable, and any stations willing to listen for test transmissions are asked to communicate with the stations concerned.

Special Notice.—Owing to the fact that G8DD can only be in Lowestoft a very few hours each week, it has been suggested that our next District Meeting should be held at Norwich together with the 56 Mc. D.F. day, instead of at Lowestoft. Full particulars of this meeting will be published with next month's notes. Members are asked to make a note of the date, June 26.

DISTRICT 10 (South Wales and Monmouthshire)

N.F.D. arrangements are all but complete at the various centres, and everyone concerned is looking forward to a good time and a high score. Will members not named in the last issue as operators or assistants at the four N.F.D. stations think about what they can do to help at the location nearest them, and get in touch accordingly?

Swansea.—The N.F.D. QRA for GW5KJP has had to be moved to Higher Lanes, Mumbles, n ar Swansea. The T.R.'s report indicates that most stations are active and that all bands are being used, including 56 Mc. The D.R. hopes to attend the meeting to be held at the end of May.

Cardiff.—On April 14 the R.S.G.B. meeting drew 2BG, 2JL, 2UH, 2XZ, 6FO, 8AM, 8CT, 8UH, 2AXT, 2BBO, 2BQB, 2BUF, 2CDM, 2CPA and 2CAF. The D.R. took the opportunity to outline the main discussions at the recent D.R. Conference.

Newport.—Activity is being maintained, and there is a good deal of latent interest which is being fostered by the T.R. and other members.

Blackwood.—1.7, 7 and 14 Mc. are the popular bands, and the Blackwood group, who did so well on 7 Mc. N.F.D. last year, are really getting their coats off to the job this time. It is understood that if they fail, they take 1.7 Mc. in 1939.

There are one or two other centres from which we should like to hear some news—Merthyr, West Wales and Monmouth may be awake, but it looks as if the D.R. will have to go and see. Also, all members who have joined during the last three months—or who are otherwise out of touch—are invited to communicate with the D.R.

As decided at the Conference already mentioned, these notes are being presented from now on in the manner indicated here, the idea being to conserve space and to make them more generally reliable. T.R.s should keep records and forward reports of all meetings, and particularly of communication or experimental work considered interesting or important. We can imagine that Bill Jones is probably using CO-PA, but what we want to *know* is whether he has worked Europe on 1.7 Mc. or the States on five metres, or if he is getting the 16th harmonic from a single valve. In this connection, it may be of interest to record that 2JL and 6FO have now established reliable 56 Mc. contact with Bristol, QRA-to-QRA (G5JU and 6VF), and that, using a simple indoor beam, G6FO is being consistently received in Bath. The QRP CC transmitter consists of a two-stage exciter, 7-56 Mc., driving a twin-triode as a push-pull PA on 56 Mc.

DISTRICT 11 (North Wales).

Monthly district meetings have now ceased for the summer, and preparations for field days are in full swing.

Members in other Districts might be interested in a scheme which is to be tried in North Wales this summer. A group of four members have joined in the cost of constructing three masts, each over 60 ft. in height. These are to be erected at an ideal location, out in the wilds, and 1,200 ft. above sea level. They will be left there for the five summer months. The masts will be arranged to form an equilateral triangle of 160 ft. per side, which will enable arrays to be suspended in any direction. The location will see regular 56 Mc. work throughout the summer, and considerable activity on other bands. It is hoped that the ease with which aerials can be erected will lead to some exceedingly interesting results.

We should like to see other groups throughout the country co-operating in similar schemes of summer activity. If the object is explained, no difficulty should be experienced in obtaining permission to use a good site, and the advantages of leaving the masts erected are tremendous. Carefully constructed masts could be used during many future seasons, and if four or five people get together in a project such as this, the " cost per person " is surprisingly low.

DISTRICT 12 (London North and Hertford)

N. London.—The outstanding event of the month was undoubtedly the District dinner, held in place of the usual monthly meeting. This is described in detail elsewhere in the BULLETIN.

As it is intended to devote the next meeting to final N.F.D. arrangements, all the station operators should make a point of attending. Mr. A. Boa, who recently operated a station in this district with the call G5BO, is now active again in Malta with the call ZB1T. He is working on the low frequency end of the 14 Mc. band, and wants contacts with all his old friends in N. London.

BRS3209 is now 2DPV, and although news of activity seems to be at a premium this month, the following have reported: G3DT, 5DJ, 5FA and 8TY.

Welwyn.—The T.R. reports that the meetings which he organises on the first Friday of every month continue to attract on an average a dozen members from all over central Hertfordshire. The April meeting held at G5ZJ Letchworth, was a great success, and the sixteen people present, in addition to talking amateur radio, were able to see the 9-10 p.m. television programme on Mr. Jower's televisor.

The May meeting was held at G2YM, in Welwyn Garden City. The June meeting of the Welwyn group takes place on June 3 at G2HK, and anyone requiring transport should get in touch with G5UM.

Hertfordshire activity continues brisk, although two prominent members, G5SA and 8QK, have been in America.

The first G3 in the Welwyn district has appeared —G3HM of Hitchin, though 2AUV of Harpenden may have become one by the time these notes

appear. 2AUV and G8MX now have RME69 receivers. Several members have been trying the W8JK beam aerial, with varying degrees of success. G5UM claims to be able to put in the field at short notice a 1.7 Mc. station, his gear being so designed that it can work off mains or batteries, and is reasonably transportable.

DISTRICT 13 (London South).

By the time these notes appear in print, N.F.D. will be almost upon us. Arrangements are practically complete, and elsewhere in these pages will be found a list of station sites, etc. During the last few years this event has proved enormously popular in the District, and has been, generally speaking, well supported. Let us hope that this year's event will prove no exception to the rule.

On April 22 the D.R. had the pleasure of attending the North London Dinner at Barnet, and would like to take this opportunity of publicly thanking those responsible for the warm welcome and hospitality which was extended to him. At this dinner the subject of co-operation between the London Amateurs was mentioned, and the point was made that the four London Districts really see very little of each other during the year. It is felt that in each District little is known of the activities in the other Districts, and we are sure that if some of the barriers between the areas were removed, great benefit would be forthcoming. The vital necessity for co-operation among members within this District has, on many occasions, been stressed in these pages; would not beneficial results be derived from a little more co-operation with our fellow amateurs across the Thames? We look forward to the time when a London Conventionette, run possibly on rather more formal lines than the old popular Hamfests, will be an annual event.

News in South London this month is somewhat scarce, and we should like to remind all TRs that one of their responsibilities is to forward each month some details of Area activities. Lists of DX stations heard or contacted should *not* be forwarded to the D.R. for publication in these notes, which we endeavour to restrict to reports of meetings, local activities, outstanding achievements or experiments, and any other matters of general interest.

Tooting and Balham Area.—G3DF has contacted ZS on 7 Mc., 3CU is on 7 Mc., 2JK has contacted VQ2, using 8 watts. 5PY and 2UX are active.

An Area meeting took place at West Norwood on April 21, and the next one has been fixed for May 19.

DISTRICT 14 (Eastern).

East Essex.—The April meeting held at G5VQ, Westcliff, was attended by 18 members, among those present being G2ZG, of Ingatestone. The site at Thundersley Glen which was used for N.F.D. last year has again been obtained and it is hoped that all who can will at least put in an appearance during the week-end. A week or two before N.F.D., details will be forwarded to all who have intimated their intention of helping and any not receiving these should apply to the T.R. The other event of special interest to local members is the QRP contest mentioned in last month's notes. The chief point about this test is its fairness to all entrants, and the useful data which should be obtained from the results. A request for reports appears elsewhere in the BULLETIN. Rules and full details can be obtained from the T.R., and a copy will be handed to all intending entrants at the next meeting. The junk sale held at the last meeting was profitable to all who took part, judging by the bulging pockets and parcels.

Colchester.—At the April meeting held at G8PZ it was announced that G8HW was returning to Bath and that G3BI is leaving to take up an appointment at Exeter. The new Colchester group will greatly miss these foundation members. They leave with the best wishes of all in their future activities. This month all members are concentrating on receivers, and at the next meeting results will be discussed. Members in and around Colchester are cordially invited to attend the monthly meetings. G8PZ will be giving slow morse practice. See schedule elsewhere for details.

East London.—The meeting held at 2CID in Chingford was well attended. A successful junk sale was held, the auctioneer being BRS3270, of Loughton. Through the generosity of 2CID and BRS3270, a substantial sum was donated to the N.F.D. fund. G8AB has received a 25-watt permit. N.F.D. arrangements were discussed and offers should be made to G8AB and G6UT. The 7 Mc. station G8ABP is to be fielded near Harlow.

Chelmsford.—At the April meeting held at the Cottage Restaurant, Chelmsford, the attendance was 15, and included G2OR, G6TQ, HB9J, and the D.R. The main discussion centred around N.F.D., where all arrangements are well in hand; additional 1.7 Mc. operators, however, are needed. A local hamfest is to be held. (See Calendar.)

DISTRICT 15 (London West, Middlesex and Buckinghamshire).

One of the very best attended district meetings ever held took place at The Albany, Twickenham, on April 27, when forty-five members of R.S.G.B.—T.V.A.R.T.S. listened to a splendid lecture given by G6CL. It is hoped that as a result of this meeting we shall in future see some of the South Middlesex members at gatherings in other parts of the District.

At the May meeting final plans for N.F.D. will be made. It is important that all members taking part, particularly those at the 7 and 14 Mc. stations, should attend because the site at the moment is not definite owing to the land having been sold. See Calendar for date.

The T.V.A.R.T.S. held a most successful dinner and dance on April 2, while on the 6th they were given a talk by Mr. E. A. Dedman (G2NH), of the *Quartz Crystal Company*, which was appreciated.

Congratulations to 2CZG who has graduated to G3JG. Reports are better this month, but we still do not hear from members in either South Middlesex or Bucks.

West London.—G3BQ who has a 125 ft. aerial working on the third harmonic in his loft running backwards and forwards N and S. about 20 ft. and spaced 1 ft. 2 ins. obtains conflicting local reports, 3GY working Europeans on 7 Mc., 6CO reports bad piracy of his call on telephony, 6WN worked five continents on 28 Mc., L. N. Wilkins has been allotted the call 6RW, 8VM using 47, 6A6 transmitter, 8WR constructing 14 Mc. beam aerial 2CMG, 2CSD, 2DFJ, BRS3074, and 3147 all active.

North and West Middlesex.—G6LJ reports active while 6VP has been elected to A.R.R.L. A1 operators club.

South Middlesex.—G3JG is ready to go. 2LA and 8HN using doublets. 6GB built and testing N.F.D. transmitter, 6LW worked Malta with 3 watts on telephony, 8MK leaving the district (sorry to hear it, o.m.—D.R.), 2CAL has built nine-valve super-het for five bands, complete with switch-in beat oscillator and noise suppressor., 2DDV heard some good DX.

Bucks.—G2RL likes 6D5G as PA., 6JK has a new rig with 6L6. 8VZ using Super-Gainer, 2AKZ, 2BAO and 2BVX active.

DISTRICT 16 (South Eastern)

The District Conventionette will be held this year at the Adelphi Hotel, Hastings, on Sunday, July 24.

The Thames Valley Amateur Radio and Television Society Annual Dinner held at Twickenham on April 2, 1938.

A conventionette is definitely *not* the concern solely of those people in the District itself; it is a social event open to *all* members everywhere who appreciate a pleasant day's outing together with a reunion with old friends, and a meeting in person with some of those who, over the air, are but call-signs. There is no need to hold back, either, on the score of the day being uninteresting to the YL or XYL, as one of the objects of the organizers of this event is the arrangement of entertainment specially for their benefit. Full details of the programme will appear very shortly, but in the meantime note the date, and tell your friends. We, on our part, will do our best to ensure that your day in Hastings will be an enjoyable one.

Ashford.—Members recently visited G6PA and inspected the superhet on which he has been engaged for some time. 2JV is on 56 Mc. Stations active include 2KJ, 2QT, 8RK and 2DCL.

Bromley.—Fifteen members attended the meeting on April 23, when the NFD and London stations' films were shown. Following are active: 2GB, 2HG, 2NK, 3GK, 8DN, 8GX. Next meeting will be on May 21, at ACS Radio, at 8.15 p.m.

Brighton.—Local members hope to be operating a portable 56 Mc. station at week-ends in the near future. 'Phone and ICW will at first be used, but CW will eventually be employed. Call G8OQP.

Chichester.—The new Hon. Secretary of the W.S.S.W. Club is Mr. C. J. Rockall (G2ZV), "Aubretia," Seafield Road, Rustington, who will be pleased to hear from prospective members. At the meeting on April 13, Mr. E. Cholot, of *Messrs. Lissen, Ltd.*, demonstrated receivers and short-wave gear generally, and a large attendance spent a very interestng evening.

Eastbourne.—The following report: 2AO, 3CX, 5BW, 5IH, 8CP, 2ARQ, 2CNO. There is considerable 56 Mc. activity locally, and 5PR, of Horam, has contacted 2AO and 5IH on that frequency.

Gravesend.—The DR regrets that he mislaid the notes for last month, which accounts for their non-appearance, so the following covers activity during March and April. Lectures: 362 *Valve Co.*, on "RF Pentodes and their Application," including supressor grid modulation; G6PG, on "UHF receivers and reception"; 2BVH, "Public Address and LF Amplifiers." The Club has been granted a portable 56 Mc. licence, G3GP, and the gear is being constructed by 6PG. The Club now has access to some useful measuring apparatus ,including a Standard Signal Generator and Cathode Ray Oscillograph, thanks to co-operation from the manager of the local branch of *Messrs. Curry's Radio.*

Maidstone.—The M.A.R.S. is enjoying excellent support, and have recently had lectures from Mullards and Lissen. 8UC has constructed a successful CO, BA, FD, PA transmitter, and is active on 7 and 14 Mc.

Tunbridge Wells.—Membership of the local society is now 15, and regular meetings are being held. Details from 5OQ or 2UJ. 2UJ has both vertical and horizontal aerials available on 56 Mc., and is active whenever possible from 22.00 B.S.T. onwards with CW. 6ML is on 1.7 Mc., in addition to 14 Mc., and would welcome QSOs. G5KV, 5OQ, 6OB, 8NO, 2AKQ, 2CUS, 2CUX, 2DIC are active.

Whitstable.—3BD, 5CI and 2AAN are active, but have nothing special to report.

DISTRICT 17 (Mid-East).

The D.R. wishes to thank all members for their whole-hearted support with the N.F.D. arrangements.

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53 VICTORIA STREET LONDON, S.W.1

Grimsby.—An Area Meeting was held on April 22, with an attendance of eleven members. The next meeting will take place on Friday, May 20, when it is hoped for a larger attendance. The following stations report active : G2QA, 2VY, 5GS, 5SX, 6AK, 6YN, 8PV, 8CI, 8JN, 2BXG, 2DDO, BRS2722 and 3296.

Cranwell.—The Cranwell group are very actively engaged in the formation of the new R.A.F. Amateur Radio Society.

Horncastle.—All District members will wish 2AAS a speedy recovery after his long and serious illness. 2AAS is in Horncastle again.

Lincoln.—G5XL is arranging N.F.D. details and equipment. 2CFT is also putting in some good work and preparing for Morse test.

Boston.—We have to congratulate BRS2906, who obtained an AA call *and* an ex-YL during Easter week ! 6GH has collected enough cards to enable him to obtain the B.E.R.T.A. 8BQ has completed his rebuild and contacted XU.

Mablethorpe and Sutton.—G5BD, having worked YV and CO on 14 Mc. 'phone and TI on 28 Mc., has now contacted 101 countries. 2FT has worked PY and VQ2 for new countries. 5LL reports active on 7, 14 and 28 Mc. 'phone. 5CY is also on four bands at week-ends.

DISTRICT 18 (East Yorkshire).

Hull.—At the last meeting there was an attendance of 28 to listen to Mr. Clark, of the Leeds G.P.O., who gave a very interesting and instructive talk on " The Suppression of Interference," which was closely followed by all present.

Those members who were able to attend the York P.D.M. were well rewarded by the fare provided, and our thanks go to all those persons responsible for arranging an enjoyable day. Also, special thanks to G6CL for his interesting speech on current topics and an outline of the agenda at the Cairo Conference. Last, but not least, the decisions and results of the D.R.'s Conference, which appeared of great interest to all present.

Scarborough.—G2TK testing 4 half-waves in phase capable of being rotated on 28 Mc. Congratulations on W.A.C. award. 5MV now licensed for 28 and 3.5 Mc.—using T55 in final. 6TG recently re-built for higher power and applied for same, experiencing trouble with aerial on 28 Mc. 8BB testing doublet aerial on transmitter and would welcome reports. Other stations active: G2CP, 5GI, 6CP, 8KU, 2DSB, 2DSY and 2DDY.

In spite of renewed efforts by the D.R., T.R. and the Scribe members seem reluctant to report, and as usual we have only a chain of call signs reputed to be active. May we appeal again to all members to keep the District active by sending in some practical reports and attending the monthly meetings ? Will Bridlington please note ?

SCOTTISH CONVENTION, 1938

If you intend visiting the Great Empire Exhibition, why not make your visit coincide with the first all-Scottish Convention, which will be held on September 17-18, 1938, in Glasgow ? Look out for full details in the June BULLETIN.

Scotland

Possibly the most important news of general interest is that the first meeting of the Scottish Convention committee has taken place and preliminary plans have been discussed. It is expected that most of the complete programme will be ready for publication in the June issue of the BULLETIN. National Field Day is now approaching rapidly and all districts have arrangements well in hand.

" A " District.—No news of general interest is to hand. Meetings this year will continue on into June and a meeting will take place on the last Wednesday of June as usual.

" B " District.—No news at time of writing.

" C " District.—All meetings will be held in future at Broughty Ferry every third Tuesday. 2CLA and 2CLD have been granted the calls GM3IX and GM3IW. GM3IX is doing good work on 7 Mc. phone. 2CMA has a nice valve frequency meter under construction.

" D " District.—Meetings continue to be well supported and a talk is usually given at each ; recent speakers include GM2SP, who spoke on " Hints and Kinks," and GM2ZN on " Modulation." GM6SR has a daily sked on 56 Mc. with G6YL at 13.40-14.00 and 22.00-22.30, but so far no results have been obtained. The only reports on his 56 Mc. transmissions from outside the district have come from GM6JJ. Seven members of the district visited " H " district and had a very enjoyable evening. All members of " D " district are active.

" E " District.—Mr. J. R. Adams, GM5KF, has been forced to resign as D.O. owing to his transfer to Rothesay. At time of writing, no arrangements have been made for successor,; details will appear in the next issue of the BULLETIN. GM6ZV will handle any queries, etc., in the interval. We thank Mr. Adams for his services during his term of office. 2BKC is now GM3HY.

" F " District.—N.F.D. arrangements are well in hand. GM6RV is working much rare DX on phone. 2AJP has applied for full licence.

" G " District.—Preparations for N.F.D. are forging ahead and it is expected that the catering will be good, BRS3103 having been appointed cook. GM6RG has entertained the district with his efforts at erecting a rotary beam aerial for 28 Mc. Well constructed, it is a landmark and enhances his radio site. Rumour has it that jackdaws are now nesting on it ! GM8RV is trying out a NC18X.

" H " District.—Two stations will be put into operation for N.F.D. this year. The district greatly enjoyed the visit of seven members of " D " district. GM6JJ is active on 56 Mc. and would appreciate reports from anyone who hears his signals. Meetings are very well supported and all members of the district are active.

Northern Ireland

The sympathy of all GIs goes out to the popular Hon. Secretary of the R.T.U., GI8DB, who has had the tragic experience of losing a friend in a boating accident in which 8DB was the survivor. Our relief on hearing of 8DB's safety, our admiration for the courage of his brother, who swam to the rescue, and our sorrow at the tragic passing of a friend of a friend are very real.

Activity is on the increase in GI, and a few new calls are appearing. Congratulations to 2BFJ, who is now GI3ML—may your signals never be more

than 2dB down on G5ML! GI5AJ has got A.C. at last and is "going places." 5MZ, 8UW, and 8PA are busy with 14 Mc. phone and doing good DX. 8TS has a new rig and is using a flat-top beam. 6YW is active on 14 Mc. after a lapse of 2½ years, but finds that DX is better now than then despite the phone QRM.

As these are the last notes from the present writer, he wishes to thank those who have helped him during his period of office, especially the T.R. for Belfast and the officers of the local Societies. He would earnestly ask that his successor be accorded an even greater support, and in taking his leave offers his best wishes to all in the District.

Egyptian Notes

Summer conditions are definitely on the way as is evidenced by the falling off of eastern DX, also the return of QRN to the higher frequency bands. Noise level has been very troublesome at times and often accompanies a period of bad conditions.

On 7 Mc. no activity has been reported, probably for the reason already mentioned. This band will remain dead to us now until about next November or December.

14 Mc. began to show promise at the beginning of last month, but bad fade-outs were noticed during the week-end commencing April 22. Even G stations, which had been coming in on telephony all night until the early hours of the morning, were affected. The last week, which should have been a peak period, was spoiled by heavy QRN and generally bad conditions, DX breaking through for only short spasmodic periods.

28 Mc. has seen more activity in SU than during any other single month of the season; however, this band has now died out again so it will be deserted until winter comes.

SU1AM has been very active on 14 Mc. using phone. Much interesting new ground has been covered and plenty of real DX worked with good reports from PY, VE, W, PK, VU, etc. Only VK robbed him of both W.B.E. and W.A.C. He recently set sail for Europe for the summer and honoured SU1RD, SU1SG and the writer with a very pleasant interview immediately prior to his departure. We take this opportunity of wishing him a most pleasant time during his absence and trust that his VK QSO will greet him on his return.

SU1RO has been putting in quite a lot of time on 28 Mc. and has had some good QSO's among which was a "first" CX/SU contact on phone. He also is still in need of a VK or ZL for WAC and WBE on that band.

SU2TW reports very little activity this month. Apart from some phone work, no item of interest can be recorded as he has been busy in directions other than wireless. His tests with the W8JK beam have therefore not materialised.

SU1RD has now qualified for his WAC phone and has been getting much better results with a half wave horizontal than with the old vertical. Congratulations OM. A P.P. final stage for a pair of 35T valves is well under way and it is hoped to give this a trial in the near future.

SU1SG is completely rebuilding to a rack and panel type. The rack has been made chiefly with the aid of SU1JM. So far the power supplies for the R.F. portion of the transmitter together with the exciter have been completed and are quite satisfactory. The next item will be the Class C stage and finally the complete Class B modulator using 809's. It is expected to be ready for testing about the end of May if all turns out well.

SU1WM has finished building a separate E.C.O., using an 802 with a sufficient output on 28 Mc. to fully drive the P.P. 807 final stage. Activity has been maintained on 14 Mc. only and a fair amount of DX done. EP5SO was worked before that station closed down and after waiting for two years, three successive QSO's with K6 were made. The only other contact worth mentioning was one with VP3TEST with the usual request to QSL via VP3BG.

SU1WM.

Swiss Notes

At the annual convention of the USKA held in Fribourg the following officers were elected or re-elected :—

President : H. Büchler, HB9AA.
Vice-President and Hon. Treasurer : G. Bieri, HB9RBA.
Secretary : R. Bazzi, HB9RNW.
Traffic Manager : R. Stuber, HB9T.
Research Manager : M. Wenger, HB9RMC.
Editor *Old Man* : H. Brechbühler, HB9M.
QSL Manager : F. Roder, HB9RMD.

Between March 28 and April 1 HB1AD was operating on 56 Mc. at the Jungfraujoch, altitude 12,000 ft. No DX was worked but numerous French airplane stations (probably military) were heard, transmitting code messages by phone. A regular sked was held with HB1S (distance about 50 miles), with S9 on both sides. The tests will be continued, probably in August, and we hope to be able to publish some information on this later.

On July 2 and 3 numerous HB stations will be working on 56 Mc. from various mountains, and we should appreciate very much if those interested would listen for us.

The USKA will be participating in National Field Day, 1938.

The number of amateur transmitting stations in Switzerland is now 90.

The new official address of the USKA and the Swiss QSL-Bureau is USKA, Berne, Switzerland.

This photo of VQ8AS is interesting for its absence of apparatus. The little TPTG is visible with a small receiving valve, and yet with this he quelled a rising of natives on a small island in the Solomon Group

BRITISH EMPIRE NEWS AND NOTES

British West Indies (Eastern Group)

By VP2AT.

Stations in Antigua are at last able to obtain official licences. This news was made public at the end of March, but full details regarding regulations, if any, are not available at the time of writing. The only change brought about so far is a revision of our call signs. So far only four have been announced : VP2CD becomes 2AB and 2TG becomes 2AD. 2AA has been reserved for any Government station that may be put into operation, 2BX becomes 2AC and 2AT remains the same. The announcement of the other calls is awaited with interest, and it is hoped that in next month's notes it will be possible to give a complete list .

On account of serious illness in the family, 2AT has had to move into the country, but the shack remains at the former QRA. This accounts for the absence of notes last month.

VP3TEST (often sounding like 3NST or 3NV) now turns out to be former 3BG. Evidently some new regulations have been made in VP3, because in a QSO with him he said that he is not allowed to use telephony until he is able to send and receive 15 w.p.m. This station used to be active on 14 Mc. phone, but may now be heard on about 14,400 with a T9x C.W. signal.

VP2AT was able to get in a few hours during the A.R.R.L. phone contest, when a first trial was also given to 28 Mc., with surprisingly good results. 6YB and 6TR were also active, the latter only on 14 Mc. Other stations working during recent weeks are 2AB, 2AD, 2BX, 2LB, 4TI, 6LN, 6MR, 6MO.

Conditions continue poor on 14 and 28 Mc., but there have been a few days when DX signals have come over at fair strength, especially on the former band.

Ceylon.

By VS7RP.

Conditions during March on both 7 and 14 Mc. were for the greater part very bad, and little or no DX was possible. Afternoon and evening thunderstorms were very pronounced, resulting in heavy QRN. An improvement on the 14 Mc. band should manifest itself by the middle of May, when South-West monsoon conditions show signs of arriving. A few Sunday morning contacts have been made between various Ceylon amateurs on 7 Mc. and quite good results obtained.

VS7MB reports similar conditions as mentioned above, except that later in the evenings the 14 Mc. band has been open for European contacts. 7MB also reports that 28 Mc. has produced good QSO's with W. 7MB has now qualified for W.A.C. on Telephony. Congrats, OM.

Malta

By ZB1E

Arrangements for the forthcoming N.F.D. are well on the way with hopes for good weather in view of a new site and the size of the bell-tent ! Conditions are improving on the 14 Mc. band, but although LUs and PYs come in at S6, it is still very difficult to effect a South American contact.

ZB1H is waiting for gear for his modulator, and 1L is back on the air with a new modulator employing a pair of 6L6s in push-pull. ZB1R has rebuilt completely, using rack mounting, all power being supplied from secondary cells. Grid modulation and a Windom aerial are contemplated.

The following new calls have been issued and we wish the recipients the best of luck :—ZB1T to ex-G5BO, who is on the air on both CW and phone ; BERS434 becomes ZB1U, and is already on the air on 14 Mc., with an input of 30 watts ; and BERS-474, who becomes ZB1V, and is also on the air on 14 Mc.

New Zealand.

By ZL3AZ.

Activity here has been at a low ebb lately on account of poor conditions on the high frequency bands. The bottom appears to have dropped out of 14 Mc. in Christchurch, and nothing of note has been worked.

The one bright spot has been the announcement that ZL1GX has passed his 100 countries mark. Last advices from Auckland give his total as 104. He has also attained W.A.S. To the best of the writer's knowledge, he is the first in N.Z. to accomplish this feat.

The new 14 Mc. telephony permits in N.Z. total 12 at the time of writing. Some of the North Island stations have already accomplished W.A.C. on phone on this band. For the benefit of readers who may not know of the restrictions on telephony here, the times of operation are from midnight to 7 a.m. N.Z. time, which corresponds to 12.00 to 19.00 G.M.T. during our session of summer time observance, *i.e.*, from September to April.

The President of N.Z.A.R.T., Mr. L. G. Petrie (ZL2OV), is at present in Australia at the World Radio Convention. All here await his return to hear of his experiences at the Convention.

Northern India

By VU2AN *via* G5OV.

Conditions during the month have been poor, although signals from CE2BU have been heard daily around 12.00 G.M.T. on 14 Mc.

QRN has been heavy, due to local monsoon storms.

VU2EO reports a rebuild to rack and panel design. His all D.C. mains transmitter was recently described in the local letter budget. He hopes to do some 56 Mc. work with VU2FV during the summer months. VU2DR has been heard putting out some nice phone and working G. VU2AN, after a third change of QRA in six months, is also now on D.C. mains with a pair of 6L6's and trying to find an aerial which will get out when surrounded by power lines.

Will Northern Indian members please send along the notes to VU2AN by the 15th of the month while VU2LJ is on leave ? Don't forget the S.S.S. Mac !

South Africa

Division One.—We wish to tend our deepest sympathy to Mr. Shoyer, ZS1H, on the tragic loss of his mother in a motor accident.

ZS1B reports contacting G8QL on C.W. and PY4CT on phone, while his aerial was not connected, the feeders being at least four feet away from the rig, so there could be no pick-up. G8QL reported the signals as RST559, later fading to S3. PY4CT reported phone as S8/9. ZS1B is now trying to WBE and WAC without an aerial!

A regenerative pre-selector has been added to ZS1B's NC100, and he recommends any amateur who is troubled by image from the German Short-wave Broadcast Station to build one up. The circuit was taken from Jones's 1938 Radio, and besides completely cutting out image frequencies, there is a good gain in all-round performance.

ZS1AN is working 7 Mc. and would like QSO's; he reports the band is good for DX; numerous G having been heard, and a few worked. ZS1BO, ex ZT1E, raised his first phone DX by working LU5CZ. This station now possesses a new NC100.

Congratulations to ZS1AH on scoring the highest points in South Africa in the German Contest. ZS1CU, ex ZT1A, is off on his travels again, this time as W.T. on the S.S. *Aloe*. ZS1AX, owing to his house QRA having no power supply, has built a power unit driven by an old motor bike engine, and is to be congratulated on the excellent results obtained.

Division Six.—Activity on 28 Mc. has increased, and DX much improved. This band is very popular at the time of writing, but several amateurs have expressed the opinion that present conditions will not continue favourable.

Conditions on 14 Mc. are still spasmodic; nevertheless, most of the DX is worked through this channel. The winter period is drawing near, and this band will gradually lose ZS calls.

The 7 Mc. band has become very busy of late, and most ZS amateurs can be heard in this field. Pleasant contacts with coast stations are being maintained; and it is surprising the many new call-signs now in operation.

We hope the 3.5 Mc. band will be employed soon, and more use made of it. Presumably ZS amateurs are awaiting the winter months before attempting these frequencies?

All South African amateurs are now using the ZS prefix, and the ZT and ZU groups have become obsolete in this country. The change-over has caused many inconveniences but is acclaimed as an improvement in localising international zoning.

ZS6DM, using C.W. on 14 Mc., has been successful in obtaining contacts with all Continents. His input is 35 watts, and the aerial in use is a vertical Windom, 33 feet in length.

ZS6C is active on 14 Mc., and has contacted W6 and K6. 6AM is operating on 7 Mc., using Class B modulation. His new address is 7, Roux Street, Townsview, Johannesburg. 6BL and 6DZ keep schedules on 14 Mc., and are interested in "break-in." Both stations use C.W. 6BT, ex-ZT6AQ, has constructed a Path Indicator on a Globe, and now works DX to order!

We believe that ZS6M is active in Bechuanaland, using the call-sign ZN1B, in the 14 Mc. band.

BOOK REVIEWS

THE RADIO HANDBOOK. 1938 Edition. 512 pages and (x)N illustrations. Published by Radio, Ltd., Los Angeles, U.S.A. Obtainable from R.S.G.B. Sales Dept., price 6s. 6d. post free (to members).

Many attempts have been made by the writer to review this book. It came along during a rebuilding spasm, and all attempts to read it as a reviewer have ended in becoming absorbed in one section with only the immediate problems in mind.

There is no need to tell amateurs what it is all about—the book is exceptionally well-known. But one can say that the new edition has been revised in every chapter and is considerably enlarged. A praiseworthy feature of the book is that the reader is encouraged to design transmitters himself instead of being a mere copyist. There are many combinations of units quite suitable, and one is helped to select the best; the block diagrams of suitable arrangements will be very useful.

Another feature of this handbook, which impresses one more and more in every edition, is the trouble which has been taken to give the most detailed design data. The coil data, for example, is printed in heavy type in a "frame," and this, for some reason which has not been analysed, is most attractive.

The data on receiver and transmitter valves was always an outstanding section, and remains so. As an example consider the 6L6: full details are given for its use as a reversed-feedback amplifier, crystal oscillator with regeneration, tritet oscillator, regenerative doubler, neutralised buffer or doubler, straight audio amplifier, and push-pull amplifier with 60 watts output.

The section on aerials and feeders would be well worth the price of the book. The diagrams of directivity make the study of the various types very interesting because they present the operation in such a clear way. The treatment is a painless one while still being technically sound, and is just as helpful—in most cases, more so.

One or two things may be mentioned, not because they are of vital importance, but because they come to mind as being useful. A zone map of the world. The index is good. A list of countries by prefixes, and prefixes by countries. A very good amateur bands chart. A useful practical section on test instruments, including 18 diagrams of the patterns which may be obtained by a C.R.O. modulation check, and why—and how. Useful tables of coil winding data for all types, sizes and frequencies. The simple but effective receivers which should interest the BRS man and encourage him to "roll his own." The section on the alignment of superhets, and crystal filters.

But this could go on indefinitely. The book is of very real value and importance to amateurs, and will be of constant service to constructors and experimenters. It is really good value.

And now there was something in the aerial section which looked promising——.

T. P. A.

EDITORIAL—(*Continued from page* 593.)

to "educate" its administration in the work its members are doing, our chances of continued occupancy are in jeopardy.

As mentioned in our last issue the 112-120 Mc. band appears to be slipping from us, but we have sufficient faith in the G.P.O. to believe that they will take steps to allow genuine experimenters to continue their work by authorising the use of a channel at some other part of the V.H.F. spectrum.

The main lesson of Cairo can be summed up in a few words—unless the R.S.G.B. had prepared its case on sound technical grounds, and unless we had been prepared to support the A.R.R.L. by sending our President to Cairo, we British Isles amateurs would to-day be actually in the unhappy position suggested by the scaremongers who were so active a few weeks ago.

Cairo too, has taught us again, that experimental work alone will enable us to retain our frequencies. Have you joined R.E.S. ?

CAIRO CONFERENCE—(*Continued from page* 607.)

(*b*) 3,500-4,000 kc. (*a*) Amateurs; (*b*) Fixed; (*c*) Mobile.

(*c*) 7,000-7,200 kc. Amateurs. 7,200-7,300 kc. (*a*) Amateurs; (*b*) Broadcasting. It is understood that on the American Continent this will remain Amateur.

(*d*) 14,000-14,400 kc. Amateurs.

(*e*) 28,000-30,000 kc. Amateurs and experiments

(*f*) 56,000-60,000 kc. Amateurs and experiments.

(*g*) 112,000-120,000 kc. Regional agreements. On the American Continent Amateurs have 112-118 Mc.

The Convention comes into force on January 1, 1939, so far as the Regulations are concerned, and the frequency allocations become operative on September 1, 1939.

* * *

Members will probably be wondering what impressions we have brought home from the Conference. For some years we have expressed belief that it is our experimental work which will enable or help us to retain our bands of frequencies. The Cairo Conference has impressed us that our belief was correct.

BROADSIDE RADIATIONS—(*Continued from page* 612.)

differentiate. The *bona-fide* technical big brother talks short, straightforward stuff without the frequent use of the words "I," "Me" and "My." His tone is quiet and matter of fact. The LUFP, on the other hand, waves about words of many syllables, his speech is unctuous and grandiose, and in the telling there is small doubt that his brain leaves Franklin, Ladner, Stoner and Terman panting behind. This offence may be quickly discouraged by the simple procedure of flipping the receiver switch to the "off" position.

Inspector Wotcher is touring the country in the "Examination and scrutiny van." This van contains cathode ray oscillographs, harmonic analysers, field strength indicators and a "percentage of hot-air" meter. Since the inspector has sent in a requisition for one dozen more notebooks it seems probable that further offences will be designated in the near future.

Through the window I see Mrs. Bonglesock (how women do change their minds) trying to climb the pigeon puzzler with a basket of washing—so be good till next month—you'd better ! !

NEW MEMBERS—(*Continued from page* 641.)

C. L. Lester (BRS3302), 388, Pinhoe Road, Exeter, Devon.
J. Kelly (BRS3303), 33, Stuart Street, Nechells, Birmingham, 7.
F. M. M. Beerling (BRS3304), "Manyweathers," Salisbury Road, St. Margaret's-at-Cliffe, Kent.
R. J. Lawrie (BRS3305), 95, Overton Road, Kirkcaldy, Fife.
J. Demarco (BRS3306), 16, Scott Street, Galashiels.
P. A. W. B. Everard (BRS3307), Ratcliffe Hall, Leics.
K. C. Mason (BRS3308), 27, Glencoe Street, Hull, E. Yorks.

Dominion and Foreign

V. I. Eloranta (OH2OB), c/o Finnish Wood Export, Ltd., Helsinki, Finland.
J. Simons (ON4AW), Meir 65, Antwerp, Belgium.
H. Bourne (SU1HB), 6, Sharia Tewfiq, Heliopolis, Egypt.
E. F. Wadsworth (VE5AAD), Box 93, Kimberley, B.C., Canada.
R. A. Priddle (VK2RA), 18, Park Road, Marrickville, N.S.W., Australia.
E. Blomfield (VS2AL), Ladang Geddes, Bahau, F.M.S.
J. D. Burgess (VS7JB), The Grand Motor Depot, Nuwara Eliya, Ceylon.
S. S. Perry (W1BB), 36, Pleasant Street, Winthrop, Mass., U.S.A.
L. B. Keim (W2IKV), 33, Sunset Drive, White Plains, New York, U.S.A.
C. W. Kirk (BERS435), 3, Transport Lane, Rosia, Gibraltar.
A. Nelson (BERS436), c/o C.P.C., Maracaibo, Venezuela, South America.
L. Dods (BERS437), 26a, Stella Maris Street, Sliema, Malta.
J. Cilia (BERS438), 44, Stda. Genio, Valletta, Malta.
L. A. Cope (BERS439), Wireless Experimental Section, Cherat, N.W.F.P., India.
Lieut.-Col. A. Jurskis (FRS42), Ingenieur-Radioelectricien E.S.E. Karotechnik, Sanciai, Kaunas, Lithuania.

QRA Section

Manager: H. A. M. Whyte (G6WY)

When sending in new, or changes of QRA, members are requested to print their names and addresses in block letters, as frequently signatures and names of streets are illegible. This necessitates reprinting the corrected address in the next issue of the Bulletin.

New QRA's

G2CJ.—S. Townsend, "Kingswell," Douro Road, Cheltenham, Glos.
G2DP.—F. G. Hoare, 6, Dunheved Close, Thornton Heath, Surrey.
G2FI.—Wm. W. Barnes, 30, Crichton Avenue, Wallington, Surrey.
G2NA.—H. Frost, "The Shrubbery," Wood Road, Codsall, Wolverhampton, Staffs.
G2SH.—J. Shearme, "Condora," Gyllyngvase, Falmouth, Cornwall.
G2BC.—David Willacy, 4, Morecambe Street, Morecambe, Lancs.
G3BI.—G. H. Williams, Silver Croft, Countess Weir, Exeter, Devon.
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