THE T. & R. BULLETIN

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CONTENTS

REAL CO-OPERATION

THE exploits of Bruce and his spider were as nought compared with the efforts which we have been making for years to interest the leading British valve manufacturers in our work. By dint of close co-operation we are at last on the threshold of a new era, for British valves made by reputable concerns are now available at prices strictly competitive with their American counterparts. For years the British amateur in need of a fairly high power high efficiency R.F. pentode has been compelled to pay £4 15s. for an American RK20. To-day he can buy a similar valve, probably an even more efficient valve, for the same price.

The low power man has been forced by circumstances to send his 27s. 6d. to America for a 10 watt valve of the RK25 class. For the same price he can now buy a British valve made by British labour in a British factory.

One of our largest valve companies has an equivalent of the 807 in production, which will sell at a strictly competitive price. Another firm are producing *first grade* 6L6G's which because of the Valve Ring have to sell at 16s.

For years leading British valve manufacturers have been forced to maintain a fixed price for valves with a rating below 50 watts. We have reason to believe that before long the leading companies will agree to reduce their prices for valves intended for amateur experimental work, thereby earning for themselves the gratitude of every British amateur.

The reasons for the popularity of American valves are two-fold—low selling price and high efficiency. With the knowledge that some of the most prominent British firms are producing amateur valves the question of efficiency can be forgotten ; with prices down to strictly competitive figures the other objection automatically disappears.

We feel certain that our members will show their confidence in British-made valves by using them wherever and whenever possible.

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The Cairo Conference had not concluded its work at the time this issue went to press, but from the information we have received from our President, who has now returned after six weeks in Egypt, we are more than ever convinced that his presence has been of the greatest value to the Amateur Radio Movement. An interim report appears in this issue, but when the full story is told we believe our members will share our view that the I.A.R.U. Delegates have rendered magnificent service, in face of almost insuperable difficulties. The fine support given to amateurs by the British Government delegation has been an outstanding feature of the Conference.

An Ultra-Modern 56 Mc. Transmitter

By J. N. Walker (G5JU).

EVERYONE interested in communication on 56 Mc. is aware of the important advantage to be gained by the use of a crystal controlled transmitter on this frequency, whether C.W. or telephony is used, but especially in the case of the former. At the same time, whilst continually intending to build such a transmitter, many amateurs keep putting it off. This is probably due to the fact that a complex design, using many doubler stages, becomes necessary, or, if the existing high frequency transmitter is pressed into service, the necessity of incorporating additional units results in a bulky whole. It is often difficult to find room for the extra apparatus, and for the supplementary high and low tension power supplies which may become necessary.

A design which cuts out all these disadvantages, and which, (a) occupies a small space, (b) can, if desired, be run entirely off one moderately rated power supply, (c) utilises only two valves, (d) gives a really useful output on 56 Mc., and (e) is simple to adjust, would appear to be a dream impossible of fulfilment. A few months ago this would have been the case, but a recent development in the manufacture of crystals has made such a design quite practicable.

The 28 Mc. Crystal

The *Bliley Company* have made available to amateurs their new HF. 2/10 crystals, and, although certain points have to be borne in mind when putting them into use, the crystal will be found very efficient and robust, it being permissible to allow up to 200 mA. crystal current.

Purchasers of a crystal are provided with the Bliley Engineering Bulletin E.5, and the important point to be noted is that which concerns the type of valve to use in the Crystal Oscillator position. The Pentode (or Tetrode) type, whilst usually employed in modern transmitters, is not suitable, because of the high input capacity, which acts as a bypass across the crystal, so that, should oscillation be obtained, the crystal cannot develop much R.F. voltage. Ordinary triodes will cause excessive feed-back on the crystal, due to the high grid-anode capacity, and crystal heating may result. The proper choice is one of the modern low-capacity, high efficiency triodes, and most satisfactory results have been achieved with them.

The anode circuit must be designed for maximum output, which means that a very low L/C ratio must not be employed. At a frequency of 28 megacycles the actual value of capacity of course is not very great, and a condenser having a maximum of 50 $\mu\mu$F, is suitable, the accompanying coil being chosen so that the working capacity is over 30 $\mu\mu$F.

The circuit constants given must be closely adhered to, as the latitude one can take with low frequency crystals is not available if good results are to be obtained.

The HF2/10 crystal has been designed specifically for 56 Mc. or higher frequency use, and must not be used to control a transmitter working on 28 Mc. The stage following the oscillator must be a doubler, to prevent excessive feed-back occurring.

The Doubler Stage

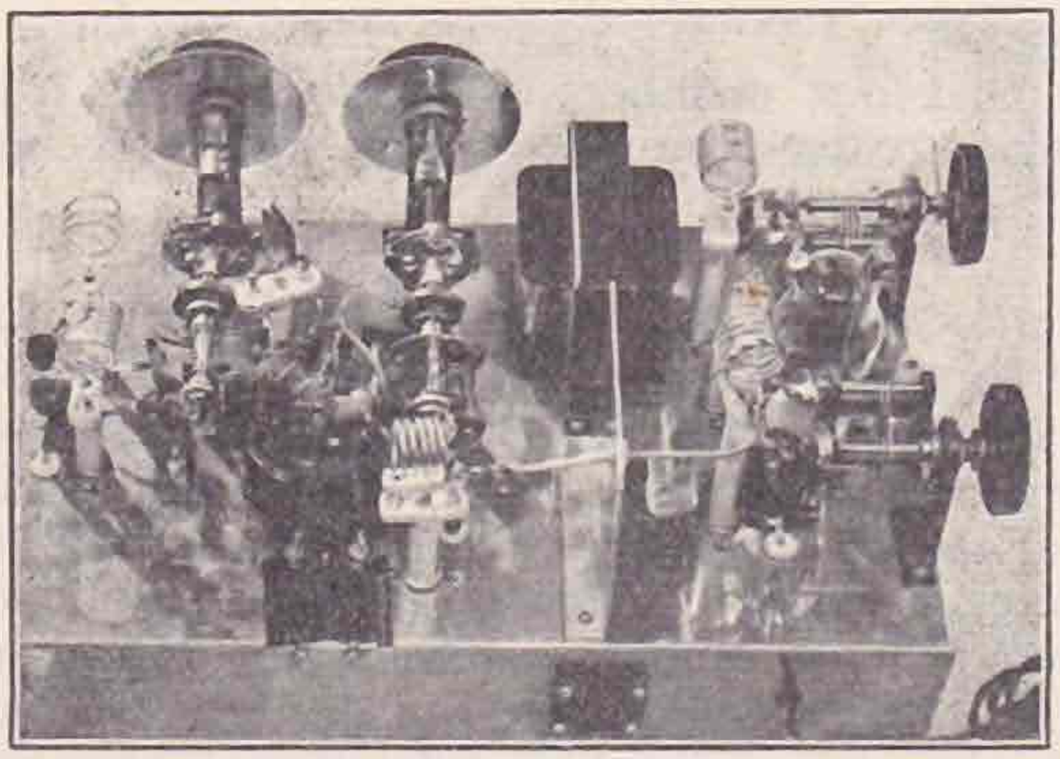
An entirely separate valve could, if desired, be used for the doubler stage, but it happens that there is available, in one glass envelope, a twin triode valve, possessing the necessary characteristics to make it very suitable for both the C.O. and F.D. stages. This valve is the *Standard Telephones* 4074A, which is fitted with a Ceramic 7 pin (American type) base, the anodes being brought out to two horns on top of the valve. The operating values are given below.

Fil. Volts	6.3	
Fil. Amps.	.8	
Anode Volts (max.) ...	300.	
Anode Current (per section)	30 mA.	
Anode Dissipation (max.)	10 watts	
Grid Anode Capacity ...	1.5 $\mu\mu$F.	Per Section (approx.)
Anode Filament Capacity	2 $\mu\mu$F.	
Grid Filament Capacity	2.2 $\mu\mu$F.	
Impedance	3,000 ohms	
Amp. Factor	13	

The wiring is simplified through only one valve-holder having to be wired in, instead of two.

Capacity coupling from the C.O. anode to the F.D. grid is employed, and the writer has found it necessary to alter the size of the coupling condenser to a value considerably less than that recommended by the *Bliley Company*. Sizes varying between .0001 and .00025 μF. are specified by the makers, but practical tests show that such large values result in the C.O. being very heavily loaded, with a consequent great reduction in output, whilst it may be impossible to get the crystal to oscillate at all. One of the 50 $\mu\mu$F. new disc type ceramic dielectric condensers made by *T.C.C.* was tried, and an immediate improvement occurred. The size could well be still smaller, and 25 $\mu\mu$F. is the capacity finally recommended.

Several of these special little condensers will be found specified for other parts of the transmitter,



Top view of Transmitter. The Neutralising Condenser is clearly visible behind the 4316A Acorn Valve, on right.

and, due to their very low losses, and small capacity to earth, they make a decided difference to results. It is very probable that their substitution for the mica type in any ultra-high frequency apparatus will result in a worth-while improvement.

A fairly high L/C ratio is desirable in the anode circuit of the doubler, and a small capacity condenser is specified.

The bias voltages for the two sections of the 4074A valve are obtained from a cathode resistor, which also protects the valve, should the crystal fail to oscillate, by limiting the anode current. Additional bias for the doubler section is obtained from a grid leak of 35,000 ohms. Values of 25,000 and 30,000 should also be tried experimentally, as a slight improvement may result with individual valves. The 1,000 ohm resistance in series with the C.O. grid choke is there to prevent a trace of low frequency oscillation, which occurred when the choke was connected direct from grid to chassis.

A further advantage, not at first apparent, is obtained through the use of triodes in the C.O. and F.D. stages, and this is that the output is bound to be on the correct frequency, as harmonics beyond the second are too weak to produce any effect. The writer has heard of several cases recently where transmitters have been reported as producing a very satisfactory output on 56 Mc., and it was subsequently discovered that the actual frequency was in the region of 42 Mc. Pentode stages were being used, and the wrong harmonic selected. Heavily biassed pentodes give good output on the third harmonic, and an absorption wavemeter is necessary to check the frequency.

The Power Amplifier

Having produced a few watts of radio frequency power at the desired frequency the problem of making the best use of it arises, and, bound up with this, is the choice of a suitable valve to act as power amplifier. Note the word " amplifier " !

It would be easy to put any valve in this position, but how much amplification, if any at all, of the input power would be obtained is a very different matter. The ordinary pentode loses its advantage of low driving power on the ultra-high frequencies, because of its high input capacity, whilst special types are not yet available.

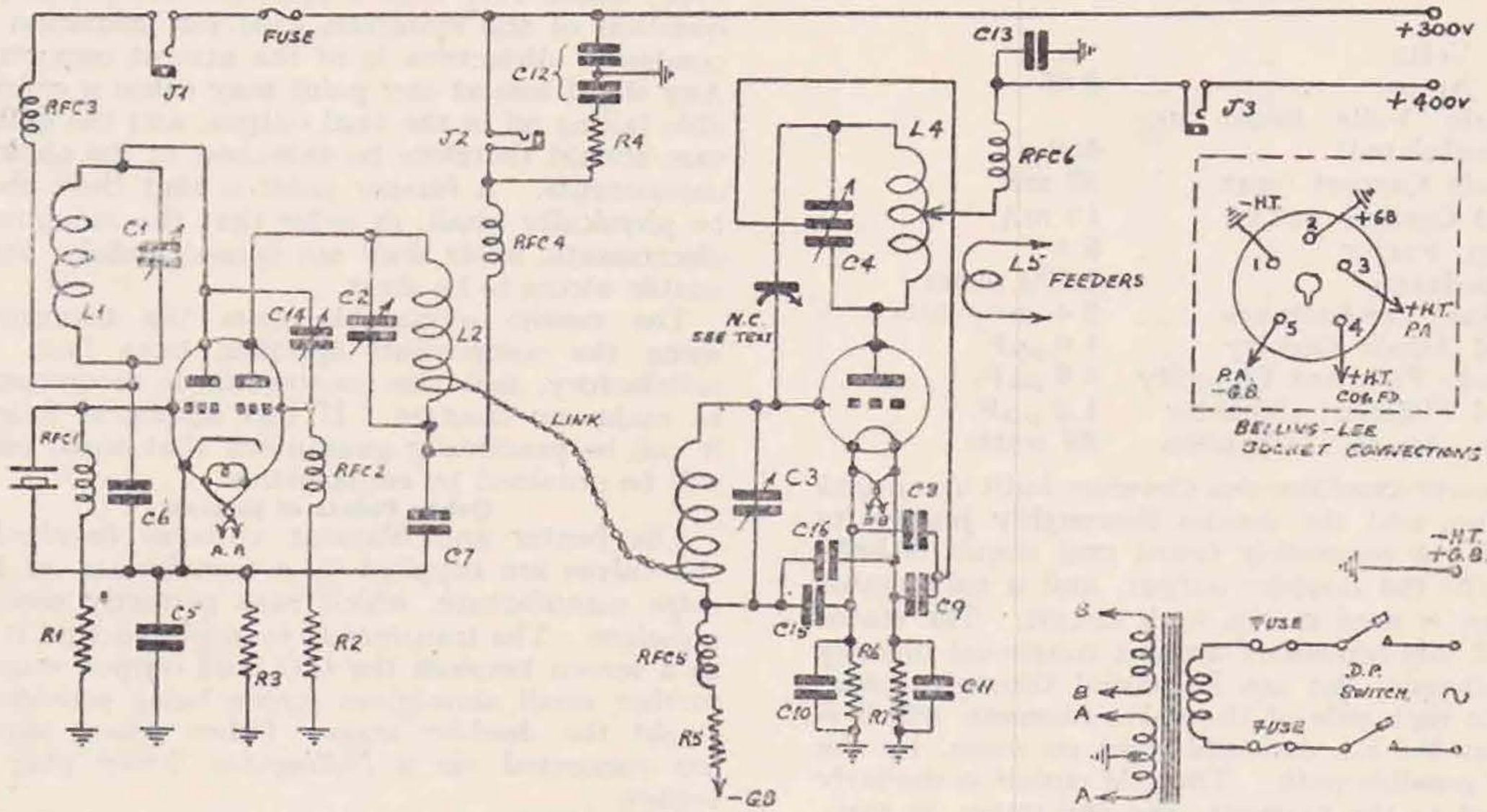


Fig. 1. Circuit Diagram of the Ultra-Modern 56 Mc. Crystal-Controlled Transmitter.

R1—1,000 ohms, 1 watt, Type F1, Dubilier.
R2—35,000 ohms, 1 watt, Type F1, Dubilier.
R3—400 ohms, 2 watt, Type F2, Dubilier.
R4—1,000 ohms, 2 watt, Type F2, Dubilier.
R5—5,000 ohms, 2 watt, Type F2, Dubilier.
R6, 7—50 ohms, 1 watt, Type BW1, Dubilier.
C1—45μμF, Variable, Single Midget with S/M, J.B.
C2, 3—15μμF, Variable Single Midget C2 with S/M drive, C3 without, J.B.
C4—15×15 μμF., Variable Twin Midget, J.B.
C5—.001 μF., Mica, Type M, T.C.C.
C6—.0005 μF., Mica, Type M, T.C.C.
C7, 8, 9, 10, 11—.0003 μF., Mica, Type M, T.C.C.
C12—.1×.1 μF., Paper Type, 87A/2, T.C.C.
C13—.0003 μF., 340, T.C.C.
C14—4/30 μμF. Trimmer, Type 1023, Eddystone.
C15, 16—100 μμF., Ceramic Cup Type, T.C.C.
RFC1, 3—R.F. Chokes, Type A, Q.C.C.
RFC 2, 4—R.F. Chokes, Type B, Q.C.C.
RFC 5, 6—R.F. Chokes, Type 1011. Eddystone.
Jacks 1, 2, 3—Single Closed Circuit Type J, with Insulating Washers, Bulgin.
Filament Transformer—2v. 4a., 6.3v. 2a., Partridge.
Crystal Bliley HF2/10 Raymart.
Crystal Holder. American 5 Pin Ceramic Raymart.
Mains Switch—Double Pole, Type S126, Bulgin.
5 Insulating Pillars, 1½ ins., Type 1029, Eddystone.
3 Insulating Pillars, 2½ ins., Type 1028, Eddystone.
6 Coil Holders, Type 1051, Eddystone.
5 Coils—L1 and L4, 8 Turns, Type 1050, Eddystone.
L2 and L3, 6 Turns, Eddystone.
L5, 3 Turns, Eddystone.
1 Terminal Saddle, Type 1046, Eddystone.
2 Flexible Couplers, Type 1009, Eddystone.
1 5-pin Plug and Socket, Type 1269, Belling Lee.
6 Adjustable Insulated Brackets, Type 1007, Eddystone.
2 S/M Knob Dials and Cursors, Type 1036, Eddystone.
Mains Fuse, 1 amp., Enclosed Type, No. 1033, Belling-Lee.
H.T. Fuse, 150 mA, open Type, No. 1034, Belling-Lee.
Valves V1, Type 4074A, V2 4316A, Standard Telephones.
Aluminium Chassis and Screen, 18 S.W.G., A.P.A., Ltd.
Metal Connectors, 4 B.A. Nuts and Bolts, etc., Bulgin.
Valve Holder American 7 Pin Ceramic Raymart.

The desirable characteristics of a suitable valve are :—(1) ease of driving, *i.e.*, high power output for a low input ; (2) low input and output capacities ; (3) low resistance filament of ample emission to avoid radio frequency losses, since the filament is part of the oscillatory circuit (such a filament will also be robust) ; (4) high wattage dissipation, as the efficiency obtainable will seldom be so high as on lower frequencies ; and (5) medium to low impedance, since it will be difficult to obtain, in practice, a high impedance output tank circuit to match a high valve impedance. One valve, especially made for ultra-high frequency use, possesses all these qualities, and this is the *Standard Telephones* Acorn Transmitting Valve, tupe 4316A. It is only $2\frac{1}{16}$ inches across and the special construction is demonstrated by the accompanying photograph. Nevertheless it is capable of dissipating 30 watts continually, the anode being fitted with heat radiating fins, and the glass being of the hard variety. The electrode connections are brought out to four short tantalum pins, resulting in short leads of low inductance, as well as low capacity. The working characteristics are given below :

Fil. Volts	2.
Fil. Amps.	3.65
Anode Volts (max. unmodulated)	450
Anode Current (max.) ...	80 mA.
Grid Current (max.) ...	12 mA.
Amp. Factor	6.5
Impedance	2,700 ohms
Mutual Conductance ...	2.4 mA/volts
Grid Anode Capcity ...	1.6 $\mu\mu$F.
Anode Filament Capacity	0.8 $\mu\mu$F.
Grid Filament Capacity	1.2 $\mu\mu$F.
Max. Anode Dissipation	30 watts.

The power amplifier was therefore built up around this valve, and the results thoroughly justify its selection. A separately tuned grid circuit is link-coupled to the doubler output, and a split stator condenser is used in the tank circuit. The stator plates of this condenser are not connected directly to the chassis, but are by-passed through a condenser to each side of the valve filament, which is the point the r.f. currents want to reach, by the shortest possible path. The grid circuit is similarly by-passed to the filament, and the latter, in turn, to the chassis. Two 50 ohm resistances are connected in series across the filament, the mid-point being earthed, to preserve electrical balance. Wiring the power amplifier stage in this way prevents undesirable circulating currents in the chassis, which, if they occurred, would react back on the earlier stages.

The value of the tank condenser is naturally small, but, in actual use with an 8-turn anode coil, the vanes are nearly fully open, giving a working capacity of about 7 $\mu\mu$F. This value is the correct one to provide the necessary "fly-wheel" effect when power is drawn from the circuit. The use of a larger coil and smaller capacity is not recommended, as it will be found that the available output will fall off.

Anode neutralising is employed, but the actual neutralising capacity necessary is so small that no separate condenser is provided, two small plates taking its place, as described later. Negative bias voltage is derived partly from a grid resistor, and partly from a 60 volt battery.

Choice of Components

It will be realised that, in a transmitter of this type, where very high frequencies are present, the question of the materials used for insulation and condenser dielectrics is of the utmost importance. Any slight loss at any point may cause a considerable falling off in the final output, and the greatest care should therefore be exercised in the choice of components. A further point is that these should be physically small, in order that the inductive or electrostatic fields shall not spread unduly, and to enable wiring to be short.

The results obtainable from the transmitter, using the components specified have been very satisfactory, and the constructor is recommended to make no changes. If this advice is followed it can be practically guaranteed that equal results will be obtained by constructors.

Other Points of Interest

The heater and filament voltages required by the valves are supplied by a transformer, of *Partridge* manufacture, which runs perfectly cool and noiseless. The transformer is so placed that it acts as a screen between the C.O. and output stages, a further small aluminium screen being provided to shield the doubler stage. Other power supplies are connected via a *Belling-Lee* 5-way plug and socket.

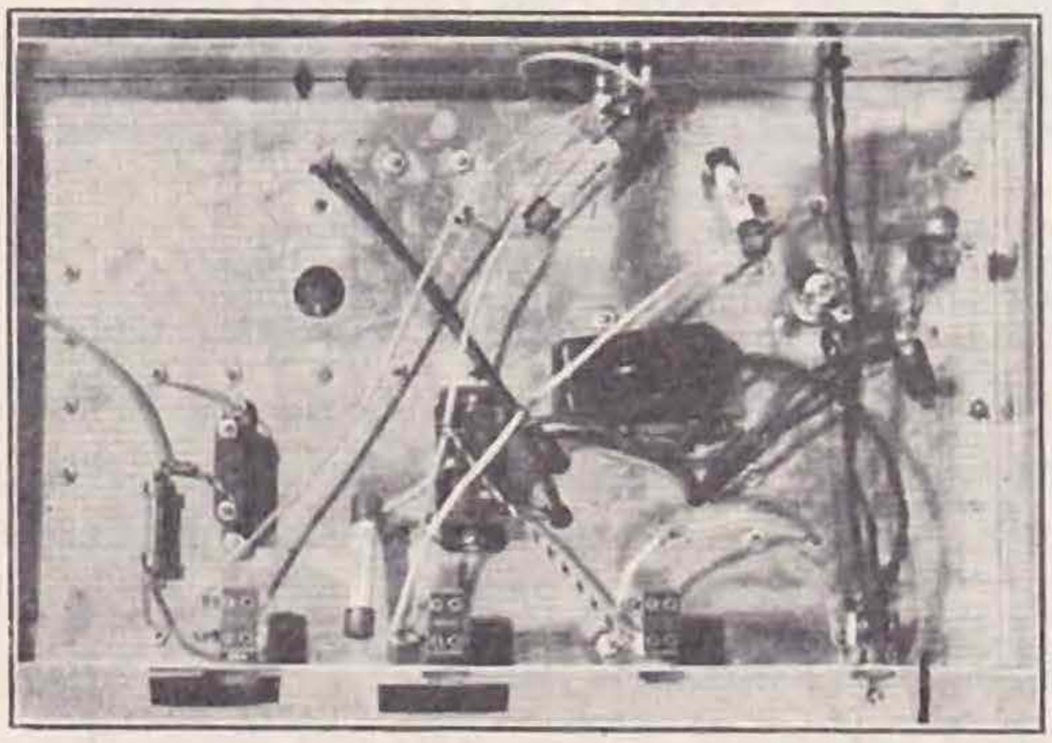
Three jacks are provided, so that a single meter may be used to measure the anode current of each stage. Keying is effected through the second jack, and a key-click filter is connected across its contacts.

Slow motion is desirable on all the variable condensers, as tuning is somewhat critical. Integral slow motion is fitted to the C.O. and F.D. condensers, and *Eddystone* slow motion dials to the P.A. condensers.

The coils are mounted well above the chassis by means of stand-off insulators, and all the wiring has been made extremely short. A special aerial coil is provided, and aerial coupling is discussed later.

Construction

An aluminium chassis, measuring 15 in. by 9 in. by 3 in., is divided into two sections, one of which holds the Crystal Oscillator and Frequency Doubler sections, and the other the Power Amplifier. The screen, which measures 4 in. by 4 in., is mounted



View of underneath of the U.H.F. Transmitter. The hole on left gives clearance to the valve pip.

5½ in. from the end, and the filament transformer is placed in line with and close against it.

The position of the various components on the deck is clearly illustrated in the photograph, and construction of the early stages is simple. The C.O. and F.D. coil holders are mounted on 2½ in. *Eddystone* pillars, which enables very short leads to be made to the associated condensers, at the same time keeping the magnetic fields of the coils clear of other objects, which might introduce unnecessary losses.

A 1¼ in. hole should be cut underneath the 4074A valveholder, to allow of the leads being brought to the pins clear of each other and of the metal chassis.

A short length of copper strip is soldered to the cathode pin, so that it projects each side, and the by-pass condensers from the tuned circuits connect to this, and not to the chassis.

C.1 is soldered between the strip and the chassis, a lead also being taken through to R2, which is underneath.

The ends of the R.F. chokes should be cut as short as possible where they connect to points of high r.f. potential. RFC1 and RFC2 are underneath, and RFC3 and RFC4 above, the chassis.

The *Bliley* crystal is plugged into an American 5-pin ceramic valve holder, which is held above the chassis by means of small white spacing pieces obtainable from *Raymart*. This also applies to the 7-pin holder for the valve, this holder being mounted with the filament pins towards the front, to allow of short R.F. connections.

The construction of the power amplifier is made a little difficult because of the unusual valve used. In order to obtain the shortest possible leads it was decided to mount the 4316A with the pins on top. A piece of 3 ply wood 3 in. by 2½ in., with a hole 1½ in. in diameter cut in it and chamfered smooth, is fitted ⅝ in. off the chassis, and on this the valve "sits," a hole being made in the chassis to give clearance to the "pip."

The anode and grid variable condensers are mounted as close as possible to the valve, with the coil holders (on 1½ in. pillars) opposite to them.

Connections to the valve pins are made by special sleeves, obtainable from *Bulgin*, which should be very carefully tightened up to grip the pins firmly. Flexible wire is necessary in order to obviate any strain on the valve.

The anode and grid by-pass condensers, C.9, 10, 11 and 12 are connected straight across from the "cold" terminals of condensers C8 and C11 to the filament pins, from which two leads are taken to a terminal block on the chassis. From this block C13 and C14, with R6 and R7 in parallel, are connected to the chassis.

A small piece of tinned wire should be soldered to the centre of the *Eddystone* 8 turn coil L4, connection being made to this by a tiny clip, as used for Acorn valve sockets, obtainable from *Bulgin*.

Extension controls are fitted to condensers C8 and C11 to avoid hand capacity effects, the details of the mounting being visible in the photograph.

To arrange a neutralising adjustment which would stay "put" and look neat was the most difficult problem encountered. The mass of metal in any commercial neutralising condenser would reduce the efficiency. The first method tried was to run a wire from the "far" side of L4 alongside the wire connecting C8 to the grid. It was found necessary to double back the wire, and to make it practically touch the grid lead, after which the valve neutralised perfectly. However, the condenser so formed had the rubber, covering the wire, as its dielectric, and was hardly "low-loss," especially at 56 Mc. A noticeable improvement was effected by the substitution of two copper plates measuring 1 in. by ¾ in. facing each other, one being soldered to the "far" end of C11, and the other inserted in the sleeve connecting to the grid of the valve. The distance between the plates was varied by the simple process of bending them nearer or farther apart. This arrangement was satisfactory, but as the valve is not firmly fixed (to avoid strain on the pins) it suffered from the disadvantage of not staying "put" and frequent re-neutralising was necessary.

This trouble was finally overcome by mounting the two plates on an *Eddystone* 1051 coil holder, this, in turn, being mounted on a 2½ in. insulating pillar, placed as close as possible to the valve. The leads to the neutralising condenser were thus kept very short. One plate was soldered beforehand in one coil holder socket and the other soldered in after the correct distance and adjustment was found at which neutralising was complete.

Incidentally the best way of neutralising this stage is to apply a potential of 250 volts or so to the anode, with the previous stage "dead," and adjusting until self-oscillation, shown by sharp upward flicks of anode current, does not occur when the grid and anode condensers are rotated. The loop and lamp method is unreliable because holding a loop near a coil reduces its inductance considerably, and upsets the circuit as a whole.

The link between L2 and L3 is made of enamelled 18 s.w.g. enclosed in a single piece of sleeving, and opened out at each end to form a single loop, the physical size of which should match the coil diameter. The link passes through an insulating bush in the screen, and the loops are fitted to the "cold" ends of L2 and L3.

The mounting of the aerial coil holder end of the ceramic terminal block for aerial connections completes the construction on the top of the chassis.

Underneath the Chassis

The three jacks are mounted with insulating bushes on the front, and connected in series with the H.T. supplies to the valve anodes.

Condenser C15, the purpose of which is to prevent radio frequency voltages being set up on the lead to the power supply (resulting in probable modulation of the signal), is fitted in any convenient position.

All the leads from the mains transformer come underneath the chassis, those for the L.T. supplies being long enough to reach the 4074A and the terminal block without joints. Note that the centre tap of the 6.3 volt winding is earthed, but not the 2-volt winding.

The transformer is protected by the *Belling-Lee* twin enclosed fuses, whilst a 150 mA fuse is also fitted in the H.T. lead to the 4316A. The *Belling-Lee* socket is mounted at the rear of the chassis, two of the pins, for H.T. negative and grid bias positive, being connected to the latter, and the other three as indicated.

Wiring can be conveniently made with 18 s.w.g. tinned wire, except those connections carrying

radio frequency current, *i.e.*, between the coil holders and condensers, and the by-pass condensers, in which cases thin copper strip is preferable. This can easily be made from copper foil, and its desirability is shown by the fact that the tank coil (of silver-plated 14 s.w.g. wire) becomes warm after the transmitter has been running for a short period.

Preliminary Trial

The C.O. stage should be first tested with an anode potential of 250 volts, both parts of the 4074A taking current, in order that proper bias (from R2) may be applied to the C.O. grid. Note that the correct anode cap is the one nearest the screen—should the anode connections be reversed a T.P.T.G. grid circuit is formed, which results in strong self-oscillation of the doubler stage.

No difficulty should be experienced in obtaining oscillation from the crystal, shown by the anode current increasing from a standing value of about 16 mA. to double this amount. Should, however, the circuit remain dead, temporarily disconnect C4 and try again. If oscillation now occurs it is evident C4 is causing too heavy a damping, and it must be reduced. A small mica trimmer, such as the *Eddystone* type 1023, may be used for C4, and it is then possible to adjust its capacity so that maximum voltage transfer to the doubler grid occurs.

If oscillation is still unobtainable the crystal should be dismantled and carefully cleaned with carbon tetrachloride, and also the plates.

When working properly the anode current of the second stage will rise from 16 to 30 mA or more, a dip down to about 25 mA occurring when the anode circuit is tuned to resonance, with the link not attached.

The 4316A output valve may now be neutralised, using 250 volts on the anode and 60 volts negative bias on the grid. Upon attaching the link and rotating C8 the anode current will be driven up from about 5 mA to 40 or more, with careful readjustment of C6 and C8.

Those who have had experience with ordinary valves employed as 56 Mc. power amplifiers know that on tuning the anode circuit to resonance the dip that occurs is usually very small. In the present case a large dip occurs, the current dropping back to 8 mA, indicating a very good match between the valve and tuned circuit impedances.

It is worth mentioning, in passing, that it is not possible to judge the output of stages tuned to 56 Mc. by means of either a loop and lamp or a neon bulb. As previously mentioned, the former alters the inductance of a coil, reducing it proportionately to the distance, resulting in the light given by the lamp diminishing through the circuit going out of resonance. A neon lamp adds capacity to the circuit, so that a similar effect takes place. Further, a circuit possessing a low L/C ratio will, other things being equal, give a brighter light in the loop and lamp, due to the circulating current being higher than that in a circuit of high L/C ratio. The opposite applies in the case of a neon lamp, a brighter glow obtaining with a high L/C ratio. In the present case a neon bulb will light fairly brilliantly when held against the tank coil or condenser, whilst some glow should also be obtainable when held against the anode caps of the first valve. It is difficult to obtain any light in a loop and bulb held near the doubler tank, due to the high L/C ratio employed.

With the anode voltages mentioned an input on load of 10 watts is easily obtainable, with an output much higher than that normally secured from such an input. The range is greater in consequence, and greater power does not offer much advantage for local contacts.

For DX work the voltage on the 4074A may be increased up to 325 volts, and on the 4316A to a maximum of 450 volts, although it is preferable to keep this latter down to 400 volts, the grid bias being increased in proportion. Under these conditions an input of 30 watts may be reached.

For portable use the H.T. leads would be connected together, and all stages fed with 300 volts or more. If this class of work is contemplated it would be well to insert small porcelain twin connectors in the leads to the valve filaments, so that the mains transformer can be easily cut out and battery supply substituted.

Aerials and Aerial Coupling

Aerials for 56 Mc. are a subject of their own, and it is not possible to discuss them at length here. The one which is at present giving good results in conjunction with the new transmitter consists of a wire 33 feet long, carrying four half waves, fed by means of *Belling-Lee* Low Impedance Cable at the correct point to secure a proper impedance match. This may be at the centre of any of the half waves, and is actually at a point 12 ft. 4½ in. from one end. The wire is cut, an insulator inserted, and the two ends of the feeder attached to the cut ends.

An aerial of this type (unphased) radiates four main lobes at an angle of 20/25 degrees to the line of the wire, and should be erected with this in mind. Many minor lobes are also radiated, and extreme directivity does not occur until the number of half waves reaches eight or more.

Many other types of radiators are possible of, course, including phased and reflector types, but it is recommended that any or all be fed with low impedance feeder. The losses occurring in this are very small, and one can be fairly certain that most of the energy transferred into the feeder is properly transferred in turn to the radiating system. The point is that it is easily possible to obtain very good impedance matching throughout, and the same cannot be said for other systems.

At the transmitter end all that is necessary is to loop a single turn of wire, connected to the feeders, around the centre of the tank coil, when it will be found that the anode current will increase considerably, provided the aerial system proper is resonant to the frequency of the transmitter. Adjustment can be made by varying the diameter of the coupling loop.

When employing 600 ohm feeders it will be correct to attach these to a three turn coil, the coupling of which to the tank coil should be adjusted for proper loading of the valve.

With other aerial systems it will be desirable to add a variable condenser to L5, so making a separate tuned circuit. An end-on or a Windom feeder can be tapped on to L5, one end of which should be earthed, at the correct point. It is very bad practice to tap directly on to the tank coil, as this will seriously upset the balance, and will probably throw the neutralisation out of adjustment resulting in self-oscillation and instability.

There is one further advantage not previously

(*Continued on page* 590.)

A Diode Phone Monitor.

THE little instrument about to be described is the outcome of a few hours' listening to amateur telephony transmissions on all bands and, in particular, 7 Mc. If some of the perpetrators of the horrible noises purporting to be speech could only hear themselves as others have to hear them then, perhaps, we should hear less noise and a little more telephony.

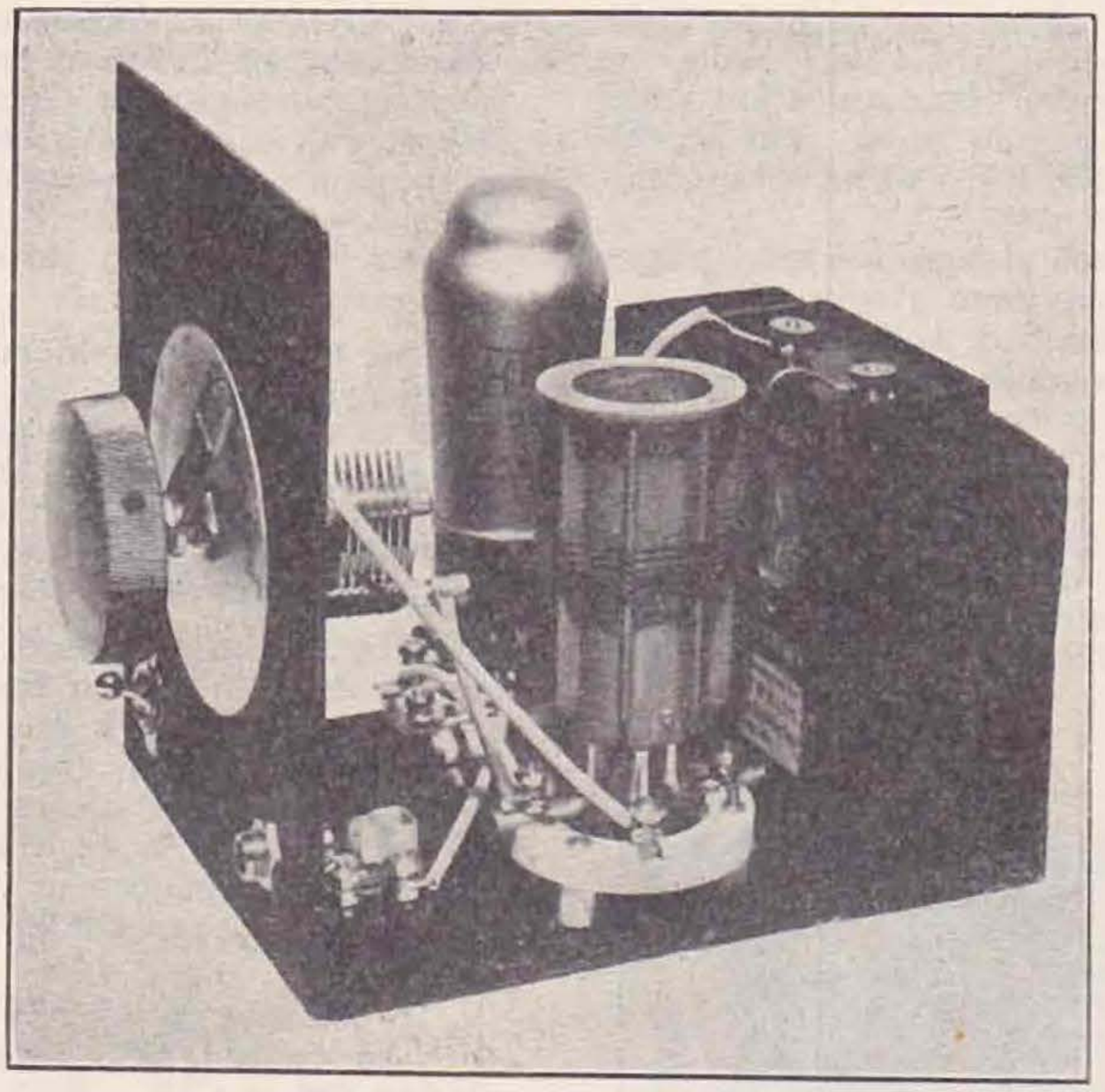
The usual method employed to monitor phone signals is to listen in the receiver with the aerial cut off and the gain controls reduced as low as possible. While this is better than nothing at all it is by no means perfect.

Back in the dim and distant past our forbears used to make use of a simple crystal set as a monitor for phone but owing to the vagaries of the crystal this was not a very stable instrument.

The most satisfactory method is probably to employ a valve working as a diode rectifier. Almost any small valve of the detector or small-power valve type will be suitable for this purpose. A battery valve works excellently and in a mains-driven station is isolated from the transmitter, as only a small two-volt accumulator is required for its operation.

For most purposes a three-volt dry battery of quite small capacity will run the monitor for months and in the instrument under discussion such a battery is used with a suitable dropping resistor.

The use of a battery-driven valve is not essential, however, and a mains-driven valve will work quite well, although, of course, there is the possibility of hum being introduced, which may detract from the faithfulness of the output delivered to the phones.



The completed Diode Monitor arranged for 14 Mc. operation.

Circuit and Construction

The circuit employed is as old as the radio valve itself and no originality is claimed on the part of the writer. However, for the convenience of the intending constructor it is given herewith. The photograph shows quite clearly the construction of the instrument and little difficulty should be experienced in this direction.

The chassis can be obtained from *Messrs. APA Supplies* or made at home, according to the wishes of the constructor. No. 16 gauge aluminium is the most suitable material for the purpose. Anything thinner than this will result in a very flimsy chassis and is not to be recommended.

The tuning condenser is an *Eddystone* 100 μμF microdenser and is fitted with a knob dial and cursor also made by *Eddystone*.

Two *Eddystone* Type 949 four-pin valveholders are used for the valve and coil, respectively.

The No. S.80 switch and the Type J.3 phone plug are both of *Bulgin* manufacture, as is the dropping resistor, which is a 10-ohm 10-watt power resistor, list No. A.R.10.

The rear end of the chassis is constructed to accommodate a "Gloria" No. 28 three-volt dry battery, which can be obtained at any branch of *Woolworth's*. The coils required will depend on the bands used by the individual transmitter, but for most purposes *Eddystone* four-pin coils, Types LB, Y, R, and W, will prove satisfactory provided that a 50 μμF fixed condenser is placed across the tuning condenser as shown in the diagram. Alternatively, an *Eddystone* "Scientific" 160 μμF condenser can be employed, when no parallel condenser will be required.

Wiring of the instrument may be done with No. 18 gauge tinned copper wire covered with sistoflex. No soldered joints are required as all the components are fitted with adequate terminals.

Operation.

The operation of the instrument is simplicity itself. With the phones plugged into the phone jack, and the filament switch in the "on" position the monitor should be placed fairly near the output side of the transmitter. Probably a rushing noise will be heard at once without swinging the condenser; however, on tuning correctly the sound will be much louder and, on speaking into the microphone, signals will be heard quite distinctly.

In the event of the signals not being loud enough, a few feet of wire can be attached to the plate terminal of the valve and trailed near the transmitter.

The person who builds this instrument need no longer wonder as to the quality of his phone; he will be in a position to know definitely how it sounds. Used in conjunction with an artificial aerial there is no reason or excuse for the all-too-common excrescences one often hears on the air.

The approximate cost, excluding chassis and the W. coil, is 25s.

See page 590 *for Circuit Diagram.*

A 56 Mc Transceiver of Proved Reliability

By G. McLean Wilford (G2WD)

THE transceiver to be described is one of a pair designed for some special tests carried out in conjunction with a Local Authority. One of the instruments was installed at a fixed location and the other in a motor car. High tension was obtained from either an *E.D.C.* 6-volt generator or a *Bulgin* Vibrator Power Supply unit, both of which were capable of giving an output of 45 mA at 240 volts. The input supply was obtained from a 6-volt car battery. For the fixed set an ordinary power supply was used for the heaters and H.T.

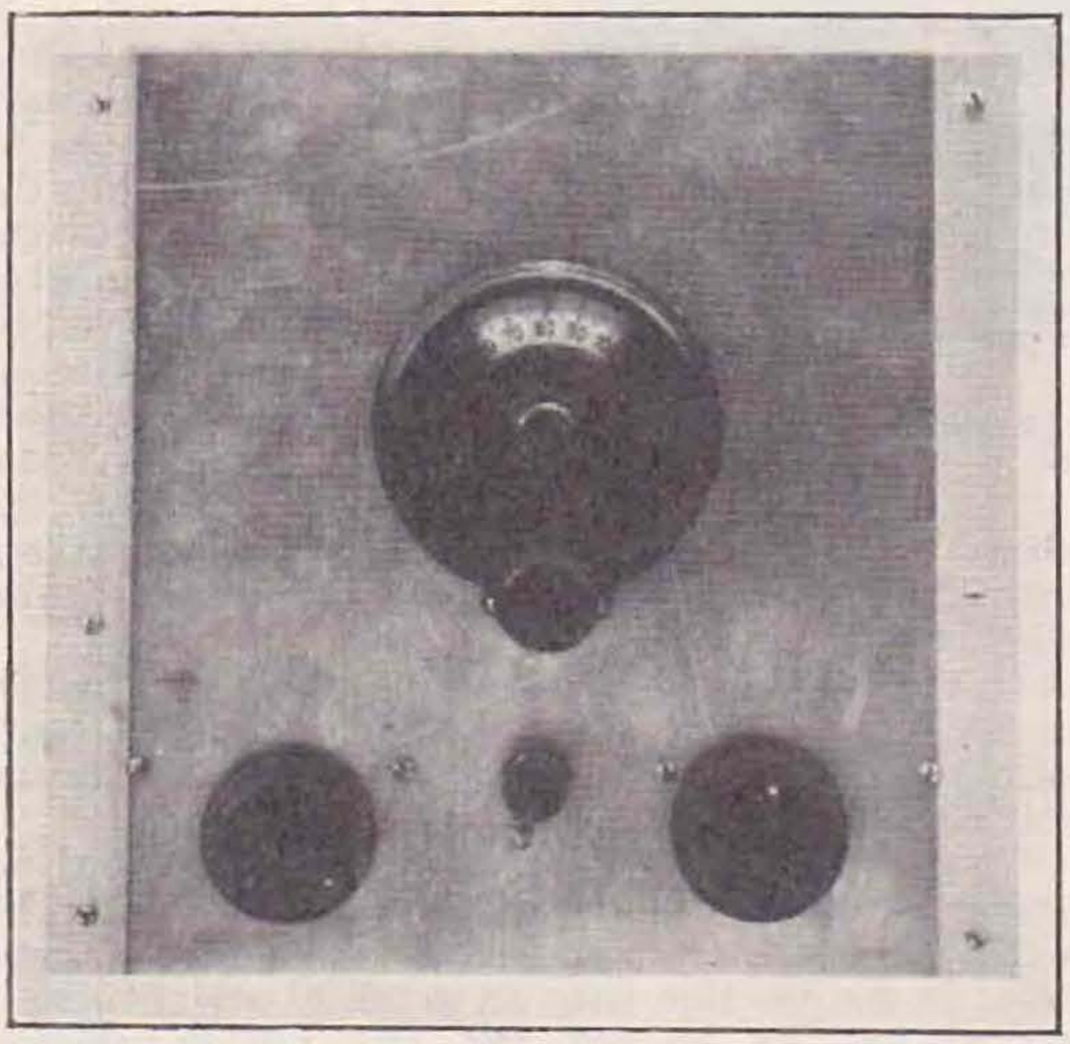
Performance

These tiny transceivers, measuring 8 ins. by 8 ins. by 8 ins., permitted reliable communication across the city of Birmingham up to distances of seven miles. The car, when cruising in between high steel buildings in industrial areas, was able to maintain reliable and regular communication with the fixed instrument during all tests. The signal reports invariably being S5, R9. All reception was by means of a loud speaker.

When the car was parked alongside a steel frame warehouse known to hold large stocks of metal, perfect reception was obtained at both ends, the distance between stations being 2½ miles.

The author is of the opinion that much greater distances could have been covered, but for the tests in question a radius of 3½ miles from the fixed station was all that was generally required.

Before commencing a description of the transceivers the writer wishes to record his thanks to Mr. C. A. Jamblin, G6BT, for co-operating in the tests.



56 Mc. Transceiver.

Front view of panel controls. Large dial main tuning. L.H. Knob Microphone gain control R.H. Knob regeneration control. Small knob between is a 4-pole C.O. send-receive switch.

Construction

The transceiver cabinet is based on a frequency meter-monitor described in the Bulletin some time ago. The structure is fabricated, the two sides and front and back being built on to an aluminium chassis plate, on to which on the underside were bolted ¾ in. by ¾ in. by 16 S.W.G. aluminium angles. The front panel was first attached to this chassis and all the high frequency wiring and components mounted and connected. This construction is shown in the photograph, the oscillator-detector valve having been removed from its socket.

The tuning condenser is mounted on an *Eddystone* DL9 bracket and the coil unit (*Eddystone* 1051 coil and base) on a 1½ in. frequentite pillar. An *Eddystone* insulating coupling is used between the condenser and front panel. The two RF chokes feeding through the chassis are *Eddystone* 1021, the screws being pin drilled to let the wire ends go through two small standoffs. These show clearly in the underside view. The aerial coupling condenser lead is taken through the side of the case in a similar manner.

The two valve-holders and mike/audio transformer are mounted to the rear of the chassis. The other three sides are then attached to the chassis, the aluminium angles at each of the four corners giving an extremely rigid and strong assembly. The underside view shows quite clearly the placement of the other components.

Attached to the front panel in the centre is a four-pole D.T. switch for changing from "send" to "receive." This has an "off" mid position. On the right is the volume control R5 and to the left the regeneration control R7. At the rear of R7 is the coupling choke, which is the secondary of a midget AF transformer. Next to this is the headphone or LS jack, cathode bypass and bias resistance for V3.

To the rear of R5 will be found C3 and R1 and in the centre R6. Attached to the mike jack below R6 is C10. Next is the bypass condenser and cathode resistor for V2. R2 is under these and nearby is the 5-pin valve socket which brings in the H.T. and L.T. leads to the set.

In the rear centre is CH1. The end of R4 can just be seen near the left-hand corner of this component. C6 is behind J2. The mike jack is edgewise to the chassis. C4 and C5 are one on top of each other near the coupling choke. C8 is immediately under CH1 and cannot be seen in the photograph.

In the top view C, L, C1, R and C2 are plainly shown, the last two being mounted on the condenser. The two R.F. chokes which come up through the chassis, as previously described, can also be seen. Thus all the H.F. portion is above the chassis.

The valve V1 is out of its socket, but V2 and V3 can be seen in the left- and right-hand corners respectively. T is between these two. All leads

going through the chassis are covered with systoflex for safety.

The microphone used was a standard G.P.O. type immersed electrode, as used in the standard G.P.O. handsets, and from this very good speech quality was obtained.

All component values are given in the parts list with the circuit diagram.

The circuit is quite orthodox, the valve V1 being operated as a triode in an ultra-audion circuit, which has been used so often in ultra-H.F. work. Experiments show that 112 Mc. work can be carried out by merely changing the coil L.

Operation

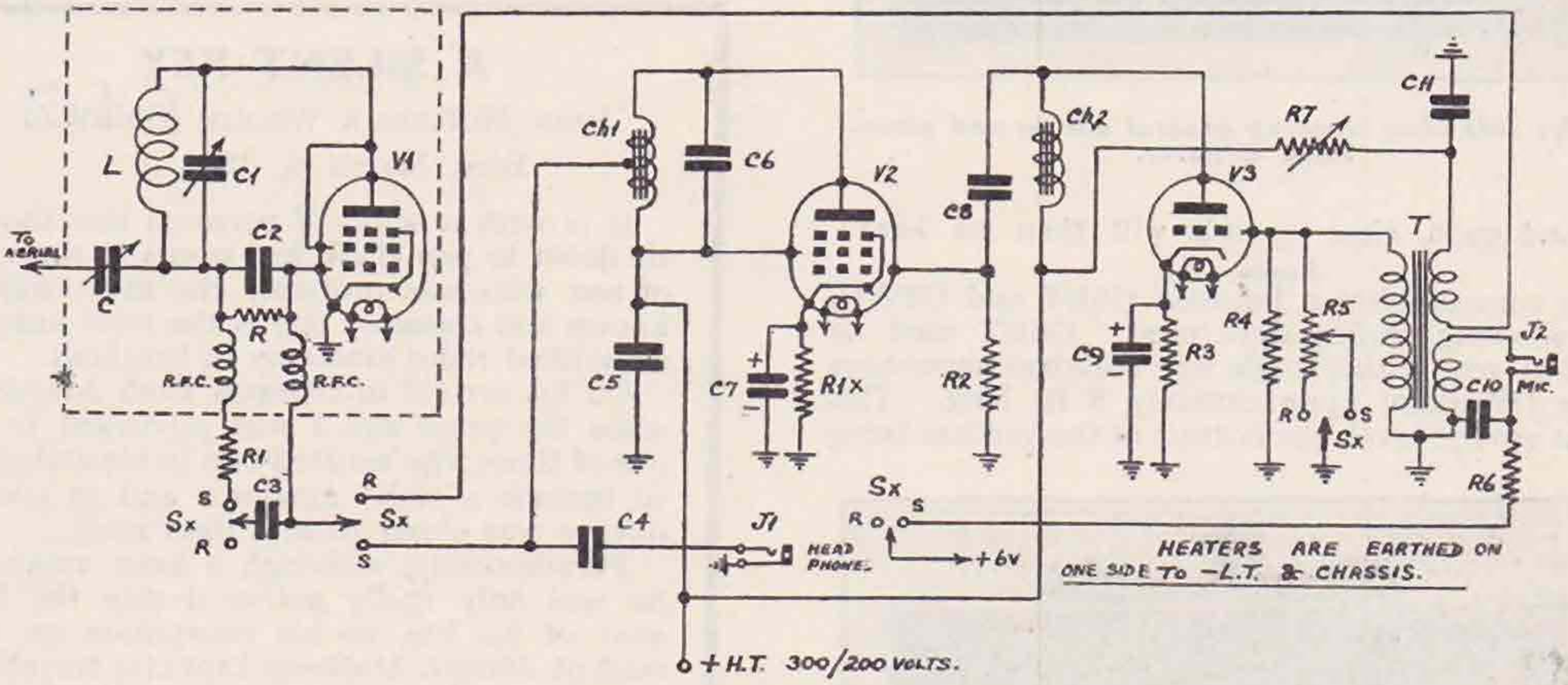
56 Mc. operation may be termed rather an exact science and, as 56 Mc. calibrations cannot be obtained except by the use of costly instruments, Lecher wires were set up and excited by a small TPTG battery driven oscillator. From the Lecher wire measurements various points in the 56 Mc. band were found. A small absorption type wave-meter was constructed similar to that described in the *Eddystone Short-wave Manual*, but a 2.5 volt flash lamp was soldered into the circuit to give visual indication that (1) the set was oscillating and (2) on modulation the light increased in brilliancy. A milliameter was also used in the HT+ lead to check the current consumption, which averaged between 35 and 40 mA.

After five or six points had been obtained, the transceiver was put into operation, and the tuning inductance L (a 4-turn *Eddystone*) adjusted so that the approximate centre of the 56 Mc. band was found. Each set was tuned to a slightly different frequency for obvious reasons, and the resonance point was obtained at about 70 to 80 deg. on the dial, which is a slow motion type so that once set the tuning cannot be jarred out of adjustment.

With the H.T. on and the switch moved to the " send " position, the aerial coupled and the mike plugged in, the wave-meter is held adjacent to the inductance. When talking the light will increase in brilliancy. If this is not the case, the aerial coupling must be either tightened or loosened by means of the small padding condenser C.

In the preliminary tests between G6BT and G2WD communication was established immediately, the distance being approximately two miles with two small hills between the two stations. The quality and strength of signals left little to be desired. Slight adjustments were made at each end and after an evening's work S9 signals were passed in both directions.

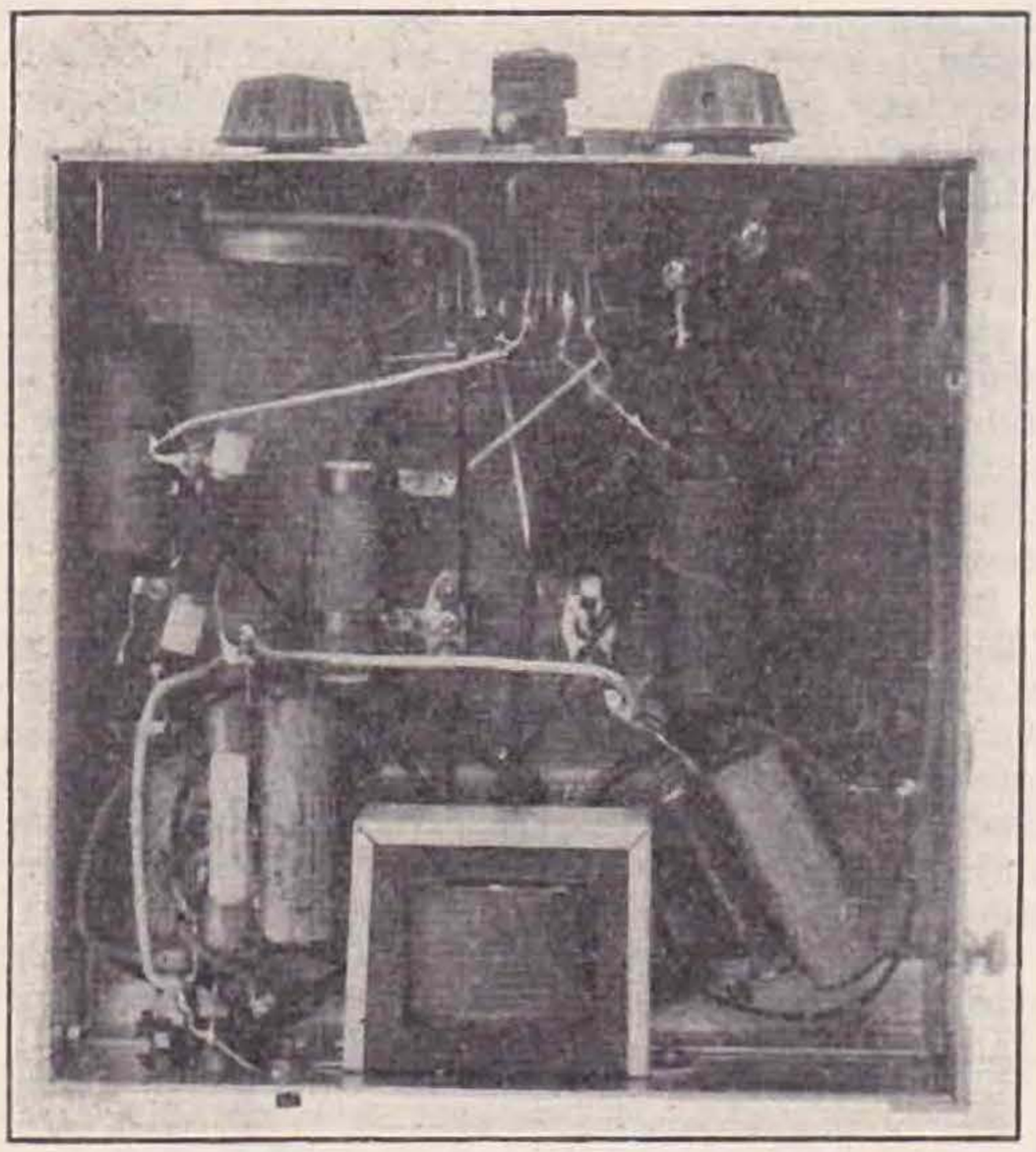
For receiving, the switch is thrown to the other side and the regeneration control moved until



Circuit Diagram of Transceiver.

C	... ...	*3-30 μμF Padder, Eddystone 1023.*
C1	... ...	*22.5 μμF Variable, Eddystone 900-20.*
C2	... ...	*.00025 μF Mica, Dubilier.*
C3	... ...	*.006 μF Mica, Dubilier.*
C4, C11	...	*.5 μF Tubular, Dubilier.*
C5	... ...	*8 μF Electrolytic, Dubilier (Power pack.)*
C6	... ...	*.006 μF Mica, Dubilier.*
C7, C9	...	*25 μF 25 volt working Electrolytic, Dubilier.*
C8	... ...	*.01 μF Tubular Non-inductive, Dubilier.*
C10	... ...	*50 μF 50 volt working Electrolytic, Helsby.*
R	... ...	*1 megohm 1 watt, Day and Elliott.*
R1	... ...	*10,000 ohms 20 watt, Bulgin Pr. 11.*
*R1**	... ...	*600 ohms 2 watt, Dubilier.*
R2	... ...	*500,000 ohms 1 watt, Day and Elliott.*
R3	... ...	*2,500 ohms 1 watt, Day and Elliott.*
R4	... ...	*250,000 ohms 1 watt, Day and Elliott.*
R5	... ...	*250,000 ohms Potentiometer, Day and Elliott.*
R6	... ...	*100 ohms 10 watt, Bulgin AR100.*
R7	... ...	*50,000 ohms 5 watt, Bulgin Vc11 (Wire wound).*
J1, J2	...	*Igranic Midget Open Circuit Jacks.*
CH1	... ...	*C.T. Midget Choke.*
CH2	... ...	*Secondary of A.F. Transformer, Thordarson T5737, Radiomart or Bulgin LF33.*
T	... ...	*Midget A.F. and Microphone Transformer, Thordarson T7259, Radiomart or Bulgin LF45.*
SX	... ...	*4-pole D.T. Switch with " off " position, Yaxley 764.*
V1	... ...	*Type 41 socket 6-pin Ceramic* }
V2	... ...	*Type 42 socket 6-pin Ceramic* } *Day and Elliott.*
V3	... ...	*Type 76 socket 5-pin Ceramic* }

oscillation occurs. This is then reduced slightly until the characteristic super-regenerative hiss is heard. As the condenser is moved, a point will be found where the modulated signal flattens out the



Under side view showing general wiring and placement of parts.

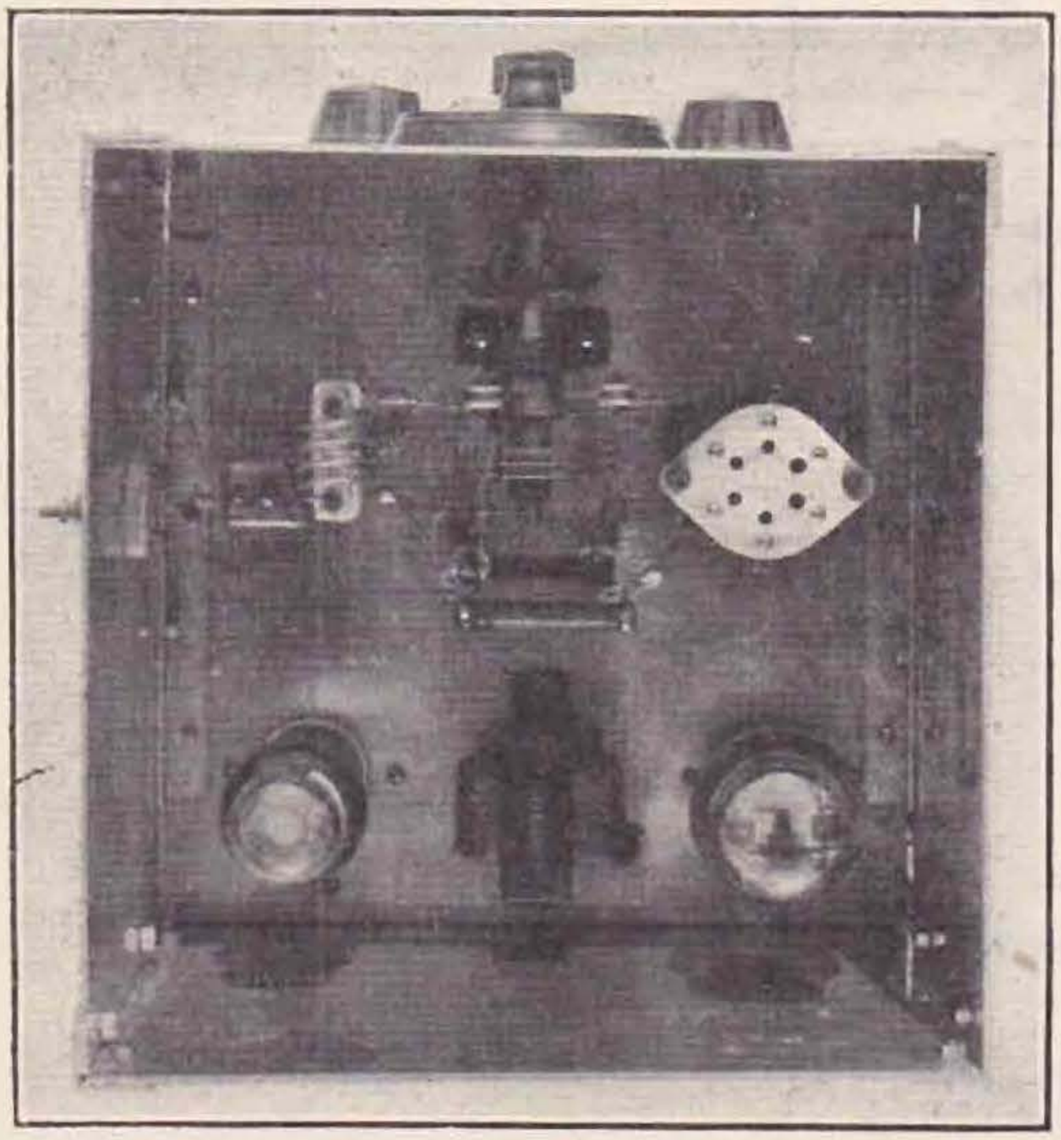
hiss and good, clear speech will then be heard

Aerial used

For communication between G6BT and G2WD, the following aerials were used. G6BT used an 8 ft. 2 in. wire with a single wire matched impedance feeder (Windom) approximately 8 ft. long. This was at ground level, the bottom of the vertical being about 2 ft. above the ground. At G2WD a similar aerial was used, but the feeder in this case was some 20 ft. long and the vertical wire was mounted on a pole approximately 25 ft. above ground level, and fixed to the wall of the house.

For mobile work an *Eddystone* aerial (No. 1038) was used as a vertical Windom, 8 ft. long tapped 14 ins. off centre, with a feeder 12 ft. long. The telescopic rod was mounted on the front bumper of the car on a small bracket and was stayed to the radiator and one of the bonnet catches by means of bamboo rods, each of which had a piece of "Tufnol" bolted to the end near the mast. This was attached to the mast by means of a small aluminium clip. There was no swaying in motion, but road surfaces caused a certain amount of vibration. This, however, apparently caused no signal variation at all, even at speeds up to and including 30 m.p.h.

As long as care is taken in the wiring and placement of parts, no difficulty should be experienced in obtaining similar results. American components were used at the time the sets were built, as no British equivalents were then obtainable, but in the parts list it will be seen that several British components, which have since been released, are now given as alternatives.



Looking down into set. All R.F. wiring and valve socket is above chassis.

A SILENT KEY

JOHN MCKENZIE WILKIE (GM6WZ).

Died March 9, 1938.

It is with a sense of personal loss that I sit down to pen these few words in memory of one who was probably the most widely known and certainly one of the most universally liked radio amateurs in Scotland.

On his arrival in Glasgow from Aberdeen some ten years ago I was privileged to be one of those who assisted him in his ambition to become a radio amateur, and in consequence was closer to him than most.

Paradoxically, although a keen amateur, he was only really active during the last year of his life, as his occupation on the staff of *Messrs. Mullards* kept him travelling all over Scotland and left him little time to indulge in amateur work.

His keenness never abated, however, and he was probably the most successful missionary the Society has ever possessed, many of the present-day Scottish amateurs owing their first interest in amateur radio to Jack Wilkie.

Never very robust, indifferent health put its mark upon him, and the last two or three years of his life witnessed an heroic battle against illness. Courageously he fought and did not let up until the very end, when an overstrained heart proved unequal to the demands of an indomitable spirit, and he left us.

Of a kindly and lovable disposition, he was popular wherever he went, and his passing leaves a gap in our ranks which cannot be filled.

GM5YG.

An All-Metal Portable

By M. Buckwell (G5UK).

THE writer does not claim any originality for the portable to be described, but, having regard to the difficulties which have been encountered in previous Field Days, it is believed that some of the suggestions made may prove useful to others. It will at once be noticed that, in planning this equipment, an attempt has been made to break away from the usual bulky and cumbersome equipment usually associated with N.F.D. and similar events of that nature. By putting together a solid and compact job, the possibility of breakdowns accuring due to insecure connections, and the danger of receiving shocks was avoided by the provision of good insulation.

The gear is assembled in a framework measuring $15'' \times 8\frac{1}{2}'' \times 23''$, constructed with aluminium corner strips and perforated zinc, as used in meat safes. The panels are of three-ply wood. This material, besides being economical, provides really good insulation, keeping working parts from the frame itself. For field day working this feature of construction has an added advantage, as it avoids earthing the transmitter, which would, of course, convert a Hertz into a Marconi aerial.

Reference to Fig. 1 will convey a good idea of the arrangement. The transmitter panel is at the top, the receiver at the bottom, and the power panel in the centre. The widths of all the panels are the same, i.e., $14\frac{3}{4}$ ins., but the depth varies slightly, being for the receiver 9 ins., power unit 7 ins., transmitter $7\frac{1}{4}$ ins. The panels are finished off with "Enamel-it," a sixpenny tin being sufficient to complete the three panels.

Power Unit

This unit was initially designed to supply high tension for both the transmitter and the receiver.

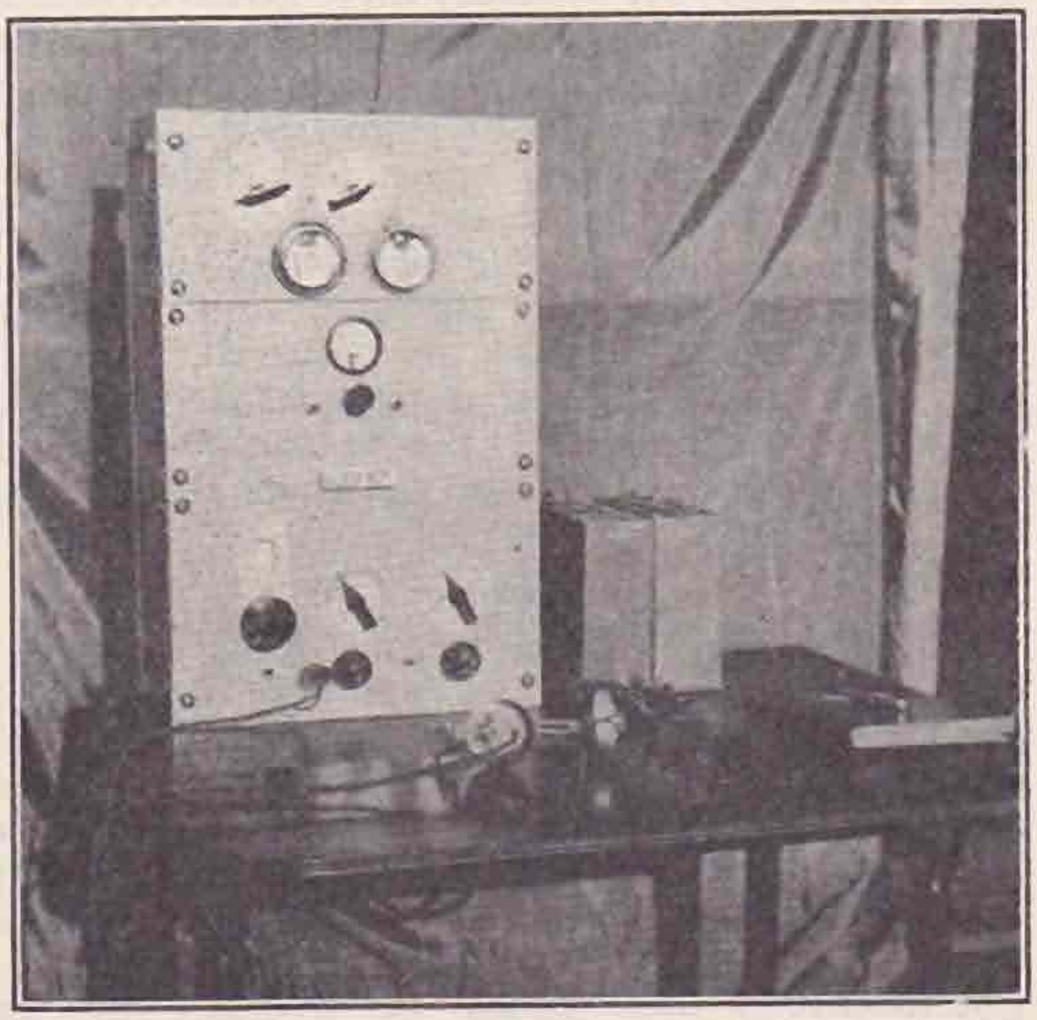


Fig. 1.
View of the completed all-metal portable station described and constructed by G5UK for field day use.

It was found, however, that the high-tension supply furnished by a motor generator, however well smoothed and choked it may be, was not completely satisfactory, as on field days and similar occasions where it is found necessary to use headphones for long periods, the slightest background noise becomes tiresome and prevents very weak signals from being read. It was, therefore, decided that the best solution of the problem of receiver high tension would be found in a 90-volt battery. It will be noticed that this was not included in the build up, as it is a matter of common knowledge that the chemical vapours emanating from the cells will attack any adjacent metal.

It will be seen that the power unit houses two generators. The second one (which is unscreened) was borrowed, and included on the occasion of

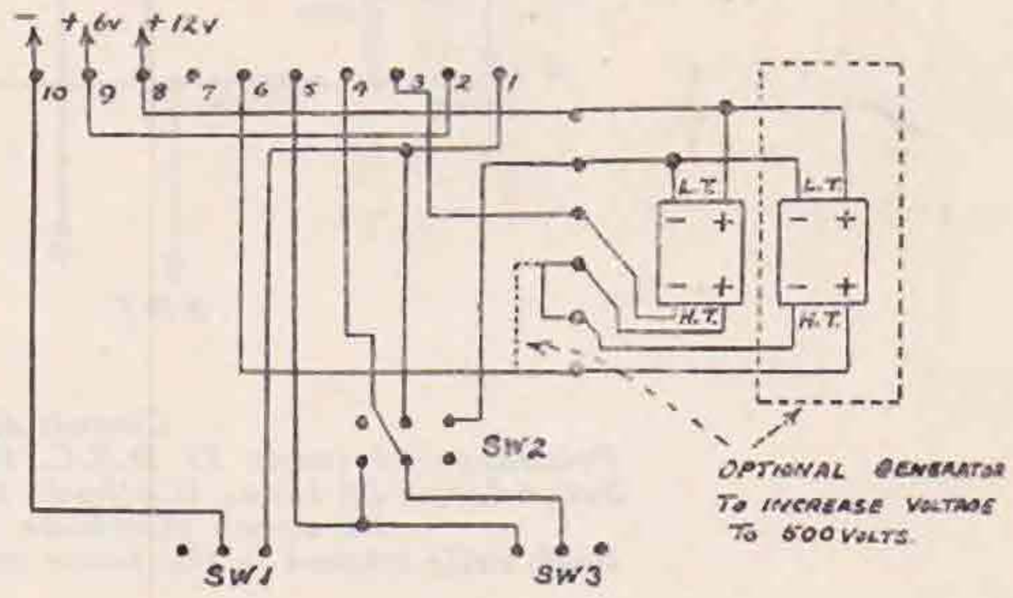


Fig. 2.
Wiring diagram of terminal strip and power unit. Generator 12 volts input; 250 volts output at 50 mA supplied by Electro Dynamic Construction Co., Ltd., London.

N.F.D., when the G.P.O. allow the use of 25 watts instead of the usual 10 watts. The extra generator, which is joined in series with the first, can be added or removed in a few seconds without disturbing the wiring. This operation is greatly facilitated by the use of terminal strips, as sold by *Webbs Radio*. Fig. 2 gives the wiring diagram of this terminal strip and also the general wiring of the power unit. The switching is very simple, and is as follows:—SW1 puts all the filaments on, and SW2 is a change-over for send and receive positions. SW3 is not often used, and was fitted to allow the transmitter and receiver to be in action together.

When it is desired to use the outfit at home, the power unit is removed and replaced by another panel and baseboard containing an ordinary filament transformer, rectifier and the necessary smoothing circuit. Sufficient room is still available to also mount a modulator unit if desired.

Transmitter

The valve selected for use after many careful tests was the metal 6L6. This was given preference over its glass equivalent (6L6G) because it was found to be more efficient. The wiring of the transmitter is given in Fig. 3. It will be noticed that a potentiometer is fitted across the H.T., and this is used to obtain the critical screen voltage

required by the 6L6. When 500 volts are applied to the anode, the screen voltage should not exceed 250 volts with a current of from 5 to 7 mA. If the anode voltage does not exceed 250 volts, the potentiometer could be eliminated and the screen of the 6L6 connected to the H.T. tapping. It was found, however, that by using a screen voltage of 200 the performance was improved, so it was decided to retain the potentiometer and stand the slight drain through it.

The remainder of the transmitter follows ordinary lines and usual practice. C1 shorts at maximum value (one of the blades was bent slightly to accomplish this), the shorted position giving a straight T.P.X.G. circuit working on the fundamental frequency of the crystal. With the condenser in use, harmonic operation is obtained. The tank coil is made from No. 12 S.W.G. enamelled wire, which is wound, together with some string of about the same diameter, on a ribbed former. Care must be taken to tighten the string and not the *wire*. Once both ends are secured, three strips of celluloid ¼ in. wide are inserted lengthwise, at equal distance, between the string and the wire. Owing to the fact that the string is taut from rib to rib, and the wire is slack, sufficient space is left beneath the wire and above the string to slide the celluloid strips into position. The strips are then secured by a liberal coating of "Durofix," and, when all is set, the former and string are removed, leaving the coil "air wound" and supported by the three strips. The tuning of the transmitter is quite normal, but the grid of the CO stage should not be run above 8mA.

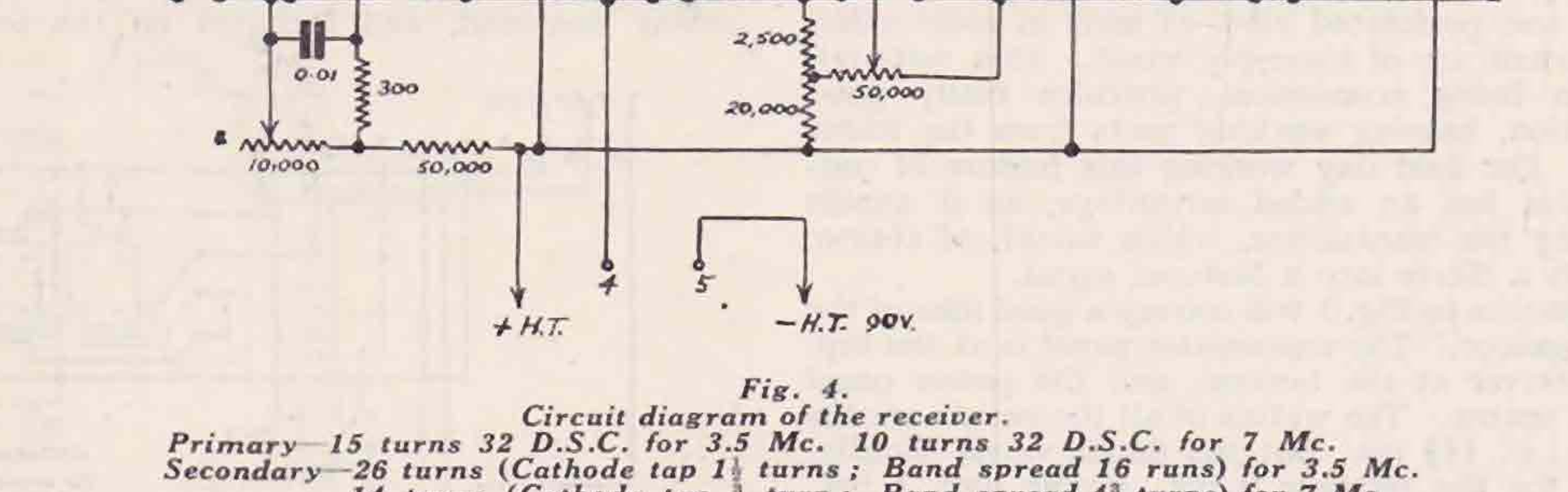


Fig. 4.
Circuit diagram of the receiver.
Primary—15 turns 32 D.S.C. for 3.5 Mc. 10 turns 32 D.S.C. for 7 Mc.
Secondary—26 turns (Cathode tap 1½ turns; Band spread 16 runs) for 3.5 Mc.
14 turns (Cathode tap ¾ turn; Band spread 4¾ turns) for 7 Mc.
Both coils wound in the same manner on Eddystone 6-pin coil formers.

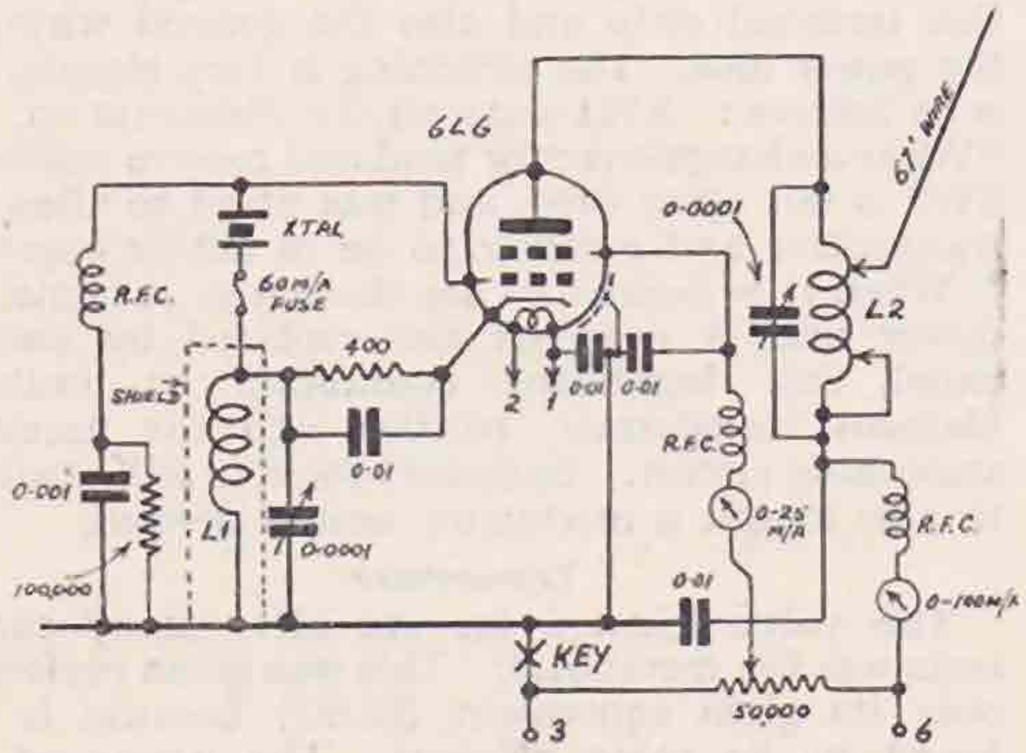


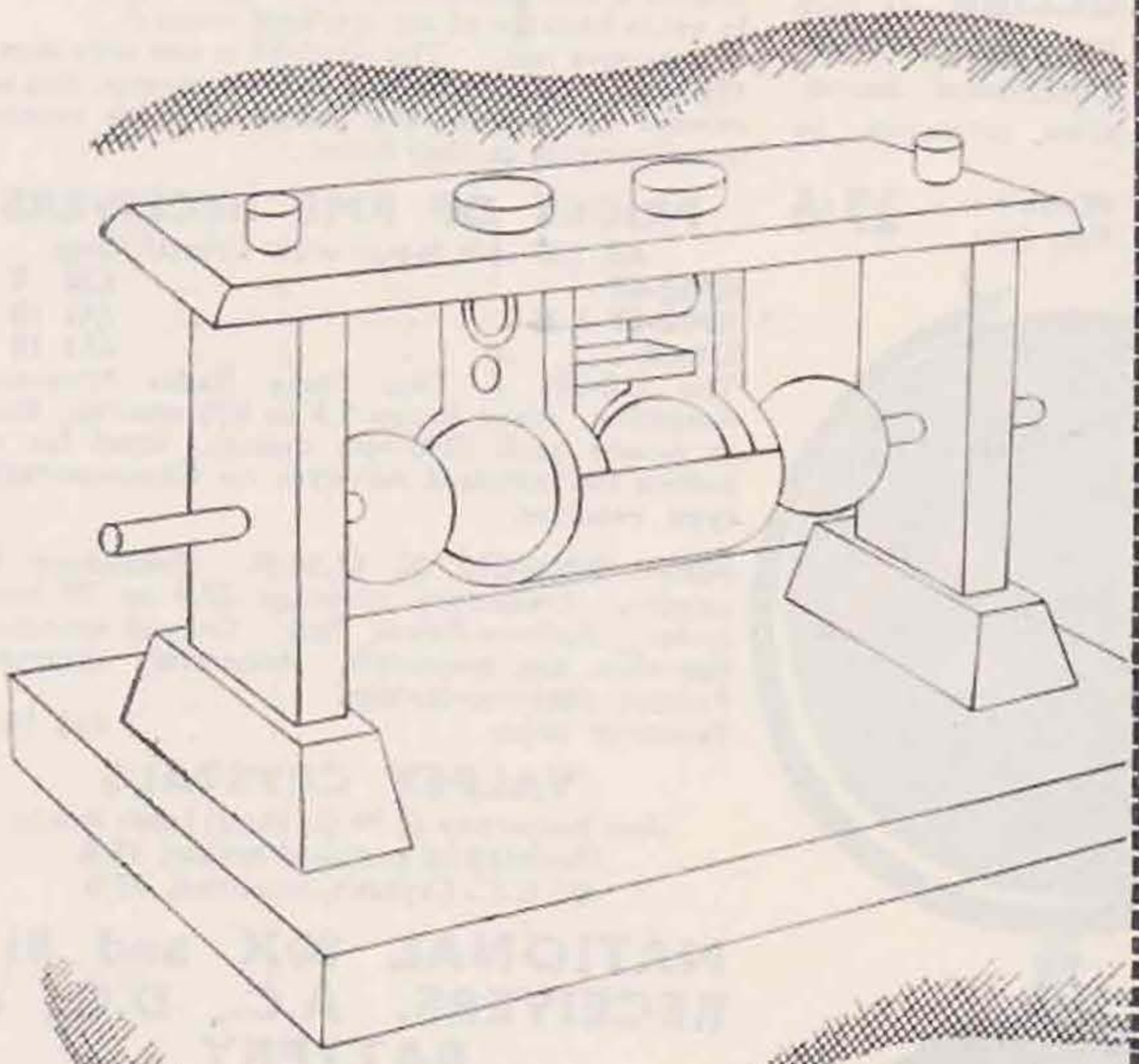
Fig. 3.
Circuit of transmitter.
L1—11 turns on Eddystone 1¾ in. threaded former.
L2—25 turns 3 ins. diameter (see text).

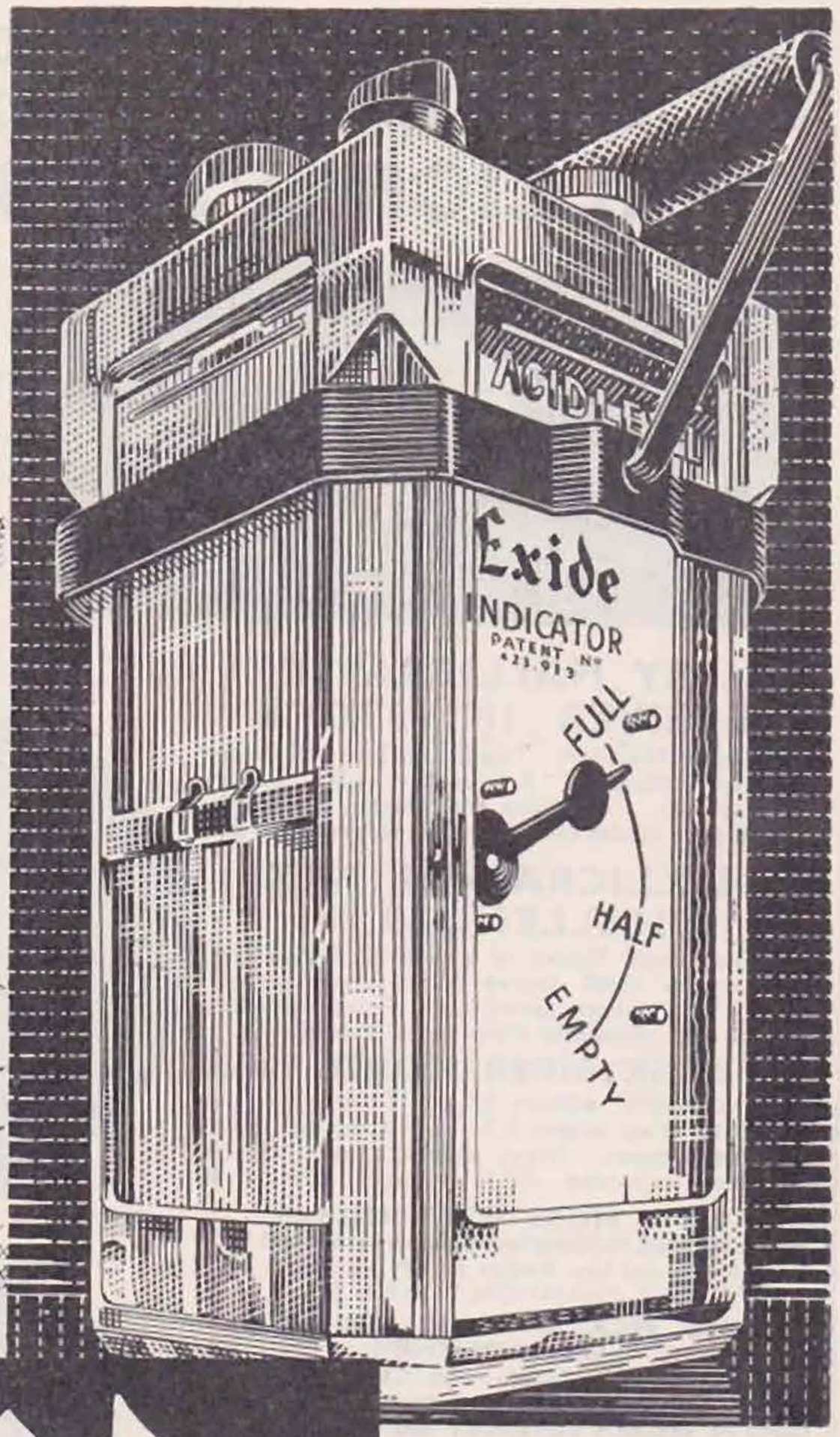
Receiver

This, as can be seen from Fig. 4, employs an ordinary circuit which is very efficient and gives good results. It is constructed on an aluminium chassis with a sub-panel of the same metal. These are both smaller than the front wood panel and frame, and are in no way connected to them. If the outfit is to be used exclusively for portable work, the 4 mA. drain on the H.T. caused by potentiometer loss could be avoided by using separate leads for the various H.T. voltages required. Careful construction of the coils and strict adherence to the various values of components will give very smooth reaction and all the necessary band spread.

OIL-IMMERSED OSCILLATOR

This oscillator was used by Marconi in his first demonstrations in England. It was about this time that the Chloride Company first made batteries. The oil-immersed oscillator has gone but the Exide Battery—made by the Chloride Company—maintains its predominant position.





R.28

Exide

BATTERIES FOR RADIO

'Still keep going when the rest have stopped'

• For dry batteries ask for **Drydex**

Obtainable from any reputable dealer or Exide Service Station.

The Chloride Electrical Storage Co. Ltd. (Exide and Drydex Batteries), Exide Works, Clifton Junction, near Manchester. Also at London, Manchester, Birmingham, Bristol, Glasgow and Belfast

Cairo Conference—Interim Report

By Arthur E. Watts (G6UN)

THE Conference was officially opened on February 1, 1938, under the patronage of H.M. King Farouk. Delegates from about 70 countries and colonies together with upwards of 100 representatives and observers from the operating and non-operating organisations are attending.

At the First Plenary Session, three main Committees were formed :—

(1) The Technical Committee, President, Senator White (U.S.A.).
(2) The Regulations Committee, President, Dr. Jaeger (Germany).
(3) The Tariffs and Traffic Committee ; President, Dr. Boetje (Holland).

These committees have allotted the work of studying the 500-600 proposals to two sub-committees in the case of Technical and Tariffs and Traffic, and three sub-committees for Regulations.

The most important of these sub-committees (to us) is No. 1 of the technical committee dealing with frequency allocations and presided over by Col. Angwin of Great Britain.

It is as well to state here that nothing which follows can be considered as definite and final until it has been adopted by the Second Plenary Session. This means that any one agreement reached in a sub-sub-committee has then to be approved by the sub-committee, then by the main committee, then by the First Plenary Session, and finally by the Second Plenary Session before it can be considered as finally disposed of.

At the time of writing, none of the proposals have gone further than the sub-committee stage, so we can only make our report up to this point.

Proposals (Operating)

(*a*) The proposed definition of Amateur Service was abandoned.

(*b*) The proposed power restrictions to 50 watts input was withdrawn by Japan after many delegates had spoken in favour of *status quo*.

(*c*) A proposal to institute an Amateur Licence and an Amateur Station Licence was dropped as there was no support.

(*d*) The proposed re-introduction of QST has been changed to C.P.

(*e*) A proposal by Great Britain that Stations when testing or regulating their equipment should sign slowly is not intended to apply to amateur stations.

(*f*) G.M.T. has been defined as 00.00-24.00 commencing at midnight.

Proposals (Frequencies)

(*a*) 1,715-2,000 kc. remains as now so far as amateurs are concerned.

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

British amateurs at present have the use of the channel 3,500-3,730 kc. 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*) Regarding 7 Mc., it is probable that in all regions except the Americas, Administrations may have the right to place broadcast stations by derogation between 7,200-7,300 kc., but the allocation in the frequency table will probably remain 7,000/7,300 kc. It is hoped that the 14 Mc. band will be maintained as at present.

(*d*) 28/30 Mc. remains allotted to amateurs and experiments on a world-wide basis.

(*e*) 56-58.5 Mc. in the frequency table is allotted in Europe to television and low power stations with a note that Administrations may authorise amateurs to use this band.

58.5-60 Mc. is allotted in Europe to amateurs, experiments and low power stations.

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

(*f*) 112-120 Mc. is allotted to low power stations with a note that the Administrations may authorise amateurs to use this band. It is doubtful whether we shall be able to have this band, but if we cannot, we shall probably be given space elsewhere.

The above information does not give the allocations for the rest of the world, as to do so at this stage might cause confusion. For the rest of the world the position remains substantially as at Madrid.

Let us once more emphasise that these frequency allocations, in particular, have not been finally approved, but we hope to be able to report the final agreement next month.

To those who have been watching closely the trend of radio development, it will come as no surprise when we say that the very large demands for increased space for aeronautical and broadcast stations is responsible for the great changes that are taking place in the frequency table. Indeed, had all the proposals by various countries regarding the 1.7, 3.5, 7 and 14 Mc. bands been adopted, there would have been practically nothing left of the amateur bands.

We can only say in conclusion, that everything that can be done at Cairo in the interests of amateur radio is being done.

Calls Heard

VE5AAD, from March 1 to March 20, 1938 :—

28 Mc. Phone : Ei6g (44), g2ro (45), 2zv (46), 6bw (56), 6lk (56), 8dm (45), 8gx (57), vk2ade (44), 2gu (56), 2iq (54), vp6yb (56), 9r (55), zl3dj (46), 3kz (57).

28 Mc. C.W. : G2hx (55), 2oa (55), 5sy (45), 6nf (44), 6wy (55), 8ap (43), vk2ade (44), 2ti (44), 2uf (44), 2vn (55), 3iw (45), 4aw (45), 4hr (44), 4ry (55), vo3x (45), zl1bc (55), 1ck (34), 1gx (45), 1hy (33), 1mr (56), zs2al (34).

14 Mc. Phone : G5rv (45), 6dl (44), 6lk (56), 6xr (45), vp4tf (57) 6mr (56), vr6a (45), xz2dx (56), zs1b (45).

14 Mc. C.W. : Ei8j (56), g2df (44), 2jt (44), 2ku (55), 2mi (33), 2pj (56), 2pl (44), 2pu (44), 2qb (44), 5cv (55), 5iu (56), 5lp (44), 5pp (44), 5ss (33), 5wp (57), 6br (45), 6cj (45), 6dt (45), 6mc (55), 6nf (34), 6qs (33), 6vx (45), 6yr (33), 8ip (45), 8ww (33), gi6tk (44), 6xs (44), gm6nx (44), vk2ade (55), 2aib (44), 2ra (44), 3bv (44), 3vq (56), 5hm (33), 7lz (55), vp5ag (33), vq4ktf (34), vs6ag (44), vu2an (44), 2eo (33), 2fv (55), 2fx (57).

The Dublin Convention

By a Visitor from GI.

THE First EI Amateur Convention was organised by the Irish Radio Transmitters' Society and held in Dublin on March 26. Modestly described in preliminary notices as a Dinner and Social Evening, it was in fact a most enjoyable and successful Convention which commenced, for the visitors at least, on the previous day, and continued without a dull moment for three days.

The curtain rose early on Friday morning, and disclosed G6CL stepping ashore from the splendid new M.V. *Leinster*, to be greeted in no early morning fashion by his hosts, EI9D and 5F. Speeding through "The Town of the Hurdle Fords" in a V8, the QRA of EI6J was reached for breakfast, and our Sec. made his first bow to the microphone at 8.30 a.m. "Calling CQ" was his first "ordeal," but he passed it well.

EI9D and G6CL then went down to Baltinglass to visit Col. M. J. Dennis, C.B. (EI2B), a Vice-President of the R.S.G.B., and the doyen of amateur radio in Ireland. The journey and the destination were a worthy introduction to Ireland's beauty, and a very happy and interesting few hours were spent in the company of one who is a specialist in the preparation of precision quartz crystals for high-frequency work.

On the return journey a call was made at EI6F, whose QRA is situated near Blackrock, a suburb of Dublin. The operator, Dr. Dennis O'Farrell, is blessed with good space for aerials. The "shack" has the quiet atmosphere of its other function—a study—and the Sky Challenger and 150-watt transmitter have a background of books on other kinds of operation. A T55 in the final is supplied at 1,200 volts by a bridge rectifier, and a Zepp fed aerial does the rest.

73 To-day.
Col. Dennis (EI2B), Vice-President, R.S.G.B., and Past-President, I.R.T.S., with Capt. Noblett (EI9D), present B.E.R.U. Representative for Eire, at Fort Granite, Baltinglass, during G6CL's visit to EI.

The evening was spent at the QRA of EI5F, where the Committee of I.R.T.S. had an informal conference with G6CL. The value of such contacts between executive officers of the two societies was fully realised by both hosts and guest, each learning much, the personal contact giving a fuller and more sympathetic understanding of one another's problems.

After the meeting a search was instituted for GI6YW (D.R. for Northern Ireland) and GI5HV (Hon. Treasurer, R.T.U.N.I), who had motored from Belfast. Run to earth at 23.30 G.M.T., GI5HV held a *salon* in his hotel bedroom. Dublin settled down in the small hours.

Next morning EI5F showed us over the Wireless School at the Kevin Street Technical Institute, and then after lunch the party left for a tour of the very beautiful mountain country which lies near Dublin. A stop was made for tea at an isolated and lonely inn on the mountains, where EI6J threw a pretty quoit, while G6CL—adopting an Irish custom—consumed large quantities of tea. He now spells Convention with a High Tea.

Seven pip emma, and about fifty were sitting down to dinner at the Moira Hotel. The visitors now included G6GL (T.R. for Birkenhead), GI5SJ (T.R. for Belfast), GI5JN and GI6TK (representing the R.S.N.I.), and representatives of the Irish Section, N.R.S. A happy feature of the dinner was the presence of YLs and XYLs. Apologies for absence were received from GI6TB (President, R.T.U.N.I.), Col. Dennis (EI2B) and Mr. Maxwell (Hon. Secretary, R.T.U.N.I.).

Some of Ireland's best-known Amateurs.
Left to right, EI6F, EI6J, GI5HV, GI6YW, EI9D and EI5F.

After the toast of "Ireland" had been honoured, GI6YW proposed the toast of "The I.R.T.S"; EI6J, in reply, gave an interesting survey of the state of amateur work in Eire.

The President proposed the toast of "The R.S.G.B.," and G6CL, in reply, spoke at some length about Cairo, and how the R.S.G.B. had been working to safeguard amateur interests.

Capt. Noblett (EI9D), B.E.R.U. Representative, proposed the toast of "GI Amateurs," and GI6YW replied.

Looking around the company, one spotted many prominent amateurs not so far mentioned here: F. de B. Whyte (EI8G) (Hon. Treasurer, I.R.T.S.); Ralph Sadleir (ex-EI4D) (Vice-President), Dermot Taheny (EI5J); Dermot O'Dwyer (EI8B); H. V.

Scott (EI7F); Rev. N. Waring (EI8J); E. A. Donovan (EI2M); G. S. Stritch (EI6L); W. McIlwaine (EI9F); and Lieut. A. C. Woods (EI3L), to mention only a few. A "swindle" for a couple of TX valves was followed by another for chocolates, which G6CL won; the remainder of the evening was spent chatting to new and old friends.

Sunday was devoted to station visits. First came EI6J, located at Dalkey, and high on the shore overlooking Killiney Bay, often compared to the Bay of Naples. With a private shore and bathing place, and a picture through every window, EI6J has an almost unbelievably beautiful situation. The rig disclosed a 6L6G-T20 combination, the input being 75 watts at 750 volts. This is modulated with a three-stage transformer-coupled amplifier, using a 76-56-45 grouping, and driving '46s in Class B. The T20 seems to be working Class Z and cool.

After lunch at Dun Laoghaire, the QRA of EI5F was visited. The I.R.T.S. President's station is one of the foremost stations in the world, as its position in the DX Century Club will prove. It is a revelation. It is not too much to say that in EI5F one surely finds amateur radio at its best—no elaborate and expensive equipment with acres for directional aerials, but limited space, a small aerial in a suburban garden, and simple inexpensive home-made gear. The reason for the outstanding work of EI5F is clear: when one finds an enthusiast, a technician, and an operator rolled into one, results are certain. The transmitter line-up is a 53 as Hartley oscillator and buffer, a 46 doubler, and a PX25 in the final with an input of 60 watts at 500 volts. Two aerials are in use: (*a*) a half-wave 14 Mc. aerial, 22 ft. high at one end and 30 ft. high at the other; and (*b*) a 132 ft. aerial about 30 ft. high. A simple tuned-RF receiver is used, and brings them in alive.

Next stop was with EI7F, once GI5OT. Here is another first-rate DX station with a real honest-to-goodness amateur "den" complete with lathe and impressive array of tools. Again, simplicity and efficiency were apparent, and the receiver also was a tuned-RF job. But time was marching on, and our departure for the frontier could not be delayed. G6CL had to be safely delivered in Belfast, and the Customs posts have a closing time.

A brief call at EI8B disclosed that this well-known station was busily engaged with beam aerials, and rumour has it that a new type has been evolved there recently. A long-lines oscillator was evidence of EI8B's interest in 56 Mc. work.

Yet another cup of tea, and we were speeding north with happy memories of a grand bunch of amateurs who are doing excellent work, and whose hospitality and kindness are even greater than their DX—and that means a lot. Good luck, EI, and our gratitude for a splendid time, and not a few lessons.

The Midland P.D.M.

By Inky

THE Midland P.D.M. was held at the Trent Bridge Hotel on Sunday, March 13, a day more like midsummer than one from the usual wintry month of March. Members journeyed by train, bus, car and plane from Nottingham, Birmingham, Coventry, Barnsley, London, Leicester, King's Lynn, Grantham, Cambridge, Derby, Wellingboro', Staffordshire and Shropshire, while the following D.R.s were present:—L. W. Parry (G6PY), V. M. Desmond (G5VM), G. W. Slack (G5KG), and H. W. Sadler (G2XS). Mr. W. Grieve (G5GS) of District 17, sent a telegram stating that his party were unable to attend owing to transport difficulties.

Mr. L. F. Parker (G5LP), of Wellingboro', acting C.R. for Northamptonshire, together with the following town representatives were present:—G. Brown (G5BJ), Birmingham; L. W. Gardner (G5GR), Coventry; R. H. Streete (G2SD), Derby; W. A. Scarr (G2WS), Ilkeston; W. M. Vendy (G6VD), Leicester; J. Lees (2IO), Nottingham; L. F. Parker (G5LP), Northants; H. W. Chadwick (G8ON), Worksop and Retford. The Mansfield T.R. was unable to attend, but was represented by W. Johnson (G8NS).

The Nottingham P.D.M.
Trent Bridge Hotel, March 13, 1938.

A record attendance was enjoyed, and a renewal of friendships was the feature of the hour before lunch, everyone seemingly anxious to have a word with Clarry.

Luncheon, served at 1 p.m., was followed by the business meeting. The D.R. (Mr. G. W. Slack, G5KG) in a few well-chosen words, thanked the gathering for supporting the function in such gratifying numbers and this was seconded by Mr. V. M. Desmond (G5VM) who made a point of thanking the Nottingham T.R. for organising such a good show.

The T.R.s present were then called upon to give a short résumé of the activities in their respective areas.

Then came a talk by the Secretary of the Society, or as we all know him, Clarry. In his own inimitable style he gave us a fine chat on the affairs of the R.S.G.B. For just over an hour he held the attention of his audience on multitudinous subjects, touching on events at Cairo, QSL's, Licences, and P.O. matters. He said he congratulated the Nottingham District on their pioneer work on 5 metres, but begged them not to lose sight of the fact that we have other bands as well and not to neglect them, for if all worked on the UHFs we should have difficulty in holding on to the other frequencies. He stressed the matter of piracy on 56 Mc., and gave a warning that offenders would not be tolerated.

The meeting was then opened for discussion and apparently there were no grouses! After a hearty vote of thanks to G6CL the meeting closed and tea followed, after which there was more rag-chewing until eventually all went their many ways leaving a strange quiet in the room so recently filled with talk of Ham Radio. Thus ended another successful P.D.M.

The writer regrets this sparse report of the meeting but owing to the fact that he was unaware until the next day that he was to write-up the event, he made no notes.

The T.V.A.R.T.S. Marches On!

By J. N. Roe (G2VV). *

PROGRESS! In this one word the activities of the Thames Valley Amateur Radio and Television Society may be summed up. Commencing with a mere handful of members in 1933, the Society now has 50 keen enthusiasts. Out of this number 20 are fully licensed, 10 are holders of A.A. licences, and most of the remaining members have B.R.S. numbers.

Affiliated to the R.S.G.B., the T.V.A.R.T.S. is closely allied with all activities in Districts 7 and 15.

One hears much about " Old Timers " these days, and this Society is not without its claims to " O.T." members. The President (G2NN) operated a pre-war station, G2VV was licensed in 1929 and was 2BUW in 1926. G5VB and G5LC were licensed in 1930.

In addition to regular monthly meetings, visits to places of radio interest are arranged, and during the summer months field days are very popular. This year in May a 1.7 Mc. field day will take place, to be followed by further ones on the higher frequencies. Last year the T.V.A.R.T.S. operated the 3.5 Mc. N.F.D. station for District 15 and made a satisfactory score. It is hoped that the Society will figure again this year in the N.F.D. activities.

Two silver cups have been donated by members. One, the Cooper Cup, donated by G5LC for the best work of the year, has been awarded two years in succession to W. G. Pyke (G6PK) for his outstanding work in connection with the T.V.A.R.T.S. 56 Mc. Group of which he is Manager. The other has been donated by G6PK in a competition open to T.V.A.R.T.S. 56 Mc. Group members. This competition took the form of a six months' observation test on 56 Mc., and G. Spencer (G2KI) succeeded in winning the cup for his excellent work and very detailed reports. This cup remains the property of the winner.

Mr. Cooper (G5LC) has rceently organised a very active and efficient Morse Class for the benefit of members and fully licensed members act as instructors.

The T.V.A.R.T.S. has always received excellent support from the local press and every meeting is recorded in a prominent place in the paper.

An advance programme is published every six months and this enables members to book important dates well beforehand. A copy of this schedule is exhibited in the local library and is also published in the national radio press publications. In addition, members receive a detailed notice of each meeting a few days before the actual date.

Mr. Campbell (G8MK), Hon. Assistant Secretary, is compiling a local crystal register to ensure that QRM will be kept as low as possible!

On April 2 the Society held its third annual dinner at Twickenham, Middlesex, with a good attendance of friends and members. The annual subscription is 3s. 6d., dating from election to membership.

* Hon. Sec. T.V.A.R.T.S.

Empire Calls Heard

VE5AAD (ex-VE5RE), 1,506, Cedar Avenue, Trail, B.C.:—

January, 1938.

14 Mc. C.W.: g2db (34), 2lb (45), 2zq (44), 5df (34), 5uf (44), 5wp (55), 6gk (44), 6wy (56), 8hn (55), 8ks (55), gm2jf (44), gm6rv (44), vk2dg (55), vo1i (56), vp6ln (45), vq8as (33), zl1kr (45), zl4fk (55), zs1s (44), zs2a (45).

28 Mc. Phone: vk2gu (45), vp6yb (56).

February, 1938.

7 Mc. C.W.: g8lv (33), vk2afm (45), vk2oc (55), vk3dj (34).

14 Mc. Phone: vk2bq (45).

14 Mc. C.W.: ei6g (55), 7f (44), g2ik (33), 2jg (44), 2qb (55), 2tr (44), 2zv (34), 3do (45), 5bd (33), 5wp (55), 6bk (44), 6hk (44), 6qs (55), 6vp (44), 6zo (33), 8ac (33), 8nv (44), 6xs (45), gm8sv (44), vk2bq (45), 2no (55), vo3x (45), 6d (56), vp9l (56), vs6ag (56), zs1an (33), 1z (55), zt2q (56), zu5aq (44).

28 Mc. Phone: vk2gu (44).

28 Mc. C.W.: vp9r (33).

Eric W. Trebilcock (Bers 195), Telegraph Station, Powell Creek, North Australia:—

1938 *B.E.R.U. Senior.*

14 Mc.: ei5f (56), 6f (55), g2ma (56), 2qt (45), 5kg (56), 5ri (55), 5wp (44), 6ll (56), 6nf (44), 6rh (56), 6xl (55), 8fc (43), ve3wa (54), vp1al (57), 2at (44), vr2ff (56), vs1aa (57), 6ah (58), 7rp (43), vu2fx (55), 2eo (54), 2jp (54), 2lj (44), 2lk (55), xz2dy (57), zb1h (55), ze1jf (55), zs2x (55), zt6aq (55), zu6p (56).

1938 *B.E.R.U. Junior.*

14 Mc.: ei2m (55), g2fo (55), 2lb (55), 2lc (35), 2qt (56), 6cj (55), 6ag (55), 6rh (55), 8ha (55), 8jv (55), 8vc (55), gm6rv (56), ve3wa (55), 3qd (54), 4ro (55), vp1aa (54), 2at (44), vr2ff (56), vs1ai (56), 7jw (55), 7rp (56), vu2fv (56), 2jp (55), 2lj (55), 2lk (56), 7fy (56), zb1e (44), ze1jv (55), zs5ah (44), zt6aq (56).

February, 1938.

14 Mc. Phone: g2na (56), xz2ez (56), ze1jr (56), zs6aj (56).

7 Mc. C.W.: g5lh (44), 6vd (45), 8dr (55), 8ff (55), 8im (55), vu2fv (44), zl1mg (56), 3jd (56), zs6eq (55), 6m (45), zt6y (54).

14 Mc. C.W.: ei3n (54), g2ao (56), 2lb (56), 3dy (56), 5bj (55), 5an (54), 5jo (55), 5py (54), 6ag (55), 6dp (54), 6cj (55), 6nf (55), 6rh (55), 6sn (55), 6td (54), 6vx (56), 8bd (44), 8il (55), 8om (55), 8lp (56), gi5nj (56), 6xs (55), gm6rv (56), 8at (54), 8mn (58), 8sv (55), ve3wa (55), vk4kc (56), vp2cd (44), 6ln (55), vq4chs (55), 3cri (55), 8aa (56), 8aj (56), vs1aa (58), 1ai (57), 6ag (56), 7rp (55), vu2an (44), 2ed (56), 2eo (55), 2fv (55), 2li (56), 2lk (55), 2jp (55), 7ar (55), xz2dy (58), zb1h (55), 1j (55), zs1ah (55), 1cx (54), 1z (56), 5u (55), 6ej (55), 6eq (56), 6t (56), zt2q (55), 6aq (57), zu5aq (56), 6am (55), 6an (55), 6c (55).

Valves for Amateur Transmitters

Standard Telephone & Cables, Ltd., through their Valve Department, Oakleigh Road, New Southgate, announce that they are now producing a number of valves which are particularly suitable for amateur work.

For the guidance of our readers we give a tabulated list of these valves showing the American equivalents and selling prices :

S.T. Co. Type	American Type	Rating Watts	Price
			£ s. d.
4052A	RK20	60	4 15 0
4061A	RK25	10	1 7 6
4069A	RK28	100	12 0 0
4304B	304B	60	3 10 0
4304BB*	—	—	3 10 0
4305A	305A	60	5 5 0
4307A	307A	20	2 5 0
4316A	316A	6	5 5 0

* (Acorn)

A brief summary of each valve is given below, but members wishing to obtain full technical details are advised to write to the above address *mentioning this Journal.*

4052-A. This valve is a radio frequency pentode having a maximum anode dissipation of 60 watts, and may be used as an exact replacement of the American Type RK20. It can be used with anode voltages up to 1,500, and is fitted with an American 5-pin base. The thoriated tungsten filament used in this valve ensures an exceptionally long life.

4061-A. This again is a radio frequency pentode and has a maximum anode dissipation of 10 watts, operating with a maximum anode voltage of 500. It is fitted with the American 7-pin base and is an exact equivalent of the RK25.

4069-A. This valve is a radio frequency pentode with an output of 160 watts on Class C telegraphy, and is the equivalent of the American RK28. It is fitted with an American 5-pin base (giant), and has a thoriated tungsten filament ensuring a long useful life.

4304-B. This valve, a triode, is primarily designed for use on ultra-short waves, and may be operated at a frequency of 300 megacycles. Only the filament leads are brought out through the base, the grid and anode leads both projecting through the top of the bulb, thereby ensuring the shortest path for both electrodes. With an anode voltage of 1,250 the maximum output of this valve is 60 watts at a frequency of 100 megacycles, but with a reduced anode voltage of 750 it has an output of approximately 13 watts at a frequency of 300 megacycles. The 4304-B which is fitted with an American 4-pin bayonet cap is the equivalent of the American 304-B, but a similar valve known as the 4304-BB is available, fitted with the standard British 4-pin base.

4305-A. This valve is a low-powered screen-grid radio frequency amplifier which may be operated with an anode voltage of 1000 on frequencies up to 50 megacycles, at which frequency it has an anode dissipation of 60 watts. It may, however, be operated on frequencies up to 100 megacycles provided that anode voltage is reduced to 500 V. Only the filament and grid leads are brought out through the base (American 4-pin), the screen, anode and filament centre taps being brought out separately on tungsten rods through the top of the bulb. This valve is the equivalent of the American 305-A.

4307-A. This is a low-power suppressor grid pentode capable of a maximum output of 20 watts when used as an oscillator. The valve may be used on frequencies up to 40 megacycles with an anode voltage of 500 and with the anode voltage reduced to 300 V. on frequencies up to 70 megacycles. It is the equivalent of the American 307-A.

4316-A. This valve is designed for ultra-short wave operation down to a wavelength of 50 cms. No base is fitted to this valve, the leads being brought out on tungsten rods through the glass at the base of the valve. Connections are made direct to the leads, but care must be taken that no undue strain is placed on the glass. The power output at 600 megacycles is 4 watts and the limit of oscillation 750 megacycles. The 4316-A is an exact equivalent of the American 316-A.

* * *

The Tungsram Valve Co., 82-84, Theobalds Road, London, W.C.1, announce that they have available for immediate delivery the following valves (including rectifiers) which are suitable for amateur transmitting work :

Tungsram Type	American Equivalent	Rating	Price
			£ s. d.
6L6G	6L6G	24 watts	16 0
OS 12/500	837	20 ,,	1 10 0
RG 250/3000	866A	3000v. at .25A	1 0 0
RG 1000/3000	872A	3000v. at 1A	2 0 0

Full details of these valves are available on request to the above address.

* * *

In addition to the valves listed above *Ediswans* have produced an exact equivalent of the American T20 which will be known as the ESW20. A sample of this valve has been tested against a T20 in a 14 Mc. final amplifier stage, and found to be extremely satisfactory. The grid earth capacity was greater than with an American counterpart, but the anode capacity compared very favourably. We understand the price of the ESW20 is to be 17s. 6d., which is approximately the same as that charged in this country for the T20.

* * *

Mullards advise that they have available an equivalent to the 304A which is listed at £3 10s. and coded TY1/50. They can also supply a 15-watt R.F. Pentode, type PV05/15 at £1 17s. 6d.

We have reason to believe that equivalents of the T55 and similar high efficiency triodes will shortly be available from several sources. Members will be advised of every new development as it becomes known to us.

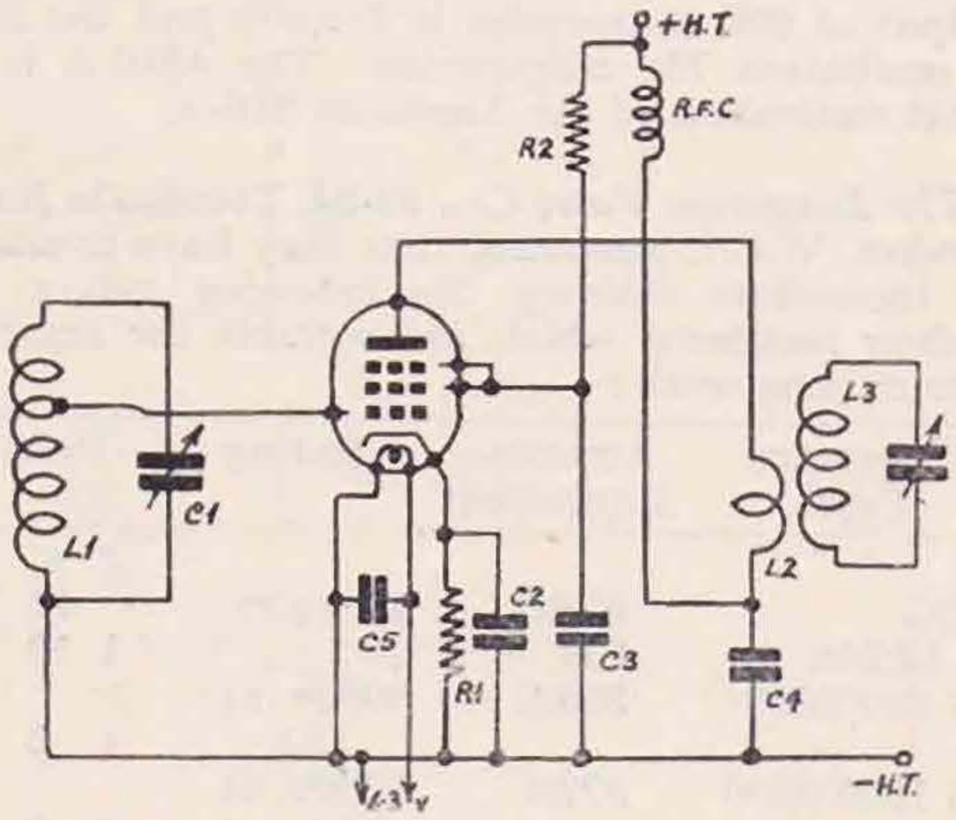
R.F. Amplification on 56 Mc.

By W. H. Allen (G2UJ).

SIGNAL amplification at frequencies of the order of 56 Mc. is generally supposed to be difficult to obtain without the aid of an expensive Acorn valve stage, so the following brief details of measurements made on the writer's TRF receiver using a 6K7 metal valve in the RF stage may be of interest.

The circuit, with component values, is shown in the diagram, and it will be seen that it is perfectly straightforward. The detector valve, in an electron coupled circuit, is a 6C6, which is in turn coupled to a 2A5 pentode output. The circuit of both detector and LF stages is quite normal and therefore is not shown.

The measurements referred to above were made with the aid of a signal generator modulated with an audio frequency of about 800 cycles. This piece of apparatus merely consisted of a small triode battery valve, with a tuned circuit so arranged that it oscillated in the 56 Mc. band. The modulation was obtained by "squegging" in the grid circuit.



Circuit of Receiver described by the Author.

C1—35 μμF.
C2, 3—100 μμF.
C4—300 μμF.
C5—.1μF.
R1—300 ohms.
R2—42,000 ohms.
L1,3—9 turns 14 S.W.G. ¼ in. dia. 1¾ ins. long.
L2—3 turns ditto.

The receiver under test was screened so that there was negligible direct pick-up from the signal generator, and an indoor half-wave di-pole coupled to the RF stage by 72-ohm feeder cable with a single turn of wire at the receiver end.

The receiver was tuned for maximum signal from the signal generator, and the audio output measured on a Universal Avominor. This was adjusted to read 100 volts A.C. The RF stage was now detuned, and the voltage appearing across the output dropped to 42 volts A.C. Coupling the aerial directly to the detector grid produced the same result.

The layout of the receiver is such as to give the shortest possible RF leads, and great care has been taken to make all earth connections in each stage to one point located near the valve-holder in that particular stage. If hum is noticed it is probably due to the grids of the RF and detector valves picking up stray A.C., and careful screening will almost certainly effect a cure.

The 1.7 Mc. Transatlantic Tests

By P. Pennell (G2PL).

The state of apathy existing amongst English amateurs has seldom been more clearly shown than in the recent tests arranged after much trouble by W1BB. Many promises of participation were received beforehand, but very few, if any, were fulfilled. Not a single person either listener or transmitter had the energy to send in a report—hence this account must be entirely personal, and as such is deprived of much of its scientific interest.

The first week-end in December produced entirely negative results, no W's were audible, and only SM5RS, G8NF, GW6YQ and G6HB were heard. The second week-end produced W1BB at 339 and W3DAE at 239 from 04.30 to 05.00 G.M.T. A contact between G2PL and W1BB resulted.

The third week-end was the most successful, many W stations, both 'phone and C.W., were audible, but the call signs were difficult to decipher owing to rather loud bursts of atmospherics. However, the following U.S.A. stations were logged between 04.30 and 05.30—W2JON (339), W3GCK (559), W1BB (579), W2HBO (549), 'phone W1JNC (55).

The English participants were very few indeed that week-end, and they certainly missed an opportunity to contact American stations at the peak of conditions. W1BB was again contacted, and an RST 459 report received at G2PL. Also W1EZ reports reception of G2PL at 05.15 (349). Unfortunately, owing to a rebuild and the Christmas festivities, the two week-ends at Christmas and the New Year were neglected by the writer, and the remaining week-ends in January produced a blank.

Conditions were certainly much worse this season than last, and this may have been caused by the marked sun spot activity during the period. Notwithstanding this, it seems remarkable that a mere handful of English stations could participate when W1BB, 1KXQ, 1EZ, 1BMW, 2IJU, 2JEX, 2JON, 2IXQ, 2BFA, 2HBO, 3GLV, 3DVE, 3GCK, 8MIS, 8BDV, 8QJN, 8BLP, 8LCY, 9FOC, 9ENQ, 9RIE and VE3KE represented the American continent.

In conclusion, the writer would like to extend his thanks to Mr. Perry (W1BB) for arranging such interesting tests, and he expresses the hope that they may be repeated next season with greater success.

Winter Conditions Around the Coast of Arabia

By L. E. H. Scholefield (G5SO).

The author's sea journey round the Arabian Coast from the Gulf of Akaba to the eastern side in the Persian Gulf has given him ample opportunity of experiencing the strangeness of radio conditions on the 7 and 14 Mc. bands in this part of the world.

The absence of regular G's soon became apparent on entering the Red Sea; only the higher powered and more efficient stations managing to overcome the high background noise. Telephony stations were heard more frequently than CW (possibly due to the relative powers used) and the best times were between 15.00 and 18.00 G.M.T. After the latter hour, G5ML and GM8NW were the only stations ever logged.

TECHNICAL INFORMATION *concerning*

"HIS MASTER'S VOICE"

MODEL 653 5-V-ALVE ALL-WORLD RECEIVER

Model 653

Price **10½** *Guineas*

● Totally screened and independent H.F. tuning unit enables close grouping of components and no interaction between circuits.

● Only four operating controls : namely, tuner waverange, tone and volume.

● Slow speed tuning with vernier dial. The drive is by means of a light metal chain and the vernier dial rotates nine times for one sweep of the tuning pointer.

● Wave range : 13.5-50 metres.
200-550 ,,
1000-2000 ,,

● Illuminated station name tuning scale with the short wave calibration on the outer edge of the scale.

● Constantly variable tone control enables reception to be adjusted to suit varying conditions of interference.

● Fitted with gramophone pick-up sockets and insertion of the pick-up plug automatically silences the radio circuit.

● For A.C. mains. 195/255 volts.
50/100 cycles.

CIRCUIT : Included in the aerial circuit is a filter designed to minimise the possibility of receiving medium wave whistles or extraneous channels on the long wave-band. On switching to the medium waveband the aerial is taken to the primary winding of the medium wave aerial transformer—completing the required primary inductance and the condenser isolated from the circuit. On the short wave-band capacitative coupling is employed. Signals are fed to the grid of the Mixer Oscillator (X63 heptode). From the X63 I.F. signals at a frequency of 465 kc. are fed through the primary of IFT 1 and transferred to the secondary winding feeding I.F. Amplifier (KTW63 Tetrode). The anode of this feeds into the second I.F. transformer and thence to a common H.T. positive supply. The grid of this valve is taken to earth via a condenser when the gramophone pick-up plugs are inserted. IFT2 secondary winding feeds into one diode of a Combined Speech rectifier, AVC supply and L.F. amplifier (DH63 double diode triode). One diode acts as speech rectifier. The other diode supplies AVC volts to V1 and V2 via the AVC network. L.F. output from the speech rectifying diode is built up across the load resistance and fed via the I.F. filter resistance and the volume control—which is also in circuit for gramophone reproduction—to the grid of the triode section of the valve—acting as L.F. amplifier. The triode anode is R.C. coupled to the grid of the output valve —KT63 (Tetrode). H.T. Rectifier (U50) supplies H.T. current which is adequately smoothed by the loud-speaker field and electrolytic condensers. An earthed electrostatic screen is interposed between primary and secondary windings.

If you would like to receive a copy of the "H.M.V" illustrated catalogue of RADIO receivers and radiogramophones write to "HIS MASTER'S VOICE," 108P, Clerkenwell Rd., London, E.C.1

As Aden was approached G signals grew weaker, until along the south coast only three were logged, even on a Sunday! The bands, however, were by no means dead and VK's and other eastern Empire stations produced terrific signals.

Each evening signals faded out at about 18.00 except FR8VX (Reunion Island) and the South African stations. These remained at good strength for about an hour, then came an almost complete fade-out until around 06.00 G.M.T. (10 a.m. local time).

Conditions remained unchanged until the Gulf of Oman had been passed and the ship had entered the south of the Persian Gulf, *via* the Strait of Hormuz. From this point a pronounced improvement was noticed, possibly due to the absence of mountains which hitherto had shielded the receivers from Europe along the whole of the Arabian coastline in the Oman Gulf. Signal strengths improved as the ship steamed northwards and Europeans provided most of the DX logged.

Curiously enough, the other DX mentioned earlier maintained its strength and the northern part of the Gulf proved a most suitable point for reception of the Empire and the world. Nearly all countries that are usually received in England were heard, but at greatly improved strengths.

Throughout the trip W stations were lacking in the numbers usually associated with them in this country and often days passed without a single U.S.A. station being heard. When they were logged it was possible to receive W2 and W6 at the same time at comfortable strength, a fact the writer cannot understand.

It is interesting to record that the only G station heard on 7 Mc. at any time was G2PZ, using CW.

The writer wishes to acknowledge his debt to his colleague, Mr. McGraw, whose co-operation enabled a regular watch to be kept for the British stations. The receivers in use were an RME69 and a Sky Chief.

A Visit to LA

By S. K. Lewer (G6LJ).

LAST winter, when visiting Norway, the writer met our old friend Rosenlund, of LA3G, in Bergen, who had recently returned to his home there after a long stay in London, and following up a remark that I hoped to meet some of the amateurs in Oslo, he started the ball rolling for me by telling them of my forthcoming visit. As a result, I had not been in Oslo many hours before calls began to come in from several of the local amateurs, and within a few days I had met LA1G, 1Y, 3Q, 4O, 5H, 6A, and some other members of the Oslo Group. I also met LA4YL, the only licensed YL in Norway, wife of LA1Y. Unfortunately for W.A.YL. enthusiasts, she only works locally at present! I was invited to several stations, including LA1C, the Oslo Group station of the N.R.R.L. Four whole evenings were spent at LA1G. This station needs no introduction, for it is well known in all parts of the world. The location is undoubtedly one of the best, from many points of view. The shack is 1,200 ft. above Oslo fiord, on the steep mountainside, in most delightful surroundings. There is practically no car-ignition interference, since the amount of road traffic is negligible, and the nearby electric mountain railway is quite inaudible. The nearest amateur station is down in the town, and is at least a few miles away. To listen round the DX bands under such conditions was a real delight, and the way the replies came in to any call made was beyond any expectations I ever had at home.

The real ham spirit is certainly very strong amongst the Norwegian fellows, and their general outlook and technique seem to be the same as those of British amateurs, but there are some points of difference which are probably of interest to us in comparison with our own conditions. For instance, their greatest activity is in the direction of 14 Mc. DX, and whereas their beginners used to start up on 7 Mc., they now cut their teeth on 14 Mc. They are not allowed to use 'phone until they have had a year's experience with CW, except by special permission. This regulation has only recently come into force.

All bands are used, except 1.7 Mc., which is not allowed, but at present there are only three or four stations active on 56 Mc. Licences are granted usually with 20 watts *output*, but a few high-power licences have been granted. Contacts between the Scandinavian countries are generally made on 3.5 Mc., although 7 Mc. is also sometimes used. These two bands are also used by the amateurs for reporting during ski races and motor-boat races. Special permits are obtained for the day, and professional commentators are engaged.

As in this country, high-priced American receivers are becoming increasingly popular, while transmitters are invariably home-constructed. American valves, of course, are also to be found in most stations.

The aurora, which is seen quite frequently during the winter, causes bad crackling, although it does not entirely close the bands. The medium-wave broadcast band is sometimes closed for continental stations, but this is considered to be a more direct effect of sun-spots. Quite apart from the aurora, the 14 Mc. band seems to be subject to quite sudden changes, at least for G contacts. Within a few minutes, all the G's disappear at some more or less regular time after sunset, although sometimes the band stays open much later or may open up again when it is also open for W contacts. Contacts with South America are considered to be easy, but South Africa is the most difficult of all DX for the Oslo stations.

Oslo is like many other European towns where BCL aerials consist of a wire twisted round a fishing rod standing up on the roof, but oddly enough, *QST* can be bought at the bookstalls. If any British amateur is contemplating a visit to Norway, he can feel assured of a warm welcome in the true ham spirit, but he should prepare himself for numerous private hamfests that last well into the night.

Reports Wanted

G8PL (Romford) on his 14 Mc. C.W. transmissions. All reports will be acknowledged.

G3GU (London, S.E.3) on his 7 and 14 Mc., C.W. and Phone transmissions. All reports will be acknowledged.

Broadside Radiations

By "Mr. Justice 'G'."

A new scribe arises to take stock of our behaviour on the air.

BEFORE the sitting of this court the bench will take the opportunity to remark with regret on the retirement of *Uncle Tom* from his not so beneficent supervision of amateur matters. He served you better than most of you deserved and now he has gone back to billets. This bench would prophesy his eventual return to the firing line. Too many amateurs have sold out and "quit the game for ever" only to return at some later date bigger, better and more enthusiastic than before. You will see *Uncle Tom's* well-worn club hanging above the bench: we preserve it for his return. The cells, in the meantime, have been newly white-washed, the Black Maria has been overhauled and a new stock of handcuffs laid in.

Evidence has been accumulated by the official receiving set. This set is *not* of transatlantic origin and uses a few valves (*not* "toobes"), all of which are expected to work for their living. A large number of flagrant offences against the peace of the ether have been recorded.

A DX station is heard plaintively begging for a call; on either side of his frequency sits a bright ornament of our group of experimental radio researchists. He and his little playmate are having such a happy talk—all about the new wall paper and what they will have for tea and the latest distemper of the family cat, not to mention the details of the last dance at the local club. They are also heard to remark on the complete absence of DX—if the QRM from W's at the moment doesn't break them up.

The grimness of the impression that this makes on those who are trying to do the things for which they were licensed is well known to at least a few of us. The impression it makes on the BCL who is sitting in with one of the ever-increasing number of all-wave receivers is positively septic.

The man in the street is interested and probably thrilled when he hears a DX contact in full swing. He is impressed and even respectful when he hears experimental or test work going on. When he hears a large chunk of the ether full of the same inane trivialities that appear at the local ladies' tea fights, his perfectly reasonable reaction is: "But what do they do it for? Or do some of you like giving the impression that you are blithering idiots?—and speaking of blithering idiots:—

Would it not be just a dandy idea if each station chose the name of a flower. Then we could have: "The flower here is Forget-me-not, dear old chum." or "Just call me Rose, old thing—by any other name I don't smell nearly so sweet," or even: "This is dear little Pansy coming right back to Gladiolus." It certainly would be no more painful than the present epidemic of: "The handle here is Marmaduke, old pet—but *you* can call me Marmy." All this hearts aflame business is ideal for the agony column of the newspapers but seems in no way even remotely connected with the business of conducting amateur wireless experiments.

The idiotic part of it all is that if Georgie met Bertie in a public place and called him "Bertie" to his face—Bertie would probably sock Georgie with an empty beer bottle (never a full one, of course), and that case would have to be removed to the jurisdiction of quite another court.

A listener in, say, Tasmania doesn't get much further if he hears somebody say, "This is Fauntelroy calling." You may not want his card, but it is vaguely possible that the said Tasmanian would like to know where you live and a nice kind friendly GPO *did* give you a call sign you know.

The telephone cases will now be remanded in custody. "Warder! bring on the CWers."

Mercifully, you cannot get that unctuous "village-curate-talking-to-the-squires-wife" tone into a CW transmission, but you can and do get the stumbling stutterer on the automatic key and the wooping-bloop expert—these cases will be held over till the next assizes.

A report of value should be given with as much precision as the wits (if any) of the operator will allow. It's no good telling that fellow whose card you earnestly desire that he is S9 plus, he might be fool enough to believe you. If he, or possibly she, is worth their salt they will be grateful for information received. If they go all hurt about it they are better suited to fine needle work than ham radio; anyway your conscience (if any) is clear.

It has always seemed to the bench that the whole system of reporting needs re-examination. There are many days of bad conditions when an S7 signal is far more worthy than an S9 on those happy days when DX rolls in on the loudspeaker from all over the world. The practice of this court is to check on the commercials, who snarl at the head and heels of our bands. Their signal strength will give a good idea of existing conditions at that time. They are spread about the world to a degree sufficient to get a good basis of comparison from any corner of the earth. One can then tell a VS that he is only S6, but that it is an excellent signal based on conditions at the moment. Equally one call tell a W6 that he is S9 and a bit, but that it doesn't mean anything because conditions are extra good.

The court will now be cleared. Inspector Wotcher and Constable Urcher have been assigned to your cases. Malefactors are warned that those appearing at the next assizes will be most severely dealt with. This bench wishes to put up a rotatable pigeon puzzler and the services of the officers and also the warders will be needed to hoik the thing into place.

If, in the quiet of your cells, any of you wish to place any grievances, suggestions or complaints before this court, we are always ready to consider your reasonable pleas. Such communications should be passed through the governors in Victoria Street. They will not be replied to except in these columns—"Warder! Clear the court!"

Experimental Section

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

General

THE routine of arranging groups is proceeding, but until these are in running order there will be little to report.

Special adhesive labels for affixing to their R.E.S. Certificates will shortly be sent to all R.E.S. members, and those who do not receive them by May 1 are asked to read paragraph 4 on page 483 of the March issue of the T. & R. Bulletin.

To obtain the maximum co-operation, a system of circulating information has been adopted, whereby inter-group matters of common interest will be exchanged. Members are therefore invited to contribute problems, constructive criticism, etc., which affect the Experimental Section. Communications of this nature should be sent through the G.C. of the Group concerned in the first instance, or, if there be any doubt, to the G.M. in whose Group the matter has the most bearing. As Groups are formed, publication will appear in these Notes.

Aurora Borealis

Reports are available from the following :— G2HG, 2NJ, 2QY, 2TR, 2UP, 2XC, 5BM, 5JH, 5JU, 5LB, 6DH, 6QZ, 6YL, 8WI, 2AGQ, 2AZX, BRS 25, 1173, 2977 and SU1WM. These cover all bands from the longest broadcast to 56 Mc., with the exception of 1.7 Mc. Reports on this, or any band, will still be welcomed.

G5JH sends interesting data on sunspots, with D.F. readings, and, whilst an article could be prepared from the available data on hand, if more members would send in material from their log books (positive or negative), we should have more conclusive evidence to go upon.

From a general extract it would appear that, although Droitwich long-wave station was not the other bands were definitely affected. There was a general falling off of signal strength, and a rise in background noise, described by some as a "hiss." It was noticed that European stations seemed to fade out in the U.S.A., whilst their signals were heard here.

A graph is being prepared showing the general trend of the behaviour of signals, but until all data that can be procured comes to hand it might be premature to publish results this month. These will appear in the May issue of the T. & R. Bulletin.

If we take it that signals were affected, members might consider the possible causes thereof, and submit short notes for examination and possible discussion.

Dellinger Fade-out

Exactly 54 days after the display of the Aurora on January 26 radio conditions collapsed again. Members who can give any information concerning observations noted around March 22-24 are asked to communicate with the writer.

Membership

Additions to the list published in March are as follows :—

Group Manager. Propagation : Wm. N. Craig (GM6JJ).

Group Members: J. H. Cant, G6FU (P), J. W. Hamilton, G5JH (P), J. P. Tourle, G8RT (A.P.).

Individual Members : S. W. Allcorn, BRS3227 (P.), S. Allen, G8TR (A.T.), T. Arnold, VU2AN (P.), L. G. Blundell, G5LB (P.), H. E. Gill, G8KO (R.T.).

Resignation : J. Williams, 2BBB.

Group formation. Propagation : 28 Mc.

Group "A": G2YL (G.C.), G6DH, G6QZ, BRS1173, BRS2780, 2AZX.

Group "B": BRS25 (G.C.), G2XC, GM6JJ, G8MH, G8SA, G8CO, BRS3179.

Contemporary Literature

By L. Fryer (GM2FR).

"Strictly 160 Meters." W. W. Smith (W6BCX). *Radio*, March, 1938.

A 20-watt 'phone for the new-comer. The circuit is unconventional in several respects, such as the omission of a buffer stage, and the use of an unneutralised triode amplifier, but is reported to be capable of 20 to 25 watts of carrier, and quite good quality up to 90 per cent. modulation.

The valves used are 42 crystal oscillator, 809 modulated amplifier, 6F6 modulator, and 6J7 speech amplifier.

Stability of the 809 amplifier stage is obtained by tapping down the excitation lead on the driver tank, thus reducing the impedance between grid and earth on the 809 to a very low value.

* * *

Automatic Modulation Control. L. C. Waller (W2BRO). *Radio*, March, 1938.

An article of great interest to the scientific amateur who desires a perfect 'phone output. The theory of the system is fully gone into, and complete data is given for the construction of an amplifier with automatic modulation control.

The author tabulates sixteen advantages of the particular system described, some of these being : (*a*) Eliminates substantially all over-modulation ; (*b*) Increases the average sideband power several db, thus providing an actual gain in the effective audio signal at the receiver ; (*c*) Makes the modulated carrier "clean" and sharp, due to the elimination of "side-splatter" caused from cut-off on excessive negative modulation peaks ; (*e*) Adjustable to any pre-determined value of modulation percentage ; (*f*) Requires few extra parts in addition to those used in an ordinary speech amplifier, and is therefore inexpensive.

* * *

Obtaining Flexibility at Low Cost. Harold Christensen (W6KLU). *Radio*, March, 1938.

A description of a band-switching exciter for the 7, 14 and 28 Mc. bands. The flexibility is accomplished by stage switching, the switches being relay operated. Full constructional details are given.

THE EFFECT OF AVERAGE GROUND ON ANTENNA RADIATION. E. H. Conklin. *Radio*, March, 1938.

While the perfect ground assumption is justified for making certain aerial calculations, the effect of average ground is of great value in predicting the results that will be obtained from the aerial after its installation, and the author discusses the effects of an imperfect ground and what causes these effects.

The article is well illustrated with curves and polar diagrams of tests made on various types of ground with various types of aerials.

* * *

A GENERAL SERVICE BRIDGING AND SPEECH AMPLIFIER. Raymond P. Adams. *Radio*, March, 1938.

A description and constructional data of an amplifier unit, which has a great many uses, such as: Audible monitoring; Simultaneous transmission and recording; Programme distribution from a common bus; Local pick-up; Repeater service; Simultaneous recording and P.A. work; Transcription duplication, and in the strictly amateur application, the modulation of two transmitters from one microphone and low-level amplifier, or the simultaneous reception and recording of special transmissions.

* * *

WHICH TUNING CONDENSER. Frank C. Jones (W6AJF). *Radio*, March, 1938.

A treatise of air-gap and C-L ratio considerations for various applications by the well-known author of the Radio Handbook, in which he discusses the values of tuning capacities for any given value of "Q," and advances sound mathematical proofs of his arguments. An article of interest to, and well worth reading by all amateurs.

* * *

A VALVE-VOLTMETER WITH RETROACTIVE DIRECT-VOLTAGE AMPLIFICATION. F. M. Colebrook, B.Sc., D.I.C., A.C.G.I. *The Wireless Engineer*. March, 1938.

A description of a sensitive form of valve-voltmeter having the following capabilities, Measurement of direct voltage changes from about one volt down to a millivolt across a high resistance of the order of one megohm corresponding to D.C. current changes of about one microampere down to a milli-microampere.

R.F. voltage measurements from about one volt down to about 25 millivolts at frequencies up to the limit set by the particular diode used.

The overall mutual conductance can be raised to 500 milliamperes per volt or more, and instability of calibration is eliminated by using the combination of amplifier and output instrument as a sensitive null indicator, the input direct voltage change to be measured being balanced against a known small direct voltage.

* * *

NEW SYSTEM OF INDUCTIVE TUNING. W. E. Schrage. *Short Wave and Television* (American), March, 1938.

An article describing a modified slider coil type of inductive tuning, which will interest old-timers, and may lead to the elimination of such devices as band-spread condensers, etc.

A HOME-BUILT VELOCITY MICROPHONE. Norman E. Gibbs (W1JXP). *Q.S.T.*, March, 1938.

An article of interest to the mechanically minded experimenter.

Full constructional details of a ribbon microphone built from magneto parts are given.

* * *

A UNIVERSAL TEST UNIT FOR THE STUDY OF TELEVISION IMAGES. Marshall P. Wilder (W2KJL). *Q.S.T.*, March, 1938.

A description and circuit diagram of a unique set-up of interest to television experimenters, with sweep circuits, vision amplifier and an Image generating tube combined in one unit.

* * *

A GOOD FIVE METER T.R.F. RECEIVER. Paul Popenoe, junr. *Short Wave and Television* (American), March, 1938.

A constructional article dealing with a three-valve T.R.F. receiver for five-meter work. The valves used are R.F. 6C6, 57 or 6J7. Det. 76, 56 or 6L5g. L.F. 42, 2A5 or 6F6. The receiver is claimed to be simple, inexpensive and non-radiating.

District 19 Contest

We have received from Mr. Hornsby, the D.R for No. 19 District, a copy of the rules covering an open contest which is being organised by Mr. B. Turner, G6ZT of Billingham, Co. Durham.

The contest will start at 0001 B.S.T. Sunday, May 8, and will continue until 2400 B.S.T., Sunday May 21. Any amateur station in any part of the world can be worked, but the same station may only be worked once on each band. Reports must be given and received from stations worked before a contact will be allowed to count for points. Five points will be awarded for each completed contact. The score will be computed by dividing the total points by the number of hours worked, and it is a condition of the rules that the terms of individual licences shall be observed.

In organising the contest, Mr. Turner hopes that members will observe closely and report upon conditions, skip distance, creep, and the apparent direction taken by signals at different times of the day. The winner, as decided by the rules, will receive a Diploma.

We take this opportunity of congratulating the organisers on their foresight in arranging such an interesting local event.

Unshackled

Farewell, dear Tom, we'll miss the smack
Of well-earned "cussings" from your Shack.
'Tis sad to think that your new track
Deprives us of your cheery quack.
Alas! Alack.

I don't suppose that there's a Ham
Has ever really cared a damn
When with your pen his deeds you'd slam.
But *now* we'll miss your monthly 'gram.
Good-bye, Old Man.

Let's hope one day you'll find a den
Where, taking up your mighty pen,
You'll issue Ham commandments ten
Of why, and where, and how, and when?
Farewell, till then.

Z. C.

THE 56 Mc. BAND

By L. G. Blundell (G5LB)

SCORE nil!—that is sufficient to tell one and all that the expected peak in conditions during March did not materialise. However, there was a large increase in the number of logs received at H.Q. during the month, and it is apparent that the contest is serving a useful purpose in encouraging steady observation on the band and maintaining interest whereas it may have been otherwise.

Since the topic of DX is so easily disposed of, the irregularities of semi-local working must again be under notice, as during March some very interesting events have occurred in this particular field of interest.

G2KU with BRS. 3003 and 3179 gave the "portable" season a good start when, on the 6th, they took some receivers up on to Epsom Downs for test under field conditions. In addition to hearing most of their locals, they heard G6CW (Nottingham) at 348x and 8JV (also Nottingham) at 449x. These signals were heard between 1550 and 1600 G.M.T. The receiver in use at this time was an O-V-1 with a 20-foot aerial slung on to a hawthorn bush 15 feet high. Incidently, this "aerial" was found to bring in the signals better than a properly tuned dipole.

G6CW and 8JV confirmed this reception and 6CW tried again on the following weekend—but without success.

G6OT (London, N.14) observed fading on Southern stations during late February, but did not find any fading or echoes during March.

G6QZ of Norwich, has been keeping watch on commercial harmonics on the rather lower frequencies of 44 Mc. and down. RIS was heard several times on 41 Mc. and on February 16 a signal was heard on 44 Mc., the limit apparently, as no signals were heard higher than this. 6QZ put a W8JK horizontal beam into service recently, and it seems to be doing its job as signals have been heard in London by 2HG (as mentioned in the last issue).

G2HG and 5LB in South London observed a general decline in signal strengths from stations 20 miles and more distant since the "lively" period of February 19 to 21 (also see last issue) and at the time of writing the process is apparently continuing in its downward trend.

In the meantime activity is on the increase, particularly in the Southern districts. G5NG, of Egham, Surrey, is regularly active at 2300 BST daily on about 57.5 Mc.

G2XC, of Portsmouth, reports another CW station in that town. This is G6NZ with 40 watts input on approximately 58.5 Mc. Excellent signal strengths are reported locally. G6FU in London, S.E.13, will shortly be active, but pending transmitter reconstruction is making the most of the potentialities of a National 1-10. Is getting solid signals from stations up to 30 miles or so, and is willing to co-operate in any scheduled activity if he is advised by post direct.

G2XC reports that VU2FV is getting encouraging local reports, and will now be using a diamond array directed on this country.

G6YL reports that FA8IH has been recently heard on 28 Mc. calling "CQ five." Is understood to be operating simultaneously on 28 and 56 Mc.

W9NY, in Milwaukee, is finding conditions similar to ours, and is only able to contact locals. He is active daily at 1400—1430 G.M.T. and very often 2300-2400 G.M.T.; he hopes G stations are listening at these latter hours.

By the way—the proverbial "dicky bird" has been saying a lot lately about the lack of activity during the weekend daylight hours. There seems to be no cause for complaint between say 2200 and 2300 during the week, but Saturday and Sunday afternoons are, it seems, taboo! Is it possibly BCL interference? See to it if you can!

Directive Aerials on 56 Mc.

GM6RG very kindly passes on the following information for the benefit of users of directional systems on this band.

To get an accurate check on the proposed beam direction, communicate with your nearest meteorological office and ask them to give you the exact time when the sun will be due south at noon over a period of, say, a fortnight. Having received this information, it is only necessary to select a convenient shadow and drive a stake into the ground in the middle of the shadow at the moment you know that the sun *is* due South.

GM6RG stresses the importance of getting the *exact* time as it is only on very rare occasions that the sun *is* due south at mid-day.

56 Mc. Conditions Check

G6DH, in recent checks on the U.H.F. commercial harmonic signals, finds that "highest frequency" limit has gradually fallen since about the end of February, and signals are now rarely heard above 42 Mc. He expresses the view, however, that with the approach of summer conditions there is possibility of contacts over the shorter skip distances—European activity permitting!

Aid to Accurate Reporting

Although DX is not yet, it is felt that the possibility is still very real and to avoid getting "dubious" reports the writer would ask you to turn to page 521 of the March issue and read again the paragraph at the head of the second column.

It should, of course, be realised that if and when scheduled tests are advertised in "black and white" the code group must of necessity be withheld—being the operators' decisive check.

Test from HB1AD

This station made a special DX test between March 28 and April 1 from 1000 to 1600 G.M.T. each day.

The writer only received the information on the 28th, but managed to QSP some local stations and hoped for another "snowball" effect. However, it was given out that details of this test were also broadcast from HB9AA on the 3.5 Mc. band, so perhaps the news did get far afield. Anyway, if you have anything to report—send it direct to HB!

The British Empire Radio Transmission Award

MANY members at present holding the W.B.E. certificate issued by the Society have in the past expressed a desire for a more comprehensive Empire award. To meet this wish Council have approved the rules for a new certificate which is designed to recognise all-round station performance. The new certificate, which will be known as the British Empire Radio Transmission Award, is open to all members of the R.S.G.B., whether resident at home or abroad. If the demand arises Council will be prepared to consider allowing non-members to claim on payment of a fee to be fixed.

Members in a position to make a claim are urged to study the Rules carefully and in their own interests they should forward their cards by registered post.

In an early issue we hope to illustrate the new B.E.R.T.A. certificate, which is at present being produced by a well-known firm of Government printers.

To remove any misapprehension we wish to state that the ordinary W.B.E. will continue to be issued as well as the special 28 Mc. and Telephony W.B.E. awards.

The rules for the B.E.R.T.A. are as follows :—

1. The B.E.R.T.A. will be issued to fully paid up members of the R.S.G.B. who have held two-way communication on the amateur bands with amateur transmitting stations in the British Dominions and Colonies.

2. Claimants must have contacted one British Empire station in at least 25 of the Dominion Radio Districts given in the following list :—

Australia : VK2, 3, 4, 5, 6 and 7.
British Isles : G, GW, GM, GI and EI.
Canada : VE1, 2, 3, 4 and 5.
Newfoundland : VO.
India : VU.
New Zealand : ZL1, 2, 3 and 4.
South Africa : ZS/ZT/ZU 1, 2, 4, 5 and 6.

And in addition 15 different British Colonial areas.

3. The R.S.G.B. List of Countries shall determine what is a Colonial area.

4. Confirmations of contacts with ships will not be permitted to count.

5. To effect a claim, members are required to produce QSL cards, or similar evidence (such as confirmation by B.E.R.U. Contest logs) from each station worked, provided in the latter instance the evidence is not more than two years old. The evidence submitted must definitely confirm two-way working.

6. Cards or similar evidence must be submitted to the Secretary, R.S.G.B., 53, Victoria Street, London, S.W.1.

7. A guarantee must be given that licensed power has not been exceeded in effecting the contacts upon which the claim is based.

8. Members who have been awarded this certificate may use the abbreviation "B.E.R.T.A. (cert.)" on correspondence and station cards.

9. In the case of any dispute concerning a claim the decision of the R.S.G.B. Council shall be final.

The above rules were approved in Council on March 15, 1938.

THE 28 Mc. BAND

By NELLY CORRY (G2YL).

DURING March activity was at a very high level, thanks to the popularity of the band for A.R.R.L. DX Contest QSO's, and signals were heard from 54 countries. Conditions were good from March 1 to 12, and still better from March 13 to 21. On the latter date G6DH heard the "Hiss," now recognised as a sign of intense solar activity which may cause unsettled conditions, and from March 22 to 26 these fears were confirmed. During this period the band was a poor shadow of its former self, as Ws were weak or inaudible, and only a few scattered DX signals got through. On the 27th conditions returned to normal, and stations in all continents were well received.

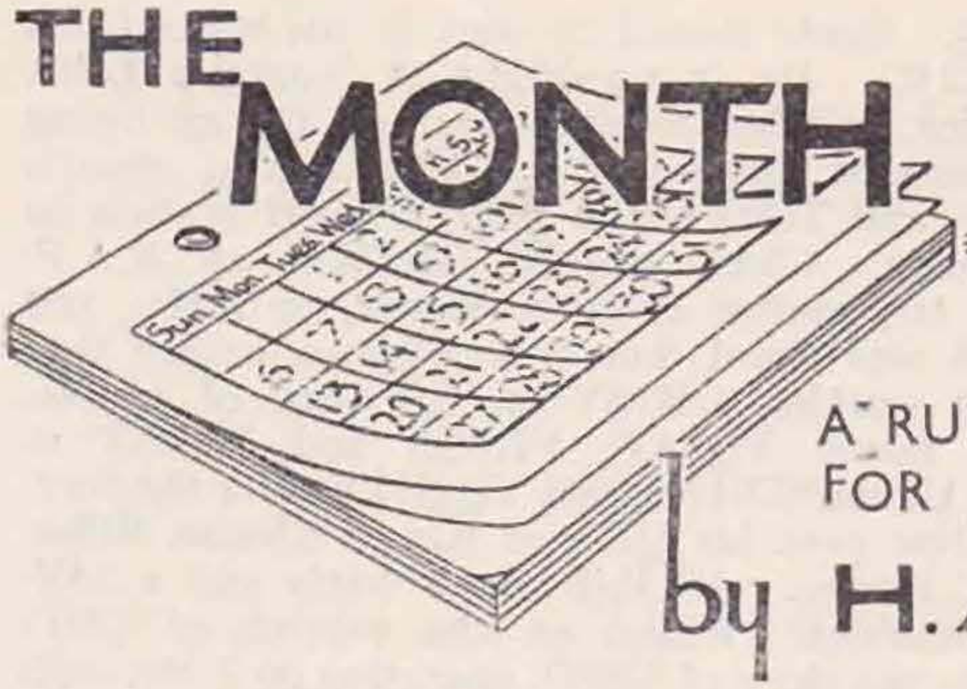
Signals from the Antipodes were more numerous than for some months, and four ZLs and eight VKs were reported. G6QX completed his 28 Mc. W.A.C. and W.B.E. by a contact with ZL4AO at 08.05 G.M.T. on March 21, and G6DH had a QSO with ZL3DJ. G2TK is to be congratulated on making first contact with KA1AP on March 27. In Asia the usual VU and U9 stations were active, and G6DH also worked Japan. A new country is represented by ZC6AQ, who worked several Gs, and details of his first G contact would be welcome. In a report on February conditions, VU2FV states that during the month he worked J2CF, FB8AA, ZT6DY, ZT6S, 7 VKs and 74 Europeans. He is usually active daily from 08.30 to 15.000 G.M.T, and he has never yet failed to raise a station any day that he has been on. He has heard LU3DH at S8, but has not received a single North American station !

The record number of 30 African stations from eight countries was logged during the month, and included 15 ZS stations and four ZEs. South Americans were also unusually prolific, and at least 19 were heard, including a few rare ones, viz. : CX1CG, HC1JM, HC1JW, HK1JB, VP3MB and YV5AA. From Central America and the West Indies nearly 30 stations were heard, in CM, FM, HI, HR, K4, K5, TG, TI, VP2, VP6, VP9 and XE. Nearly all were actively engaged in the DX Contest, in particular the 11 different Puerto Rico stations which were reported.

A good many Gs worked all districts of Canada and U.S.A. on either c.w. or 'phone during the Contest, and G2XC logged Ws at times from 11.15 to 23.00 G.M.T. West Coast stations peaked. in the late afternoons, and on several days came through really well. BRS3179 heard five VE5s, three of them on 'phone, and ten different VE4 'phones. European stations in 17 countries were heard during the month, usually at best strength around mid-day, but sometimes audible up to 18.00 G.M.T.

(*Continued on page* 588)

THE MONTH ON THE AIR



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

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

NUMBERS! Millions of them! March started in a blaze of number exchanging between U.S.A. and Canada and the rest of the world. On the whole conditions were highly satisfactory in the CW portion of this contest, and excellent for the first two days of the 'phone event. Unfortunately the Aurora Borealis display took place exactly 54 days before March 22, and as prophesied by a few the expected 5-day fade out occurred with a vengeance right in the middle. Towards the end conditions started to pick up again, to end fairly satisfactorily.

The high light of the contests was the behaviour of 3.5 Mc. The first four days of CW operation produced some amazing results. Besides the usual East Coast Americans, W4 and W9 were worked by many, including W9ARL in Kansas worked by G2MI who later received a report card from W5EGP. Other DX heard working W, included XE1A, K5AY and CM2AD. G5BD, 6LL and 6WY and many others worked near east Canada and U.S.A. on 'phone. K7PQ was heard on 7,280 kc.

The "rare" United States were well received and worked, and the following are a few on 28 Mc.: W9USI, South Dakota ('phone and CW); W6DRE (CW) and W6GUQ ('phone), Arizona; W7GDU (CW) and W7BJS ('phone) in Wyoming; W9ZNA ('phone), Nebraska; on 14 Mc.: W5DWP ('phone), New Mexico; W9FUH ('phone), Colorado; W7EL and W7BVI (both CW) in Montana; W7CJR (CW), Wyoming; W6NGD (CW), Arizona, and W6NPU and W6DTB both on CW in Utah. No one, however, has reported hat the elusive Nevada was heard or worked.

Two new "first contacts"! To G2TR goes the honour of the first Great Britain-Pitcairn contact with VR6AY on 'phone at 0730 G.M.T. on March 28. The operator of VR6AY was W1BES, who told G2TR that this contact was definitely the first with G.B. and the second with Europe. He was called "on spec" after he had called G5DR; following this contact VR6AY worked PAOMQ, G6WX, a GM, and we believe G5IV. Of great interest is the fact that 2TR used only 25 watts for this achievement. XZ2EZ, VS2AK, YV4AA, VK and VO have also been worked with this power on 'phone. G6QS has received confirmation from VR2FF in Fiji that their QSO on February 24 at 0820 G.M.T. was the first ever between these two countries. This took place on 14 Mc. and G6QS received a report of RST479. Congratulations to both of you.

EP5SO gave a first contact to G2PL at the end of March. He is ex-G5SO operating in the Persian Gulf with a rough note on the HF edge of 14 Mc. G2TR (his brother) tells us that XG5SO heard recently has no connection with the genuine EP5SO, and is believed to be in the Manchester district with a distorted sense of humour.

We believe that G6YR has accomplished a feat that is not easy to equal, in fact he thinks it has not been done before. Contact with ZS1AN was established at 1755 G.M.T. on 28 Mc. At ZS1AN's request they changed to 7 Mc., where they immediately QSO'd; a QSY to 14 Mc. a little later gave them a three band contact in under 70 minutes on March 20.

In our endeavour to champion the cause of QSL'ing we had no idea what sabotage we should cause with our spanner. We will not comment further, except to maintain that a ham who does not reply to a good report plus coupon is a low DX hound. What constitutes a good report? This is a question we are now being asked. In brief, a report should include the following: RST or RSMQ scale report; conditions prevailing at time of reception, i.e. good, bad or medium; other stations heard in the same region with comparative strengths; calls of interfering stations; degree of QRM; fading effects, especially with regard to phase distortion; type of receiver and aerial, and whether audio was used on the receiver; report should cover a period of careful listening to the one station. 2AIJ goes further and suggests weather conditions should be included with barometer, temperature, wind direction and velocity, etc. If such a report is sent in an endeavour to be of real assistance, we feel sure that the card will have been well and truly earned and the applications for H.B.E. should increase at H.Q. as a result.

The first member to report from the U.S.A. is our well-known 600 watt 'phone friend, Dorothy Hall, W2IXY. She worked VR6A on March 6 before his official licence arrived. The power at Pitcairn was 75 watts, but has since been increased to 650 watts fed into a rhombic directed eastwards. W1BES is the present operator, and he tells us to send an uncancelled New Zealand stamp or I.R. Coupon if we want one of the 1,500 cards taken with the equipment. We feel sure these won't last long. ZC2OP was heard in the Cocos Islands —400 miles from Costa Rica. This station is operated by an American, a member of a party of eight white men searching for the proverbial treasure. SU1RD has been putting a wonderful signal into New York, and W7CEO in Wyoming is using 900 watts on 14230 'phone for those who

9 The Mead, Beckenham, Kent.

want this State. The most consistent G's heard at W2IXY are G6XR, G5ML, G6ML, G5JF, G5LK, G2AI and GI2CC.

Eric Trebilcock, BERS195, has moved further into the country and heard a new country as soon as his receiver was set up—CR10ZS who gave his QRA as: Missao, Geografica, Dily, Timor. The signal was rather rough and broad on 14 Mc. He heard VP3TEST frequently, but G2IO reports working VP3NST, and VP3EST was reported in last month's BULLETIN. So exactly what is the correct call of this new station! Unusual stations heard by him on 14 Mc. during the B.E.R.U. were ZS3F, VP6LN, VQ4CRI, 4CRT, VQ8AA, 8AJ and VR2FF. Following the test, 7 Mc. was tried and produced K4FAI, K6OWQ, XU3YK, 2AA, 6LN, 8FY, U0NB and G3DY.

From another part of the Empire we hear from VE5AAD. He informs us that VE5LD and VE5ACS are both in Zone 2 and cards for the latter may be forwarded to him with safety. 5ACS will be returning to Nova Scotia in July, but 5LD appears to be a permanency in King William's Land. G8LV was heard on 7 Mc. calling W8AQT on February 5 at 0829 G.M.T., and of interest is that fact that several VE5's were heard and worked from G.B. during the DX contest on 7 Mc. VE5EO, 5EH and 5OJ gave some G's this coveted zone.

We do not intend to report, month after month, the same rare DX signals heard. This takes up space and frequencies of these stations can be found by back reference to BULLETINS. From home, we learn from G5BD that RUPUL is active on 14270 and is the call of the Soviet Survey Ship searching for the lost fliers at Aklarik, N.W.T., Canada. FY8A was heard on 14400 and OA4R on 14080 and 14260. G5RF raised TA1AA, who gave his QRA at Ancara this time, and promised to QSL. We wish you luck, G5RF! 2AUV heard G4FR, the Yacht *Valdora* in Alexandria Harbour. BRS3025, of Weston-super-Mare, wonders if EL2AE is genuine. We think not. G6CJ gives the QRA of VQ2FJ—C. F. Jones, Box 9, Luanshya, N. Rhodesia. G5FA is still sticking to 7 Mc. with QRP and added 70 more W's during the month, including W6-7, only missing four days, with contacts on 22 consecutive days. Other stations worked included TA1AA, SU1NH, SV6SP (Crete), 7200, and heard LU7AZ 7050, HR4AF, VP2TG, and VP7NT. G2MI heard this latter station on 14 Mc.

G6GN elevated his country total to 90 by working VO6D and requests details of ZN2AA. G5AX also worked this ship station when in Gibraltar Harbour, but ZN2AA ceased operation shortly afterwards. G6GN reports working UK8IA and CR7AC, and heard J2LK, J2OV, J5CC, and FQ8AB. G8MF represents the Channel Is. again and queries the authenticity of ZN5B. We have our doubts. 8MF, with 'phone, worked HH2B, LU3DK, FI8AC and VK with 10 watts, and all districts of U.S.A. on CW four times. BRS3101, of N.W. London, has received cards from AC4YN, K5AA, VK7YL (who is *really* a YL), and J8CF. To obtain a card from J8CF, it is necessary to write a nice letter, with coupon enclosed. BRS2917, of Belvedere, Kent, received some 14 Mc. 'phones, the best being CO2WM, CO8CC, K4EMG, KA1BH, and VK's. G8RL, with a genuine 10 watts, worked W1, 2, 3, 8, 9, and requests details of ZZ4M, worked when 500 miles south of the Azores.

GM2UU says that VO6J is indeed the new call of VO6JQ. Cards should be sent to his home QRA at VE2JQ. He is operating at Sandgirt Lake, Labrador, and has recently been off the air owing to generator breakdown. GM2UU also reports ZC2OP, and TG9AA the only licensed station in Guatemala. G5AX worked GH7WB, an R.A.F. service transmitter at Ford, Sussex, on 7 Mc., and EF8BA was heard, but still no news, except that he was working OK1SV on L.F. end of 14 Mc. G8HA raised VQ8AF, VK6SA and VP2AT in B.E.R.U. and CX1NE and VQ4KTF after the fray. The latter gave his QRA as King's African Rifles, Kitale, Kenya. All this on 10 watts and a half-wave doublet. Whilst on the subject of QRP, listen to the story of G8SD, operating on 7 Mc. with *one watt*. Six W's were worked with this power, and he is hoping for W.A.C. on this frequency! Please send reports to him if you hear his 7014 transmissions.

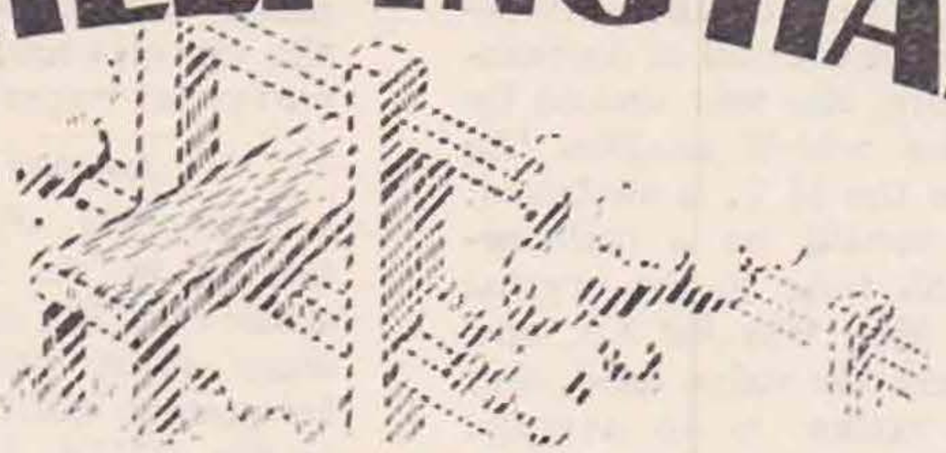
BRS2763, of Snodland, Kent, logged LU7AZ, K5AY and CM7AB on 7 Mc. and VR6A, HR5C 14030 on 14 Mc. 'phone, and K6MVV on 28800 'phone at 18.30 G.M.T. G8IL, also using low power, worked VQ2JC, CR7AY, FB8AA, ST6KR, J2JJ and XU9MK (late XU6MK moved to Central China College, Wuchong, from Canton). J2JJ informed him that there were many UO's operating on 28 Mc. at 07.00 G.M.T., but none on 14 Mc. G8IL has now worked 84 countries in 38 zones in a little over a year's activity with a 1,000 DX QSO's. He wants to know if VS1AI, OQ5RM, EL2M, CE7AA, OA4AQ, K5AG and FB8AD QSL. The answer is "Yes" in the last four cases. G2SO raised XU8RL (HF 14) at 19.00 G.M.T. 2AUV heard VR6AY and hopes to have his licence by next month to have a shot at working him! G8GO throws some more light on VO6J as he sent his card *via* VE2JQ and received a card back from a relative of the operator. G6WY had a similar experience by sending a card to VE2JK for VO6D. No official confirmation can be received from these two stations until after July.

Two G3's report this month. G3GU was licensed on March 3 and in 25 days worked ZE1JI, ZL4GG, ZS1BG and W. G3CT had an amusing QSO with U3FN, a YL in Moscow, who kept repeating that she was a "pratti girl," and signed off with "my darling," and many uncalled-for promises of photo. He asks for details of MOB, who called him on 7 Mc. A new country to try for is Curacao. PJ3CO is operating on 14280 kc., and the operator is ex-PA0XX, and signals were S7-8 when heard at G6WY. I1IR received a card from PX1B, but the call on the card was PX1A, so it would appear that our old Friend PX1A is on the air again with a new call. He is proved genuine anyway. A card was also received from HAM at Budapest Airport. I7AA now uses crystal control with various frequencies, and CN1AA/CR is the same station, but 1AA is crystal, whereas 1CR uses ECO.

Now here is a real piece of reception. G3CJ heard K4EPO on 1.7 Mc. on February 22 at 05.47 G.M.T., but the signal soon disappeared below the mush level. He has since received confirmation. G8UA and many G's have worked EA3SI in Barcelona on 7 and 14 Mc. 'phone. His card is a most gruesome sight. 2BTY, of Reading, wonders if he was the first British station to hear VR6A on March 9. We think not, as VR6A opened

(*Continued on page* 588)

THE HELPING HAND



By Austin Forsyth (G6FO).

PART XII.—DRIVE CIRCUITS.

WE make our appearance once more, with apologies to those who, as we fondly hope, may have missed this section last month.

As the headings and circuit diagrams will show, we intend this time to talk about Crystal and Electron-Coupled Oscillator drive circuits, since this follows logically from what has gone before, and is the direction in which the progressing reader will be turning his attention.

At the risk of introducing redundities, we might repeat here what is, or should be, well known already: that the Post Office nowadays insists that every amateur station must be equipped with some form of frequency control, either directly on the transmitter—which applies in the majority of cases—or by means of a calibrated frequency meter, itself checked against a quartz crystal resonator, where the transmitter is operated with a variable-frequency driver stage.

There can be no doubt which method it is wiser for the beginner to adopt: Straight crystal control, with a multi-electrode valve which can subsequently be used to double or quadruple the crystal frequency for exciting either the output stage (in the case of a low-power transmitter) or a buffer amplifier.

The simplest possible crystal oscillator is shown in Fig. 1. The crystal itself is connected between the grid and filament—or cathode, in the case of an indirectly heated valve—of a hard triode, the word "hard" being used in the sense of high impedance. In practice, it is difficult to find a small output valve capable of handling from four to seven watts input and yet having an impedance of over 3,000 ohms. This is one of the reasons why it is advisable to use pentodes in this position, since they also give, generally speaking, better R.F. output. For experimental work, however, suitable triodes are those in the *Mazda* AC/P, *Mullard* PX4 and "362" *Co* ACPX4a class for mains operation, and the P.220 type for batteries.

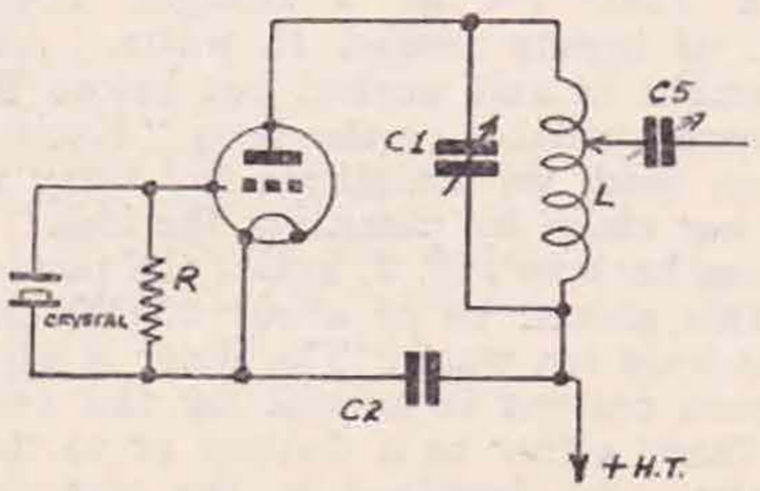


Fig. 1.
Simple Triode Crystal Oscillator.

Reverting to Fig. 1, the method of adjustment and operation is to tune the plate circuit L-C1 near the crystal frequency, such that maximum R.F. output is obtained at the plate end of the coil without the crystal tending to go out of oscillation. The point here is that tuning *exactly* to the fundamental—anyway not always possible—renders the whole circuit unstable, and usually the crystal cannot keep control, or "hold," at the critical point of exact resonance.

The crystal, which oscillates at a certain fixed frequency by reason of its size and physical properties, will only take up control, i.e., oscillate, as the plate circuit is brought near its resonant frequency. A picture of what is happening is shown on a milliammeter in series with the H.T. feed to the valve. Unless it is that C1 is accidentally at the correct setting to start with, the needle will "fly off the scale" when the H.T. is switched on, due to there being no bias on the valve. As C1 is swung through its range, the needle will kick back, and by careful movement of the dial when the kick-back is noted, it may be possible to reduce plate current as low as 5 mA without the crystal going out of oscillation. However, a point will be reached on the condenser where the needle suddenly flicks right over again, and the correct setting is somewhere between the lowest obtainable reading and the point to which the meter-needle first kicks back. A tuning loop held near the plate end of the coil also shows all this. First, as the crystal goes into oscillation, a dim glow appears; this strengthens as the condenser is moved further towards the critical point, suddenly going out as this is reached.

The best test for correct setting of the dial is where it is possible to switch H.T. off and on with the crystal picking up each time. This will usually be found to correspond to a plate current reading of about 10-12 mA.

Loading and Values

If the circuit of Fig. 1 is used for actual drive

purposes, another factor which will affect matters is the loading. On connecting the drive to the following stage, not only is the tune of L-C1 affected, but the load may be sufficient to pull the crystal out of oscillation. This is easily corrected by readjustment of C1 or a reduction of the drive—the latter either by tapping down the coil or decreasing the value of C5. As before, the test should be that setting of the variables which enables the crystal to pick up every time the H.T. is switched.

As regards values, L-C1 should be a coil-condenser combination which will tune to the crystal frequency, C2, .01 μF for 1.7 Mc., .005 for 3.5, and .002 for 7 Mc. R depends upon the valve used, and about 25,000 ohms, 1-watt rating, is an average value. C5, if made variable, should be 100 μμF.

Beyond possible difficulties in getting it working at all—not very likely even for the most inexperienced beginner—this simple crystal oscillator circuit has no tricks. It is just possible that with a very active crystal, second-harmonic output could be obtained, but it is most unlikely. For the first example of a frequency-multiplying circuit, we must look to Fig. 2.

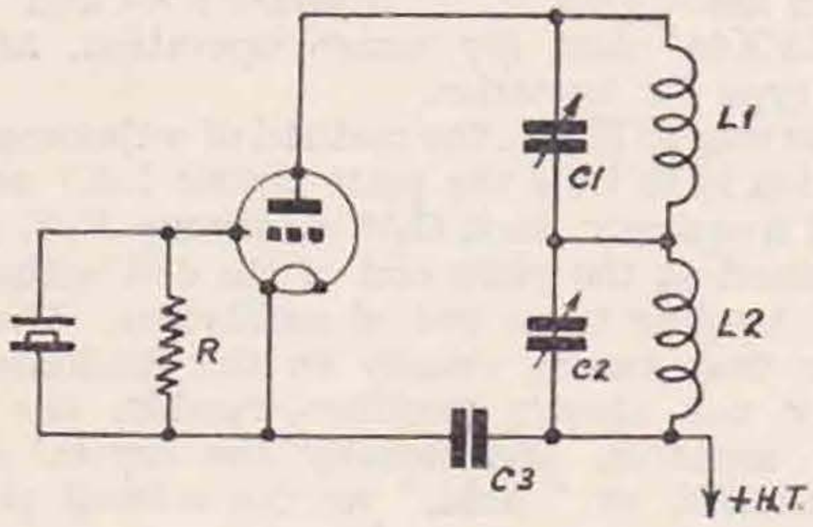


Fig. 2.
Method of getting Second Harmonic operation with a straight CO.

Twin-Tank Oscillator

This shows a straight CO with two tanks in its plate circuit, one tuned to the crystal frequency, and the other to the second harmonic. The method of adjustment is as follows: with C2 at maximum capacity, get the crystal working in the same manner as described above. Then hold the tuning lamp near the end of L2 which is towards the plate, tuning carefully on C2 till a glow is obtained. If the circuit is correctly proportioned, this will be the second harmonic. That is, with a 1.7 Mc. crystal, L1-C1 should tune 1.7 Mc., and L2-C2 3.5 Mc.; drive can be taken off either L1 for 1.7 or L2 for 3.5 Mc., as required. Note, however, that the tune of the circuits affect one another, and there is a best setting for C1 when the second harmonic is being used.

With an active crystal, very good second-harmonic output can be obtained; the other values in the circuit should be as previously mentioned.

Both these circuits, Fig. 1 and Fig. 2, can be used with pentodes of the ordinary L.F. type. The auxiliary grid is by-passed to the cathode (or filament) with a condenser of the same value as C2 in Fig. 1. The H.T. for the auxiliary grid is obtained in the manner shown in Fig. 3—from a potentiometer tapped across the H.T. supply. This should be adjusted so that screen current does not exceed the maker's rating. Where the suppressor grid is brought out to a separate pin, it should be taken direct to the cathode.

As was said earlier, pentodes will usually give better R.F. output than triodes of the type normally obtainable, but to familiarise oneself with the circuits and their operation, it is advisable to carry out experiments with both types of valve.

Another Frequency-Multiplying Circuit

Here (Fig. 3) we have a pentode with a tuned circuit in its auxiliary grid. Some interesting tests can be carried out with this arrangement, since it is possible to conduct experiments in frequency multiplying, using small pentodes such as the MPT4, AC/Pen. and similar types.

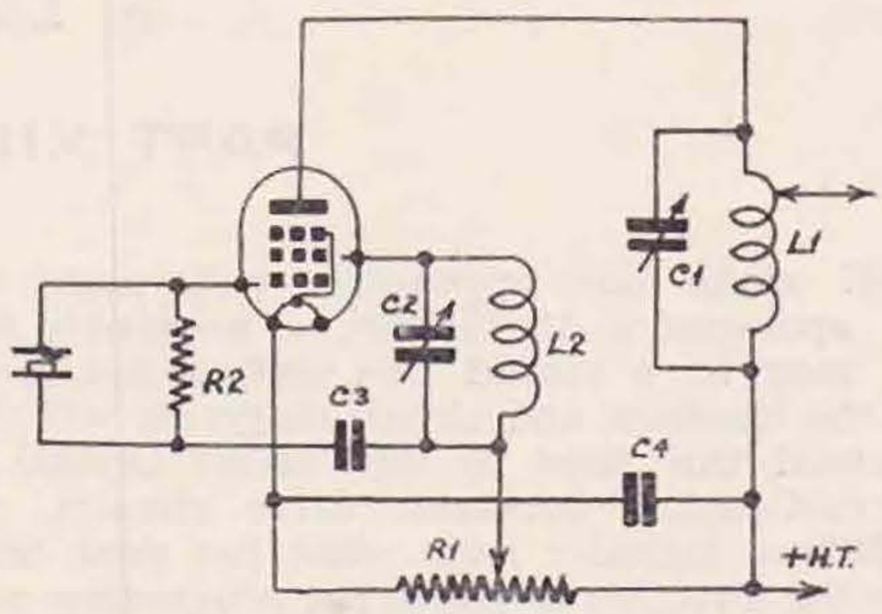


Fig. 3.
A Doubler Circuit using an ordinary LF pentode. On no account must the two tuned circuits be brought to the same frequency as the crystal.

The first experiment is to tune L2-C2 to the crystal frequency, with L1-C1 doubling to the second harmonic. Note that both these tanks should *never* be tuned to the fundamental simultaneously, or the crystal may fracture. In other words, L1-C1 must always double or quadruple. For the latter operation, L2-C2 doubles and L1-C1 doubles again, enough R.F. output being obtainable to excite a small buffer amplifier on 7 Mc. when working from a 1.7 Mc. crystal. With careful design, it is even possible to get some 28 Mc. output in the same way, using a 7 Mc. crystal.

This circuit is essentially a doubling CO, however, and in general the 4th harmonic drive will not amount to a great deal. In this connection, it is perhaps worth noting that we ourselves used for some time a pair of *Mazda* AC/Pens. in exactly the same manner, the second valve doubling again. In this way, very good 4th harmonic output was obtainable with crystals of any frequency 1.7 to 7 Mc., and the 8th, and even the 16th harmonics could be taken out. For instance, the 8th harmonic from a 3.5 Mc. crystal would drive a T25D PA as a straight amplifier on 28 Mc., at inputs around 15 watts. As all this was thought of and worked out before R.F. pentodes were available or the term "Exciter Unit" had been used, we sometimes feel sorry we never staked our claim by patenting the idea!

Coming back to Fig. 3, notice the power resistor R1. This should be of about 25,000 ohms, and rated at least ten watts. The slider is adjusted till the screen current is normal for the valve, with L2-C2 tuned either as a doubler or to the crystal frequency. As described in the last paragraph, this circuit will drive a similar pentode as a second

doubler, in which case the circuit of Fig. 3a. should be used. Co is a small coupling condenser, 100 μμF., either fixed or variable. C2, C3, C4, are all .002 μF. for 7 and 14 Mc., L-C1, of course, being chosen to tune to the desired frequency. RFC can be a *Q.C.C.* type A choke, R1 as used in Fig. 3, and R2 a 10,000 ohm 3-watt resistor. The method of operation is first to bias to cut-off: that is, with no drive Co disconnected from L1 in Fig. 3) and full H.T. on the circuit of Fig. 3a., find the value of fixed grid bias which reduces plate current to zero. With 250-300 volts on the plate of an AC/Pen., it will be about 20 volts. Then, get Fig. 3 working, having first connected up Co and switched H.T. off Fig. 3a. Switch H.T. on to Fig. 3a. and adjust C1 till plate current is at a minimum. There should be a very bright glow in a tuning loop held near L in the latter circuit.

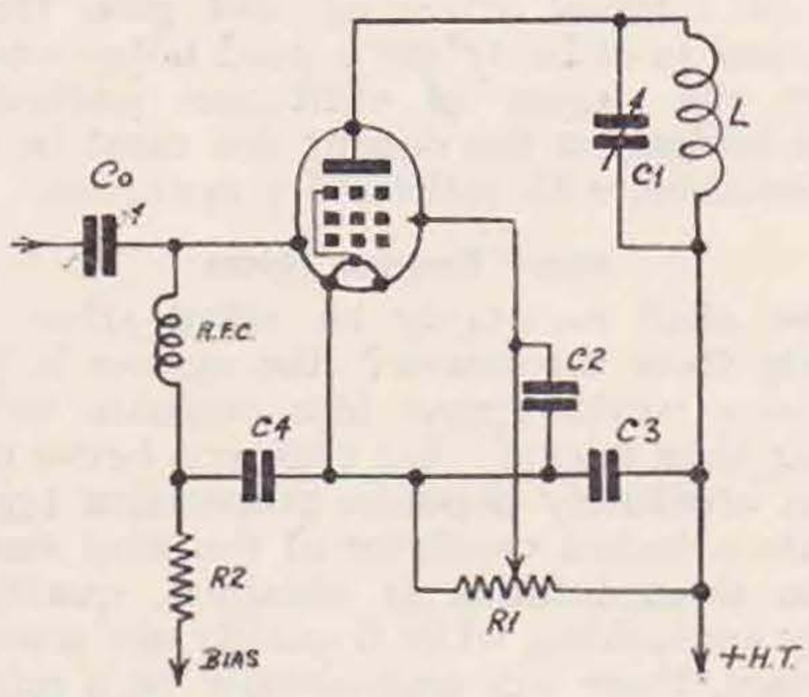


Fig. 3a.
A second doubler to follow that of Fig. 3. L-C1 always doubles to avoid neutralising. See text for details.

There are one or two points to note here; first, always operate the circuit of Fig. 3a. as a doubler. This dispenses with the necessity of neutralising. Secondly, take care not to allow the screen current of either valve to exceed maker's rating. Thirdly, key in either the screen lead of Fig. 3 or Fig. 3a, preferably the former. If the crystal still tends to oscillate even with the screen lead broken—this sometimes happens with a lively crystal and the rise in voltage at the plate due to the regulation of the power supply—it may be necessary to key in the cathode of Fig. 3a to get complete R.F. cut-off. The point is that if the crystal goes on oscillating, even slightly, there may be enough drive to excite the second stage such as to produce a spacer. This may only show as a very faint glow on the tuning loop, but if there is a following power amplifier which is at all efficient, there cannot be complete R.F. cut-off, i.e., a spacerless signal.

The characteristics of the more modern AC2/Pen. are very similar to the AC/Pen. we happen to have used—this being the original valve of this type—and what holds for the one is also true of the other.

We intend to deal more fully with doublers, biasing, excitation and neutralising in the next article in this series, hence the rather sketchy description of the doubler circuit of Fig. 3a, which does not properly belong here.

The Tri-tet Oscillator

Shown in Fig. 4, this is yet another frequency multiplying circuit, with which very good second-harmonic and quite good fourth-harmonic output can be obtained. Its main feature is the tuned cathode L2-C2, which must be carefully used if crystal fracture is to be avoided, while again, it is essential always to double (or quadruple) at L1-C1.

The first part of the tuning process is to adjust the cathode circuit, this being done by rotating C2 from maximum towards minimum till the crystal picks up. The actual setting of C2 must be as far towards minimum as is consistent with satisfactory output in the tank circuit L1-C1, and, in any case, C2 must not be set where the glow obtainable from L2 is a maximum. The further off tune C2 is adjusted, the less the load on the crystal, and this is a very important point.

Having got R.F. at L2, the next thing is to swing C1 till the desired harmonic is brought out in that circuit. As mentioned above, either the 2nd or 4th should be used, and checked by means of an absorption wavemeter. Keying can be carried out in the screen lead, with a suitable click-filter, as described in the *Guide*. This need of a key-thump filter is, of course, equally necessary with any circuit, but by keying where the current to be broken is low, the effect of key-clicks is correspondingly reduced.

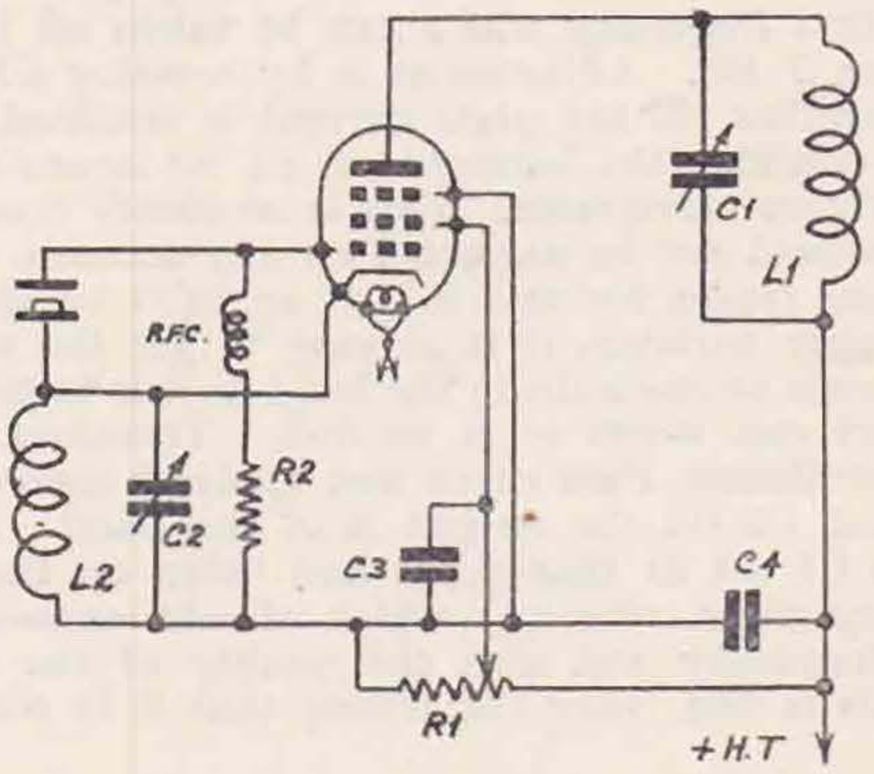


Fig. 4.
The Tri-tet Oscillator Circuit, for 2nd and 4th harmonic working with a single valve.

Values in Fig. 4 are as previously given for the other circuits, and either a standard British L.F. pentode can be used, or the English and American types specially developed for R.F. work of this sort. It is worth noting that it is not absolutely necessary to use, say, a 6L6; the AC.2/Pen. is a good performer in any of these circuits. It really depends upon what is available. If you have one or two ordinary L.F. pentodes on hand, use them for experimental work. But if you have to buy a valve, get either a *Tungsram* 6L6 (which is first grade) or a *Tungsram* APP4g.

The tri-tet can be tuned by both meter and loop indications. With a meter in the plate lead, "no-tune" is indicated by the usual very high current reading, which is bad for the valve, the meter, the power pack and, if he has proper regard for his gear, the operator's nerves. The first indication of the crystal going into oscillation is the drop to a

low value of plate current as C2 is brought into tune; this reading will not be as low as that obtained with the more normal CO circuits. Then, as C1 is rotated across the various harmonics, there will be secondary dips on the plate meter needle, the second harmonic giving quite a deep one, the third one not so deep, and so on. The tri-tet will give the 8th harmonic in usable proportions if a good valve and crystal are being employed.

The Electron-Coupled Oscillator

The circuit of Fig. 5 is both convenient and dangerous; convenient, because it allows of frequency variation over wide limits with good stability at the chosen setting, and dangerous because a badly-adjusted ECO makes all sorts of unpleasant noises and can very easily land its owner right out of the band, with the usual dire consequences.

Briefly, in the ECO, one side of the valve acts as a stable oscillator, and the other half as the output circuit, the usual precaution being necessary here of not operating the cathode side L2-C2 on the same frequency as L1-C1.

Excitation is obtained by tapping the cathode a little way up the coil L2, about 10-15 per cent. of the total number of turns usually being ample. It is wise to work the cathode side on a frequency not higher than 3.5 Mc., as this will ensure the minimum of creep and a reasonably good note. The first frequency which can be taken off L1-C1 is then 7 Mc. Adjustment is by rotating C1 and C2 together till low plate current is obtained, and then checking the harmonic at L1 by means of an absorbtion wavemeter. *This is absolutely essential*, and should not be neglected on any account. The obvious reason for this is that an ECO being continuously variable, it is as easy to get the wrong harmonic or one outside the band as it is to get the correct one where it is wanted. Therefore, first get oscillation, then check and readjust condensers C1 and C2 till the output is in the band. Now, leave C1 set at that point and listen on the frequency-meter monitor, which should cross-check the frequency and also the quality of the note. If this is bad, vary C2, noting that it is possible to get output at L1-C1 on several settings of C2; the right one is that which gives reasonable R.F. with the purest possible note and the best stability. There will only be one spot on C2 where this can be obtained.

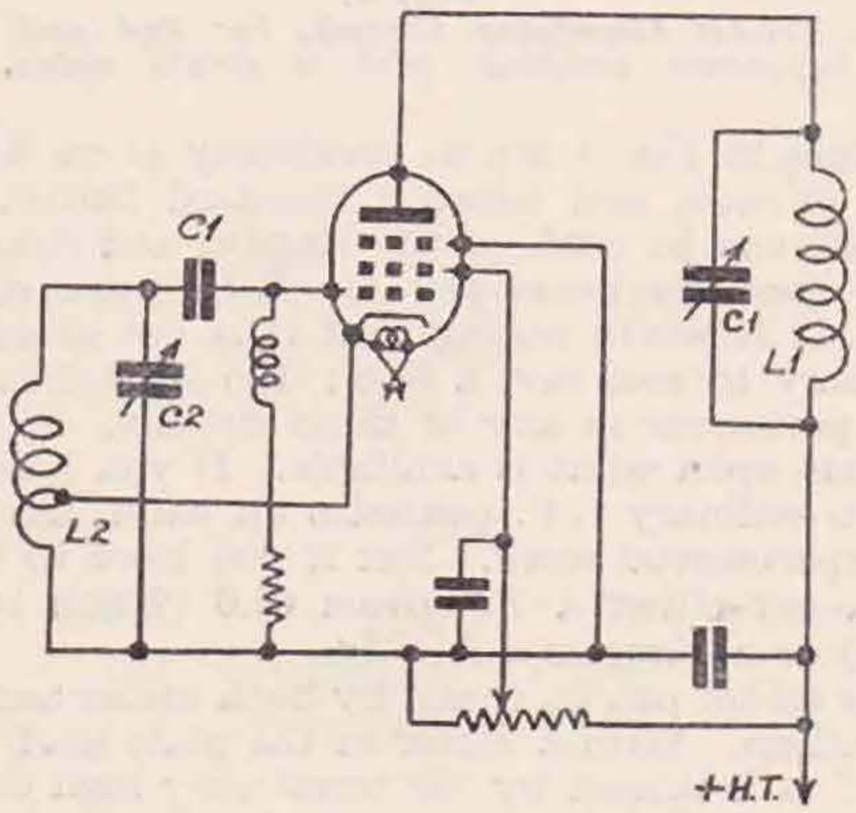


Fig. 5.

The Electron-Coupled Oscillator, requiring careful construction and adjustment for stability. C1 is .0001 μF.

Once the relative settings of C2 and C1 have been found in this manner, they are varied very slightly *together* in order to change frequency within the band. Note that the tuning on C1 will be fairly flat compared with that on C2, which is the control circuit. Hence, slight changes of frequency can be made without having to adjust the rest of the circuit, or the tuning of the driven transmitter following the ECO. The width of variation possible without this re-tuning being necessary depends upon the output and stability of the ECO and its general design, construction and losses.

Values for Fig. 5 are as given for the other circuits discussed, and, as before, almost any pentode can be used. Those having the highest degree of internal screening will give the best results, and in order to get a good note—and keep it—both the degree of excitation (cathode-tap) and the loading on the output side must be as low as is consistent with satisfactory operation.

Some General Notes

As we shall inevitably be asked—How can I modulate these oscillators? the answer is (in the words of a world-famous film magnate with less grammar than talent) " We t'ink you better don't." It is an absolutely hopeless proposition trying to modulate a locked oscillator of the kind described here, as if modulation is obtained, quality and stability are lacking, while if quality can reasonably be claimed, there will undoubtedly be a minimum of stability. The two just won't go together with these circuits, so don't waste your time trying it!

Other points are that all by-pass condensers should be mica, and that R.F. chokes should be inserted in the H.T. leads, on the power supply side of the by-pass condensers. This will prevent coupling between screen and plate.

Finally, we suggest that readers would be well repaid by going through the trying-out of all the circuits described here, as in so doing they will gain a very much better idea of what happens and of what to expect than they can possibly do simply by reading the article.

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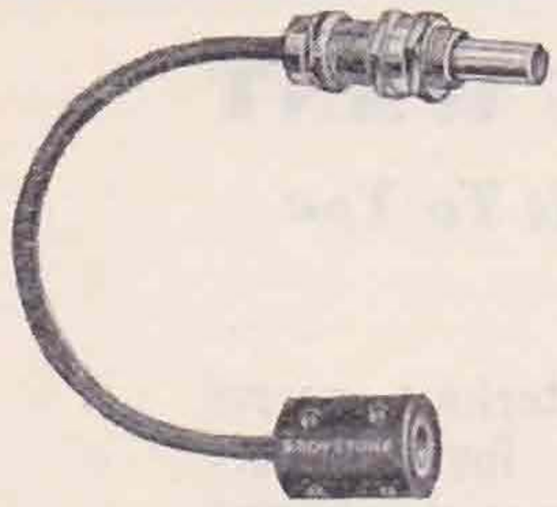

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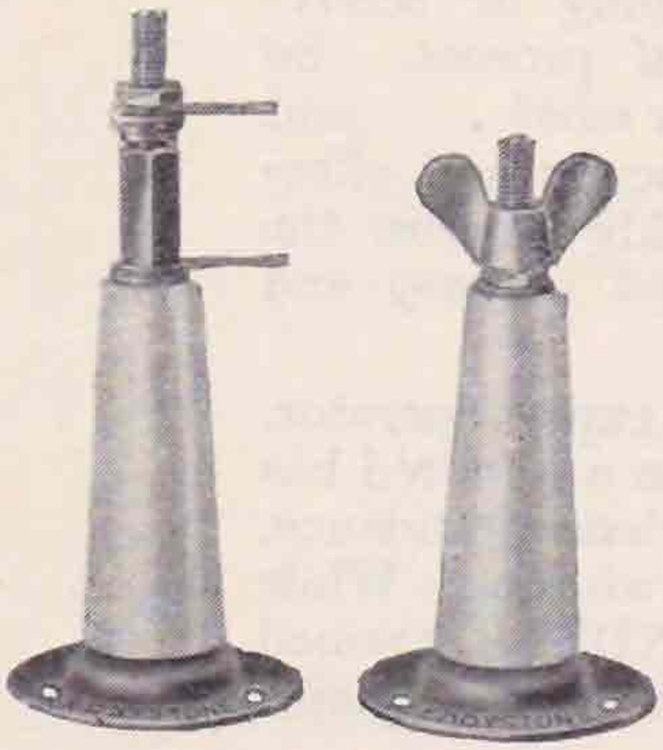

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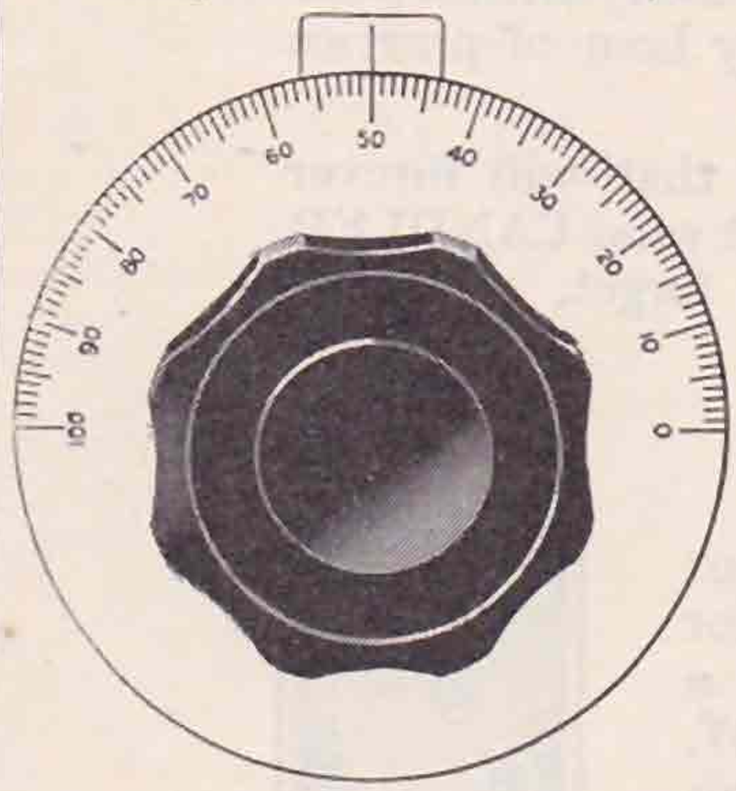

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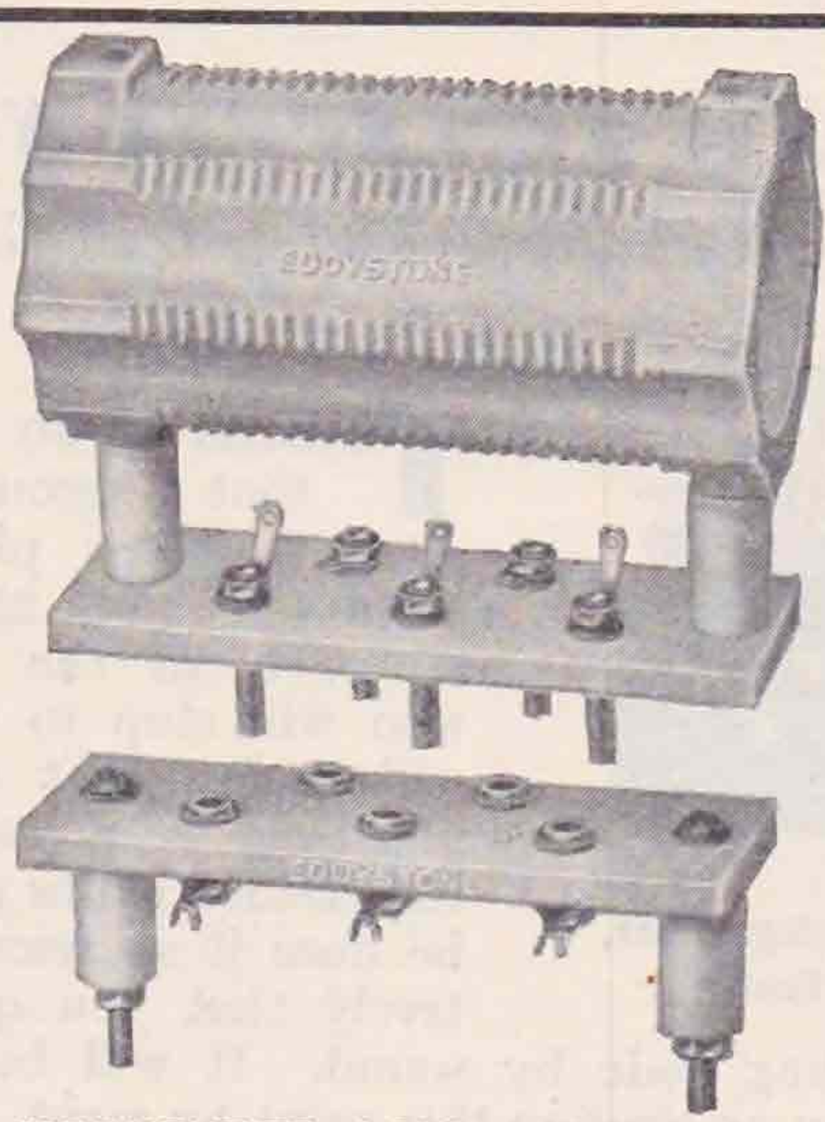

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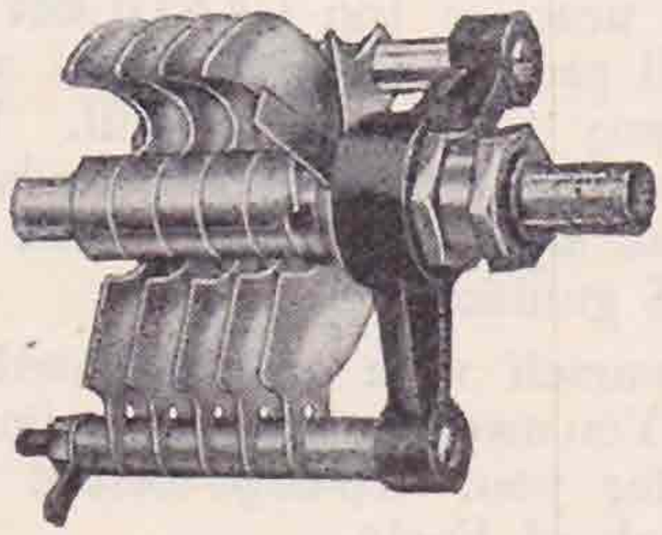

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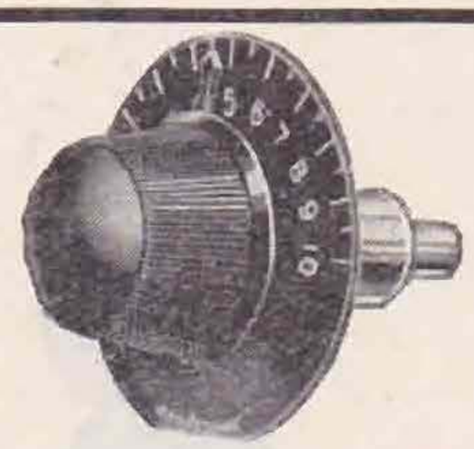

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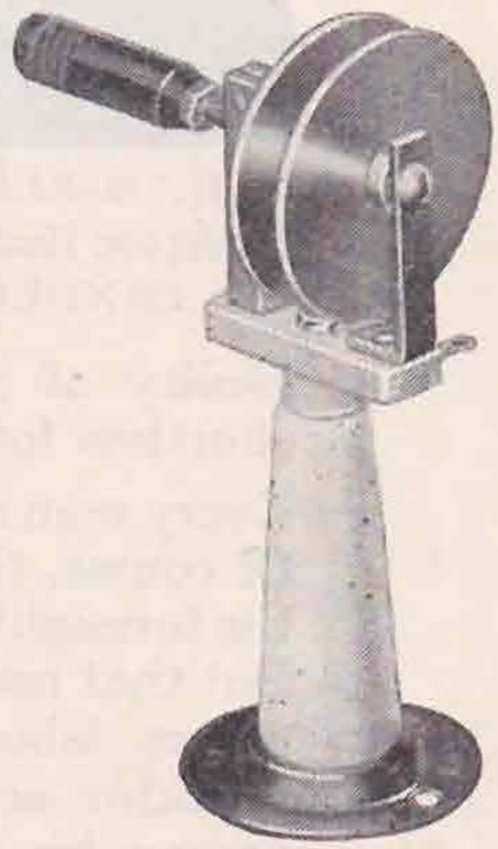

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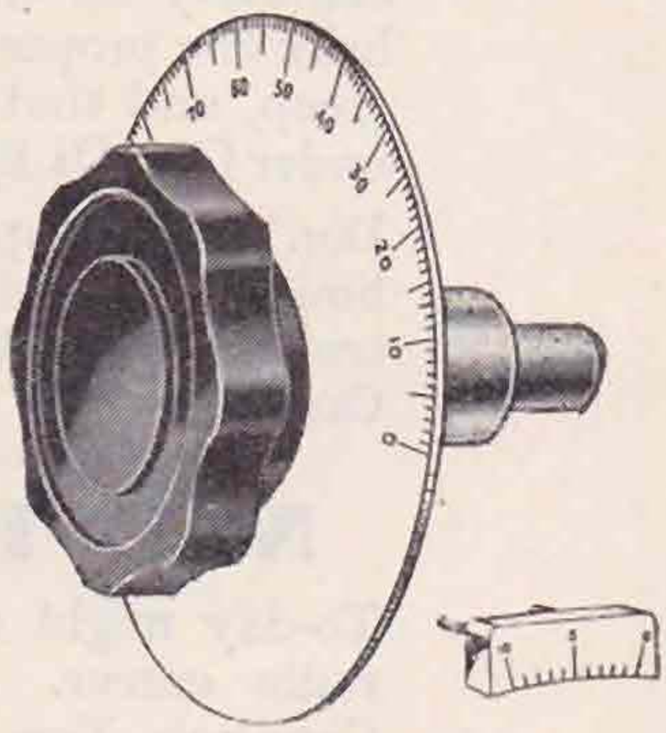

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To The Editor

LISTENERS' REPORTS.

To the Editor, T. & R. Bulletin.

Sir,—Mr. Moores' recent letter and attitude can be appreciated to the point that no one can force him to send a QSL card to a person who applies for one, but from here onwards he and I part company, for his letter leads me to wonder just how long he ceased to remember the days when the chief function of the QSL card was not confirmation of tests but just the joy of a permanent record of an interesting contact between two new friends without reference to distance or status.

It is, as he states, quite possible for the stations concerned to carry out the tests they have in mind to their entire mutual satisfaction, but do they fully report those tests on the small space available on a QSL card? Of course not. Nothing short of a letter can be the satisfactory medium in this respect, and it is mere eyewash to stress the importance of the QSL card in this direction.

Why then does the QSL habit survive in a world where the amateur fraternity are almost criminally cruel to their own kind, and what useful purpose does it serve? The answer to both of these questions is simple. The urge to collect is a fundamental principle peculiar to the human mind and in radio has its outlet in the collecting of QSL cards. The urge is helped by the important point that the collector has, in the first instance, to rely upon his personal skill in order to qualify for the card of the amateur whose signals he has received, often under great difficulties known only to a local observer. He therefore sends a personal report, backed by the necessary money for return postage to ensure the return of the coveted card. Here I must state that I heartily agree with the paragraph in the December Bulletin, so frankly and justly penned by Ham Whyte, and if the amateurs of Salisbury are in agreement with the retention of monies most certainly not their property, then there is something wrong with the Ham Spirit in Salisbury.

Not many years have passed since the "first-line" amateurs of to-day (some of them in possession of receiving licences) were eagerly collecting "Wall paper" not for scientific reports but merely as verifications, and yet they take part in the chorus condemning the collection by the amateurs of the future, dismissing their eagerness to follow on by calling the collection of cards "A silly game." Now I say without fear of contradiction that the collection of QSL cards has a most important function *to continue* as "recruiting agent" to Amateur Radio and that very many members of the Amateur Movement have progressed from card collecting to a full licence. The listener of to-day is the amateur of to-morrow, and if we treat him in such an haphazard manner, the courtesy sins of the present generation will be carried on into the next just because there happens to be a few black sheep among the listeners' fraternity. It is obvious that one cannot, and should not, expect a scientific report from a newcomer who has just mastered the use of the RST code, and I do not think that Mr. Moores expect that; if he does, then obviously he will be disappointed in nine out of ten reports, but what about the Amateur side of the game? Does Mr. Moores want to be paid for all the Amateur spirit he puts into the game? It is the *Ham* Spirit that has made Amateur Radio a force to be reckoned with; for time, money and patience are not to be valued in terms of hard cash or the exacting standards of the commercial world.

Use then the QSL card as it should be used not to usurp the functions of a carefully detailed report of a test (a letter should do that) but as a verification of a handshake between two persons on a common ground. Without it that QSO between us has no foundation in fact and the VK or PY one works or hears may be situated in the next district (and sometimes is) for all its value to the participants. The QSL card is the personal representative of the station, it proves the contact, and is a lasting record of a pleasant meeting that may be held once in a lifetime.

Surely we have enough of the spirit of co-operation and toleration to assist the climbing listener by small sacrifices of time (or even larger sacrifice if necessary) in order that the cause of Amateur Radio may be served, and not starved, during the short time that we hold the reins in the forefront of its service. Let the social spirit or, as we know it, the Ham spirit, play a larger part in the present-day "grab as grab can" attitude of the Amateur World.

Yours faithfully,
W. E. F. Corsham (G2UV).

To the Editor, T. & R. Bulletin.

Dear Sir,—Mr. Moores (ZE1JA) says in his letter to you published in last month's Bulletin that the "silly game (of listeners reporting his QSO's) has got to stop." Apart from the solid implication in his arguments of selfishness, Mr. Moores should know that any attempt by the Editor would result in no more success than that which attended the efforts of the Post Office in stopping circulars sent by moneylenders or sweepstake promoters prior to legislation in this country.

It is unfortunate for Mr. Moores that he has to rely on a messenger to fetch his mail; that he has to pay surcharges which a normal individual would refuse; and that the usual remedy of consigning in silence unwanted correspondence to the wastepaper basket is insufficient. He speaks only of communications transmitted through the Post Office, yet he appeals to the R.S.G.B. for redress against the activities of societies unaffiliated to it. He affects injured pride that his numerous correspondents prepay postage, and forthwith argues that he has the right to misappropriate it on the ground that the money was sent to him in speculation. His heart is so hard that it yields to no such entreaties of disappointment of reporting listeners as are involved in a broken spirit, ill-health, youth, etc. The limit of his Ham Spirit is exhausted by societies who, he says, encourages others to "indirect stealing from his precious pile" of QSL cards (which could be bought at ten a penny), notwithstanding that

he must first facilitate the theft by voluntarily addressing the cards which then become automatically stolen. He admits he wants free information, but leaves it to others to instruct beginners what kind to send.

Mr. Moores displays his record of having had three call signs in a most abundant manner, but allow me to say that this outward sign of strength and experience does not, *ipso facto*, make him a "big shot." There are as many men with brains in the ranks of listeners proper as in those of operators. There is no real distinction between one and the other except at the commencement. The true test of quality, as in all branches of science, is the ability to make deductions which are *right*; to be able to argue from premise to conclusion with balanced judgment after eliminating such inconsistencies as, we venture to say, abound in Mr. Moores' letter.

Does Mr. Moores deny that, without listeners, he could have carried on his experiments? Supposing he had got no contacts with his new beam aerial, would he then have upbraided the fellows who he says speculated their money without result for one of his QSL cards? Is it not true that one listener, at whom he pokes ridicule, unwittingly warned him that he was causing QRM by an harmonic on 10 metres? Does he seriously think that another listener, who he says misquoted a conversation he had with a G station, did much worse than the one to whom he was in QSO could have done in view of the present conditions on the 20-metre band?

Does Mr. Moores hope to convince readers that the other amateurs in Salisbury subscribe, as he says, to the many unpleasant things which he would have us believe are facts? I am afraid, if he does, that he is also mistaken in this, as there are far too many contradictions in his letter. Not the least of these is his ungracious attack (which he says prompted his desire to come into print) against the wholly justifiable remark made by such an indefatigable worker and benefactor to both young and old members as G6WY, coupled with the tame acknowledgment in the final paragraph of his letter of the use to him of the gratuitous monthly reports appearing in the Bulletin from the pen of this same true ham, G6WY. Mr. Moores must know that if he were successful—which he cannot be—in stopping this "silly game" of listeners, that the very support and courage which helped and inspired him to acquire the knowledge by which to-day he enjoys reading those monthly reports would be denied to youngsters now on the threshold where he previously stood.

Yours faithfully,
L. O. Jones (G2JO).

To the Editor, T. & R. Bulletin.

Dear Sir,—Having read with keen interest Mr. P. W. Moores' letter anent the QSL position, and also the editorial thereon, may I venture to reply from the standpoint of one who, although now a licensed amateur, was previously a keen SWL?

Firstly, let me at once agree with Mr. Moores that any listener who does not make an effort to enclose reply postage is simply taking a chance, and no possible blame can attach to an amateur who fails to reply under these circumstances.

Also the point about valueless reports from a country with which the amateur was at that time in QSO is a strong one and cannot be refuted. Of course, the fact that a reporting station should endeavour to make reports intelligent and helpful is self-evident, and many listeners fail dismally in that respect.

Now for the listeners' case. He cannot join in a QSO nor engage in experiments except in special circumstances. His great pleasure in nearly every case is quite candidly the collection of verification cards from all parts of the world and from such stations as are kind enough to send them.

It therefore seems, in my opinion, to boil down to this: the licensed amateur cannot be said to have any definite obligation to QSL to reporting stations, but in the case of listeners who take the trouble to enclose reply coupons or stamps it surely seems only courtesy to make that extra effort to QSL to them.

I can assure Mr. Moores that if he could see the pleasure given in many listeners' homes by the arrival of some much-sought-after DX card, he would find it hard to keep up what I should respectfully call a rather intolerant attitude on this matter. Such an attitude does seem to be a departure from the high standard of generosity and kindliness which characterises amateur radio throughout the world.

Yours faithfully,
Hector G. Mappin (G3BS).

[A considerable number of other letters have been received in reply to the one published in our last issue from Mr. P. Moores (ZE1JA). Unfortunately space does not permit us to reproduce more than a selection.]

DOWN TO EARTH

To the Editor, T. & R. Bulletin.

Dear Sir,—It may interest Mr. D'Arcy Ford and other members to know that over 20 years ago ground aerials were used for radio reception during the War. A single insulated wire with an earth pin or net, or, alternatively, two ground aerials, were laid out on the earth surface. The ratio signal strength to interference was good, the properties less directive than frames or loops, and signal strength could be increased up to a certain limit by increasing the length of the wire, after which no further improvement was noticed. Two hundred yards of wire seemed to be the limit for a wave-length of 1,000 metres. Range and QRK depended on soil moisture, dry ground giving good signals and moist ground proving poor. By actually burying the wire below ground a buried aerial often gave improved ratio signal strength to interference, but the disturbed earth became very conspicuous to enemy airmen. A low-frequency current system of signalling was also used, wires up to 200 yards in length being laid out on the surface of the ground. Alternating E.M.F. from a power buzzer sent earth currents that could be amplified at the receiving end by an ordinary L.F. valve amplifier. Ranges up to 2,000 yards were covered, and the ideal site was one that had a thin layer of clay over chalk or rock. This seemed to confine the signals to a layer near the surface of the ground, giving a marked increase in QRK.

Yours faithfully,
N. P. Spooner (G2NS).

EARTHED !

To the Editor, T. & R. Bulletin.

Dear Sir,—With reference to the letter head "Down to Earth" in the March issue of the Bulletin, I must admit surprise that such valuable space be wasted on such obvious facts. Many of us proved to our own satisfaction 15 or 16 years ago that broadcast signals could be received with the aerial lying on the ground with even such simple apparatus as was then in use. With present-day apparatus the facts are of even less value as a modern set will bring in dozens of broadcast signals with only a few inches of aerial. If Mr. Ford had experimented on the short-wave bands with his ground wire and made signal strength measurements under varying conditions, the results would have been highly interesting, but no doubt he will publish a pamphlet on the subject in due course.

Yours faithfully,
H. Miles (G2NK).

CONTINUOUSLY VARIABLE C.C. OSCILLATOR

To the Editor, T. & R. Bulletin.

Dear Sir,—The heading "Continuously Variable C.C. Oscillator" to 2BIB's letter on page 495 of the March Bulletin suggested, first, that here was something too good to be true ; but a second reading leaves one wondering whether or not a gentle leg-pull was intended.

The snag is that if a C.C. beat-note is to be obtained by mixing two signals, then both signals must be themselves crystal controlled. If a C.C. signal be mixed with an E.C.O. signal, the resultant beat-note(s) cannot have greater stability than the E.C.O. There is this, however, to be said for 2BIB's scheme, that if, contrary to usual practice, the "sum of the frequencies" beat be extracted, then the percentage variation in the beat frequency will be less per kc. than in the signal varied. Probably the inconvenience of using such a system is the reason so little data on it is available.

Yours faithfully,
G. S. Stritch (EI6L).

A FURTHER VIEW.

To the Editor, T. & R. Bulletin.

Dear Sir,—I should be pleased if you could spare space in your columns for a reply to your correspondent 2BIB, who writes on the subject of "Continuously Variable Crystal Control." The essential value of a crystal is in its source of constant and fixed frequency, and 2BIB seems to me to have devised a very ingenious system of using a crystal to avoid the one advantage of crystal control. Apart from this objection, I doubt if his circuit will work in the way it is intended, for the following reasons :—

1. The output frequency of a mixer circuit, as used in "supers" and in the circuit devised by 2BIB, is entirely dependent on the sum or difference of the two frequencies mixed. If, therefore, one of the frequencies varies the I.F. must also vary by the same number of kilocycles. The stability of the whole system, therefore, is dependent on the stability of the least stable member, which is, one assumes, the ECO circuit.

2. If the ECO is locked by the crystal, the beat note is of zero frequency, whilst if the ECO is not locked the stability of the whole system depends upon its own rather doubtful stability.

3. For those who wish to eliminate the advantages of crystal control, the ECO circuit is, as such, almost perfect. It enables those who like to wander all over the band, and neighbouring territory, to do so at no immediate cost to themselves, and allows them to settle down on top of any station that is working a DX station, "so that he hears me and I raise him as soon as the other fellow finishes," and incidentally helps "the other fellow" to finish with the DX station sooner than he otherwise would have done.

4. For those who suffer from the effects of the above, I would recommend an AT cut crystal in a variable air-gap holder. This will let them swing some 10 kc. either way on 14 Mc. and perhaps hold the QSO, the chief disadvantage being that variable-gap holders are not, to my knowledge, available in this country, and therefore must be home made This appears to be a great bar to present-day amateurs.

5. Finally, why not go back to the time-honoured trick of slipping a piece of mica under the crystal ? Admittedly, one does not know beforehand which way the cat will jump, but why worry—everyone knows the edges of the bands are either imaginary or futile !

There are one or two points raised by other correspondents that I should like to answer.

Firstly, to GM8CF, on the subject of G8s and G3s, I would say that, so far from the proof of the "pudding" being forthcoming, there is only the proof of the 7 Mc. "Jam-tart" available, and the flavour is a trifle strong ! Speaking seriously, however, my cathode ray circuit shows that the "lids" are pretty evenly divided between all the numbers.

With regard to the relative cost of a T9X note on 10 and 100 watts, it seems that no amateur should use a higher power than he can afford to smooth properly. Further, a T7X report is infinitely better than a T7C, and the change is only a matter of common sense, decent building, and careful adjustment. Everyone, without exception, should be able to get a T9X note from their primary drive source, whether crystal or ECO, and having got this, it is impossible to get a chirp on the final, and we should no longer have to put up with what a local amateur of some ten years' standing calls "so-and-so drifting past, like a butterfly in the breeze."

Yours faithfully,
Stan O'Hagan (2BGG).

THE LATE G6RL

To the Editor, T. & R. Bulletin.

Dear Sir,—Further to the announcement carried in the January issue regarding the disposal of the apparatus and station equipment owned by the above deceased member, I feel that some appreciation is due both to the Society's journal and to the membership as a whole for the whole-hearted manner in which the appeal was met.

Over 280 letters and postcards were received from places as far away as Canada and the F.M.S., not to mention innumerable telephone calls.

Practically the whole of the gear has been disposed

of, with the exception of the transmitter and a number of small items, and these I hope to clear within the next few weeks.

To all those who purchased gear, and to all who wrote, I tender my deepest thanks, which I know will be heartily endorsed by his family and relatives, and, above all, I thank Headquarters' Staff for the splendid manner in which they co-operated with me in this matter.

Yours faithfully,
G. A. Exeter (G6YK).

IN DEFENCE OF C.W. ON 56 Mc.

To the Editor, T. & R. Bulletin.

Dear Sir,—As one of the original exponents of this mode of transmission, and, in common with other C.W. operators, having very definite ideas as to the general value of such practice, I should appreciate a little space so that I may make suitable reply to G5HF's remarks in the March issue.

It appears that since 5HF is possessed of such superior knowledge as to what is the *only* suitable form of transmission for experimental purposes on this band, I (and the other C.W. users) can only be wasting time and effort. Further, it seems that we are actually impeding experimental development of 56 Mc. by using what we consider best for that purpose. Certainly an appalling state of affairs—for 5HF!

Now, whilst I am broadminded enough to thoroughly appreciate the old saying "one man's meat is another's poison," I do take exception to the other fellow telling me that his poison is very much more nutritious than my meat, just because it suits him.

Plainly, then, 5HF cannot under any circumstances state in such a downright fashion that experimental work can only be carried out through the medium of telephony. It is equally evident that he did not make the contents of his letter fully indicate what was in his mind.

As for his wholehearted faith in telephony, I will agree that he would find this system more *convenient* when signal strengths allow, but what does he do when he cannot get (or give) understandable transmissions? I presume that, rather than resort to other means of communication he has to await the appearance of signals of suitable strength before he can resume his experiments. This fact alone will show that telephony is *not* the only satisfactory channel for experimental work—a point which is fully realised by the "Morse mad," hence all the signs of a flourishing "disease."

Mr. Heap may take it for granted that the "sufferers" (?) are fully aware of their own activities and are, in all truth, doing excellent experimental work—whatever the subject may be.

Finally, I would correct his remarks concerning "other fields for experiment." Coupling systems and absorption—yes, but standardisation of construction—no! Apparatus for 56 Mc. is the least suitable for this kind of treatment inasmuch as individual ideas and requirements very seldom tally. In any case, when one makes a standard one does not experiment, so seeing that the word "experimental" covers the greater amount of amateur activity, there can be no standards except those indicated by theory.

Yours faithfully,
L. G. Blundell (G5LB).

Trade Notes

What is claimed to be the first British-made Pillar Insulator of low loss design has recently been placed on the market by *Radiomart*, of Birmingham. The insulator is especially suitable for ultra high-frequency equipment, and has a loss at high-frequency considerably less than 1-50th of some competitive pillars which have been tested by the manufacturers. The insulator is listed as Type SP, and retails at 6d.

* * *

We have been notified that the prices of the Exide "Hycap" range of cells have been reduced as follows:—

Type.	*New List Price.* s. d.
OCG3-C, OCG3	3 6
GFG4-C, GFG4	10 0
GKG5-C	12 0

At the same time Exide advise us that they are now fitting their famous Indicator to all cells in their "CZG" range, with the exception of the CZG2 and CZG8, at prices at present obtaining for the non-indicator range.

The range of "CZG" cells with Indicators is now priced as follows:—

Type.	*New List Price.* s. d.
CZG3-C	11 0
CZG4-C	12 9
CZG5-C	14 3
CZG6-C	16 0

Non-Indicator cells are still available, but there is no price advantage to customers ordering CZG cells without indicators.

* * *

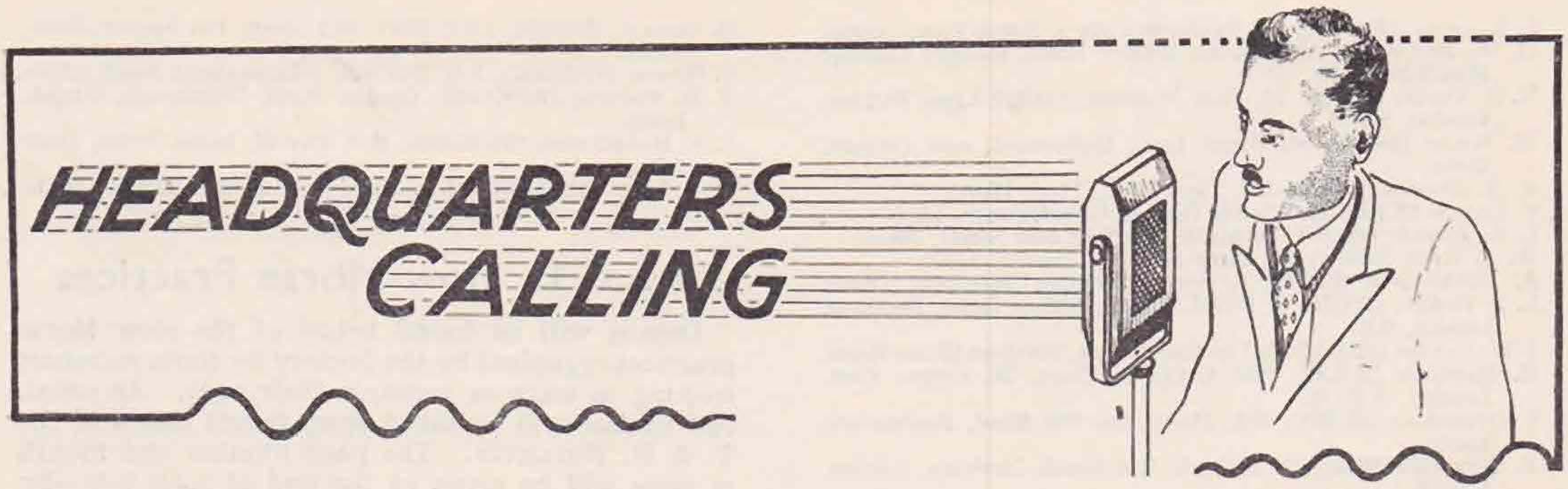
The fifth edition of the *Quartz Crystal Co.'s* price list has just come to hand and displays an imposing array of components of both British and American manufacture, including a very interesting and comprehensive range of low-priced measuring instruments. An adjustable air-gap crystal holder is another new line.

The booklet contains a wealth of technical information and is well illustrated. It should prove especially valuable to the newly licensed amateur who is building his station. The old hand will of course already be familiar with Q.C.C. apparatus and service.

It seems a pity that crystals themselves have remained at the same price for so many years, but as 15s. appears to be a universal price, there must be some good reason for it.

We congratulate Q.C.C. on a very well-produced catalogue.

A. O. M.



I.E.E. Meeting

At the April meeting, to be held on the 29th inst., Mr. H. A. M. Clark (G6OT) will deliver a lantern lecture on the subject of "High Definition Television."

The lecture, which will deal with modern television equipment, will commence at 6.45 p.m., preceded by tea, served free of charge, from 6 p.m. The I.E.E. will be open from 5 p.m. for informal discussions.

* * *

Convention

We understand the R.M.A. Exhibition will run from August 24 to September 3, in which case our Annual Convention will take place during the period September 1 to 3. A further announcement will appear in our next issue.

* * *

New Vice-President

Council have much pleasure in announcing that Capt. George Courtenay Price, T.D. (GW2OP), of Pembroke Dock, West Wales (late representative for Districts 5 and 10), has been elected a Vice-President in recognition of his long and loyal service as an executive officer of the Society.

Headquarters, on behalf of his many friends at home and abroad, offer Capt. Price congratulations.

* * *

1.7 Mc. Contests

The suggestion has been made that two 1.7 Mc. Contests should be held annually. The Tests and Awards Committee have given careful consideration to this matter, but are of the opinion that it would not be in the best interests of the Society to sponsor a dual event.

In connection with this contest, the Committee invite members to forward suggestions for improving the 1939 event. Suggestions should be sent to Mr. A. O. Milne, G2MI, "Twemigh," Kechill Gardens, Hayes, Bromley, Kent, not later than April 30, after which date the rules for the next contest will be framed.

Special 56 Mc. Permits

Members holding 56 Mc. permits are reminded that they may apply for permission to operate portable 56 Mc. stations from now until the end of September without additional fee. An assurance must, however, be given that frequency stabilised apparatus will be used.

Applications must reach Headquarters not later than April 23.

* * *

56 Mc. National Field Day

The Tests and Awards Committee have decided not to organise the projected 56 Mc. Field Day in July. They hold the view that with the development of stabilised transmitters at home stations little purpose will be served by organising an official event which tends to encourage the use of obsolescent gear.

* * *

Iraq

Council have decided that contacts with, or reception reports from, Iraq (YI) amateur stations relating to the period up to December 31, 1935, will count for W.B.E. and H.B.E. claims. Contacts or reports relating to the period from January 1, 1936, onwards cannot be accepted for these awards. It should be mentioned that Iraq is now a foreign country.

* * *

NEW MEMBERS.

HOME CORPORATES.

H. W. WARNER (G3BB), 29, Grove Street, Retford, Notts.
C. T. HOLMES (G3CH), Municipal Technical College, Hull, East Yorks.
J. F. DAVIS (G3CI), 10, Treherne Road, Brixton, London, S.W.9.
C. WATSON (G3CW), 13, High Street, Wem, Shropshire.
R. MITCHELL (G5LH), Earlville, 9, Earl Road, Keighley, Yorks.
M. HOLLINSHEAD (G5QG), 66, Frankley Beeches Road, Northfield, Birmingham, Warwicks.
R. W. WRIGHT (G5RY), 112, Melling Road, Aintree, Liverpool, 9, Lancs.
P. H. TRAFFORD (G5UQ), Ratcliffe Road, Sileby, near Loughborough, Leics.
A. R. DELLBRIDGE (G6KV), 35, Ellerton Gardens, Becontree, Essex.
V. WALKER (G8BL), 8, Thornton Ville, Cleckheaton, Yorks.

HEADQUARTERS TELEPHONE NUMBER HAS BEEN CHANGED TO

ABBey 4412

C. Parsons (GW8NP), 26, Mackintosh Place, Roath Park, Cardiff.
H. W. Bannister (G8OM), 44, Elksley Road, Welbeck Colliery, Mansfield, Notts.
N. F. Young (G8VM), 14, Park Mansions, Colehill Lane, Fulham, London, S.W.6.
W. Wilde (2ACD), 30, Bower Lane, Hollinwood, near Oldham, Lancs.
R. A. Archer (2AXP), 194, Fleet Road, Fleet, Hants.
F. Green (2CFL), 24, Woods Terrace, Gainsborough, Lincs.
L. G. Abbott (2CQU), Tetworth, Everton, near Sandy, Beds.
W. A. Rack (2DDO), 39, Birch Avenue, Grimsby, Lincs.
A. Duckworth (2DFS), 6, Seymour Grove, Heysham, Lancs.
L. S. Davies (2DJN), 3, Bland Avenue, Clifton Road, Peckham, London, S.E.
J. W. Barnes (2DHK), 27, Cardinal Avenue, Boreham Wood, Herts.
H. Marsden (2DLM), Flat 1, Craven Court, 55, Craven Park, London, N.W.10.
S. Overstall (2DMA), 201, Haslingden Old Road, Rawtenstall, Lancs.
V. Hay (BRS3235), 41, Pollards Hill North, Norbury, London, S.W.16.
T. J. Sheridan (BRS3236), c/o "St. Joan," Gloucester Road East, New Barnet, Herts.
P. C. Ratcliffe (BRS3237), The Bungalow, Allanson Road, Rhos-on-Sea, North Wales.
G. C. Lambert-Clear (BRS3238), Rivers Corner, Sturminster Newton, Dorset.
J. Stewart (BRS3239), 27, Bridge Street, Lisburn, Northern Ireland.
A. S. Graham (BRS3240), 43, Fitzgerald Road, Old Swan, Liverpool, 13, Lancs.
R. J. Melchior (BRS3241), Rutland Hall, Loughborough, Leics.
K. Gooding (BRS3242), 7, Broadbent Avenue, Ashton-under-Lyne, Lancs.
J. Nickle (BRS3243) 15, Clonlee Drive, Belfast, Northern Ireland.
J. G. Macvie (BRS3244), 72, Marsh Hill, Erdington, Birmingham, Warwicks.
R. O. Lloyd (BRS3245), 155, Abergele Road, Colway Bay, North Wales.
L. Heys (BRS3246), Faraday House, Henry Street, Blackpool, Lancs.
R. E. Hopper (BRS3247), 130, High Street, March, Cambs.
J. Gallagher (BRS3248), 36, Laxey Road, Blackburn, Lancs.
W. R. Brooks (BRS3249), 18, Winston Gardens, Headingley, Leeds, 6, Yorks.
J. Stevenson (BRS3250), 14, Hillcrest, Chryston, Glasgow, N.B.
J. Erskine (BRS3251), 29, Balbirnie Street, Markinch, Fife.
A. E. Dempsey (BRS3252), 50, Chase Side Avenue, Enfield, Middlesex.
Miss T. H. Schadla (BRS3253), 32, Chiltern Avenue, Bushey, Herts.
W. Schreuer (BRS3254), 12, The Park, London, N.W.11.
D. E. Postle (BRS3255), 53, St. Nicholas Road, Great Yarmouth, Norfolk.
A. F. Thompson (BRS3256), 5, Audley Street, Great Yarmouth, Norfolk.
J. A. T. bousfield (BRS3257), 131, Bedford Hill, Balham, London, S.W.12.
F. L. Curbeson (BRS3258), 561, Inglemire Lane, Hall Road Corner, Hull, East Yorks.
R. N. Williams (BRS3259), 1, Gibraltar Lane, Swavesey, Cambs.
L. G. Bacon (BRS3260), 20, Seale Street, St. Heliers, Jersey, C.I.
G. I. McHale (BRS3261), Dalquhurn, Renton, Dumbartonshire.
G. W. Wilkins (BRS3262), Stone Acre Cote Park, Westbury-on-Trym, Bristol.
B. Cortis-Jones (BRS3263), c/o Bank of New South Wales, 47, Berkeley Square, London, W.1.
J. Murray (BRS3264), 9, Buchanan Drive, Kessington, Bearsden, Glasgow.
R. R. H. Wright (BRS3265), 8, Hanbury Road, Clifton, Bristol, 8, Glos.
Mrs. G. Hough (BRS3266), 198, West Street, Crewe, Cheshire.
R. W. Fisher (BRS3267), 6, Ribblesdale Avenue, Northolt, Middlesex.
E. J. Hartley (BRS3268), 145, Manchester Road, Burnley, Lancs.
M. G. Ferguson (BRS3269), Grosvenor House School, Harrogate, Yorks.
C. G. Lawrence (BRS3270), 62, Southern Drive, Loughton, Essex.
D. Armstrong (BRS3271), 7, Butt Lane, Beverley, East Yorks.
J. J. Thomson (BRS3272), Jericho, by Forfar, Angus.
N. E. Gillard (BRS3273), 78, Norton Grove, Askew Avenue, Hull, East Yorks.

Dominion and Foreign.

F. A. Bech (HB9CE), Badenerstrasse, 68, Zurich, Switzerland.
W. E. Franzok (D4GZF), Post Box 22, Charlottenburg 9, Berlin, Germany.
A. G. laukidsen (OZDROO1), "Skovgaard," Lilering, Denmark.
D. S. Robertson (VK5RN), c/o Mrs. T. B. Robertson, c/o Union Bank of Australia, 71, Cornhill, London, E.C.3.
J. Mead (VK6LJ), 39, Canterbury Terrace, Victoria Park, West Australia.
P. Caboche (VQ8AS). Salaman Islands, Chagos Archipelago, c/o VQ8AF, Box 163, Port Louis, Mauritius.
H. Becker (W6QD), 1117, West 45th Street, Los Angeles, Calif., U.S.A.
S. Howie (BERS431), P.O. Box 846, Johannesburg, South Africa.
T. R. Madhok (BERS432), Circular Road, Gujranwala, Punjab, India.
C. S. Mackintosh (BERS433), P.O. Box 47, Ixopo, Natal, South Africa.
L. A. Lock (BERS434), H.M. Naval W/T Station, Rinella, Malta.

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. As transmissions from GW6AA and G8RL, however, will be confined to telegraphy, the following will be sent slowly at the commencement of the tests: "M.P.T., M.P.T., M.P.T. de G . . ." (M.P.T. =Morse Practice Transmission).

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).

Schedule of Slow Morse Transmissions.

		B.S.T.	kc.	Stations
Tuesdays	...	1900	7169	G8RL
,,	...	1930	7137	GM8KR
,,	...	2000	7200	G8JA
,,	...	2030	1800	GW6AA
,,	...	2200	7184	G6UA
Wednesdays	...	2215	7200	G8JA
,,	...	2315	1741	GI6XS
Thursdays	...	1900	7169	G8RL
,,	...	1930	7096	GM8MQ
,,	...	2000	1780	G8LI
,,	...	2115	1930	GW5OD
,,	...	2230	7184	G6UA
Fridays	...	2030	1800	GW6AA
Saturdays	...	2300	7145	GI5QX
Sundays	...	0930	1792	G8AB
,,	...	0945	7155	GI5UR
,,	...	1000	7190	G8FA
,,	...	1015	1920	G6VC
,,	...	1830	7169	G8RL
,,	...	2115	1930	GW5OD
Mondays	...	2315	1741	GI6XS

HEADQUARTERS TELEPHONE NUMBER HAS BEEN CHANGED TO ABBey 4412

BOOK REVIEWS

COMMUNICATION ENGINEERING (Second Edition). By W. L. Everitt, E.E., Ph.D. 727 pages, 411 illustrations and tables of Real Hyperbolic Functions. Published by McGraw-Hill Book Company, Inc., London. Price 30s. net.

. . . an excellent book, of decidedly engineering flavour, dealing with the broad principles of systems and leaving applications to be studied " in the field." This reflects the present trend of engineering education due to the increasing complexity of both principles and practice. One sentence from the preface should be copied into every student's notebook: " The student should realise that engineering does not consist in the using of formulas but in the application of principles to new problems which have not been solved before."

In outlining the functions of networks, the treatment of complex waves by Fourier analysis, the peculiarities of the ear, etc., the first section marks out the ground in preparation for the building of principles. Every engineer dealing with circuits should study the network theorems for, as the author points out, the use of Ohm's and Kirchhoff's laws in their simpler forms is like the exclusive use of a hacksaw and file when the lathe is available.

Resonance is, of course, given very comprehensive treatment and in analysing the behaviour of lines which may be considered as infinitely long the author uses the equivalent T and π sections; the use of complex hyperbolic functions is not explained until the following chapter. While the author's method has the merit of rather simpler mathematical treatment, the writer feels a personal preference for the hyperbolic treatment from the outset.

The behaviour of lines not terminated in their characteristic impedance is next considered and a short section covers the efficiency of R.F. transmission lines.

The general treatment of the filter characteristics of networks is outstandingly good and must prove very valuable to readers in grasping the fundamental conditions before they tackle the simpler sections, *m*-derived and constant-*k* types.

Coupled circuits and their simpler equivalents lead on to the important subject of impedance transformation. Here the radio man will concentrate on matching networks in R.F. lines, harmonic attenuation, matching stubs and proper termination of feeders by taps on the aerial. There is a wealth of information here on the design side.

The function and design of equalisers is followed by a section on bridge circuits, dealing with phantom operation and repeater circuits in addition to the use of bridge circuits in measurement. A chapter is given to the question of elimination of interference in circuits due to the presence of other circuits, either similar or of the power type.

The valve is analysed in its several forms and as to their individual characteristics and the principles of modulation and demodulation are covered before passing to the fundamentals of carrier-telephony, " scrambling " of speech and frequency modulation.

After dealing with the various forms of detector, the Class A audio-amplifier section includes a very useful survey of feed-back amplification. The Class A radio-frequency amplifier section deals with band-pass amplifiers, superhets, A.V.C., etc.

Class B and C amplifiers deal almost exclusively with radio frequencies and it will be helpful to amateurs that the curves shown to illustrate design matters are those of the 210 and 50T valves. The design principles here are very thoroughly covered.

A chapter on oscillators, including dynatron and Barkhausen types and a chapter dealing with the fundamentals of radiation and propagation precede a final chapter on electro-mechanical coupling. This deals with the inclusion of mechanical elements in the electrical network and includes piezo-electric oscillators.

Many numerical problems are worked out and each step in the calculations clearly presented. Each chapter carries a number of problems to be solved by the reader, but no " answers " are supplied and their value to the reader is thereby diminished. A bibliography is supplied at the end of each chapter.

The book is confidently recommended as an excellent text-book.

T. P. A.

TELEVISION. *Theory and Practice.* (Second Edition.) By J. H. Reyner, B.Sc., A.C.G.I., A.M.I.E.E., M.Inst.R.E. 224 pages, 126 figures and 24 plates. Published by Chapman & Hall, London. Price 12s. 6d. net.

Readers who are in possession of the first edition of this book will know that few writers can deal with this complex subject in such an interesting yet thorough way as has this author.

In the three years since the first edition the science has progressed rapidly and the new edition has necessitated the complete re-writing of large sections of the book. Also, some rearrangement has taken place and some descriptive matter excluded.

The book is now divided into two main sections: receiving and transmitting technique. The mirror-drum and screw and the light-valve are now included in the mechanical systems and this aids continuity. The description of the cathode-ray tube includes modern improvements and the same applies to the treatment of time-bases and synchronising. Cathode-ray reception has much new material, and the treatment, while stressing principles, is well illustrated by diagrams and practical information.

The chapter on high-definition mechanical systems, such as the Mihaly-Traub scanner, shows how this section of the art is adapting itself to meet stringent conditions. Also, on the receiver side the circuits have improved and modern types are described. Descriptions of the Farnsworth multiplier and the dissector and Zworykin's iconoscope are included in the transmitter section, and the photo-cell gets very generous treatment.

This edition brings the book right up to date and it will, like the earlier edition, be known as a most readable and attractive book.

T. P. A.

TEXTBOOK OF MORSE SIGNALS AND SIGNALLING. By Major Antonin Rakous, OK2RS. 114 pages with 23 tables and illustrations. Published by the author, Brno 12, Purkynova 79, Moravia, Czechoslovakia. Price 3s. and postage.

Though this little book is in Czech it is fairly clear what it is about and how the author has tackled the subject. It is a textbook for those learning Morse and semaphore signalling; indeed it is rather more, for it gives a short history of the subject and much advice about sites, duties, etc. It describes ordinary keys, "bugs," buzzers, oscillators, lamps, etc., and a feature of the book is the great number of exercises to be used in training practice. They are usefully numbered as to the letters contained, and so laborious counting is eliminated.

The author, who is a Signal Corps Officer and an amateur, wrote this unique little book to assist the new National Defence scheme in Czechoslovakia, in which scheme communications play a big part, but it has of course a general interest.

It is a most praiseworthy effort, neatly and very ntelligently compiled, and something of which thei OK gang should be proud.

T. P. A.

TELEVISION RECEPTION TECHNIQUE. By Paul D. Tyers. 144 pages and 85 illustrations. Published by Sir Isaac Pitman & Sons, Ltd., London. Price 12s. 6d. net.

There is a sound engineering flavour about this book that is attractive. The author sets about the subject in a business-like way, and one is immediately impressed with the feeling that he speaks as one with great experience and wide knowledge of his subject. The writer, it is admitted, did not come to this book with any great enthusiasm, but soon found that it was definitely not "just another television book."

The author has excluded all historical matter, and indeed much that is only of general interest, and after a brief survey of the basic principles in the first chapter gets right down to business. Much appearing in general books on television, such as electron optics and television cameras, are naturally excluded in a book directed at developing a proper reception technique.

Beginning with aerial systems, the author then passes on to signal amplification, stating the problems and giving a critical survey of the solutions; in this chapter suitable frequency changing circuits as well as demodulation are considered. Then an excellent chapter describes the cathode-ray tube operation with both electrostatic and magnetic deflection. Time base circuits are treated clearly and with much practical detail, as also are synchronising circuits. In the latter section, the author describes a circuit which he has evolved and which he has found to be practically immune from ordinary electrical interference as demonstrated by the severe test of coupling an electric motor to the receiving aerial.

Having dealt with the components individually, they are then considered as a combination in the vision receiver, and the reader is taken carefully through the design scheme, right up to the adjustment. Perhaps the last chapter will prove to be the most useful to many readers: it deals with vision receiver faults and is illustrated by many pictures demonstrating the various types. Faults which prevent operation are considered in addition to those which cause faulty operation, and the illustrations given should help considerably in classifying the main faults which arise.

An appendix gives an outline of a new scanning system which obviates the line and frame hold controls on the ordinary vision receiver, and which the author has now satisfactorily designed and tested but which was not ready to be included in the manuscript.

Every circuit arrangement in the book has been used successfully by the author, and the photographs and illustrations were prepared in the author's laboratory.

The book is recommended as very satisfactory in every way.

T. P. A.

BROADCASTER 1938 RADIO ANNUAL. Published by "Wireless Retailer and Broadcaster," 29, Bedford Street, Strand, London, W.C.2, at 5s., post free.

Practically every aspect of the radio industry is covered by this annual, which is colour-coded into four parts: Statistical, Technical, Legal and Commercial, and Directory; and these are printed on white, yellow, white and green paper sections respectively for easy reference.

So wide is the range of contents that figures are the best way of indicating the wealth of information given.

There is a "first-aid" Quick Test data for nearly 100 best-selling sets; characteristics and prices of 2,500 different valves; a 30-page Service Section; a directory of the electricity voltages in 8,000 towns; the officials and details of the 50 radio associations; and "Who's Who" entries for 250 radio personalities. As well, the full address of every radio manufacturer, wholesaler and agent in the country appears in the Directory Section.

A map gives exact details of where the Alexandra Palace broadcasts are being received; a special Television Section tells how an installation should be carried out, and gives a special transmitter-to-home explanation of how television works.

Statistics of the radio market which together are available in no other publication form the opening pages of the Annual. The information includes quarterly licence figures for 500 districts covering the whole country, a survey of the electrified homes in 1,000 areas in the British Isles, radio export and import trade, and the success of the radio industry's annual exhibition—in figures.

The 1938 "Broadcaster Annual" is an encyclopædic publication which everyone with a radio interest should have.

Southend and District R. & S. Society

The field days conducted by the S. and D.R. and S.S. during the past two years have been so successful that it has been decided to arrange a programme for 1938. Field days will be held using 1.7 Mc. on May 15, June 26, August 21, September 24 to 25 (all night), October 23.

In response to a request from several members a 56 Mc. field day is to be held on July 3, and if this is a success more will follow. Any R.S.G.B. member who is interested in the above activities should communicate with G6CT.

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 (GM6AA), "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).

District Representative : Mr. J. Noden (G6TW), "Fern Villa," Coppice Road, Willaston, Nantwich, Cheshire.

District Scribe : Mr. H. W. Stacey (G6CX), "Sandleas," Eddisbury Road, West Kirby, Cheshire.

Town Representatives :

Birkenhead : Mr. G. Russell Lee (G6GL), 25, Boundary Road, West Kirby, Cheshire.

Blackburn : Mr. Jim Bolton (2CRM), 6, Ash Street, Blackburn.

Blackpool : Mr. H. Fenton (G8GG), 25, Abbey Road, Blackpool, S.S.

Burnley : Mr. P. Nicoll (G5ZN), 35, Reedley Road, Burnley.

Bury : Mr. T. G. Platt (G2GA), 64, Holcombe Avenue, Bury.

Liverpool : Mr. J. Davies (G2OA), 13, Exeter Road, Wallasey, Cheshire.

Manchester : Mr. W. Lucas (G2OI), 25, Boothfields, Winton, near Manchester.

Nelson : Mr. R. Hardy (G2RB), 10, Westcliffe Walk, Nelson, Lancs.

Preston : Mr. H. Jones (G5ZT), 109, New Hall Lane, Preston.

Rochdale : Mr. T. A. Whiteley (G6QA), 82, Molyneux Street, Rochdale.

Warrington : Mr. F. A. Vost (G2IF), 11, Glebe Avenue, Chester Road, Grappenhall, Warrington.

Bury.—The usual monthly meeting was held at G8NL and a full attendance recorded. The T.R. would like to thank 8NL and Mrs. 8NL for their hospitality on that occasion. These local meetings have certainly created interest in the District. A prospective new member, Mr. Ryder, was a welcome visitor. N.F.D. was discussed in detail and members are supporting the event. Plans are already formed and every member is co-operating.

G2GA, who is working only on 7 Mc., is busy rebuilding sections of the station and is hoping to have a decent aerial up shortly. 3CJ has been getting good results on 1.7 Mc. with QRP and a poor aerial and is now trying 7 Mc. 8QS is now

on 14 Mc. trying out a new rig using 6A6 push-push doubler, driven by a push-pull 6A6 CO, and has had fair results, but grid drive has given some trouble. 8NF is concentrating on his aerial system and also very busy with N.F.D. constructional work. 8NL is also erecting new mast and aerial system and has had some good results with his long links between transmitter and aerial in spite of trouble through losses. 2BGF is building a new transmitter with 6L6 CO and PX4 P.A. and still keeping up morse practice with the T.R. BRS3008 also reports active.

Burnley.—The star station this month is G8TD, who started working ZL and VK daily with the W3EDP aerial. Later he erected the W8JK beam and found that he could work only W stations, but contacted 70 in one week. 2RB has worked W6 again, but is busy with new power packs. 8FI is installing T20's. 5ZN is on 3.5 Mc. with 24 watts to a 210. 8UA will soon be on the air again with a new transmitter. 2BFB is building S.S. Super. 2DKR logging DX phone. 5TR has been off the air for a few months but a pirate is making good use of his call-sign. Monthly reports to G5ZN please.

Blackpool and Fylde.—The Blackpool Group will operate the 7 Mc. N.F.D. station and the transmitter is to be 6L6-T20 CO-PA as there are several of these valves in use locally and spares will therefore be available. Two alternative sources of H.T. are being considered and by the time this is in print the detector van—G6VQ's Minx—will have settled the site.

Individual reports are as follows :—

G5MS has returned to 14 Mc. 6VQ has a new Class B modulator and is on 7 and 14 Mc. 8AK has obtained a 14 Mc. crystal and is considering a 6L6 in the hope of being able to work 28 Mc. 8GG is having trouble with a 6L6 as Class A modulator and has rebuilt transmitter and receiver. 8NU now using a new transmitter comprising 6L6-'10. 3OJ in Cleveleys has been heard and reports at intervals to the T.R. as requested. 2CUI has passed his Morse Test and is waiting for his call-sign. 2CQQ has had a spell in hospital but is now recovering and hopes to have passed his Morse Test by the time this is in print. 2CKO is waiting to hear from the P.O. about his application for radiating licence. 2CRO, of Cleveleys also is awaiting Morse Test and two R.N.W.A.R. stations have applied for G licences. No reports have been received from any of the BRS members except 2CWW.

Manchester.—A very interesting and descriptive talk was given at the last Manchester meeting by Mr. Preston, with the kind permission of the *W.B. Speaker Co., Ltd.*, on moving-coil speakers and their construction. Mr. Preston brought with him an amplifier to demonstrate the various speakers on show, also numerous parts connected with the assembly of same. The 25 members who attended the meeting showed their appreciation in the usual way.

Don't forget to make a note of the next talk on May 4 by Mr. Perkins, of *Belling Lee, Ltd.*, on "Suppression of Electrical Interference." Please make the attendance a record one.

A 56 Mc. schedule has been arranged every Friday night between 10 p.m. and 11 p.m. Those taking part in these tests are G2OI, 5YD, 2WQ, 3DA, 5KL, 5HF, 2ARC and BRS3228. Reports will be welcome and those interested should communicate with 2OI.

Application has been made for permission to operate the 14 Mc. N.F.D. station instead of the 3.5 Mc. station as first suggested.

The following stations report active: 5HF, 8PW, 2CXP, 2CZW, 5WR, 2ARC, 5OZ, 2BDA, 2OI, 2LC, 5YD, 2JC, 6OM, 2WQ, 5KL, 3BY, 3DA, 2RA, BRS2918, 3174, 2974 and 3228.

Rochdale.—No reports have been received except from G6QA, who is using a 66-ft. centre-fed aerial with 48-ft. feeders. This works very well and is coupled to the transmitter through a Collins Coupler. Each half can be used as a W3EDP giving very directional results in the direction of the wire.

Blackburn.—There was a record attendance at G2QN on March 13, over thirty members being present. As the ex-T.R. (G2QN) is leaving for sunny Nigeria a surprise presentation was made to him of a combined purse and note wallet containing sufficient cash to purchase a generator which he is taking with him. He expressed his thanks to those who had subscribed. 5ZT and 8FI came to wish him good-bye. A vote of thanks was accorded to Mrs. 2QN for the time and trouble she has taken in making her visitors welcome.

In view of N.F.D., meetings are being held fortnightly and every member has a particular task to carry out. 2HW is looking after the transmitter, 6BH the batteries and generator and 8JA and 2AQI the site.

G8JA is now sending slow Morse as per schedule and would appreciate reports from listeners who are making use of his transmissions.

Liverpool and District.—At the March meeting 2AIJ read a paper on U.S.W. Telephony, which is to be continued at the next meeting. Further talks are being arranged for future meetings.

About 25 members attended the March meeting and a portion of the time was allotted to discussion of N.F.D. The station will operate on the 3.5 Mc. band and will be erected at Gayton, near Heswall, on the same site as last year's station. In order to go all out for a record score it was decided, with the approval of the meeting, that four operators only should have charge of the station with a further member as technician. The operators will be G2JT, 6GL, 2QB and 6DP and the T.R., 2OA, will act as technician.

DISTRICT MEETING
NORTH-EASTERN PROVINCIAL

SUNDAY, APRIL 24, 1938

AT

WINDMILL HOTEL, BLOSSOM STREET, YORK

Assemble	1 p.m.
Lunch	1.30 p.m.
Business Meeting	2.30 p.m.
Tea	5 p.m.

Inclusive Charge 5/-

Reservations to Mr. L. W. Parry, G6PY, 13, Huddersfield Road, Barnsley, not later than Wednesday, April 20.

G2OA reports that he is working on 28 Mc. with telephony, using suppressor-grid modulation of the buffer stage and class B amplification in the final, but finds conditions rather erratic. He scored nearly 4,000 points in the A.R.R.L. Contest. 2QB also took part and reports a score of nearly 12,000 points. No other reports of local activity have been received.

Ilkley.—J. W. Hemingway (G8ID), 17, Thwaites Avenue, Leeds Road.

Leeds.—W. F. Wilson (BRS2317), 4, Stratford Street, Leeds, 11.

Sheffield.—A. Pemberton (G2JY), 57, Tillotson Road.

Wakefield.—W. L. V. Parker (G6WJ), Chalfont, Thornes Road.

FORTHCOMING EVENTS

Apr. 20.—District 6 (Exeter Section), 7.30 p.m., at Y.W.C.A., Exeter.

,, 20.—*District 14 (East Essex Section), 8 p.m., at G5VQ, 149, Westbourne Grove, Westcliff-on-Sea.

,, 21.—District 6 (Torquay Section), 7.30 p.m., at "Sherrington," Cleveland Road, Torquay.

,, 21.—District 14 (Chelmsford Section), 7.30 p.m., at The Cottage Restaurant, Tindall Street, Chelmsford.

,, 21.—District 14 (Brentwood Section), 8 p.m., at BRS3131, 2, Sebastian Avenue, Shenfield.

,, 21.—District 13, Area Meeting, 8 p.m., at Brotherhood Hall, West Norwood.

,, 22.—District 12, 7.30 p.m. Dinner at the Salisbury Hotel, Barnet. Tickets, 3s. each.

,, 24.—North Eastern and P.D.M. at York. (See separate announcement.)

,, 24.—District 4, 3.30 p.m., at the Swan Hotel, Church Street, Mansfield. A talk by a representative of Messrs. Whiteley Electrical Radio Co., Ltd.

,, 26.—*District 14 (East London Section), 8 p.m., at 2CID, 25, Moreland Way, Chingford, E.4.

,, 27.—Scotland "A" and "E" Districts, 7.30 p.m., in Room "A," Institution of Engineers and Shipbuilders, 39, Elmbank Crescent, Glasgow.

,, 27.—Scotland "H" District, 7.30 p.m., in District Clubroom, Bank Street, Kirkcaldy.

,, 27.—District 15, 8 p.m., at The Albany Hotel, Twickenham.

Apr. 28.—*District 12 (Watford Group), 7.30 p.m., at G8MH, 11, Nightingale Road, Bushey, Herts.

,, 29.—District 6 (Plymouth Section), 7.30 p.m., at 2CYJ, 55, Greenbank Avenue, Plymouth.

,, 29.—London Meeting, at the I.E.E. Commence 6.45 p.m. Tea from 6 p.m. Lecture on "High Definition Television," by Mr. H. A. M. Clark (G6OT).

May 1.—District 7 . 2.30 p.m., at The Royal Hotel, Stoughton, Guildford.

,, 4.—*District 1. 7.30 p.m., at Brookes Café, 1, Hilton Street, off Oldham Street, Manchester. Talk by Mr. Perkins, of Belling and Lee, Ltd., on "Suppression of Electrical Interference."

,, 5.—District 14 (Colchester Section), 7.30 p.m., at G8PZ, 19-21, Artillery Street, Colchester.

,, 6.—District 8. District Meeting at Peterborough.

,, 8.—District 19, 6.30 p.m., at G2LD, 4, Prior's Terrace, Tynemouth, Northumberland.

,, 11.—Scotland "H" District. Details as above.

,, 12.—District 10, 8 p.m., at Globe Hotel, Duke Street, opposite Castle, Cardiff.

,, 15.—South Western P.D.M. at Exeter. (See separate announcement.)

*Sale of disused apparatus at these meetings.

DISTRICT 2 (Yorkshire).

District Representative.—L. W. Parry (G6PY), 13, Huddersfield Road, Barnsley.

District Scribe.—C. A. Sharp (G6KU), 316, Poplar Grove, Great Horton, Bradford.

Town Representatives :—

Barnsley.—T. Malkin (G5IV), 5, White Hill Terrace, Dodsworth Road.

Bradford.—C. A. Sharp, 316, Poplar Grove, Great Horton.

Doncaster.—S. Hobson (G6SH), 28, Wheatley Hall Road.

Halifax.—(G5QS), Lynn Cottage, Lightcliffe.

Huddersfield.—J. Dale (G5VD), 12, Langley Terrace, Crosland Road, Oakes.

Please do not forget to send your card at once to the D.R. if you intend to be present at the Provincial Meeting at York on Sunday, April 24.

Bradford.—The Bradford Radio Society finished its winter session on March 29 with a lecture and demonstration by *Messrs. Voight* on Quality Reproduction. Members from the local areas were invited and a record attendance of 104 persons was made. In the A.R.R.L. tests, G6QS contacted 292 stations, scoring 21,000 points, and 6MC had 17,000 points. 6QS has had confirmation of what is thought to be the first contact from England with the Fiji Islands, VR2FF. The date of the QSO was February 24.

Halifax.—Most members of the local Radio

Society now have 56 Mc. receivers and on March 20 a field day was run with 6QS as the home station. Signals were heard by every party which took part, and were spread out over the surrounding country. The transmitter power was only 1.8 watts. 2DOR is another new call added to our members. Active stations include G5DF, 5QS, 8CB, 8GM, 8SJ, 2ABC, 2DGK and 2CYM.

Sheffield.—Meetings for the remainder of the session are being held at the QRA's of members, who are asked to co-operate with the arrangements made by 8JP and 5TO. Please let 2JY have a card about your activity. Stations reporting active include 2JY, 2JI, 2LT, 5HK, 5TO, 6LF, 8JP, 8KT, 8NN, 3FN, 2BXA, BRS2282, 2973, and best wishes are sent to Mr. Gould, our new member.

Barnsley.—G6PY has installed a 50 ft. ladder mast, and it is said that his YF can climb it to the top! Progress is being made with the N.F.D. arrangements, and the station will be operated as G5KMP. 8WF is home on vacation and is active again.

Leeds.—It is hoped that all members will help with the N.F.D. station, at Finsdale Quarries, Britannia Road, Morley, operating on 3.5 Mc. G5CX is understood to be in the W5 district of U.S.A. The following are active:—5MW, 6QO, 6RJ, and 6XT.

DISTRICT 3 (West Midlands)

The D.R. and G5BJ from Birmingham, together with G5PP, 2LU, 5GR, and Mr. Gaye, from Coventry, represented District 3 at the Nottingham P.D.M., and they wish to thank the organisers for an excellent time. By the time these notes appear District No. 3 Conventionette will have taken place, and this will be fully reported next month.

Coventry.—The C.A.R.S. are still maintaining their weekly meetings and good attendances are recorded. We congratulate G3GA, who has obtained his full ticket, still further swelling the number of licensed amateurs in Coventry.

Birmingham.—No reports are to hand this month, but it is known that all the well-known stations are active.

Shrewsbury.—Arrangements are completed for N.F.D. Four A.A. men working hard at morse and concentrating on 1.7 Mc.

Staffordshire.—G6SW is working 7 Mc. phone. G2YV is on 7 and 14 Mc. with grid modulation. We welcome BRS3187, of Hednesford, who joins the area.

DISTRICT 4 (East Midlands).

All is quiet again after the rush of the P.D.M., an account of which appears on another page of this issue. T.R.'s will welcome any offers of help, or loan of gear for N.F.D.

Nottingham.—56 Mc. signals from G8JV have been heard on Epsom Downs, a distance of some 150 miles. The following are active:—G2HD, 2IO, 5VU, 5JX, 5DM, 5CG, 5QZ, 6DS, 8DZ.

Northants.—2CSH is busy with aerials preparing for the time when his full call arrives. 2CTZ has purchased an RME69. G2DZ has purchased an NC81X. The C.R. noticed that in the March issue G2ZQ comments on the following calls in Daventry: G2DZ 2YD GM6LD, 6JX, and 5YZ. He also states that an experimental society is being formed amongst the above at Daventry. G5LP would appreciate a word from these members as nothing has been heard from them to date. We welcome a new member from Wollaston, Mr. F. V. Hall, who is licensed under the call 2AWW. He has held this call for twelve years. G6BF is getting out well with 'phone and C.W., using an RFP15. He finds grid modulation better than suppressor grid. G5LP took an active part in the A.R.R.L. contest and scored 1,360 points on 14 Mc. He has recently worked VK7 and FI8 for the first time. The Kettering Radio Society are holding a field day on Sunday, May 1, at which portable receiving stations will attempt to discover a hidden transmitter using the Society call sign G6KN and radiating telephony on 1.7 Mc. All enthusiasts in the county and nearby districts are invited to attend and full particulars can be obtained from the secretary, Mr. I. L. Holmes, who will welcome any co-operation from R.S.G.B. members. 2CAX has completed a 1.7 Mc. transmitter and is preparing for a full call. He is using a 56 Mc. portable receiver and will have it in operation during the week-ends in the summer.

Derby.—It would appear that Derby is not entirely dead but as the T.R. is not a thought reader, will members please send in some reports. 2CWA has built a 56 Mc. portable receiver with which he hopes to co-operate with District 56 Mc. members. G8BN has now a 25-watt permit and has also graduated to a rack and panel job with a T20 in the final. G2HC is violently active on 14 Mc., having a final fling before his marriage at Easter. 2CVV is building a high-quality speech amplifier, probably as a result of listening round the "War Band." G2SD is completely rebuilding but still manages to keep something on the air.

Mapperley.—G6FP has returned from Rugby and is rebuilding. He is expected to be on the air from his old QRA shortly. We are glad to welcome BRS3222, a new member. A two-valve battery receiver is required for N.F.D. and 2ARN would be pleased to hear from any local BRS or AA member willing to lend or assist in the construction of a suitable RX. Reports from BRS402 and 2399 would be appreciated. BRS2987 reports that activity on 56 Mc. has commenced, and it is hoped that at least two 56 Mc. receivers will be in operation in the near future.

Worksop.—A successful meeting was held at G8PO (Retford), those present being G8OM, 8ON, 8SD and 2CAJ. This was the first time a meeting has been held in that town. A new member has come to light with the call G3BB, and we hope to have another in the shape of 2CTW. G8SD is still working DX on 7 Mc. using an input of one watt. The D.R. has heard a rumour that G6MN and BRS Cartlidge are building a new shack complete with a bombproof beer cellar! 6MN still keeps his sked with 6YP on 3.5 Mc. This sked has been running without a break for two years and observations of great value have been noted. It is hoped at some future date to publish a graph showing the results.

Mansfield.—The next local meeting will be held at the Swan Hotel, Mansfield, at 3 p.m., May 1. Members are asked to note that the next District meeting will be held at the above address on April 24. (See note elsewhere in this issue.) At the last meeting members from Huthwaite, Mansfield, Sutton, Warsop and Worksop were present. N.F.D. was discussed, and arrangements made with the

Worksop group for the 3.5 Mc. station to be operated under the call sign G5KGP. G8NS has worked OXVC, using an input of two watts on 14 Mc. He is also active on 7 Mc. G8OM is using an omni-directional aerial on 14 Mc. With it he worked all continents in 1½ hours, W5YJ, J2JJ, VK3NS, PY5BO, ZS1BH, and OH. He has also worked TA1AA, who gave his QRA as Ankara. BRS2777 reports reception of 56 Mc. signals from G8JV, of Nottingham. G5KG worked J2JJ on approximately 14,100 kc. at 1830 G.M.T.

Next District Meeting.—The next District meeting is to be held at the Swan Hotel, Church Street, Mansfield, at 3.30 p.m., on Sunday, April 24. A talk will be given by a representative of Messrs. *Whiteley Electrical Radio Co., Ltd.* Price of tea will be between 1s. 6d. and 2s.

DISTRICT 5 (Western)

District Representative: J. N. Walker, (G5JU), 4, Frenchay Road, Downend, Bristol.

Town Representatives:

Bath: G. R. Marsh (G2IW), Oriel Lodge, Lower Swainswick, Bath.

Bristol: R. E. Griffin (G5UH), 4, Nailsea Close, Bedminster Down, Bristol, 3.

Cheltenham: W. G. H. Brown (G5BK), 200, Prestbury Road, Cheltenham.

Gloucester: J. W. Hamilton (G5JH), Brook Cottage, Bristol Road, Hardwicke, Glos.

An alteration in the N.F.D. arrangements has been necessary. The 1.7 Mc. station will be situated at Hardwicke, and will be in charge of G5JH. Offers of assistance at all four stations from those who have not already given notification will be appreciated by those in charge (G6RB, G5UH, G5BK, and G5JH), and by the D.R., Arrangements are already well in hand.

In Bath, G8JO is studying various types of aerial systems with a view to working DX consistently. G8DX has just obtained his 56 Mc. permit, and has built a transmitter for that band. 2DLW is very active on 56 and 28 Mc., and is building his first transmitter.

G6BW and 6VK took an active part in the W/VE phone contest, both using 28 Mc. and beam aerials. 8WW has worked W5 and W6 on 14 Mc. 6RB has been taking a necessary rest after prolonged contest activity.

G5JU and 6VF have been actively engaged in 56 Mc. tests with stations in Newport, Mon, and results so far are very encouraging.

G8ML and 8DT, both of Cheltenham, have applied for 3.5 Mc. permits, and will be active on that band soon. G5BM has been overhauling his gear ready for more 56 Mc. work.

G5JH continues his propagation studies. G5HC, of Stroud, has recently changed his QRA, and will not be active for some little while.

Finally, please do not forget the P.D.M. at Exeter on May 15. The programme will be found elsewhere in this issue.

DISTRICT 6 (South Western).

District Representative: W. B. Sydenham, B.Sc. (G5SY), Sherrington, Cleveland Road, Torquay.

Town Representatives:—

Torquay: L. G. Mays (2CWR), 185, Windsor Road, Torquay.

Exeter: H. A. Bartlett (G5QA), Lendorie, Birchy Barton Hill, Heavitree, Exeter.

N. Devon: D. H. Jones (G3BO), Westover, Windmill Lane, Northam.

Plymouth: D. E. Herbert (G6RF), 3, Hill Lane, Hartley, Plymouth.

S.W. Cornwall: J. C. P. Clark (2CGC), Goonhavern, near Truro.

Taunton: Dr. D. A. Iles (G5LM), Shutterne House, Taunton.

N. Devon.—N.F.D. was discussed at the monthly meeting held at G3BO, other members present being G3AM and 2DOW. G3GH joined in over the air. North Devon now possesses a YL station (ex 2CHY). Reports on her 1.7 Mc. transmissions will be welcomed. 8US is changing his QRA, and will now be in a position to erect far better radiating systems than formerly. Congratulations to BRS 3162 and 3081, who are now 2DVM and 2DOW respectively. 2DVM has now gone to Exmouth. G3BO, 3AM, 2ID, and BRS2970 report active. G6GM is hereby thanked for permission to use one of his fields for N.F.D.

SOUTH-WESTERN PROVINCIAL DISTRICT MEETING

SUNDAY, MAY 15, 1938

at

THE ROUGEMOUNT HOTEL, QUEEN'S STREET, EXETER.

12 noon.—Assembly.
1 p.m.—Luncheon.
2.30 to 5 p.m.—Visits.
5 p.m.—Tea.
5.45 p.m.—Speeches, Discussions and Society Films.

Inclusive Charge, 6s.

Reservations to the D.R. before May 9.

Exeter.—The last meeting was fairly well attended. There is one new call in this area, that of Mr. Ridge, who is now G3HR. G2SH has left to take up a G.P.O. appointment at Dollis Hill. The T.R. says that the city only lacks a G6 call for the area to be represented by all the numerals! Morse classes are going strong, and the Exmouth YL is taking her test soon. All stations report active. G2FP is on 7 Mc. phone (?), and 5QA spends a lot of time on 28 Mc. His best contact has been Guatemala, S7 both ways at 1400 G.M.T.

Taunton.—The following members met at the QRA of G6LY, Taunton, on March 10:—G2JM, 3AS, 5GT, 6LY, 2BUH, 2DIQ, BRS 2097, 3096. Owing to the absence of the T.R. and Scribe, the chair was taken by 5GT. It was decided to take charge of the 1.7 Mc. station for N.F.D. A representative of *Messrs Mullards* very ably gave a demonstration of their modern valve tester. This was keenly followed by all.

G2JM is on 14, 7 and 1.7 Mc. 2DIQ and 2DBB are experimenting with CO's, while 5AK and 6LY are rebuilding. 2BUH is building 28 and 56 Mc. oscillators, and 2027 has applied for his A.A. permit.

Plymouth.—There was an attendance of twelve at the monthly meeting, among whom was G2CF, who favours 1.7 Mc., and who has unfortunately to use a 110-volt D.C. supply. The main topic was N.F.D., and it was decided that G2HX should build the TX.

It was also decided that, as the membership had grown so much, there should be a topic fixed for each meeting. That for next month, on April 29, at which the D.R. hopes to be present, will be on aerials. The discussion will be led by G2HX.

Torquay.—The last meeting was again well attended, there being a total attendance of thirteen. These were :—G2FP, 5GD, 5IF, 5SY, 6RF, 2AFQ, 2AUI, 2CMF, 2CWR, 2CRL, BRS 2338, 2927 and 3171.

The main topics of discussion were N.F.D. and the Provincial District Meeting to be held at Exeter on May 15.

Congratulations to 2CRL and 2AUI, who are now G6JL and G3HW respectively. The latter is surely in the almost unique position of being, at his own request, licensed to radiate on 56 Mc. only ! 5IF has now got his permit for 56 and 28 Mc., and is conducting tests on 56 Mc. with self-excited gear. Most members report active. 5SY is working on 3.5, 14, 28 and 56 Mc., all C.C. The input to the final on 56 Mc. has now reached about 80 watts. 28 Mc. has produced many interesting phone contacts, and reports have been most encouraging.

The D.R. hopes that all who possibly can will attend the Provincial District Meeting at Exeter on Sunday, May 15. Clarry will almost certainly be present. as well as other London members, and we would very much like to see this meeting the most successful we have ever had in the South-West. A notice regarding the meeting appears elsewhere in this Bulletin.

DISTRICT 7 (Southern).

Members are reminded that their monthly reports should be sent direct to their T.R. and not to the D.R. Also that reports should reach the T.R. by the 20th of the month at the latest, as it is essential that these reports reach the D.R. by the 25th. This has caused a considerable amount of trouble lately and it was only by using stop press methods that we were able to get last month's notes into the Bulletin at all.

A most successful junk sale was held at the February Guildford meeting and G5WP made a very good auctioneer in the absence of the D.R.

All the N.F.D. stations are fixed at the same sites as last year and members are reminded that at each station a definite operating schedule will be in force, in order that the time wasted in previous years by erratic operating hours may be saved this year.

The May meeting is at Guildford. (See District Calendar.)

Reading.—At the March meeting of the R.T. and R.S. some 25 members were present. We welcome this month eight new members, this making a total membership of 32 amateurs. A new A.A. call is 2DBU of Henley. N.F.D. details were discussed and the site fixed. A demonstration of 56 Mc. work was given by G8MG and 5TP assisted by two BRS members. A dipole aerial was erected in the club room and two receivers were in use, first an Hallicrafter Super Sky-rider by 5TP, then a super regen. 2 valve RX. Transmission was carried out by 8MG from his home station at Woodley, Berks. An interesting comparison was obtained from these two RX's.

Most members report active, G2GG has been carrying out tests on 56 Mc. with 2OD and 5RD. 2IT is now licensed for 56 Mc. 2BFD has a new Hallicrafter and is getting to the controls. We regret to report that G5HH fractured his arm while erecting a 28 Mc. aerial (we hope that you will soon be O.K., O.M.). 2BTY reports hearing VR6A Pitcairn on 14 Mc. in contact with W4AH (phone) R4, Q5, at 09.05 March 9. We wonder if he can claim to be the first G to hear this station. (See last month's " Month on the Air " article.—Ed.) G6KB reports that G8NS is a pirate. G2YB, 5AO, 6WO, 6GT, 6CU, 8KJ, and 8MS all report active. The next meeting of R.T. and R.S. will be on Wednesday, April 20, at the Y.M.C.A., Reading.

Portsmouth.—N.F.D. was discussed at the March meeting of the South Hants R.T.S. Arrangements for the site were made and operators appointed. An active week-end is promised. *Messrs. Lissen's* lecture is due for May 19 at Fareham. G2XC, having done well in A.R.R.L. contest, is back on 28 and 56 Mc., as is 6NZ. 8WC is again on 14 Mc. 'phone. 5XY just completed T.R.F. mains RX. 3CN active on 14 Mc. with unorthodox aerial which raises DX. Welcome to 2DGF, a new member. 2AWC wants a directional receiver aerial. BRS3182 building S.G. H.F. amplifier and selector. 2AHA, 2CBL, 2DJY, 8BD, 8LO all very active.

Woking.—G2GK is erecting 14 Mc. doublets for all round coverage. 2ZC finds little time for operating, RES duties taking all his time. Welcome to 3HH new station in Woking on 14 Mc. 'phone. 6GS knocking off the Yanks on 28 Mc. 'phone in amazing fashion, using QRP and a horizontal doublet. 6LK's score in the 'phone contest reached astronomical figures, after only two days of operating. 6NA divides his time between 56 Mc. and his latest acquisition—an organ. Sounds as if he is modulating his 56 sig. with bottom C. 8IX using T20 doubler on 56 Mc. and working plenty of other 5 metre addicts. Raised FI8AC on 14 Mc 'phone. 8LT returns from Cambridge, bringing a new rig and new ideas on the aerial problem—some of them work. 5WP testing out vertical aerials and reflectors, and finds their low angle radiation very good.

Reigate.—The first official meeting of the " East Surrey Short Wave Club " is to be held at 8 p.m. on April 28, at " Lakers Hotel," Redhill. The chief topic of the evening is in the able hands of Mr. Douglas Chisholm, G2CX, and an interesting time is anticipated. G6JF was being well heard in the States during the DX contest. 8HH did extremely well to work no less than 200 W's in the C.W. version of the contest. 8MP is active and still experimenting with suitable aerials for small space. 8KI is still interested in flat top beam aerials, and hopes to put out good 'phone when the building of the modulator described in the T. & R. Bulletin is completed. G5LK has worked all W Districts on 'phone, and is requiring an Asiatic contact for W.A.C. 'phone.

Oxford.—Congratulations to 2CSV who is now G3HC. 8LV reports a card from VE5 saying that he is the first G heard there on 7 Mc. 8PX blew his 500 volt power pack, using 350 volts finds that he can work W's much easier on 28 Mc. 5HS is working W's on 7 Mc. in early mornings. 2CZQ has now speech amplifier and modulator going. BRS3163 having built an U.H.F. receiver, covering 120 to 22 Mc., is willing to co-operate with anyone in the district on U.H.F.'s.

Individual reports are to hand from 2AXP of Fleet, Hants, and 2CVA reports that he is now licensed and is awaiting call. G3HD is back from service on the N.W. Frontier and is active using an 89 c.o. and 6L6 P.A., and 8VP is using 3 watts input on most bands and is doing good work.

DISTRICT 8 (Home Counties).

Fifteen members enjoyed the excellent show of RSGB films kindly projected by Mr. Mansfield through the introduction of G5BQ on the evening of March 11, and it is to be regretted that more members did not take the opportunity to attend. A further meeting was held on March 18 for the purpose of arranging N.F.D. sites and operators, when eleven members were in attendance.

Cambridge.—G5DR has now literally forests of poles erected, and has hired a special field for the purpose! Up to date three Windoms and a Johnson Q have appeared. 5JO now has 200 watts of audio available. 2PL is occasionally heard "stealing" a few contacts with remote DX. G5BQ, 5DQ, 8SY, 8FF are active, and although 2XV is still getting out well he is troubled with an elusive hum in his speech equipment.

Peterborough.—G2UQ has erected an "8JK beam" and is delighted with results. 3DY finds his new trellis mast enables him to erect good aerials for 7 and 14 Mc. operation. 3BK is getting good results on 14 Mc. 2NJ has completed rebuilding, and is preparing for operation from his summer QRA at Heacham, Norfolk. BRS3247 at March is a new member and is going well for HBE. 2075 now becomes 5NP. (Congratulations, O.M).

Bedford.—G2MD is getting good reports on 7 Mc., as is 5PA—who is on 7 and 1.7 Mc. 2AWH has been erecting new masts. 2CAP has completed transmitter. 2BFN is testing with portable receivers. 3125 met a boxing glove with too much RF in it, but is now recovered and hearing good DX.

St. Ives.—No reports are to hand, but 6WA and 5RL are known to be active on 1.7 and 7 Mc. respectively.

The next district meeting will be held at or near Peterborough on May 6, and all members are welcome. Notification will, as usual, be sent by post to each member. Don't forget the P.D.M. on July 10.

DISTRICT 9 (East Anglia)

District Representative: H. W. Sadler, Warren Farm, South Woottan, King's Lynn, Norfolk.

District Scribe: F. L. C. Firmin, 2, Hall Park Villas, Oulton Road, Lowestoft, Suffolk.

Town Representatives:

Ipswich: S. G. Keeble, 139, Sidegate Lane, Ipswich.

Lowestoft: R. Tunney, "Kelley Bray," Colville Road, Oulton Broad, near Lowestoft.

Norwich: A. G. Parker, 84, Cecil Road, Norwich.

A good number of members from all parts arrived for the District Meeting at Ipswich on Sunday, March 27. The D.R. was in the chair. Final N.F.D. arrangements were completed, and will be published in due course. The next District Meeting has been arranged to take place at Lowestoft on Sunday, June 26, with which it is hoped to combine a 56 Mc. D.F. day. Those who were not present at the Ipswich meeting can obtain particulars from the D.R. or any of the T.R.'s should they wish to co-operate. Directly final arrangements have been made, details will appear in the notes.

During the course of the meeting, the D.R. mentioned the cases of certain A.A. and BRS members (not in District 9) who were using low-powered transmitters for local inter-communication work. It is his earnest request that all our own BRS and A.A. people refrain from this practice. The G.P.O. are well supporting the amateur cause at the Cairo Convention, and it is up to us as members of the R.S.G.B. to comply with their regulations.

The business of the meeting completed, there followed a demonstration of a cathode-ray oscilloscope given by G8MU. This was much appreciated, and the instrument was the envy of all present. A very enjoyable tea followed, after which parties left for a round of station visits, and so the second of our newly arranged District meetings came to a satisfactory conclusion. The thanks of the District are due to Mr. S. G. Keeble, the Ipswich T.R., for the very excellent arrangements he made.

Ipswich.—Work has commenced on N.F.D. gear, G8KB being responsible for the TX and 2AN for the RX. The QRA for the event will be the same as last year, and the loan of a bell tent and small marquee has been arranged. 8MU is still active on all bands, and has received S9 phone reports from W1IKS on 28 Mc. with an input of 16 watts; 6TI is trying various aerial systems without much success; 2JD has commenced building his speech amplifier; 8KB seems to have been chiefly testing with the G.P.O. for BCL interference recently; 8IS, having received a U9 card, is now WAC.—Congrats., O.M. 8AG is still rebuilding his RX, while 2AN is getting good reports on 7 Mc. phone. Congrats. to 2AGO, now G2DT; he had his first QSO within half an hour of being licensed. 2CBX has returned to the fold, and hopes for his full ticket within the next few months; 2CWZ is busy key-punching, and hopes to take his test very soon.

Lowestoft.—G8DD is active on 14 Mc. CW, and is co-operating with 5QO in 56 Mc. work. The latter has now erected a four element beam, rotatable, and has been heard in Norwich on 56 Mc. 2CWO is fast attaining morse speed, and hopes to take his test within the next few weeks.

Great Yarmouth.—2BND reports activity rebuilding; also we welcome two new members, BRS3255 and BRS3256, both of whom hope to be on the air before very long.

King's Lynn.—G2XS reports station rebuilding proceeding satisfactorily, and he hopes to be on the air again shortly. 5UD, of Swaffham, also active.

Norwich.—The recently arranged weekly meetings continue to be well attended, and morse practice is going ahead well. G5IX is busy moving all gear to new QRA at Swannington. It is rumoured that several of his amateur friends are busy buying DF gear in order to help them to locate the place. 8IY continues success on 28 Mc. phone. 2UT reports good contacts on 14 Mc. phone. Congrats. to 8VW on his QRP phone results on 14 Mc. 2MN and 6QZ very active with 56 Mc. receivers and transceivers.

Notice.—All T.R.'s and members reporting activities should please see that the Scribe receives them not later than the 25th of each month.

DISTRICT 10 (South Wales & Monmouthshire)

The whole district will be pleased to know that Capt. G. Courtenay Price, T.D. (GW2OP), has been made a Vice-President of the Society. As one of our senior members, who has done much for the R.S.G.B. from the earliest days, this honour is a tribute both to his record and Council's good judgment.

District arrangements for N.F.D. are going ahead well, station sites and personnel having been fixed as follows: Cardiff (14 Mc.), GW5BIP, at Ridd's Farm, Lavernock, with 8AM, 8NP, 8UH and 2BQB as assistants; Blackwood (7 Mc.) at Plas Farm, Gordon Road, GW8CTP, with 2NG, 6BK and 8PU on the job too; Swansea (3.5 Mc.), GW5KJP, at The Park, Llangannech, Llanelly, the personnel here being 2UL, 3AX, 5ZL and 6JW, so they should do well; Newport (1.7 Mc.) will be at Penyrheal Farm, Wentwood, G2JLP, assisted by 3AJ, 6FO, 2CDM and 2DBO.

Though operators' calls have been given above, this does not mean that the lists are full. There is room for willing asistants at each station to help with transport, gear, and culinary arrangements, so those within reach of the various locations are asked to do their share by getting in touch. N.F.D. is essentially a communal effort, and even if you cannot participate for the whole period, there will be something useful you can do.

Next, we have to record the high spot of the month in the District—the Cardiff Hamfest on March 24. This assumed the proportions of a P.D.M., no less than 46 being present, of whom 35 were R.S.G.B. members from Cardiff, Swansea, Blackwood, Newport and the Valleys. 2BQB is to be congratulated on the success of the whole function, and we also much appreciated GW8NP's showing of the 1937 N.F.D. and London Stations films. These would have been even better if (*a*) the operator at the previous showing had used his re-winder, and (*b*) the breaks in the films had been notified beforehand.

There can be no doubt that this Hamfest—a cheerful, friendly "get-together"—has done much to bring the members of the various centres into closer personal contact. It was particularly pleasing to see such strong support from Swansea, where it is hoped to arrange a reciprocal meeting during the summer. The roll-call reads as follows: 2BG, 2JL, 2NG, 2UL, 2XZ, 3AX, 3CR, 3GO, 5BI, 5FI, 5FK, 5PH, 5TJ, 5VX, 5WU, 5XN, 5ZL, 6BK, 6FO, 6JW, 6YJ, 8AM, 8HI, 8NP, 8PU, 8UH, 8WU, 2BBO, 2BLH, 2BQB, 2CDM, 2CPA, 2DBO, 2DOS, 2DOZ.

Lastly, will the T.R.s, 2JL, 2OP (who has kindly undertaken to supply notes from his end of the District), 2UL, 6BK and 2BQB carry on the good work by posting reports to G6FO by the 20th of each month. The Editor's blue pencil is poised, so that individual station activities must be held over till May.

DISTRICT 12 (London North and Hertford).

The application for tickets for the forthcoming District dinner has far exceeded the organiser's expectations, 70 members having notified their intention of attending. Those who have not yet made up their minds still have until April 18 to obtain their tickets from any of the T.R.'s, A.R.'s or the D.R.

"Ham" Whyte (G6WY) was the speaker at the last District Meeting on March 18, when he chose as his subject "The Sins of Amateur Radio." Bearing in mind his warnings "What *not* to do on the air," it was still found to be possible to operate a station as a "ham."

N. London.—We are sorry to hear that G2RX has left the district to take up a new job in Glasgow. 3AZ reports active on the air with a 6L6 tri-tet, and has succeeded in contacting three continents. 6OT is active on 56 Mc., and would appreciate it if operators on this frequency would endeavour to arrange hours of working from 7 p.m. onwards, as the usual 10 o'clock schedules make it extremely difficult to study conditions over a period of hours.

Watford.—G5RD supplied the QRA for the March meeting of the Watford and Bushey group. The T.R. (2BUP) gave a chat on R.F. chokes. 5RD is maintaining regular schedules on 56 Mc. with 8MG, of Reading, and was successful in contacting him during the meeting. The T.R. welcomes a new member in BRS3253.

(DISTRICT 13 London South)

The Junk Sale held on March 24 at West Norwood was truly a momentous occasion. The attendance was a little below the average, but the amount of gear for disposal was phenomenal! So much so that the sale was not concluded until 11 p.m., and the party dispersed at 11.45 p.m. The District Fund benefited by a favourable amount, and the balance in hand should be ample for all N.F.D. expenses. It is regretted that time did not permit of a discussion on Field Day arrangements. It may be well to point out here that offers of assistance this year are very much below the average. This is difficult to understand in view of the success of last year's event, and we can only assume that it is due to lethargy on the part of the membership. The four stations have, with some difficulty, been arranged, and the full list of operators posted to H.Q.

The total absence of reports this month is somewhat discouraging, and these notes are for that reason somewhat shorter than is usual. The following stations are known to be active: G2GZ, LW, JB, UX, JK, VB, 5CI, OX, PY, 6OW, 8LQ, TN. G3GU has now been on the air for some weeks, and has worked some good DX, including ZS, ZE, W, ZL and XU. 2WV is maintaining his bi-weekly schedule with ZS5BB, and some interesting experiments have taken place. The half-wave sloped aerial still proves very satisfactory, and produced an S8 report from VQ4.

We should like to congratulate G2ZQ on the occasion of his marriage, which took place on April 2, and we feel sure that the whole District will join us in wishing Mr. and Mrs. John Hunter every happiness in the future.

We learn that Mr. L. H. Thomas (G6QB) is shortly leaving this country for India, and we should like to offer him our sincere good wishes and the best of luck on his new venture.

May we, in conclusion, remind members of the dinner which has been arranged in North London for April 22. It is hoped that a large number of South London amateurs will be present.

DISTRICT 14 (Eastern).

Colchester.—At the last monthly meeting held at G8PZ all the local members were in attendance. G6DH paid a very welcome visit, and gave some helpful hints and tips. G3BI is active on 14 Mc., using both phone and C.W. Other members are building gear and getting slow morse practice.

Chelmsford.—G6LB has fixed up his N.F.D. station, G6LBP, working on the 1.7 Mc. band. The QRA will be " Fairmead," Binacre. At present the T.R. is in the London Hospital, where he has undergone an operation, and we are able to state that he is making good progress. He has the very best wishes of all his numerous friends for a speedy and lasting recovery. Will licensed 1.7 Mc. band operators willing to help on N.F.D. drop him a line.

East Essex.—At the March meeting held at G2SO, Leigh-on-Sea, the attendance was poor, only 13 members being present. It had been hoped that the crystal register could be brought up to date, but the absence of members who are known to have acquired new crystals made this impossible. To defray N.F.D. expenses a collection was taken. An interesting test will take place during the last week in May (22nd to 28th), and all participants will use as their sole power supply a standard 120-volt H.T. dry battery. By this means some very useful data should be obtained, with real QRP. Full details and rules will be announced at the April meeting, or will be furnished by the T.R. upon request. BRS2538, of Laindon, is doing very well with a 1-V-1 56 Mc. receiver, and has heard a number of stations within a radius of 60 miles . He also awaits confirmation of a report on signals of a Sheffield station he heard. G2KH, 2LC, 6CD and 6IF are on phone on 7 and 14 Mc. G2SO added to his DX recently by working XU with QRP. G5UK has been re-vamping last year's N.F.D. transmitter ready for this year's 14 Mc. attempt.

East London.—At the March meeting held at 2DJI there was a good attendance. G8AB has agreed to take over the 7 Mc. N.F.D. station as G6QK, of Manuden, we regret to say, is in the Brompton Hospital. He carries the best wishes of the district for a speedy recovery. At the meeting " junk " donated by G6SG was sold, and the sum realised was placed to the account of the N.F.D. fund. Operators licensed to work on the 3.5 Mc. band are wanted for station G6UTP, which will be again fielded at Rookwood Hall, due to the kindness of Mr. Rowe and the Misses Rowe. G6QX scored 56,667 points in the A.R.R.L. tests, working 494 stations in 39 zones, using a Bipush 40-watt exciter supplied by Herb Becker (W6QD), driving four separate 150-watt final amplifiers on 28, 14, 7 and 3.5 Mc. Aerials 137 ft. end on, 46 ft. high for 14, 7 and 3.5, and a 33-ft. Windom on 28. Worked all zones on 14 and 28, all nine U.S. zones on 7, but only two on 3.5, wasting time on this band owing to five frequencies being QRM. He also spent at least three hours calling VE3 on 14 Mc., then worked two of them 10 minutes before contest finished. G6RD is now at Dagenham, and awaits a 25-watt permit. G8AB also waiting a 25-watt permit. G3AI, of Forest Gate, will assist at N.F.D.

Brentwood.—A meeting held at 2CRJ, Shenfield, was very well attended, and included a visit from the D.R. A feature at the meeting was a draw for a milliameter. A junk sale was also conducted. Activity in the district is increasing, and most members also belong to the Brentwood Radio Society, who have arranged a series of interesting lectures.

DISTRICT 15 (London West, Middlesex and Buckinghamshire)

District Representative: H. V. Wilkins (G6WN), " Hills View," 81, Studland Road, Hanwell, W.7.

Town Representatives:

High Wycombe.—V. O. Hawkins (2BVX), 35, Green Lanes, Terriers, High Wycombe, Bucks.

North-West Middlesex.—J. Hearn (G8MA), 43, Eversley Crescent, Ruislip, Middlesex.

South Middlesex.—F. C. Crocker (G2NN), " Deepside," 17, Cross Deep, Twickenham, Middlesex.

West London.—H. B. Crowe (G6CO), 22, Chipstead Gardens, N.W.2.

West Middlesex.—E. J. Napier (G8FA), 44, Cranmer Road, Hayes, Middlesex.

The March meeting was very well attended and final arrangements for N.F.D. were made. The D.R. was, however, down with influenza so was not present, but he has now recovered. The April meeting is being held in the Twickenham area, and as G6CL will be talking it is hoped that the attendance from other parts of the district will be good.

Town Representatives for South and West Middlesex have been included above, but while they held office last year they have never been re-elected this year as far as is known. Will someone in each of these areas remedy this please ?

A welcome to G3HT, a very " old timer " who dates back to 1912, and to VK2KC who joins the District. Congratulations to BRS3052 in graduating to G3GY in one jump, and to BRS3178 who is now 2DNX.

On March 16, Mr. F. Charman, G6CJ, delivered a very interesting lecture to the T.V.A.R.T.S. on transmitting aerials, explaining his points carefully with the aid of polar diagrams.

At the S.R.S. on March 15 Mr. H. V. Wilkins, G6WN, gave a lecture and demonstration of his four-valve superhet. This receiver was designed around an American circuit, but using English valves and components throughout.

Activity reports follow :—

West London.—G6CO still busy with superhet, 8WR has telephony going well now, 6LJ been visiting LA hams and re-erected mast, 2CMG and BRS3074 send very good logs, 3DU will soon be on the air.

North-West Middlesex.—G3HT first held a licence in 1912 with the call PZX and after attending the " Old Timers Dinner " decided to take it up again. Is getting gear ready. 2DNX is building.

South Middlesex.—G2KI has heard 2XC and 6DH on 56 Mc., 5VB active on 28 and 14 Mc., 2LA and 6GB on 28 Mc., 2VV rebuilding, 2NN link coupled Johnson " Q " to P.A. with two-turn link with improved results. The following are also active : 2ZY, 6LW, 8MK, 8HN, 8IP and 8MB. 2CZG heard four continents in twenty minutes on 28 Mc. one Sunday morning.

Bucks.—G6JK cured all his troubles with a new crystal, 2RL still rebuilding, 2BAO built and calibrating frequency meter and would appreciate it if more members would give their frequencies over

the air when signing, 2BVX has rebuilt with improved results using 6L6 and 6D5; BRS3020 uses both a two-valve and a six-valve commercial superhet.

DISTRICT 16 (South-Eastern)

By the time these notes are in print, National Field Day will be less than eight weeks ahead. Members who would like to help at any of the four portables to be run in the District should apply to the operator of one of the following stations:—1.7 Mc.—G2MI, Hayes, Kent; 3.5 Mc.—G2UJ, Tunbridge Wells; 7 Mc.—G5FN, Gillingham; 14 Mc.—G5JZ, Heathfield. The respective stations will be within easy reach of the four places mentioned.

Ashford.—G2QT has been busy in the B.E.R.U. Contest, while the following members also report active:—2KJ, 2JV, 8RK, 2BUQ, 2DCL, and 2CJT.

Bromley.—At the last meeting on March 26, G2MI demonstrated his combined preselector and U.H.F. converter as used in conjunction with his receiver. Using a high-slope pentode the unit gave high gain on the 14 Mc. band, while as a converter, good results were obtained on the television sound channel. At the next meeting to be held at *A.C.S. Radio* on April 23, the N.F.D. films will be shown, and it is hoped that all members who have not yet seen the films will make a point of being present.

Chichester.—The general meeting of the W.S.S.W and T. Club was held on March 8, and Mr. D. Ashby, B.Sc., of the *Westinghouse Brake and Saxby Signal Co.*, gave a lecture on "The All-Metal Way." He covered all aspects of the design and application of metal rectifiers in both the electrical and radio industries, and a vote of thanks for a very interesting evening was passed at the conclusion of the meeting. 2BBB is leaving for Egypt this month, and hopes to be on the air with an SU call in the near future. We wish him good luck in his new appointment and may his signals always find their way to G. In consequence of the foregoing the Secretaryship is being taken over *pro tem* by Mr. L. Frost, G5PF, "The Mikado," Station Road, Bognor Regis. The latter is active on 14 Mc. using a flat-top beam, and on 56 Mc. with T55's in PP in a long-lines Tx. So far he has not received reports from beyond 14 miles on the latter frequency. 8RO is active at week-ends only and reports his call being pirated on 7 Mc.

Eastbourne.—The E.D.R. & S. met on the last Monday of February, and a talk was given by G3CX on "Transmitters." Future meetings will be on April 30 and May 30. The following report active:—G2AO, 3AT, 5BW, 5IH, 8CP, 2AVQ, 2BPB and 2CNO.

Heathfield.—G5JZ on 3.5 and 14 Mc., 5AQ rebuilding, 5PN busy with receivers, 5PR on most bands including 28 Mc., where considerable DX has been worked. 1173 has been trying various QRA's for best signals from Alexandra Palace, using a super-regen receiver.

Medway Towns.—The M.A.T.S. have had lectures from both Mullards and Avo's recently, both of which proved very interesting. Congratulations to 2668, who is now 2DOH.

Tunbridge Wells.—G2UJ has at long last heard 56 Mc. CW signals in T.W. The stations concerned were G8CV at Farnham, near Aldershot, and 2HG at Sydenham. The Rx, is a TRF-V-Pen. mains-operated, and the aerial a 2BI Windom. A "Short Kraus" beam is now in position, and a watch is kept on the band most evenings from 22.00 to 22.30 B.S.T.. Transmissions will be made shortly at these times and reports are requested. 6OB, 5KV, 5OQ, 8NO and 2AKO are also active.

Whitstable.—At the W.R.A. meeting on March 5, 2BBT gave an excellent exhibition of the N.F.D. and R.S.G.B. films which were much appreciated by a good attendance of local members. The next meeting will be on April 30, at G5CI's QRA at 19.30 G.M.T. 5CI is building an exciter for a CC 56 Mc. Tx., 3BD is rebuilding, and 2AAN is trying an RK23 as a BA and FD stage. 5PY, of Clapham, will be active at week-ends only from Herne Bay in the near future.

DISTRICT 17 (Mid-East).

Boston.—G6GH reports being in communication with VU on 28 Mc., making him W.B.E. on that band. 8BQ is rebuilding his transmitter. BRS 3154 put up a good show in the B.E.R.U. reception contest. BRS2906 hopes to have his A.A. shortly.

Mablethorpe and Sutton.—G5BD has worked W1, W3 and VE1 on 3.5 Mc. phone and W6 on 28 Mc. phone. 5CY reports slight activity on 3.5 and 28 Mc. phone. 5LL is active on 7, 14 and 28 Mc. phone. 2FT is getting DX on 14 Mc. and working phone on 7 Mc. with good reports.

Cranwell.—G8OL has built a S.S. receiver and is now back again on the air. 8PI has entered the W/VE contest, and 8PQ has also been very active. VK5AP is now with us, and hopes to take out a licence soon.

Brigg.—G8AP is still very active on 28 Mc. and has worked W9 on phone.

Grimsby Area.—The next R.S.G.B. meeting will be held at the headquarters of the Grimsby and District Short Wave Society on Friday, April 22, at 8.30 p.m. Will local members please make a point of attending.

G2VY is at present QRT owing to alterations to the shack. 8PV is very busy experimenting with aerials. 8JN is active on 7 and 14 Mc. 5GS has been very successful with his 14 Mc. phone tests. 6AK is active on 14 Mc. and testing aerials. 8CI has built a new T.R.F. receiver. 2BXG is completing his transmitter. 2DDO has just erected a new shack, and is busy installing the transmitter. 2AZH is active with 56 Mc. gear.

The D.R. wishes to thank all those members who helped to make the District Meeting at Lincoln such a huge success. The attendance must have been a record for this District.

DISTRICT 18 (East Yorkshire).

Hull.—Arrangements are being made for a party to travel to the York Provincial Meeting on April 24, either by rail or road, and the T.R. would like those members who wish to attend to get in touch with him as early as possible so that he can make the necessary arrangements for travel and lunch.

Another reminder to members is with reference to the lecture which is being given on April 27; full particulars of this appeared in the March BULLETIN. The district officers are hoping that all members will make a point of attending.

Only two reports are to hand this month from BRS members, who state that conditions on 14 and 28 Mc. are improving. Those known to be

active include G2QO, 2XA, 3CC, 6OS, 6UV, 8IM, 2XA, 2AAX, 2CAQ, BRS 1948, 2072, 2975 and the three new members, whom we welcome and wish the best of luck.

DISTRICT 19 (Northern)

Stockton Area.—G5XT is using a Windom on 14 Mc. and made a good score in the A.R.R.L. 'phone contest. 5QU is busy on a superhet RX. 8GL continues aerial tests and is now trying out a Windom. 2FO is busy on NFD TX. 8OH and 8PS are both using 6L6's in their PA's. The latter is also using a "V" beam on U.S.A. with very good results. 6ZT is organising a District contest and stations will receive full details of this in due course. Also active are 2BHU, 2DGQ and 2CZO. The first mentioned now has a Sky Chief RX and has applied for his full ticket. 2DGQ is testing a 6L6 CO.

Sunderland.—G6HV is very active on 14 Mc. 'phone and getting many S9 reports from that quarter. 6CV is on 7 Mc. 'phone. 6TR and 8AR are on 1.7 Mc. CW and 'phone and the latter is also on 14 and 7 Mc. 6UD is trying to put consistent 'phone signals into the U.S.A., while G5NS is on 14 Mc. during early mornings for DX. Others active are G5AC, 6GY, 5PZ. G6TR reports that 6IR made a very good recording of his 1.7 Mc. 'phone and sent it to him in lieu of QSL.

South Shields.—G5WZ reports all members looking forward keenly to NF.D. and plenty of activity. 8IF is now working DX for a change and is doing very well. 8JO is inactive due to pressure of work. 8KK continues to work DX in early mornings. 8AO is also active but too busy to do very much. 8VV is fixing up a better aerial and then hopes to get going in force. 5SB is testing and comparing aerials. Also active are G5YO, 6XO, 6VG, 5TG. Ex G6GC is reported to be contemplating starting again!

Newcastle Area.—Preparations for N.F.D. are well in hand and we are hoping for a good score as this is our first time on 14 Mc. G6UC has been doing some good work on 14 Mc. with 10 watts. 8SG reports hearing plenty of good DX on 7 Mc. 2YY is on 7 and 14 Mc. 2PN is using a 35T in the final and active on 14 Mc. 5RI has been working DX on 7 Mc. as well as operating on 1.7 Mc. QRP CW with hand generator. 6IR is rebuilding his final to P/P 35T's. 6YG continues to work DX on 14 Mc. CW. 6YL's aerial succumbed to Felton gales again, but it did not make much difference to 56 Mc. CW sigs. 5QY has a temporary mast erected and is active on 1.7, 28 and 56 Mc. CW. 5ZM is having a complete rebuild. BRS3189 has two superhet receivers and would like to visit some local stations. Also active are 2BDQ, G2OT, G8AO.

Channel Islands

By G8DO.

Activity is increasing both in Jersey and Guernsey. Congratulations to G3GS, of Jersey, on obtaining his full call. G5OU and 2AOU are also active.

Of the Guernsey members, G8MF is the most consistent DX worker. He is experimenting with aerials of his own design, and reports remarkable success. He has now worked all W districts.

G8DO is on 7 Mc., using CO-PA, and class B modulation. 8OK is also on the same band. 2AIX and 2ASO are using transmitters operated from batteries and experimenting with Jones exciter units.

Scotland

During March all were shocked to hear the news of the sudden death of one of the most widely known members in Scotland, Mr. J. M. Wilkie (GM6WZ). Mr. Wilkie will be missed by his many friends throughout Scotland.

Arrangements for N.F.D. are now well advanced, and all districts are taking part for the first time since the number of districts in Scotland was increased. By the time this appears in print, it is expected that preliminary arrangements will have been completed for holding the forthcoming Scottish Convention in September. Full details will be published as soon as possible, but in the meantime keep note of the following dates: September 17 and 18, and be sure to keep them free.

"A" District.—Sites for N.F.D. stations have been fixed and are similar to last year, but on this occasion four stations will be in operation. GM8VL finds an 809 a good investment, works VK on first call and follows up with a very creditable score in the A.R.R.L. C.W. contest. 6JD after spectacular explosion in his power pack, is thinking of offering his electrolytics to the Air Ministry—as incendiary bombs! 8RJ made good score in A.R.R.L. 'phone contest, and finds a W8JK aerial very good indeed on 28 Mc. 8TT has acqured a number of telegraph poles for aerial experiments. His big worry now is how to transport them to his QRA. Considerable amusement has been caused by his tape recordings of local transmissions. Some of the "Fists" have to be seen to be believed. 8PM is in the throes of building the 1.7 Mc. N.F.D. transmitter. A rather novel line-up is being used, details of which will be published later, provided results come up to expectations.

"B" District.—Contest time being now all over, things have gone back to normal and preparations are now being made for N.F.D. Meetings are being well attended and it is hoped to resume Morse Practice Classes again soon. GM8AT has been heard in Pitcairn Island and recently worked 65 W stations in five hours, which, if not a record, is certainly good going. 6IZ is believed to have a heavy score in the A.R.R.L. Contest and has also taken part in the 'Phone Contest. 5YN is tired of DX and all that and has gone all QRP with a very small and compact D.C. transmitter. 8SV will be much more active shortly when brother 2CHK passes his morse test and becomes secoud operator. BRS3011 uses a Collins coupler on his receiver and finds the difference remarkable. Several BRS have moved up to A.A. status, but no reports are to hand. GM2JF and 8AS are apparently doing well in the DX line, but fail to report. 2OX has crystal-controlled 'phone going on 56 Mc. and is looking for co-operation.

"C" District.—Meetings are being well attended. GM6RT is active on 3.5 and 7 Mc. 5SC is revising aerial arrangements and rack transmitter is nearly completed. A new NC81X receiver has been installed at 8HM. 2CLA, 2CLD, 2CMA, 2BLJ and 2DGN are all nearly ready for morse

test. BRS2798 reports hearing KA1ZL on 14 Mc. 'phone. GM8MN is now WAC, WBE, favours ½-wave centre-fed aerials with EO 1 cable.

"D" District.—The meetings are being well supported and arrangements for N.F.D. have been put in hand. GM5YX gave a short talk on his new transmitter at a recent meeting and a lively discussion ensued. 6XI is changing QRA and will be off the air for some time in consequence. 6RZ is busy on 1.7, 7 and 14 Mc., while 3BK, 3BZ, 2ZN and 5HL are active on 7 Mc. phone. Hunting DX on 14 Mc. occupies 6NO, 6JH and 5GK. A report has been received by 6SR from Federated Malay States on his 3.5 Mc. 'phone. Work on 56 Mc. continues at 6SR and he is anxious for co-operation.

"F" District.—The district are making their debut in N.F.D. this year, one station active on 3.5, 7 and 14 Mc. GM6NX's score of 81,000 points was the highest European score in the D.J.D.C. In the A.R.R.L. C.W. Contest, some 55,000 points were run up on the score board. 6RV had a good score in B.E.R.U. 2UD has built a very fine 4-valve straight receiver with reaciton on the audio and tuned speaker, if the tests are satisfactory, it it hoped to describe in the "BULL." No signals have been heard yet on 56 Mc. by GM6XW.

"G" District.—This year three stations will be put into the field for N.F.D. It was with deep regret that the district learned of the passing of Mr. Jack Wilkie 2CXC is putting up a new den in the garden and erecting a new aerial. 2CGY is doing good work with his transmitter. Amongst those swotting morse is 2CVH, while BRS2200 is hearing much DX on an Eddystone All-World Two. GM8CN had a high score and place in the D.J.D.C.

"H" District.—We must apologise for omitting to mention last month that the district have the distinction of holding a District licence, GM3DR having been allotted. BRS3151 is now 2DMC. GM8KR has now completed rebuild on extensive scale and is getting some good reports. Meetings are being well attended and now average 16 to 17 members present.

GI Meets EI.

Howard Coombes (EI6J) (Hon. Secretary, I.R.T.S.), T. Palmer Allen (GI6YW) (Northern Ireland D.R.), and George Noblett (EI9D) (B.E.R.U. Representative for Eire) show G6CL the sights of Dublin. The new M.V. Munster is in the background.

Northern Ireland

District Representative : T. P. Allen (GI6YW), 62, Balmoral Avenue, Belfast.

Town Representative :—S. N. Johnson (GI5SJ), 10, Cyprus Avenue, Belfast.

The main topic this month has been the visit of GI representatives to the I.R.T.S. Convention in Dublin. On behalf of myself and the other GI amateurs who were present I offer our hearty congratulations to the EI fraternity on the great success of the event, and our very sincere gratitude for the immense welcome we received ; the kindness and completeness of the hospitality extended impressed us greatly, and it has been voted the happiest amateur gathering we have ever attended. We hope that before long we will be able to greet the EI people in Belfast, and show them our appreciation in a practical way.

After attending the I.R.T.S. Convention in Dublin, G6CL came up to Belfast for two days. Some 20 GI amateurs were thus able to meet him informally over a cup of tea and receive first-hand information as to how Society affairs were going.

N.F.D. arrangements are well started and four stations are being organised ; the list of operators is now closed, but the stations will be in charge of GI5HV (1.7 Mc.), GI5SJ (3.5 Mc.), GI5UR (7 Mc.), and GI5QX (14 Mc.).

GI8PA reports that he has worked W on phone at last, but only after a reflector was erected. GI3FH is a new GI call, being the Methodist College with GI8PA in charge. GI5TK used an input of 7 watts from batteries to a TPTG in the A.R.R.L. Contest, and worked W3, 2, 3, 4, 5, 8 on 14 Mc., reports being S5-S7. Also worked ZS6ED at S5. Pretty work, GI5TK.

An Old-Timers' QSL Card

Mr. Eric Martin, G6MN, of Castlemount, Worksop, has recently designed a special QSL card for use by Old-Timers. We believe those who attended the recent O.T. Dinner will be interested in this novel card, which incorporates "Hamusla," the G.O.M. of Ham Radio.

BRITISH EMPIRE NEWS AND NOTES

Australia (Queensland)

By VK4GK *via* G2BY.

The writer has been transferred to Itaca, a suburb of Brisbane, thereby saying farewell to DX as his QRA will now be next to a power station ! We learn that now VK4KH is not to purchase an RME 69, as after all charges had been paid, the price would be £150 !

News for these columns will be welcomed by VK4GK.

Canada (Fifth Division)

By VE5AAD.

VE5DK (Rossland, B.C.) has been active on 14 Mc., and recently contacted GM2UU. He uses 100 watts to a pair of 801's, and, being an Englishman, is always glad to have G contacts. Look for him on 14,110 kc.

VE5AAD was in QSO with GM5ST on February 25. On the same day G5RL was also heard calling the writer, but QRM from PAOMQ spoiled a QSO. 5MZ is preparing to become active again after a brief rest. 5RL is on 7 Mc., using 150 watts. 5AEB is a new call held by a 16-year-old lad at Kaslo, B.C. He is working on 7 Mc. at present. 5ABD ,of Challwack, B.C., has been putting out good phone at the L.F. end of the Canadian phone band. 5ABO is at the H.F. end of the band, and both are looking for G's. 5AC is on 14,040 and 5ACN on 14,380. 5HR, who has taken over the QSL Bureau for the District, works on 14 Mc. VE5BI, 5GR, 5KC and 5ABB are all active on the DX bands.

Ceylon

By VS7RP.

Conditions for the month of February on 14 Mc. opened quite well, but after the Senior B.E.R.U. Contest, gradually got worse, and the peak of poor reception was reached during the last week-end of the Junior event.

On Saturday, the 26th, from approximately 2200 to 2400 G.M.T., there was practically a complete fade-out of signals, and the writer had to wait for over 11 hours before the first contact was made. Afternoon thunderstorm activity has been another cause of poor reception, as QRN was so heavy that it was more or less impossible to hear signals through it. With the inter-monsoonal period approaching, conditions, in all probability, will get worse instead of better, and little or no DX will be possible.

A welcome is extended to VS7JB and 7RG, two new calls that have come on the air recently. Other amateurs in the Island will doubtless give them such assistance as lies in their power.

In view of the new Air Mail rates of postage, VS7RP wishes it known that no listeners' reports and requests for QSL cards will be sent unless an International coupon is sent. This appears to be somewhat harsh treatment, but the postage on letters and cards is over 3½d., as against 1½d. previously. All QSL cards from stations worked will, of course, be promptly acknowledged.

Eire

By EI9D.

To the EI's who attended Dublin Convention the week-end March 25-27, 1938, will long remain a very pleasant memory.

To have had "Clarry" with us as also other friends from G and GI gave us all the greatest possible pleasure. However, as a full report of the proceedings appear in this issue of the BULLETIN, it is not proposed to go into detail in these notes. Suffice to say that everything went off very satisfactorily indeed, and that we all enjoyed the evening at the Moira, the station visits and other informal gatherings.

Unfortunately, owing to unavoidable circumstances, it was not possible for Col. Dennis (EI2B), Vice-President of R.S.G.B., and Past-President of I.R.T.S., to be present with us in Dublin. However, our disappointment was lessened somewhat because, anticipating EI2B's difficulty, we had taken "Clarry" down to see him on the previous day. Our recollection of the very pleasant morning and luncheon party at Fortgranite will last a very long time.

To the Council of R.S.G.B., to "Clarry," to G6GL of West Kirby (who crossed the Irish Sea twice in twenty-four hours in order to be present), to all the GI's, to Mr. and Mrs. Coombs, to Mrs. Waring, to Professor O'Farrell, to Mrs. Hodgens, to Col. Dennis, to the Press, to our friends in the trade, and to all our visitors we record our appreciation of the support they gave us in making this, our first Convention, an unqualified success.

Kenya, Uganda, Tanganyika and Nyasaland

By VQ4CRC.

The slight improvement previously reported was not maintained and conditions generally during March have been very bad indeed. QRN has been prevalent and has caused a damping of the ardour and enthusiasm of quite a few operators in these parts. On the other hand, VQ4CRI had a welcome surprise a few days ago by contacting two W6 stations as early as 15.00 G.M.T., a most unusual occurrence at such an hour.

South Africans have just about faded out again, but European Continental stations are coming along again. G's, however, are very difficult to contact.

There is every probability of conditions around these areas improving considerably as soon as the long rains break, which it is expected they will do early in April.

Malta

By ZB1E.

Rebuilding and overhauling appears to be the order of the day for this month. ZB1C is busy with the finishing touches to his new 28 Mc. P.A. 1E is completing his new 3-band exciter. 1H is building a new modulator to suit his latest P.A. 1J is testing out a grid modulator and 1L is overhauling his entire rig.

BERS416 has been licensed with the call ZB1S and we wish him the best of luck.

Conditions have been generally poor on all bands.

Mauritius

By VQ8AF.

VQ8AA was active on C.W. during the Senior Contest and reports that conditions on 14 Mc. were not so good as last year. He was lucky enough, after calling Test B.E.R.U., to hear his first PY come back, thus qualifying for WAC. He is now testing on 'phone on a frequency of about 14,200 kc. Reports will be highly appreciated. VQ8AF, who was active during the second week-end of the Senior and during all the Junior, also found conditions very erratic on 14 Mc., and in the latter noted the absence of signals from VQ3, VQ4, VS6, VS7. The result is that his score is lower than last year. VQ8AB was prevented from entering the contests on account of business.

New Zealand

By ZL3AZ.

The B.E.R.U. Tests have passed for another year, but conditions in Christchurch were not up to expectations and very few contestants were audible. Only five G stations were worked during the whole Senior contest, but a very pleasing feature was the number of Canadian stations heard calling "B.E.R.U." In past years only two or three stations have been heard from this part of the Empire. An unusual call logged was VS1AI.

From the number of entry forms sent out here, it would appear that a record number of ZL stations participated. As yet, no reports are to hand from contestants, although it would seem that either Auckland or Dunedin has carried off the certificate for New Zealand.

After bemoaning his luck for this contest, the writer on the morning of February 23 worked CR7AC, ZT5J and ZE1JI, as well as ZB2OXVC. In the evening another new one was VP9L, making four new countries in one day, bringing the total to 92. After this, no more moaning that African stations cannot be worked from ZL!

ZL3FZ has also carried on the good work and has worked a couple of ZS stations around 1900 G.M.T. Word to hand from ZL3JX mentions that he had bad luck in the contest with his transmitter. He does not expect to be on very much for a while owing to being busy on his farm. He uses an RK23 in the final with about 30 watts. Will all Welsh stations give ZL3JX a call when they hear him on, as he hails from the land of the leek and will be glad to have a yarn with anyone in his home country.

The 14 Mc. 'phone permits issued to ZL's so far total 12 in number. Should any G stations wish to listen for them, it should be remembered that 'phone operation is permitted only between the hours of 1200 and 1900 G.M.T. The band width is from 14,150-14,250 kc. Some of the North Island stations have already accomplished W.A.C. so they have not wasted any time. The writer has hopes of being on 'phone next season, so there will be fierce competition then among the spitch merchants.

Northern India

By VU2EO *via* G6ZO.

Due to VU2LJ's impending leave, the following notes have been prepared by VU2EO. During Mr. MacIntosh's absence from India VU2AN will be acting B.E.R.U. Representative. VU2AM is accompanying 2LJ on leave.

VU2EO has W.A.C., having contacted LU9BV, but awaits cards before being able to qualify for his certificate. 2EO will be active in VU for probably another year, as posting home has been cancelled.

A good entry from India was recorded in the B.E.R.U. Contests, and most stations seem to have done fairly well. At 2EO results in the Junior were spoilt by a bad falling off in conditions during the second week-end, a new moon period. During the middle of March conditions returned to normal, coinciding with a full moon period; this phenomena has been very noticeable of late.

QRM on the 14 Mc. band is being caused by VWK, the Karachi Civil Airport sending daily meteor reports addressed to all stations between 2000 and 2020 I.S.T. on a frequency between 14,000 and 14,200 Kc. (Any other VU stations noting this are requested to report to VU2AN.)

Owing to short notice, no other reports are to hand, but the following stations were active during the month:—2AM, 2AN, 2CA, 2CQ, 2DR, 2ED, 2EO, 2FH, 2FV, 2FX, 2FQ, 2JP, 2LJ, 2LK, 2LL, 7.AR and 7FY. 2FV is putting out excellent signals on 14 Mc., and did very well in the W/VE tests.

South Africa

Division One.—It is with a feeling of regret we learn that ZS1H has decided to give up amateur radio altogether and is disposing of his gear. We can only hope that he will one day, in the near future, come back into the fold, although he assures us it is for good.

Conditions on 14 Mc. have been excellent with practically no static. 28 Mc. has been fair but shows signs of improving.

ZS1AN put in some very hard work during the B.E.R.U. contest, raising about 590 odd points, which, we believe, tops the list for the Cape Zone. ZS1AH spent about 2 hours trying to raise a W5 in New Mexico—the only State required for his WAS—with no result.

ZS1B tried out a W8JK 14 Mc. beam but something was wrong somewhere as it increased signals round South Africa and nowhere else. So far his 14 Mc. Zepp gives the best results. A Windom is the next aerial to be tried. ZS1BO ex ZT1E has been heard testing his new rig, consisting of a T20 in the final modulated by 46's in Class "B." ZS6DW ex ZU6P informs us he is off the air rebuilding but hopes to be on again very shortly.

As all South African calls now have the prefix ZS we would suggest that overseas amateurs, when

calling South Africans, take particular notice of the call signs as it often happens that the last letter of the call is missed. This is borne out by ZS1B receiving cards for contacts he has never had.

We would again urgently request members to forward news for these notes to ZS1B, Box 35, Cape Town.

ZS1B.

Division Six.

The annual B.E.R.U. Contests have just recently finished; we are pleased that the South African amateurs took a keen interest in both sections of this Empire Radio competition.

The work of the African Radio Research Union is going along well, particularly in Divisions 5 and 6.

The 28 Mc. band is particularly active now, and many ZS contacts have been made with W. Conditions on 14 Mc. have been fair, and ZS amateurs have obtained a good share of DX.

A few local stations have managed DX contacts on 7 Mc., notably ZS6AM, who linked up with VK and LU. Otherwise this band is being used mostly for inter-ZS communication. Signals on 3.5 Mc. are scarce, static noise being pronounced.

ZT6X, now ZS6CS, awaits a more opportune moment for radio activity. He has moved to a new locality, and his address is 83, Derby Road, Kensington, Johannesburg. ZU6C, now ZS6DM, has been active on 14 Mc, and finds no difficulty in contacting W stations. ZS6C is active on 7 Mc., and keeps regular schedules with ZS6AM. They are in Alberton and Johannesburg respectively, having recently returned from the Barberton District. ZT6AD has been inactive, pending the completion of a new transmitter. His new call-sign is ZS6BL. ZU6V, now ZS6DZ, has been active on 14 Mc., and has contacted W1 and OK1, the latter being a new country for this station. The following members have been heard :—ZS6T, 28 Mc.; ZS6Q, EM, 14 Mc.

A request is made for all members to report their activities monthly. All correspondence should be sent to Box 4020, Johannesburg, not later than the 20th of each month. ZS6DZ.

Southern India

By VU2JP, *via* VU2EO and G5OV.

The B.E.R.U. tests for 1938 are over and we appear to have had a record entry, VU2EO, 2FV, 2FX, 2LJ, 2LK, 7FY and VU2JP all taking part, but conditions were peculiar in many ways. As regards VU2JP all districts of VE were heard but no contacts made, although U.S.A. was worked.

The following Zones, usually workable, were entirely absent: XZ, VU8, ZC6, YI, VS8, VP5, although ZC1 was heard.

Signals in the Junior were stronger all round than in the Senior, in spite of lower power, in fact, VU2JP has never heard signals at such high S level for years.

The 7 Mc. band afforded a few QSO's in the early mornings but QRM, QRN and commercials in the evening made operation impossible.

A remarkable feature was the absence of practically all signals on 14 Mc. between 05.30 and 17.09 G.M.T. Other reports of conditions and results are not yet to hand.

Egyptian Notes

Very little activity on 7 Mc. is reported. QSB has been very noticeable at times but QRN is keeping off, although QRM still holds sway. Contacts with U9 are still possible in the early evenings, but other DX is rare. 14 Mc. seems to be poor in the afternoons and VK and ZL contacts have been very scarce as the band does not open up until early evening. As a result, G stations are workable until half-past one in the morning, a time when semi-DX is not expected to be heard. The 28 Mc. band has shown a welcome return to better conditions, although not much activity is reported. At about sunset W 'phone and C.W. QSO's are possible, but not much else is to be heard as yet.

SU1AM is becoming more and more active and is hoping to have his QRO outfit working very soon. 808's are to be used in the final stage so a really good signal should be the result.

SU2TW reports that, for the moment, he is out of QSL's and is thus unable to answer listener reports. As soon as they arrive, the matter will receive full attention. Some activity on 28 Mc. is reported, but aerial experiments on 14 Mc. are taking up most of his time. He is testing a W8JK beam with a ½ wave matching stub link coupled to the P.A. Beyond the fact that it is working all right, no details are to hand as to how it compares with the various others that have been tried. The 'phone break-in scheme is still in a very early stage of construction, though he hopes to have it working in the near future.

SU1RD is now on very regularly and putting out quite a good 'phone signal. Plenty of DX contacts are being made but a South American QSO is still lacking for his W.A.C., as is also a VE for W.B.E. Best DX to date include ZL, W and CO.

SU1WM recently reached his century of QSO's (100 countries ?—Ed.) when contacting CT3AN, whose card is just to hand. ZA3X has cropped up once more and was worked after he had QSO'd G5BY. QRA again given as Elbasan and promise of QSL. (Has *anybody* got one yet ?)

To G6WY in answer to a query as to whether TF5C QSL's, SU1TM received one for a QSO that took place about two years ago. In return for this information may it be asked if OXVC really constitutes a " country " in view of the fact that it is a ship, although in dock ? (Not according to the A.R.R.L.—Ed.).

We in SU trust that Mr. and Mrs. Watts enjoyed their stay in Egypt; for our part we retain most happy memories of their visit. SU1WM.

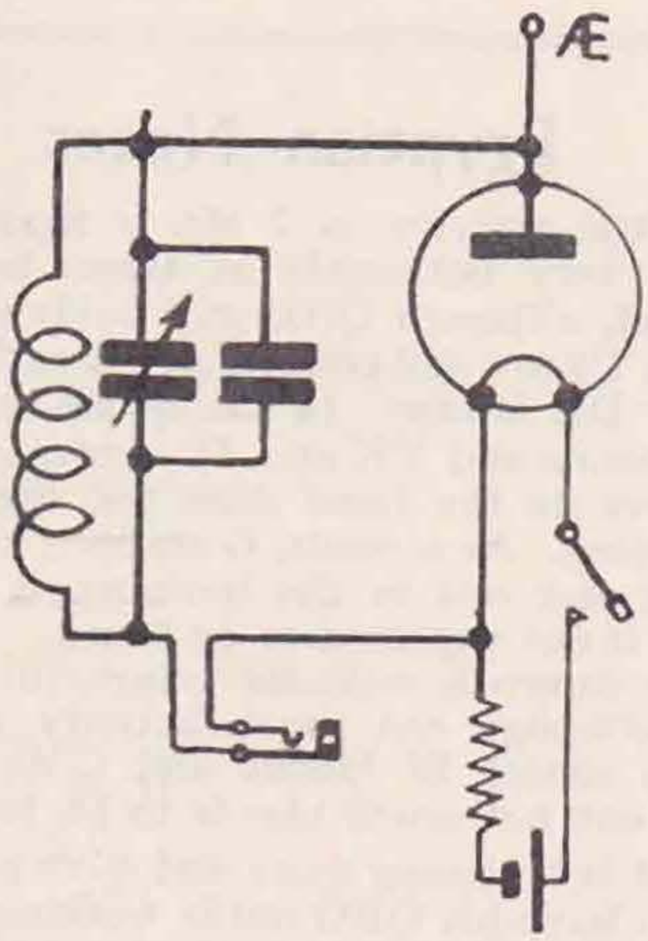
Ham Movements

Mr. R. Jardine, G6QX, has just left for the States on a two-months business trip. He hopes to visit many of the U.S. stations he has contacted and also expects to call at A.R.R.L. Headquarters.

HEADQUARTERS TELEPHONE NUMBER HAS BEEN CHANGED TO ABBey 4412

DIODE PHONE MONITOR—(*Continued from page* 531.)

The circuit of the Diode Phone monitor is given below.



Components required:

- *2 4-Pin Valve Holders, Eddystone 949.*
- *1 100 μμF Microdenser, Eddystone 900-100.*
- *1 Knob, Dial and Cursor, Eddystone 1026.*
- *1 Toggle Switch, Bulgin S80.*
- *1 Jack, Bulgin J3.*
- *1 10 ohm Wire Wound Resistance to carry 100 mA. Bulgin AR10.*
- *1 HL2 Valve, Marconi.*
- *Chassis 16 S.W.G., Aluminium, Crackle Finish, APA.*

ULTRA MODERN 56 Mc. TRANSMITTER—(*Continued from page* 530.)

mentioned obtainable from a transmitter of this type. There are three tuned circuits on 56 Mc., and it is impossible for the original frequency to reach the final circuit. The junction of the low-impedance feeder and the aerial represents an absolute mismatch to any frequency lower than 50 Mc., so that no signals are radiated except on the desired frequency. It follows that signals heard at a distance must be *via* the 56 Mc. wave, and not through any weird effect of a strong 28 Mc. wave being radiated, and the harmonic of it selected at the distant station.

The transmitter has not been finished long enough to test its possibilities in the way of DX, but it is putting a very clean, strong C.W. signal over a wide area locally, and there is every reason to think that, given suitable conditions, reception should be possible at great distances.

28 Mc BAND—(*Continued from page* 552.)

GM8FR reports that he worked all continents except South America in 1½ hours on March 20, and G6QX had over 300 W and VE QSOs during the c.w. DX Contest. G2XC is keeping regular schedules, as follows, and would appreciate reports from any distance: with G8MH every Monday, 21.30-21.45 G.M.T., and with W9WSY every Saturday and Sunday throughout the summer, at 20.00 and 22.00 G.M.T. In addition to those already mentioned, the following are thanked for their reports: G5BM, G5BD, G6YL, G8IY, BRS25, BRS3003, I1ER and VU2EO.

MONTH ON THE AIR—(*Continued from page* 554.)

up on March 4 and was immediately received by a large number of listeners over here.

We always rely on G6YL to point out mistakes in this column. This month she tells us that XSM7QD is s.s. *Monark*, and although T4TWO appears to be bogus, she received a card posted in Avonmouth following a QSO when QTH was given as being in the Atlantic. BRS207, of Southampton, received a letter from Bronx Emergency Receiving Station, N.Y., stating that there were only eight white people on Fanning I. (VQ1) and no amateur transmitter. The QRA's of FI8AC and VS4CS both appear in the current call book. G6ZO, using a real honest 25 watts, worked Vermont (W1EZ) for a new State and CN1CR on 7 Mc. A ship signing SIWN/SM5WC was contacted and SV6SP gave him a new country. The following were heard on 7 Mc.: K6MOK 7090, EA9AI, YV1AC 7100, YV5AE 7210, VK4CW 7070, EA9ME 7200, and many S. Americans. On 14 Mc.: J2OV 14320, J2LL 14290, XU8RB 14080, VP1AA 14400, VP9L 14390, K6PAH 14030.

We think we have some information about ZB2A and ZB2AB, but more of this next month. OXVC is now stationed at Marseilles until the summer and will not be on the air until he returns to Gibraltar. An interesting letter arrived from VQ8AS in Chagos Archipelago with his card. He will return to Chagos in April from Mauritius, where he has been on holiday for four months. During this time he operated a low-power transmitter with the call XVQ8AS. When he returns he will be using higher power than his old 270-volt T.P.T.G.

We have received enough material to write a book this month, and reports have had to be cut down to a minimum of interesting details. Please confine your reports to reception of really unusual stations and unusual things heard, and send them in not later than the 25th of the month.

Empire Calls Heard

By H. S. Brown (BERS265) on board H.M.S. *Delight* at Chefoo, North China, during first three week-ends of B.E.R.U. Contest:—

14 Mc.: G2dk, hd, lk, mi, qt, yv, 3cc, co, 5bd, hz, jm, jx, mw, pq, vu, 6bq, cj, hp, ii, kp, nf, rh, vd, vq, xl, 8ab, hf, hp, im, jv, nv, tl, gi5uw, 6nb, xs, gm2qu, 6bm, fn, jh, su1nh, ve3qn, 5kc, qp, vs1aa, ai, vs7rp, vu2au, bg, ca, eo, fv, fx, jp, lj, lk, xz2dy, zb1h, j, p, ze1jv, zs1an, z, 2x, zt2q, 6y, zu1t, 5u, 6c, p.

J. Roberts (BRS2620) on board H.M.S. *Kempenfelt* in Gibraltar Harbour:—

14 Mc. C.W., March 21, 17.15-18.00 G.M.T.: G8ql (s5), 5na (s5), 8js (s5), 8pl (s5), 8nm (s5), 8gc (s3), 2ft (s5/3), 8td (s4), 8bq (s5), 5ms (5), 2db (s5), 5ls (s5), 6uc (s5). March 22, 07.00-07.35 G.M.T.: G8hh (s5), 5wg (s3), 2xw (s4), 3gq (s4), 8gp (s3), 6gh (s5).

INDEX TO DISPLAYED ADVERTISEMENTS

QRA Section

Manager: H. A. M. Whyte (G6WY).

New QRA's

G2DP.—F. G. Hoare, 24, Dunhered Road North, Thornton Heath, Surrey.
G2DR.—S. R. Wright, 45a, Holland Park, London, W.11.
G2FH.—J. H. George, 107, Fairlands Avenue, Thornton Heath, Surrey.
G2IM.—E. R. Radford, 1, Gibbs Green, Edgware, Middlesex.
GM2JF.—J. C. Foster, Skibo Electric Station, Clasmore, Dornoch, Sutherland, N.B.
GM2SP.—R. A. Sproule, 23, Colinton Mains Place, Edinburgh, 3.
G2VZ.—H. W. Daly, 9, Limpsfield Road, Sanderstead, Surrey.
G2ZQ.—John Hunter, 21, Brook Way, Blackheath Park, London, S.E.3.
GW3AX.—A. S. Thomas, "Roseland," Kittle, Bishopston, Swansea, Glam., South Wales.
G3BB.—H. W. Warner, 29, Grove Street, Retford, Notts.
G3BS.—H. G. Mappin, "Mundays," Writtle, Chelmsford, Essex.
GW3CF.—G. Jones, 15, Park Drive, Rhyl, North Wales.
G3CH.—C. T. Holmes, Municipal Technical College, Hull, Yorks.
G3CJ.—E. H. Jones, 278, Deane Church Lane, Bolton, Lancs.
GI3CM.—J. Patton, 63, Belvoir Street, Belfast, Northern Ireland.
GW3CR.—W. T. Rees, 82, Oak Street, Gilfach Goch, Near Taonyrefail, Glam., South Wales.
G3CW.—Cyril Watson, 13, High Street, Wem, Salop.
G3DO.—D. A. G. Edwards, Selwyn House, Pilkington Avenue, Sutton Coldfield, Warks.
GM3DP.—T. Paterson, 45, Market Road, Carluke, Lanarkshire, Scotland.
G3DY.—P. C. Morton, 22, High Street, Whittlesey, Near Peterborough, Northants.
GI3FO.—A. J. Cobban, 2, Portrush Road, Coleraine, Co. Londonderry, Northern Ireland.
G3FQ.—C. H. Ashmore, 33, Wingfield Street, Rugby, Warks.
G3FX.—H. Clegg, 23, Hutton Road, Marshfields, Bradford, Yorks.
G3FZ.—M. L. Quartermaine, 9, Princes Gate Court, London, S.W.7.
G3GC.—E. H. Godfrey, 32, St. Mary's Avenue, Church End, Finchley, London, N.3.
G3GF.—E. F. Read, 26, Hillside, Grays, Essex.
GM3GG.—G. Mortimer, 5, Boyndie Street West, Banff, Scotland.
G3GH.—Mrs. C. H. Myler, Knowle, Near Braunton, North Devon.
G3GK.—A. G. Hayles, 23, Station Road, Bromley, Kent.
GW3GL.—J. W. B. Evans, The Apiary, Conway, North Wales.
G3GS.—A. G. Cole, 6, Greve Dazette Gardens, St. Clements, Jersey, C.I.
G3GU.—W. W. Taber, 12, Lee Park, Blackheath, London, S.E.3.
G3GY.—J. Newson, 23, Auriol Road, West Kensington, London, W.14.
G3GZ.—A. A. Houchin, 35, Stoke Road, Slough, Bucks.
G3HB.—G. L. Benbow, "Two Ways," Anson Street, Rugeley, Staffs.
G3HH.—A. Southgate, Dewerstone, Kingsway, Woking, Surrey.
G3HJ.—J. R. Huggon, 168, Dalston Road, Carlisle, Cumbs.
G3HM.—L. E. Harris, 66, Periwinkle Lane, Hitchin, Herts.
G3HR.—H. Ridge, 9, Mayfield Road, Heavitree, Exeter, Devon.
G3HS.—D. T. Boffin, Market Place, Faringdon, Berks.
G3HT.—H. W. Pope, 4, Gainsborough Gardens, Edgware, Middlesex.
G3HZ.—Thomas Bentley, 158, Sylvan Avenue, Timperley, Ches.
G5CM.—Thomas H. Streeter, School House, Alfold, Near Cranleigh, Surrey.
G5CS.—Colin Coates, 59, St. Michaels Crescent, Luton, Beds.
G5GT.—R. A. Napper, 43, Albemarle Road, Taunton, Som.
G5HN.—E. Handcocks, 1, Conisboro Way, Conisboro Avenue, Caversham, Reading, Berks.
G5LH.—R. Mitchell, Earlville, 9, Earl Street, Keighley, Yorks.
G5QG.—M. Hollinshead, 66, Frankly Beeches Road, Northfield, Birmingham.
G5TS.—T. Brian Smith, 77, Great Thrift, Petts Wood, Orpington, Kent.
G6CC.—B. A. Matthews, "Cartref," 20, Hesketh Crescent, Stockland Green, Birmingham.
G6CY.—A. S. Clacy, 8, Hangleton Road, Hove, 4, Sussex.
G6GF.—F. H. Tyler, "Inglemells," Stoughton Lane, Leicester.
G6II.—H. Leigh, 20, King Street, Southsea, Hants, for Portsmouth and District Wireless and Television Society, 1a, Hufson Road, Southsea.
G6IX.—S. P. Mason, 104, Fentham Road, Erdington, Birmingham.
G6JL.—William B. P. Watson, 278, Union Street, Torquay, Devon.
G6LH.—Rev. L. C. Hodge, Eastville Vicarage, Boston, Lincs.
G6OO.—T. Woodcock, 24, Roundhay Road, Bridlington, Yorks.
G6QR.—A. Shearer, 109, Melling Road, Aintree, Liverpool, 9.
G6QT.—J. R. Brown, 31, Bemburgh Grove, Primrose, Jarrow-on-Tyne.
G6TJ.—Alfred Cooper, 26, Hemyock Road, Selly Oak, Birmingham.
G6YS.—S. C. Bayeystock, "Brendon," 30, Crescent Road, Friern Barnet, London, N.11.
G6ZC.—J. Twatt, 52, First Avenue, Broomfield Road, Chelmsford, Essex.
G8DK.—J. Alexander, 38, Manor Park Lane, Yardley, Birmingham.
G8IP.—G. F. Barrett, 23, Warfield Road, Hampton, Middlesex. (Reported incorrectly in March "Bulletin.")
G8MA.—J. Hearn, 43, Eversley Crescent, Ruislip, Middlesex.
G8ND.—N. E. Dalby, 167, Showell Green Lane, Sparkhill, Birmingham, 11.
G8SL.—H. A. Smith, St. Ives, 29, Agate Road, Clacton-on-Sea, Essex.
G8VM.—N. F. Young, 14, Park Mansions, Colehill Lane, Fulham, London, S.W.6.
G8VV.—J. Teasdale, 16, Mowbray Road, South Shields, Co. Durham.
GI8WD (ex EI7G).—R. H. H. McDonnell, 52, Elmwood Avenue, Belfast, Northern Ireland.
GW8WJ.—J. P. Evans, "Westcroft," Meliden Road, Prestatyn, North Wales.
2AVR.—A. V. Spray, 42, Pembury Grove, Bexhill-on-Sea, Sussex.
2AXG.—A. S. McNicol, "Airlie," West Park Road, Cupar, Fife.
2BDA.—W. B. Bennett, 357, Chorley Old Road, Bolton, Lancs. (Reported incorrectly in March "Bulletin.")
2BNK.—N. K. Read, "The Newlands," St. Mary's Road, Leamington Spa, Warks.
2BSR.—T. S. Tatton, 15a, Derby Grove, Lenton, Notts.
2CCJ.—W. Jardine, 35, Raglan Road, Plumstead, London, S.E.18.
2CGI.—L. M. Spalton, Suncrest, Governor's Road, Onchan, I.O.M.

HEADQUARTERS TELEPHONE NUMBER HAS BEEN CHANGED TO ABBey 4412

2CHA.—R. Hilton, 35, Beresford Avenue, Whetstone, London, N.20.
2CMM.—John Mansell, 15a, The Avenue, Minehead, Som.
2CPG.—G. H. Randle, "Otherton," 145, Newtown Road, Great Malvern.
2CSN.—R. C. Beardsmore, 8, Mossley Bridge, Rugeley, Staffs.
2CZT.—W. E. Lavis, 6, Brunswick Place, Bath, Som.
2DAH.—F. Holman, 15, St. Davids Square, Rhyl, North Wales.
2DCN.—L. P. Altman, 29, Basing Hill, Golders Green, London, N.W.11.
2DDM.—G. B. Rowledge, 37, Hounslow Road, Feltham, Middlesex.
2DGR.—C. T. Fairchild, 1a, Dover Road, Brighton, 6, Sussex.
2DHS.—A. Evans, "Rhosmair," Sandy Lane, Prestatyn, North Wales.
2DIL.—T. R. Nisbet, 35, Malcolm Street, Dunfermline, Fife, Scotland.
2DJI.—A. E. Royle, 23, Mornington Road, Chingford, London, E.4.
2DJO.—J. C. Barron, 21, Rosemount Place, Aberdeen, Scotland.
2DLC.—G. Thorlby, The Crescent, Spalding Road, Holbeach, Lincs.
2DLD.—D. D. White, Toller Vicarage, Dorchester, Dorset.
2DLJ.—W. R. Chaffe, 21, Rosslyn Park Road, Plymouth, Devon.
2DLM.—H. Marsden, 76, Uxendon Hill, Wembley Park, Middlesex.
2DMB.—R. F. G. Thurlow, "Restalrig," 42, Regent Avenue, March, Cambs.
2DMC.—W. G. Hopcroft, 3, McKenzie Street, Sinclairtown, Kirkcaldy, Fife, Scotland.
2DMZ.—R. Stellig, "Romir," Victoria Road, Prestatyn, North Wales.
2DNA.—A. W. Gover, 11, Rolfe Road, Charlton, London, S.E.7.
2DNR.—S. A. Ross, 11, Allan Street, Aberdeen, Scotland.
2DOG.—S. C. Harvey, 24, Alwyne Road, Canonbury, London, N.1.
2DOH.—L. Nicholson, 8, Pine Road, Strood, Kent.
2DOW.—A. E. Cornish, 1, Halsdon Road, Torrington, North Devon.

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(*Continued from Back Cover*)

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