THE T. & R. BULLETIN

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CONTENTS

NOMENCLATURE

THE current issue of QST (official publication of the American Radio Relay League) contains an account of the recent C.C.I.R. meeting at Bucharest, written by Messrs. James Lamb and John Stadler, the I.A.R.U. delegates to the Conference. Among hosts of other important subjects in which the Union delegates collaborated was that concerned with the Classification of Radio Waves, and although the new classification does not, to quote from the report, have any bearing on our *use* of frequencies, it is of interest in that it offers a somewhat more logical nomenclature for generally describing different parts of the radio frequency spectrum. In the old classification, adopted at The Hague eight years ago, the various portions of the spectrum were indefinitely classified as "low frequency, medium frequency, medium-high frequency, high frequency, and very high frequency." The new classification proposed is more definite, having seven designations, and specific upper and lower frequency limits for each range.

The projected classification is as follows :—

Designation of Radio Waves according to Wavelength.	Wavelength in Metres.	Designation of Radio Waves according to Frequency.	Frequency in Kilocycles per Second.
Myriametric ...	Above 10,000	Very low	Below 30.
Kilometric ...	10,000 to 1,000	Low	30 to 300.
Hectometric ...	1,000 to 100	Intermediate	300 to 3,000.
Dekametric ...	100 to 10	High	3,000 to 30,000.
Metric	10 to 1	Very high	30,000 to 300,000.
Decimetric ...	1 to 0.1	Ultra-high	300,000 to 3,000,000.
Centimetric ...	0.1 to 0.01	Super	3,000,000 to 30,000,000.

In again raising this question of nomenclature we appreciate the difficulty of adhering to hard-and-fast rules, but since our earlier comments appeared we think it proper to point out that the terms used in the columns of this journal have, to the best of our ability, conformed to official practice. We can think of nothing more likely to annoy our technical readers than to find inconsistency occurring in the use of radio nomenclature.

Last month a notice drew attention to the fact that a circular is available for the use of those willing to prepare articles for publication. In this circular intending contributors are given advice which should assist them to produce contributions which can be published without undue editorial correction. Our D.R.s and District scribes would be doing us a service if they also study the suggestions made, with a view to forwarding consistently worded reports of local activities.

As a scientific Society it behoves us to set an example by using correct electrical terms both in writing and in speech.

J. C.

The 1937 Olympia Transmitter

By G. McLean Wilford (G2WD).

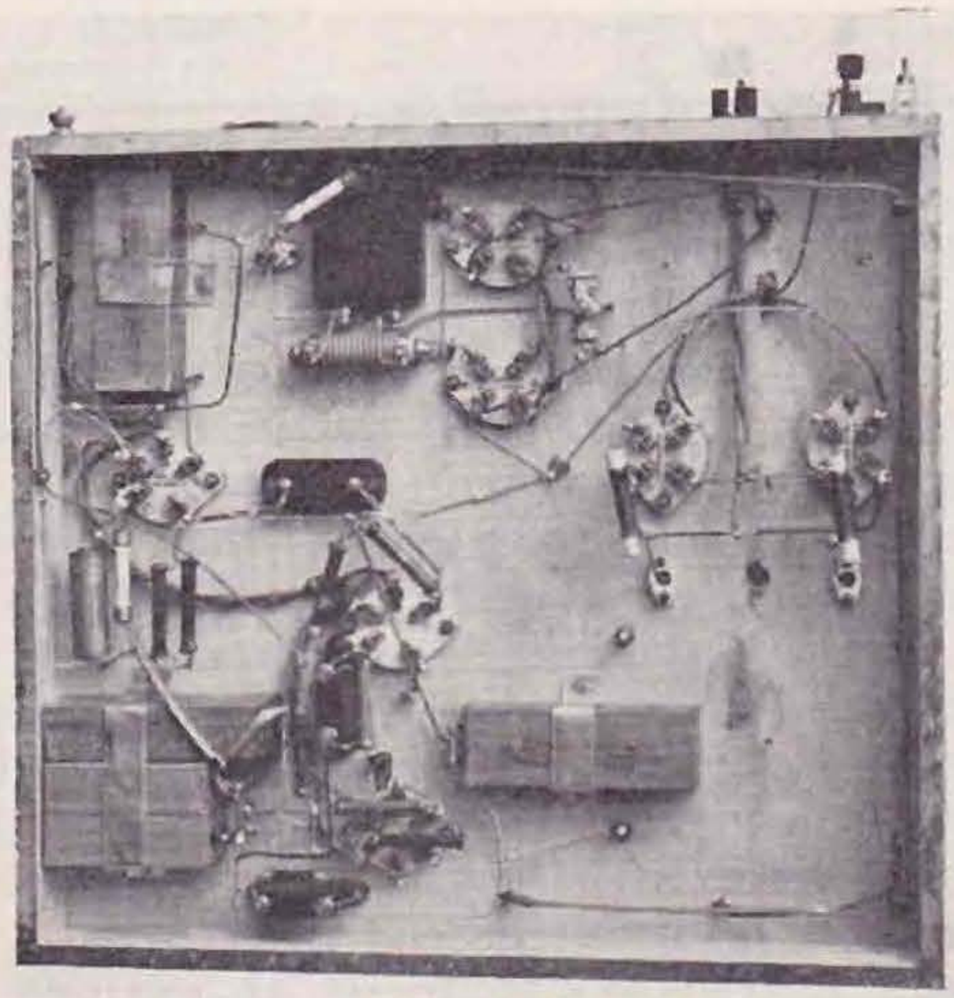
PART III.—SPEECH AMPLIFIER MODULATOR UNIT.

Introduction.

IN the two previous parts the R.F. channels have been dealt with and we now come to the Audio portion; but before proceeding with the description, the author would like to state that, while the unit as a whole is capable of delivering at least 100 watts (which is more than sufficient to modulate 200 watts input) it can be built progressively and used in other ways for lower power output. Suggestions appear later in the text.

Microphone Arrangements.

In considering a Class B Modulator unit, one of the principal factors affecting the design is the type of microphone to be used. In the unit to be described this particular point has been taken care of by making it available for a Carbon or Crystal microphone, either of which can be used by changing over the SPDT switch immediately after the microphone transformer. .This switch brings in the high gain crystal microphone pentode valve or the microphone transformer for the carbon type. If a condenser microphone is used, the small figure in the dotted lines showing V1 only gives the alterations to the microphone input to that valve. By changing R1 to 3 megs. and adding a bias cell, a 3 meg. resistance and a .01 μF condenser the input circuit is then ready for a condenser microphone, all other component values being the same as shown for crystal microphone input.

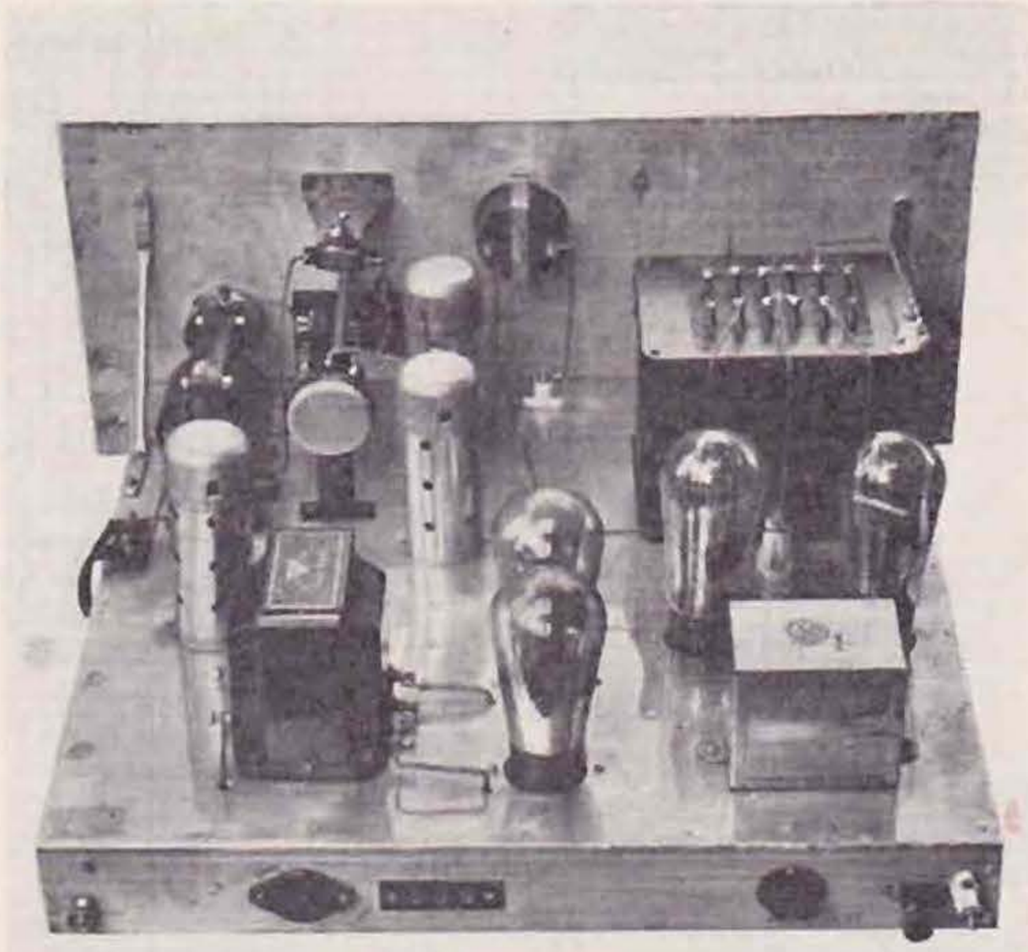


Under chassis view of speech amplifier modulator unit showing arrangements of parts.

General Design.

It may be argued that V1, V2 and V3, which comprise the input and speech amplifier portion, should be built as a separate unit, and V3 coupled to T1 through a 500 ohm line, but the layout of the author's transmitters is such that the unit as it is is less than 2 feet from the operating table, which is easily handled without moving position.

The audio gain control is between V1 and V2.



Rear view of modulator unit showing layout of components. The meter in centre is in plate circuits of the Class B valves and is an 0-500 mA. type.

and is mounted on an *Eddystone* condenser bracket, so that a short lead (screened) goes to the grid of V2.

V1 is a 6C6 (or 57 if 2.5 volt valves are preferred), V2 and V3 are 76 or 56.

As the speech amplifier valves are all operated Class A, and as the 76 or 56 has a Mu of 13.8, it should, on theoretical grounds, with resistance, coupling, give a voltage gain of approximately 10 per stage, which is ample to drive the two type 45 valves (V4 and V5) in push-pull.

The push-pull driver stage valves are those recommended by the *Taylor Tube Co.* for driving the Taylor 756 valves (V6 and V7) in the Class B stage, and these valves will give a maximum signal power output of 100 watts with a plate voltage of 850 volts, the maximum current on peaks being in the region of 220 mA. The static current of the 756's is about 25 mA at no signal.

It will be noted that one of the new U.T.C. "Varimatch" transformers (VM3) is used for the

Class B output stage. This is capable of dealing with outputs up to 250 watts; other smaller sizes are available for lower outputs. These transformers have the very great advantage in that by means of 12 different tappings literally dozens of plate to plate and output impedances can be matched, consequently if different valves are used in the Class B stage it is only necessary to calculate the plate to plate and output loads and connect up the correct terminals.

In this unit the terminals used are :—

(*a*) To Class B plates 8 and 10 (9 and 10 are strapped and the H.T. is fed here).

(*b*) To modulated Class C stage. The H.T. is connected to 2, while 3 and 4 are strapped, and 5 goes to the plate of the modulated valve.

It is also possible to obtain " Varimatch " Class B input transformers, and with a pair of these any type of valve may be experimented with.

Two power supplies are used, one giving 250 volts at 150 mA and the other 850 volts at 300 mA. A choke input filter is used. The rectifier valves are Type 866J[B].

The unit gave no trouble except that when first tested a hum was noticed. This was eventually traced to a filament transformer on the shelf just below. A sheet of tinplate was cut the exact size of the chassis and placed under it; immediately the hum disappeared.

One point to remember is that all grid leads are run in screening braid, and the braid is earthed to the common earth wire. Electrolytic condensers are used where possible as this type is to be preferred, due to their compactness as compared with ordinary types.

Lay-Out.

The two illustrations show quite clearly the lay-out both above and below the chassis. V1 is close to the panel, V2 just alongside the gain control, and V3 to the left rear of the gain control. V4 and V5 are in the centre, and V6 and V7 on the right. The terminal at the left side is the earth. The chassis socket brings in the 6.3 volt supply for V1, 2 and 3, and the 2.5 volt supply for V4 and 5. Next is a 3-socket *Clix* strip, the sockets from left to right being (1) 250 volt supply to V1, 2 and 3; (2) 250 volt supply to V4 and 5; (3) the 800 volt supply to V6 and 7. Next is a *Belling Lee* 2-pin

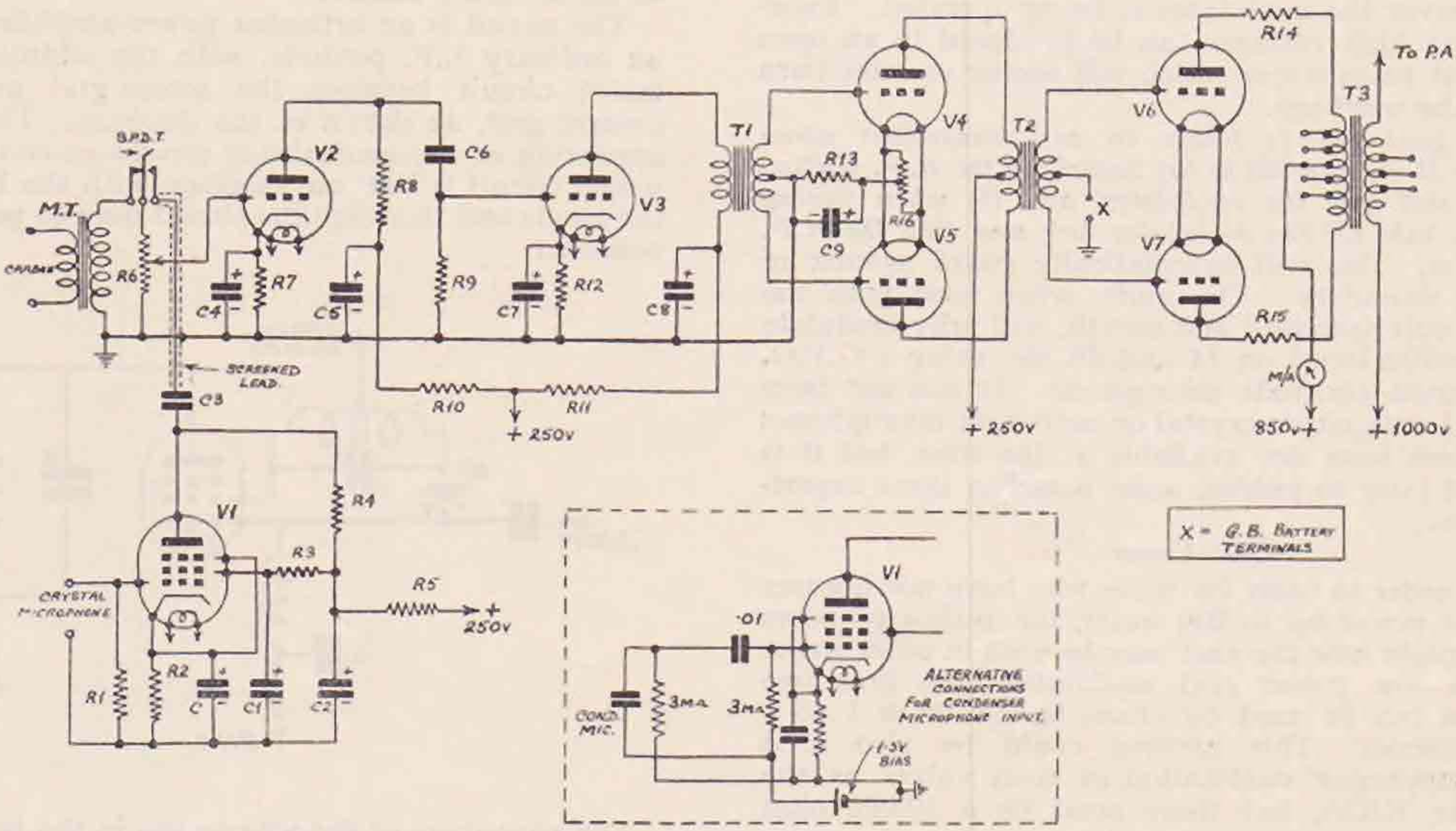


Fig. 1.
Circuit of 100-watt Modulator.

M.T.—Mike Transformer (Ferranti RD1143).
T1—P.P. input (Varley Heavy Duty).
T2—U.T.C. Class B input (CS294).
T3—U.T.C. Vari-match VM3.
S.P.D.T.—Changeover Switch (Bulgin S.81).
R1—5 megs., 1 watt (Premier Supplies).
R2—3,500 ohms, 1 watt (Premier Supplies).
R3—1 meg., 1 watt (Premier Supplies).
R4—500,000 ohms, 1 watt (Premier Supplies).
R5—250,00 ohms, 1 watt (Premier Supplies).
R6—500,000 ohms Pot. (Reliance).
R7—3,000 ohms, 1 watt (Premier Supplies).
R8—50,000 ohms, 1 watt (Premier Supplies).
R9—500,000 ohms, 1 watt (Premier Supplies).
R10, R11—10,000 ohms, 1 watt (Premier Supplies).
R12—2,500 ohms, 1 watt (Premier Supplies).
R13—750 ohms, 20 watts (Bulgin PR4).
R14, R15—100 ohms, 10 watts (Bulgin AR100).
C—25 μF., 25 v. wkg. electrolytic (T.C.C.).
C1—4 μF., 250 v. wkg. electrolytic (T.C.C.).
C2—8 μF., 250 v. wkg. electrolytic (T.C.C.).
C3—.01 μF Tubular (T.C.C.).
C4—24 μF., 25 v. wkg. electrolytic (T.C.C.).
C5—8 μF., 250 v. wkg. electrolytic (T.C.C.).
C6—.01 μF mica (Dubilier 610).
C7—25 μF., 25 v. wkg. electrolytic (T.C.C.).
C8—4 μF., 250 v. wkg. electrolytic (T.C.C.).
C9—15 μF., 100 v. wkg. electrolytic (T.C.C.).
M—0/500 mA. (Howard Butler).
Jacks for Crystal or Carbon Mike (Igranic Midget open circuit).
V1—6C6 (Eves Radio).
V2, V3—76 (Eves Radio).
V4, V5—45 (Eves Radio).
V6, V7—Taylor 756 (Eves Radio).
Sockets—National Isolantic (Q.C.C.).
V1—6-pin.
V2, V3—5-pin.
V4, 5, 6, 7—4-pin.
Valve Screens for V1, 2 and 3 (Raymart).

plug for the 7.5 volt filament supply to the 756's; next is the GB supply for these valves, battery bias being preferred for this stage, the others being self biassed. Lastly there is the 1,000 volt supply through the modulation transformer to the Class C modulated stage.

The two microphone input jacks are immediately under the change-over switch and are mounted on a small piece of ebonite screwed to the front panel.

All high voltage leads are taken through the chassis by means of small stand-off insulators. All leads which have 1,500-volt rubber insulation also have a piece of varnished cambric tubing over them at the point where they go through the metal covering of the chassis.

The small stand-off insulator on the corner of the output transformer is for the lead to the Class C plate. The microphone battery is connected to the small 2-terminal block on the left-hand side of the chassis just behind the panel fixing bracket.

It will be noted that there is a resistance in each plate lead of the 756 valves; this is for surge suppression, but even with these resistances in circuit it is particularly important in *any* Class B modulator unit to keep the secondary loaded whenever the modulator is being operated. Enormously high voltages can be produced in an open output transformer which will sooner or later burn out the windings.

A good rule to follow in any transmitter using Class B modulation is (a) Switch on the R.F. portion first and then the modulator, and (b) when closing down, take off the modulator first and then the R.F. portion. This will automatically guard against an open secondary. The units, when used with the P.A. unit described last month, will fully modulate 200 watts input on 14 and 28 Mc. using a G.P.O. immersed electrode microphone. It has not been tested with either crystal or condenser microphones as these were not available at the time, but it is hoped later to publish some notes on these experiments.

Low Power Uses.

In order to cater for those who have not licences to use power up to 200 watts, the author proposes to explain how the unit may be used in other ways.

For low power grid modulation the first two stages can be used by changing T1 for a 1 to 1 transformer. This method could be also used for suppressor modulation of such valves as the 802 or RK25, but there must be a 10,000 ohm loading resistance across the secondary in series with the negative bias supply to the suppressor grid.

Another method is to use the unit up to and including V4 and 5. With a plate supply giving 300 volts at 80 mA approximately 5 watts of audio can be obtained. If, however, up to 10 watts of audio are required, all that need be done is to replace the 45's by a pair of 2A3's.

The next suggestion is to go one stage further for low power Class B work, using either a pair of 46's or 59's Class B. In this case T2 is replaced by a Class B driver transformer and T3 by a Class B transformer for the valves mentioned above. However, two 46's or 59's with 400 volts 90 mA peak will give 20 watts of audio, or with 500 volts 110 mA a peak of 30 watts. If a still higher output is required, then either four 46's or 59's in push-pull parallel can be used, which will give with a 400-volt supply more than 40 watts 180 mA peak, or with 500 volts 200 mA peak about 60 watts of audio.

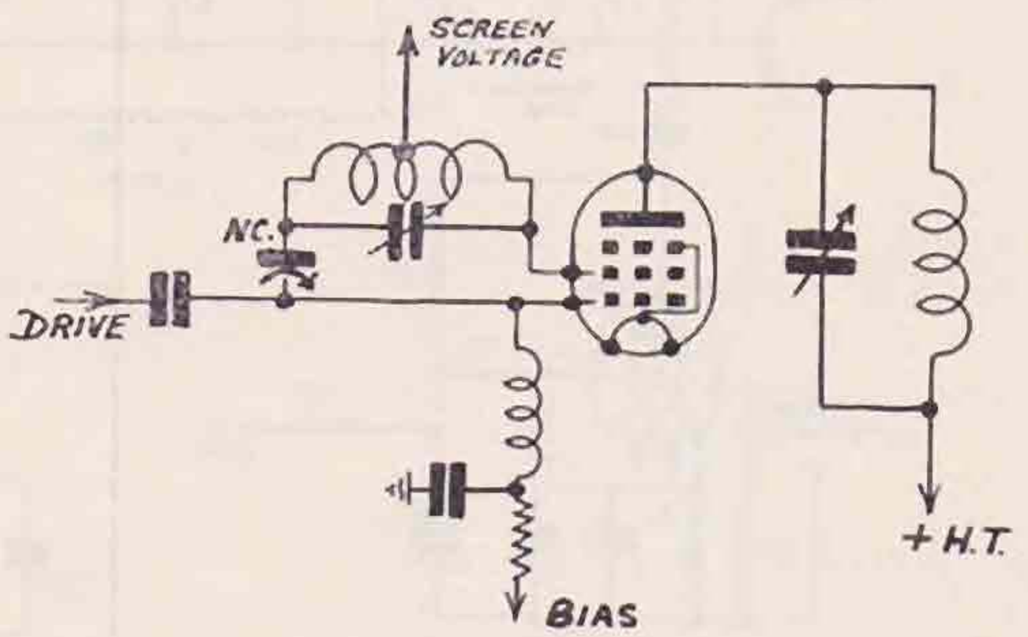
It is as well to remember that 10 watts of audio (as an example) will fully modulate a 25-watt Class C unit *on speech*. And so depending on the experimenters' licensed power and his own ideas of what type of modulation is desired, the layout can be adapted to any reasonable requirements. In conclusion the author would like to state that any queries on Parts 1, 2 or 3 will be gladly answered, and if of general interest they will be answered for their benefit in these pages.

AN ELECTRON-COUPLED AMPLIFIER

The following is a short description of a circuit which will be of especial interest to those whose pockets are not deep.

The idea is thought to be original, and although it is not a scientific discovery, it merits consideration as an economy measure.

The circuit is an orthodox power amplifier using an ordinary L.F. pentode, with the addition of a tuned circuit between the screen-grid and the control grid, as shown in the diagram. The R.F. appearing at the neutralising condenser end of the screen circuit is 180° out of phase with the R.F. on the anode and therefore the circuit may be perfectly balanced.



The advantage of the scheme lies in the fact that an ordinary L.F. pentode costing about £1 can be persuaded to work as efficiently as its properly screened R.F. counterpart, costing a good deal more, because it is possible to draw power from the anode circuit quite independent of the drive on the grid.

It is conceivable that with two valves of the PT25 class in push-pull, a perfectly stable 50-75-watt transmitter may be operated, with a consequent saving of about £3 in valve costs. A feature of the circuit is that the anode section requires no neutralisation.

The writer has used the arrangement for some time, with very satisfactory results, and will be glad to hear from any member who is interested in its development.

G8AA.

A Modern U.H.F. Superheterodyne Receiver

By J. N. Walker* (G5JU).

General Considerations.

FIRST of all, why build a superhet for the ultra-high frequencies at all? There are several very good reasons, the most important of which we will now briefly consider.

Super-regenerative receivers are useful when only short distances are to be covered and when the carrier strength is such as to cut down the quench noise to a low value. Due to their lack of selectivity, which is a great drawback when several transmitters are working close together, they also prove effective in receiving self-excited transmissions, and the "wobbulation" and poor stability of the latter are of little account. When it comes to weak signals, quench receivers are out of the picture. The high level of background noise prevents such signals being heard and it is only too easy to imagine signals are audible which are not there, a fact many readers will substantiate! Further, straight C.W. is unreadable.

A straight receiver effects an improvement on this state of things and, provided suitable valves are used, can be made easy to control and sensitive to weak signals, including C.W., over long distances. The selectivity also is very much greater. However, only a small stage gain, if any at all, can be obtained from radio frequency stages, and the straight receiver depends for its sensitivity on the reacting detector valve. Two stages of L.F. amplification can usually be used, but beyond this the noise level increases out of proportion.

The superhet scores over both types, in that, by the usual frequency conversion, a high degree of amplification can be secured at the intermediate frequency, in addition to some at the original frequency, so that the overall gain is much greater than with other types of receiver. Selectivity is very much higher, and sometimes it may be necessary to take steps to reduce it. The reception of weak C.W. signals is much more likely, so that the superhet is superior for both long and short distance reception. It is necessary that the signals heard emanate from a frequency controlled transmitter, and the position is favourable in this respect, as the old self-excited types of transmitter are rapidly being replaced by crystal controlled or "long lines" types.

Technical Considerations.

The design of an ultra-high frequency superhet need not be extremely complicated, although the requirements are rather different from those of a broadcast or communications receiver, lying somewhere in between. To be really worth while and to bring the sensitivity up to a level well above normal, it is desirable to incorporate the special "Acorn" valves in the radio frequency section, especially as British-made types are now available. The receiver has been designed chiefly for use on the amateur 56 Mc. band, but as few will wish to be restricted to one band only, it has also been arranged to cover the 28 Mc. band, plug-in coils being used, as the losses which are bound to occur in switches and "dead-ends" cannot be tolerated.

Band spread is, of course, very desirable, therefore very small tuning condensers are used, whilst the trimming condensers perform the functions of both band set and trimmer. The use of small tuning condensers confers an extra benefit, in that the ganging holds much more constant over the tuning range than would be the case if larger condensers were used.

A radio frequency amplifying stage is included for several reasons. The first is the reduction of image interference which (with the 56 Mc. band covering four megacycles and the intermediate frequency being 465 kcs.) will be liable to occur, though possibly not until a lot more amateurs are using the band! Secondly, the use of an R.F. stage results in a lower noise level and, with the higher signal voltage applied to the mixer grid, gives a better signal-to-noise ratio, which is very important where weak signals are concerned. Second channel selectivity is also increased, although this is largely taken care of by the I.F. amplifier. The use of a pentode Acorn valve ensures a definite gain in the R.F. stage.

Turning to the frequency changer or "mixer" we come to one of our main difficulties. Ordinary heptodes or triode hexodes, whilst satisfactory up to about 20 Mc., do not function well at higher frequencies, the high internal capacities resulting in an erratic performance. No special frequency changer of the Acorn type exists, but the radio frequency pentodes have the suppressor brought out to a separate pin and we can therefore use suppressor grid injection of the local oscillations. The only drawback to this arrangement is that the control grid must be at a greater negative potential than usual, whilst the suppressor must also be negative, otherwise the valve will merely act as an amplifier of both applied frequencies, and no mixing action will occur. The effect of having both electrodes negative is to reduce the mutual conductance, but the reduction, in practice, is not great and can be counteracted to a certain extent by keeping the anode voltage well up to the maximum recommended.

The local oscillations are produced by a triode Acorn used in an electron coupled circuit, to give the necessary stability. It is not permissible to connect the suppressor grid of the mixer directly to the tuned circuit, as this places too great a load on the oscillator, the power of which is not high, since it is derived only from the electron stream in the valve and not directly from the source of high tension. With the insertion of a choke in the anode circuit, high oscillatory voltages develop at the anode and are fed to the suppressor grid *via* a blocking condenser.

* 56 Mc Group Manager R.E.S.

We now come to the choice of the intermediate frequency. If it was desired to receive the television signals, a frequency of 4 megacycles or more would be necessary, to allow of a sufficiently wide band being passed, but that is not essential for amateur work. It would also be necessary to use at least three I.F. stages, as the gain from each would be small. The commonly used frequency of 465 kc. is more suitable and has been used, as commercially-made transformers are readily available.

Variable selectivity is very desirable, in order to cope with varying types of signal and this feature is included in the design, the I.F. transformers being *Varley* B.P.95, which also give the advantage of high gain, through the use of iron-cored coils and air dielectric trimmers.

A beat frequency oscillator, necessary for the reception of C.W. signals, has been included and the design of this is both simple and unique. It is based on the fact that a normal broadcast medium wave coil, with a .0005 μf. condenser at maximum capacity, tunes to approximately 600 kc. By including the reaction winding as part of the tuned circuit, which incidentally gives the additional benefit of enabling an electron coupled circuit to be used, and adding a small fixed capacity, it is easy to resonate the circuit at or near 465 kc.

Automatic volume control is provided, but not

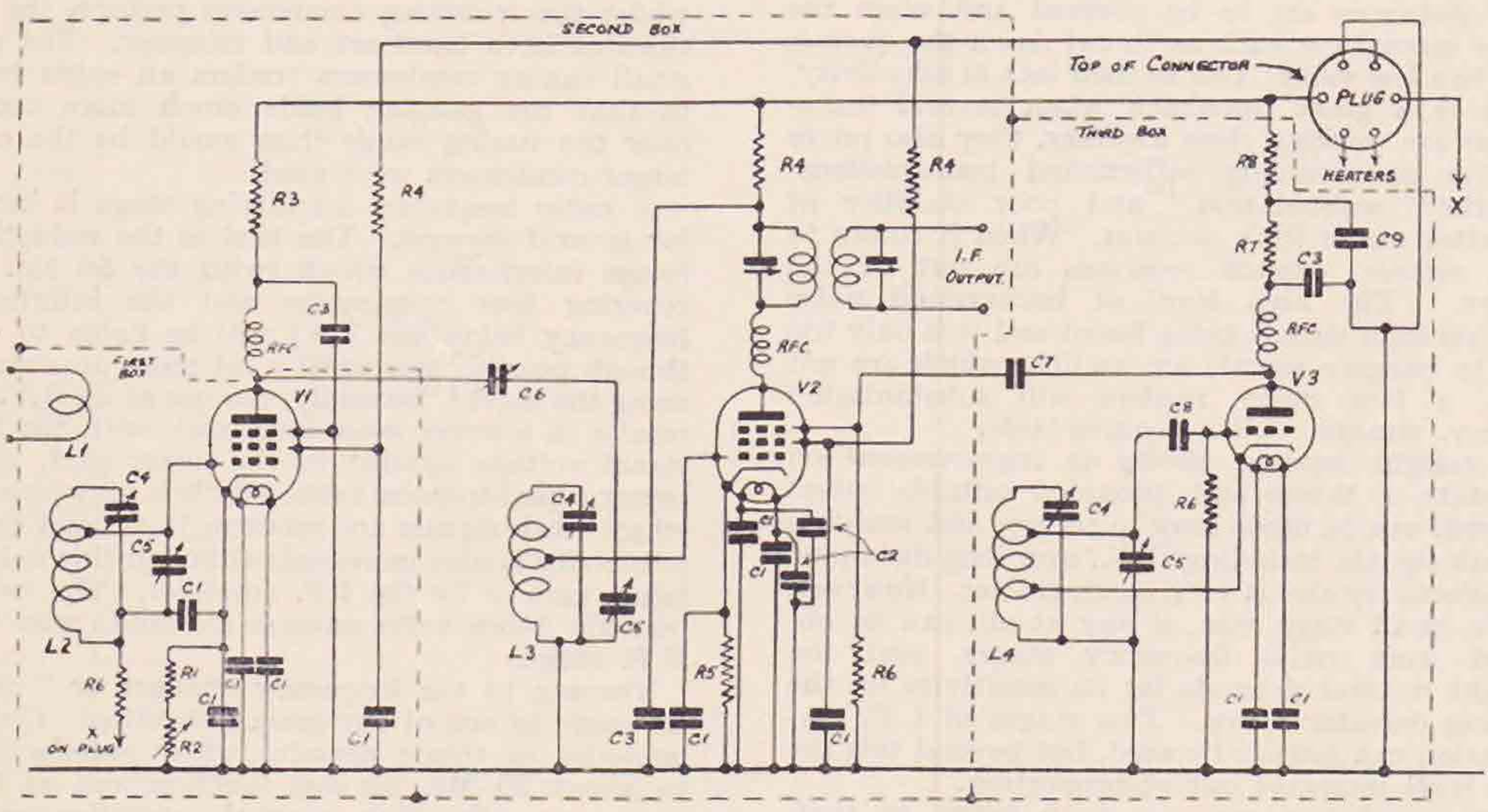


Fig. 1.
R.F. Converter section employing Acorn valves as R.F. amplifier, frequency-changer and oscillator.

C1—.0003 μF T.C.C., type M.
C3—.001 μF T.C.C., type M.
C7—.0001 μF T.C.C., type M.
C8—.00005 μF T.C.C., type M.
C9—2 μF T.C.C., type 50.
C2—.01 μF T.C.C., type 250.
C6—3/30 μμF Eddystone, type 1023.
C4—15 μμF, Webbs Radio, Apex.
C5—25 μμF, Polar, Trimmer "Cedo."
R1—100 ohms, Dubilier, type F, ½ watt.
R3—5,000 ohms, Dubilier, type F, ½ watt.
R4—1,000 ohms, Dubilier, type F, ½ watt.
R5—2,000 ohms, Dubilier, type F, ½ watt.
R6—100,000 ohms, Dubilier, type F, ½ watt.
R7—20,000 ohms, Dubilier, type F, 1 watt.
R8—20,000 ohms, Dubilier, type F, 1 watt.
R2—10,000 ohms, variable, type B.
3 R.F. Chokes, Eddystone, type 1011.
Coil Bases, Eddystone, type 1051.
4 Flexible Couplers, Eddystone, type 1009.
Extension Control Outfit, Eddystone, type 1008.
L1, 2, 3—Coils, Eddystone, type 1050 (see text).
4 Midget Stand-off Insulators, Q.C.C.
3 Insulating Pillars, Eddystone, type 1029.
3 Acorn Valve-holders, Bulgin, type VH38.
4 loose clips as used in above.
1 Indicating Lamp, Bulgin, type D19.
3 Insulated Resilient Sockets (1 earth, 2 output), Clix, type 12.
3 Solid Plugs, Clix, type 7.
1 3-socket strip, Clix, type C.
2 Aerial Plugs, Clix.
I.F. Transformer, Hammurland, 465 kc., Epoch.
Slow-motion Dial, Lissen High Q, Decimal type.
Valves—V1, 2, Acorn Pentode, ZA1, Osram; V3, HA1 Triode. Osram.
Metal Work—Cqbinet, 15 ins. × 7 ins. × 7 ins., grey cellulose, hinged lid, A.P.A.
Metal Work—3 metal boxes, 4 ins. long, 5 ins. wide, 5 ins. high, with tight-fitting lids, A.P.A.
4 and 6 B.A. N.P. nuts and screws, grommets, group boards, etc., Bulgin.

all of the radio frequency valves are controlled. The pre-selector stage can be allowed to take the A.V.C. voltage or not, at will, by means of a switch, and it is a matter of preference and conditions as to what use is made of this device. On 56 Mc. it will usually be desirable, unless strong local stations are being worked, not to use A.V.C. but to allow the R.F. stage to develop its full sensitivity. On 28 Mc., with slow fading telephony, A.V.C. will be useful, but if the fading is of the rapid variety, it will be better to cut it out.

The mixer valve is not controlled, as variation of bias would vary the internal impedance of the valve and consequently cause frequency variation of the local oscillations. It is also desirable to have this valve working at maximum efficiency at all times.

The first I.F. valve is controlled, except when the beat oscillator is working, as A.V.C. is a nuisance when receiving C.W. The second I.F. valve is arranged to give slightly less than optimum gain, in order to keep the circuits stable, and it is not connected to the A.V.C. line, the reason being that it is better to allow this valve to provide an adequate signal voltage to be fed back to the controlled stages. The diodes require fairly high signal voltage, as the output stage is fed directly from the diode output without an intermediate stage of L.F. amplification.

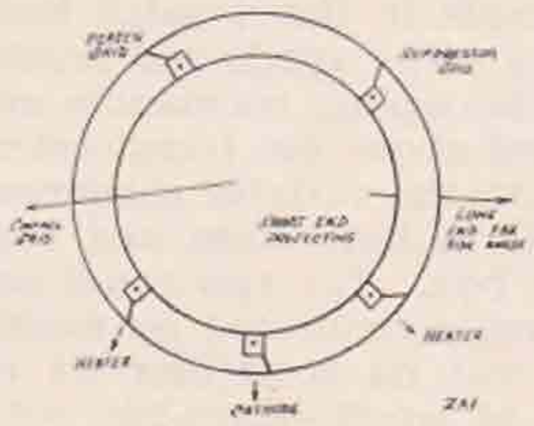


Fig. 2.
Connections to ZA1 Pentode Valve.

In other ways, the receiver follows normal practice, although a number of special refinements are added, these including manual gain controls to the pre-selector stage, first I.F. valve and audio output. The receiver is designed for use with a P.M. loud speaker, but a telephone jack is incorporated. The power supply is somewhat unconventional and deserves special mention. By-passing and decoupling are very thorough, the heaters of all valves being specially looked after to prevent modulation hum developing.

The Power Supply.

In a superhet of this type, incorporating an oscillator working as a very high frequency, it is essential that the anode voltage should be kept absolutely constant to prevent frequency variation. Smoothing must be exceptionally good, as no hum can be tolerated in the output, neither must there be any ripple on the high tension voltage supplied to the signal and beat frequency oscillators or all signals will have T6 tones.

The normal power supply, using condenser input filter, possesses very poor regulation, the output voltage varying a great deal with variation of the current taken. Its only advantage (a doubtful one) is that a 250 volt transformer will give anything up to 400 volts! A choke input filter, on the other hand, provided a certain minimum current is always passing, will give a voltage practically independent of the load, within reasonable limits. This type is therefore used and two high inductance *Q.C.C.* chokes provide adequate smoothing in conjunction with the *T.C.C.* condensers. A further advantage of choke input filter is that the load on the transformer and rectifying valve is lighter, and cooler running therefore results. A 350 volt transformer becomes necessary, as the first choke cuts down the available voltage considerably, and a final, perfectly steady, voltage of 210 is available. This is less than the output valve will stand, but the output is, nevertheless, all that one usually requires.

The rectifying valve is of the indirectly heated type to prevent surges damaging the decoupling condensers.

The Radio Frequency Convertor.

It will be well to run through the practical design of each stage, and at the same time deal with the constructional details.

To begin with, care must be exercised, first in the placing of the components, so that, in the confined space of the small boxes used, these do not foul each other, with special reference to leaving a clearance for the *Eddystone* flexible couplers, and, second, part of the wiring must be finished before some of the components are mounted, otherwise difficulty will be experienced.

Each of the three stages is completely enclosed in its own aluminium box, measuring 4 ins. long, 5 ins. wide and 5 ins. deep. This latter measurement can be reduced to 4½ ins., which will give the advantage of better accessibility. The boxes are provided with tight-fitting lids, so that the only apertures are the small ones through which various leads are taken. This method of construction provides maximum screening and ensures that the stability is very high. Unwanted inter-action between stages is reduced to the minimum, this being very essential with the oscillator stage, as no signal voltages must be allowed to reach it, neither must there be any radiation of the fundamental oscillations or the associated harmonics, otherwise undesirable whistles may occur in the output. Only one connection is made between each box and this is provided by the method of fixing the variable condensers. Similarly, only one connection is made to the metal cabinet enclosing the whole assembly.

The boxes are fixed down to a piece of 7-ply wood, measuring 13 ins. by 6 ins., the fixing being accomplished by means of the screws which hold down the coil holders.

The First Stage.

This is the radio frequency amplifier, often referred to as the preselector. The components contained in the box are indicated in the circuit diagram, C4 being the main tuning condenser and C5 the trimming condenser. Both of these must be insulated from the chassis, C4 being mounted on an *Eddystone* bracket, the centre of the condenser hole being set to bring it 1½ ins. from the front, 1¼ ins. from the right-hand side and 3 ins. from the bottom of the box. The clearance left for the flexible couplers is very small and it may

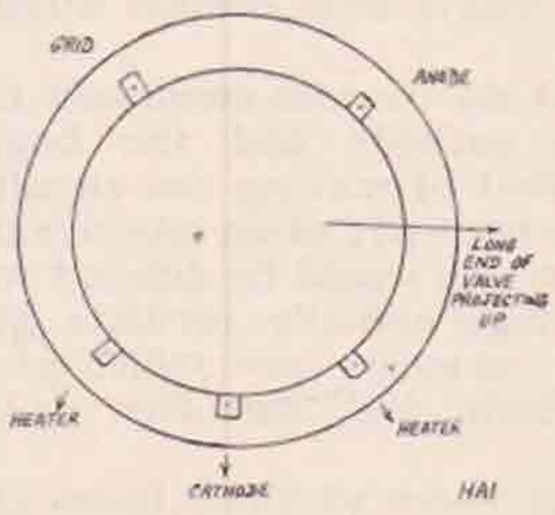


Fig. 3.
Connections to HA1 Valve.

be necessary to file down both the couplers and the condenser shafts in order to prevent fouling at the front and rear of the box.

The coil mounting is as follows :—The bolt fitted to a *Q.C.C.* Type D stand-off insulator is removed and a 1 in. 6BA fitted in its place, an *Eddystone* 1051 holder is slipped on the bolt and the nut and washer fitted to hold the whole firmly. This applies to all the four holders required. Two are used in the first section and are screwed to a small block of wood, with $1\frac{3}{8}$ in. spacing between centres. The block is then screwed down, through the bottom of the box, the front coil being connected to the aerial feeders, which come in to the *Clix* panel mounted on the L.H. side of outer cabinet. C4 is connected across the whole coil, but C5 is connected to a centre tap on it, which makes the setting of C5 less critical. The grid of the valve is also connected to the centre tap, in order to reduce the damping the grid imposes on the tuned circuit. Tuning, as a result, is much sharper. It is necessary to make a small bracket to hold the Polar trimming condenser, which is of surprisingly small physical dimensions and so is very suitable for inclusion.

We now come to the valve mounting. A special holder made by *Bulgin* is used and this is mounted against the rear of the box, the centre being $1\frac{1}{2}$ ins. from both the bottom and the L.H. side thereof. The anode pin projects through into the box containing the frequency changer and a hole of $\frac{3}{4}$ in. diameter, or slightly less, must be cut to allow for this. Before the holder is bolted on, the screen by-pass condenser should be soldered on to the cathode and screen lugs ; the suppressor connected to the cathode ; the heater by-pass condensers (which are there to prevent modulation hum) to the heater lugs, and suitable leads to all five lugs. Care should be taken during these operations not to distort the valve pin holding clips. The connections to the valve-holder are as shown in the diagram (Fig. 2).

The screen decoupling resistance is fitted to a *Bulgin* group board ; the others are mounted in the wiring. A manual gain control is fitted and this is the *Dubilier* 10,000 ohm variable resistance, mounted on the front of the box, 1 in. from the L.H. side and 1 in. from the bottom, although $\frac{7}{8}$ in. would allow of greater clearance of the knob from the dial. The spindle is not long enough to project through the front of the cabinet and an extension control is used. To prevent fouling, the variable resistance should be mounted with washers inside the box so that no more of the bush than is required for fixing projects, whilst the spindle is cut down to $\frac{1}{4}$ in. and a *Bulgin* solid coupler fitted to it.

It will be noticed that no by-pass condenser is connected between the cathode and the box. Omitting this has the effect of making the circuit regenerative, without the necessity of an additional cathode tap on the coil, which would be difficult to arrange. Should the stage actually oscillate at maximum gain, a small condenser, say .00005 μf., connected between cathode and the box, will overcome the trouble.

The lug of the moving vanes of C4 is taken as the point to which all R.F. returns are taken. The heater by-pass condensers are secured under the bracket holding the trimmer condenser, which is mounted above the valve-holder, 1 in. from the top of the box. The various leads, consisting of heater, screen H.T., A.V.C. bias, and aerial, are all taken out through holes drilled on the left-hand side.

The Frequency Changer Stage.

It will not be necessary to go into so much detail here because its construction follows that of the first stage. The coil is mounted centrally on the left-hand side and the trimming condenser on the front. A hole is made to correspond with that through which the valve projects in the first box and an *Eddystone* $1\frac{1}{2}$ in. insulator is used to carry the lead to the anode, the coupling condenser and the R.F. choke. The valve-holder, with the leads and condensers soldered on as before, is bolted to the rear, well to the left, with lengths of 6 B.A. rod, ebonite tubes 1 in. in length being inserted between the holder and the metal, in order to give clearance to the anode pin. A small ebonite bracket holds the lead to this and the R.F. choke, which connects to the primary of the *Hammarlund* I.F. transformer. The latter is bolted through the bottom on the right-hand side, holes being made in the wooden base to accommodate the bolts. The anode and screen by-pass condensers and decoupling resistances are mounted on a group board above the transformer.

Holes to correspond with the variable condenser in the first box are made in both front and rear of the frequency changer box. The two boxes are held together and electrically connected by means of the bush and fixing nut on condenser C4 of Stage 2. A thin piece of wood—three-ply with one-ply removed does nicely—is inserted between the boxes.

As in the first stage, the grid and trimming condenser are tapped to the centre of the coil, the coupling condenser from the R.F. valve anode being connected to the same point. Otherwise, the loading on the tuned circuit would be so great that tuning would become very flat.

All the power supply leads are taken out on the left-hand side of the box, but the I.F. transformer secondary leads are taken through the right-hand side and are connected to a small terminal block at the rear of the assembly.

The valves used in the first two stages are both R.F. pentodes and the grid and anode pins are brought out at the short and long ends of the valves, respectively. Small clips to fix the pins are not ordinarily available, but Messrs. *Bulgin* will, on special request, supply some of the silver-plated contacts used on the valve-holders. Short lengths of thin flexible wire, such as Litzendraht, should be soldered to the clips, the other end being anchored to one side of C5, in the case of the grid, and to the stand-off insulators in the case of the anode. The valves in each case are inserted with the short end projecting on the contact sides. The connections to the coils are also made with these clips, as the crocodile variety are far too big, and introduce iron into the field of the coils. Short lengths of 20 s.w.g. tinned wire are soldered on to the coils. This is a simple task if the coil is well scraped at the point of connection, and resin-cored solder used.

Condensers C5 must be temporarily removed from the sides of the box to allow of the insertion of the first valve and the connecting of the clips.

It will be realised that the boxes must be accurately in line on the wooden base before the coil-holders are finally screwed down, since the screws hold the boxes in place.

The Oscillator Stage.

The tuning condenser, C5, as previously, fixes the two boxes together and another wooden washer is required to prevent the sides coming up flush with each other. The valve-holder is mounted on the front side, well over to the left, ½ in. tubes being sufficient in this case to give ample clearance, as the valve used is a triode and no loose clip connections are required. The connections are given in Fig. 3. Small holes are drilled to correspond on the rear of the second box and front of the third, and through these are passed the lead from the suppressor grid of the frequency changer to the anode of the oscillator. Both the condenser C7 and the resistance R6 are in the oscillator box. It will be appreciated that, due to the R.F. voltage across, it, a small grid current flows through R6, so giving the suppressor grid the necessary negative voltage, also partly supplied by R5.

The decoupling resistances are mounted on the right-hand side and the *T.C.C.* 2 μf. condenser on the base. This large value is used in order to provide additional smoothing to the oscillator valve H.T. supply, since, as previously mentioned, it would be fatal for there to be any ripple present. The coil-holder is mounted in the middle of the box, whilst on the rear are two *Eddystone* 1½ in. pillar insulators. The left-hand insulator holds the grid condenser and the grid clip connection to the coil; the right-hand one the cathode clip connection. It is permissible to connect the grid to the end of the coil in this case, but oscillation is smoother and more constant if the grid is tapped down to the point where the trimmer condenser connects. This condenser, in the oscillator stage, is mounted on the left-hand side, immediately behind the valve, which is inserted with the large end projecting.

Two taps are required on the oscillator coil, and it may be necessary to experiment with the position of the cathode tap.

Minor Details.

The above completes a description of the three stages and the writer hopes that he has made matters clear, as it is somewhat difficult to describe the rather complicated construction without going into an unwieldy mass of detail or giving drawings of the exact position of all components. The erstwhile constructor should bear in mind two things, one, that components are arranged for the shortest possible wiring, two, that room must be left for the flexible couplers, which measure 1½ ins. across. Two of these are used in the first box and one in the second (at the rear coupling). A *Bulgin* solid coupler is used for the other. A short length of brass rod, taken from an *Eddystone* extension control outfit, will complete the ganging.

In addition to the I.F. transformer connection block, another with six small terminals is mounted at the rear and all leads are taken to this point. One end of the six-way cord is also connected to it, the other being connected to the appropriate pins of the *Eddystone* plug connector.

Most of the wiring is made with 20 s.w.g. tinned copper wire, enclosed in systoflex sleeving. The exceptions are the wire actually in the tuned circuit, i.e., between coil and condensers, which is 18 s.w.g. "Glazite"; the loose clips, which have been described; and the heaters, for which flat twin flex is suitable, the filament consumption of each valve being only about .3 amp.

The two condensers marked C2 are connected from the rear heater terminals to a bolt on the rear box. They are present because the frequency changer valve has to deal with both ultra-high and intermediate frequencies.

Holes are made in the front of the cabinet to take the volume control spindle, which is a short length of ebonite fitted into the *Bulgin* coupler. An indicator lamp is mounted on the top left-hand corner to show when the convertor is on.

The *Lissen* "High-Q" Decimal Dial is mounted so that the collar comes exactly in line with the hole in the front of the first box and another short length of brass rod is inserted to carry the drive from the dial to the first *Eddystone* coupler. Finally, the box assembly is bolted down through the "floor" of the cabinet. The aerial leads are connected to the *Clix* sockets, the earth socket to the negative H.T. terminal on the block, a length of twin screened flex to the I.F. transformer secondary terminals, and the cable is brought out through a suitable hole in the rear of the cabinet.

The *Lissen* dial is an ideal one for a receiver of this type, as the action is particularly smooth; as a result accurate calibration and dial reading is possible. It is unlikely that weak signals will be passed over, with the very slow movement of the small tuning condensers.

Testing.

Preliminary testing should, of course, be done before the receiver is mounted in the cabinet, as it is desirable to test each stage separately to commence with.

Connecting up suitable voltages to the first valve should result in a reading of about 5 mA. with the gain control at maximum, this falling to very little at minimum. The screen current will be about 1 mA. Oscillation, if present, will be indicated by the meter needle flicking on touching the "hot" end of the coil. The cure has been described. During these tests, be careful to see that the A.V.C. lead is connected to the box.

The second stage will show rather lower readings and if 2 mA. pass in the anode circuit, this will be satisfactory.

The oscillator current will be in the region of 4 to 6 mA., but should oscillation cease, it will be much higher. The reading should vary only slightly with rotation of the tuning condensers, except possibly when these are both at minimum, and, should large fluctuations occur, it shows that experiment is necessary with the cathode tap.

Adjustment.

Before going on to the actual adjustment, a word or two about the coils is necessary. For 56 Mc., an *Eddystone* 3-turn Type 1050 coil is inserted in the aerial coil-holder. In the three other holders, five turn coils are used, each centre tapped, in addition the oscillator coil has a tap one turn from the "cold" end.

On 28 Mc. the tuning coils are of eight turns each. It is not possible to conveniently centre tap these and the grid tap is made three turns from the "hot" end. The cathode tap on the oscillator coil is one turn from the cold end but two turns should be tried experimentally. Also it is a matter of experiment to discover whether a 3- or 5-turn coil gives best results for aerial coupling.

The special I.F. amplifier used with this converter will be described in the October issue, anp

it is necessary that this is correctly lined up before the converter is put into service. At the same time, it can be used with any amplifier using an intermediate frequency of 465 kc. or near—the exact frequency is immaterial.

The secondary of the transformer in the converter is connected to the input transformer of the amplifier *via* a screened cable, a very small condenser (C9) of between 1 and 3 μμf. being inserted in one lead close up to the input transformer. A 30 μμf. "postage stamp" trimmer, with as much metal as possible snipped off and used at minimum capacity, is suitable. In this connection, it is regretted that no transformers are available with link windings, but possibly some experimenter may try the idea and make known the results. The normal transformer necessitates "voltage feeding" and gives a band pass effect. If a small link winding was fitted in place of one 465 kc. winding on each transformer, the signal energy could be transferred at low potential, screened cable would be unnecessary, pick-up would be very small and a nice adjustment (optimum, sub-optimum, etc.) could be obtained, whilst variable selectivity could be easily arranged by means of a low value variable resistance in series with the link windings. The idea is recommended to our manufacturers.

A modulated oscillator, working on the intermediate frequency, is loosely coupled to the converter transformer primary and the trimmers are adjusted for maximum output from the I.F. amplifier.

Any ordinary 56 Mc. receiver, by suitably altering the grid condenser and leak, the former to about .006 μf. and the latter to 1 megohm, can be turned into a temporary modulated oscillator. This is set at the high frequency edge of the band and placed near the converter, the tuning condensers of which should be set near but not at minimum, the lids not being fitted to the boxes.

On adjusting the oscillator trimming condenser, the signal will probably be heard at two settings—the one with the higher capacity is the one at which to leave it set. Now adjust the trimmer in the middle box and the signal should be very strong. Fit the lids to the two rear boxes and adjust the trimmer in the first, making sure the gain control is set for maximum gain. This trimmer will be found very critical in its setting.

Now set the test oscillator at the other end of the band and rotate the converter dial until the signal is again heard. Test to see if any increase is possible by readjusting the oscillator trimmer. It is unlikely this will happen, but should it do so, and extra capacity is found to increase the output, adjust the intermediate frequency to a slightly higher value and re-trim.

The same principles are followed on 28 Mc. It is unfortunately necessary to re-trim when changing bands, unless the tappings on the coils are very carefully set so that the trimmers can be left alone. Suitably marking their position for each band enables a fairly quick change over to be made.

(To be continued.)

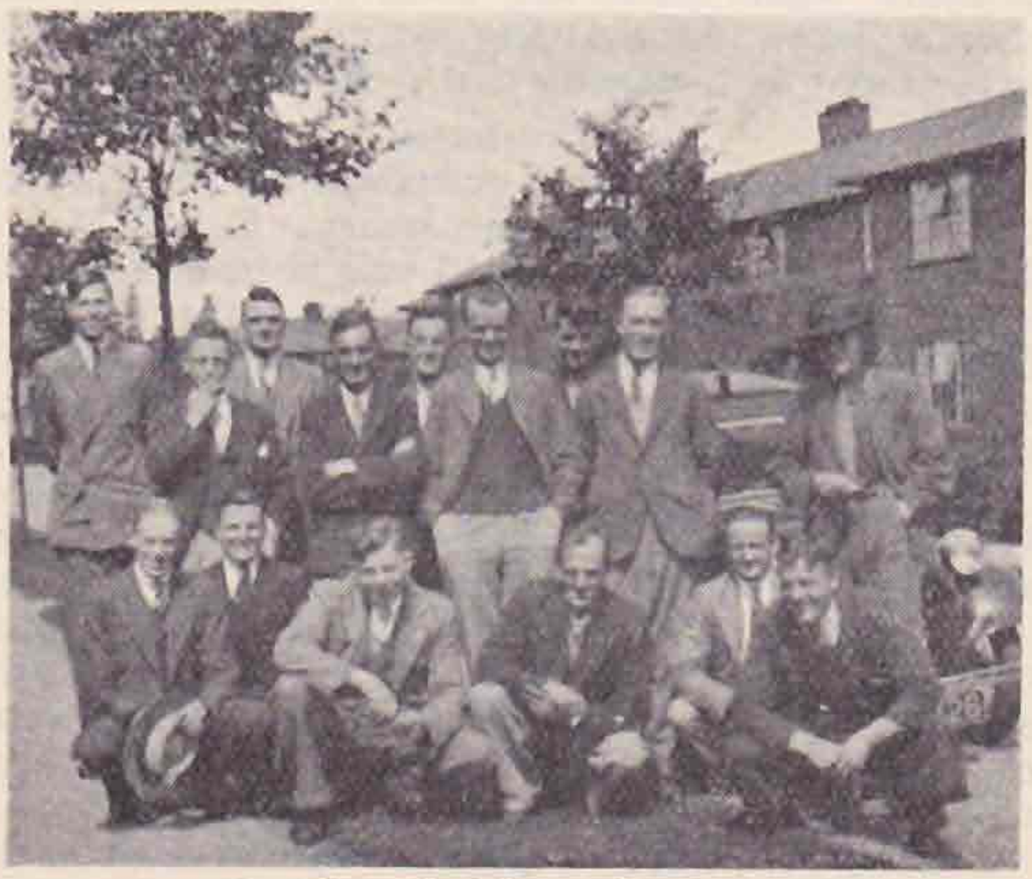
Blackburn Activities

Thanks to the initiative of G8FK a very successful rally and 56 Mc. field day was held at Blackburn on August 8, 1937.

Although no outstanding DX was heard the meeting served to open interest in this, to us, hitherto unexplored territory. The weather was excellent and this, together with the interest displayed, served to make the gathering a pronounced success.

The success of our first venture leads one to hope that it will be forerunner of many similar meetings in the area.

G2QN.



The Blackburn Group.

Leonard Trophy Contest

We are informed by the R.S.N.I. that Mr. Donovan, EI2M, was the winner of the above trophy for the current year, with a score of 3,672 points gathered from 113 contacts with 27 countries. GI6TK was second and GI5TK third, the former's score being 3,256 from 61 contacts in 41 countries.

LY1KK wins the Gold Medal awarded to the station outside Ireland making the highest score; the runner-up and winner of the silver medal is W2GVZ. The R.S.N.I. Committee thank all who supported the Contest.

North-West Kent Group

The North-West Kent members of the R.S.G.B. propose to reform themselves for the coming winter season, and all members residing in Beckenham, Bromley, Shortlands, Hayes and Orpington are invited to attend the first meeting to be held at G8DN, 39, Witham Road, Anerley, S.E.20, at 8 p.m., September 25, when details for future meetings will be discussed. It is hoped that a fully representative gathering will attend.

G.P.O. NOTICE

We have been asked by the G.P.O. to inform members that the height of aerials erected within half a mile of the boundary of any aerodrome shall not exceed 50 ft. above ground level.

Condition 13 of Experimental Licences will be suitably amended in future, but it is not proposed formally to amend licences already issued.

Diamond Aerials

By Bryan Groom (GM6RG).

AERIAL problems have always appeared to the writer to be particularly interesting, particularly important, and, very often, peculiar, so that when it was found there was plenty of space at GM6RG for some work on diamonds, permission was requested from and granted by the Post Office authorities. Then the fun started.

At this point it should be mentioned that the writer was conversant with the theory of the diamond, and in particular of the basic requirements, one of which was flat, and preferably marshy, ground. At his disposal was some ground on a hillside, with a gradient of one-in-six, facing south; just about as unpromising as could be found. However, with the aid of a compass, the position of the masts was soon fixed, space being used sufficient for a diamond 3½ waves long (each leg) on 14 Mc. A 600-ohm transmission line was found to be much better than one of 800 ohms, as the pick-up at the point where it crosses a public road was considerably less. Here we should mention that, when using the big diamond for reception and the 800-ohm line, it was found that it was not nearly so directive as it should have been, as signals from the side were coming in well. It was then decided to test it on 28 Mc., and immediately ZS1H came back, and gave an S9 report. This was all wrong, as ZS1H is precisely 10 degrees back from a line drawn at right angles to the aerial line!

Careful investigation showed that most of the trouble was due to the fact that the "non-inductive" terminating resistance was not, at any rate at 28 or 14 Mc., "non-inductive"! A very big improvement was effected as soon as a really "non-inductive" resistance was used. Unfortunately, this had to be procured from the *Carborundum Co.*, of Niagara Falls, U.S.A., as there is no such device available in this country. This fact is mentioned to save others the headaches which the writer had before getting over the trouble.

The next stage in the investigations was to see what effect on the directivity, changes in the height and angles of the aerial produced. Here again results quite different from those anticipated were experienced. It was found, for instance, that if a broad diamond were used, it was at its best when only raised about 30 ft. from the ground, but if the angles were narrowed at the ends, then a height of about 50 ft. was best, although there was little difference in pick-up between the broad, low diamond, and the high, narrow one. In subsequent tests of the two arrangements for transmitting, the same effect was observed. But, on the other hand, the whole transmission was too restricted in its coverage to be very practical.

The obvious course was adopted, the size of the diamond was reduced to avoid too much concentration of the field. The final size being 130 ft. long in each leg, with an overall length of 81 yards and a height of 48 ft.

When first reduced to this size, a noticeable reduction which was anticipated did not, in fact, show up, so the smaller aerial has proved much more practical.

When originally set up, an examination of a great circle map showed that if the diamond were aimed 15 degrees north of west, signals would centre on Cleveland, Ohio, and would cross the States diagonally, finally landing in the Gulf of Mexico. Therefore, a 5-degree beam should, on the one side, cover right down the seaboard of the States, and on the other just touch W9 and W6. This, in effect, is not quite what has happened, because in working out the direction, the important fact that the diamond was erected on a hillside was overlooked; so now for a résumé of what did happen.

As will be apparent from a great-circle map of the world, a line drawn as indicated above leaves land at Mexico, and arrives in the Pacific, therefore it was with some surprise that the writer had a reply to a test call from South America, the nearest point of which continent should have been out of the beam by a thousand miles. The report, too, was very good, and subsequent calls produced a crop of replies from South America. Investigation has shown that there are two major lobes, one about 12 degrees north of west, in place of the 15 degrees north of west, to which the aerial is pointing, and another around 15 degrees south of west.

This puts maximum signals into VE1-2, W1-2-3-4, and the eastern side of 8-5, with a very sharp cut-off west of that line. There is also a "bulge" on this lobe (or a smaller subsidiary lobe) which puts a signal into Cuba, Porto Rico, and thereabouts. The other lobe centres on North Argentina, covering north and south of that line with a reducing signal, until at Honduras a 2-wave Zepp-fed aerial, directionally favourable for putting a maximum lobe to that point, is one to two S points better than the diamond. It will thus be seen that erecting a diamond on a hillside, from an amateur point of view, is quite a good idea! There is no radiation from the back at all, and for working east or south a different aerial has to be used.

For some considerable time the 800-ohm diamond was used, with a matching section to couple the 600-ohm transmission line (which is 400 yards long) to it, but later a change was made to the double diamond, with around 12-in. spacing. This has a natural impedance of almost exactly 600 ohms, so a terminating resistance of that value was used, and the 600-ohm line connected direct in. A very big gain has resulted, presumably due to the fact that standing waves have been eliminated on the transmission line, a point we had not found it possible to manage so completely, using the matching section and 800-ohm diamond.

Another, and very interesting, series of experiments, was to terminate the diamond into another aerial, instead of into a resistance.

The method was to terminate the diamond into a second 600-ohm line, and, using a Y match,

(*Continued on page* 171.)

Hullo, Paris!

By Scottie.

THE August Bank Holiday trips organised by Mr. Max Buckwell (G5UK) have always proved themselves in the past to be highly successful, both from a radio and social viewpoint, and while the visit to the Paris Exhibition over the week-end, July 30—August 2, provided us with an excellent excuse to improve our technical knowledge, it must be admitted that the activities of all the party were not entirely confined to radio!

Platform 11, Victoria Station, on the evening of July 30, was the meeting place for the party, and by 7.30 all but one had arrived. Eventually he arrived, and the party, comprising G5UK, 2MY, 5JO, 6MN, 5XI, 5KT, 2LC, 8DR, 5VQ, 2WG, 2AX, 6WA, 6OB, GW5FI, and BRS2178, was complete. In addition to the above, there were included six non-radioites, Mr. and Mrs. Cordran, Mr. and Mrs. Hall, Mr. Gay, and Mr. Meyrick.

Under Way.

The journey to Newhaven passed without incident, and we arrived at the boat well ahead of schedule, to learn that we would cross immediately and await the arrival of the next train from London. During the crossing the popular *rendezvous* was the cabin of the ship's "Sparks," who was most interested when he learned that we were more or less of the same species, and went to great lengths explaining the procedure he had to follow on the trips. While his receiver, one of the latest installations, was greatly admired, it cannot be said that any of the party coveted his "TX." It is only just here to extend to G5UK the thanks of all male members of the party for the very diplomatic manner in which he retained possession of the nineteen first-class bunks occupied by them. What the other nineteen passengers thought when they found all the bunks taken we do not know, nor, for that matter, did we care very much. Verily, possession is nine points of the law.

Although we arrived in Dieppe first, our train was the last to leave, and it was six o'clock before we drew into the Gare St. Lazare. Here the first find was a microphone; by following the leads very carefully, an O.B. van belonging to *Post Parisienne* was eventually located, but we soon found that it was not there to welcome us—in fact, when the engineer heard "G2AX calling 20m dx," he switched off at once. G5UK approached the said engineer, and was given an invitation for the party to visit the "P.P." station at 11 a.m. This impromptu visit turned out to be one of the most interesting of the whole trip.

Saturday morning, apart from the P.P. visit, was left free, and we next forgathered at the P.T.T. Offices in the Rue de Grenelle, to visit the Television Studios. Here we found only the sound equipment, the vision gear having been moved to the Exhibition. Those members who had just quitted the Exhibition expressed themselves violently on being told they would have to pay another 6 frs. to return. However, the television exhibit in the Radio Hall amply repaid the additional outlay, and we feel sure no one regretted the extra expense. The Chief Engineer of *British Thomson-Houston* personally conducted us round the engineering side of the exhibit, and explained everything most fully, while the Administrator of the Radio Exhibition escorted us round the studios.

We were given the opportunity of being in the studio during an actual transmission, at the same time being able, with the aid of a receiver, to observe the transmission that was taking place. We were all very interested in a transmission made by the mobile camera in the grounds of the exhibition; views of the Seine and the various buildings being very well received.

After this the party split into groups and made their way back to the Hotel Montcalm. It must, however, be recorded that on the Saturday night there were no really late birds!

Sunday.

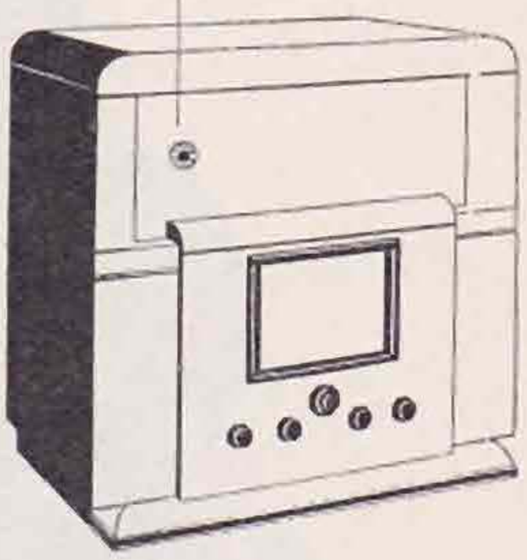
Sunday morning was spent in sightseeing, with the stipulation that zero hour was to be 1.15 at the hotel, for a trip to Porte Gentilly, to visit some of the French Amateurs. Between 1 o'clock and 1.30 the hotel was a scene of feverish activity, the telephone staff being well-nigh unable to cope with calls from all quarters of Paris, explaining that one party would be late, and that another had lost themselves. However, with the aid of the Paris taxi-drivers, all members were present at 1.55, and a start was made. During this trip we saw the unusual sight of a G in the person of G5UK, directing a Parisian taxi-driver about his native city. Unfortunately one of the other drivers thought he knew the way and went off on a different route, followed by a third. When G5UK arrived at F8KQ, there was no sign of the rest of the party, and it was about half an hour later before they put in an appearance. In the meantime, G5JO, 6MN, 2AX, and Co. arrived on their own, having had to phone the hotel to find out where they were. It says a lot for G5JO's command of the language that he brought his party to the QRA so successfully.

F8KQ read an address of welcome *via* a public address outfit, which G5UK translated and suitably replied to. Then the health of the R.S.G.B. was

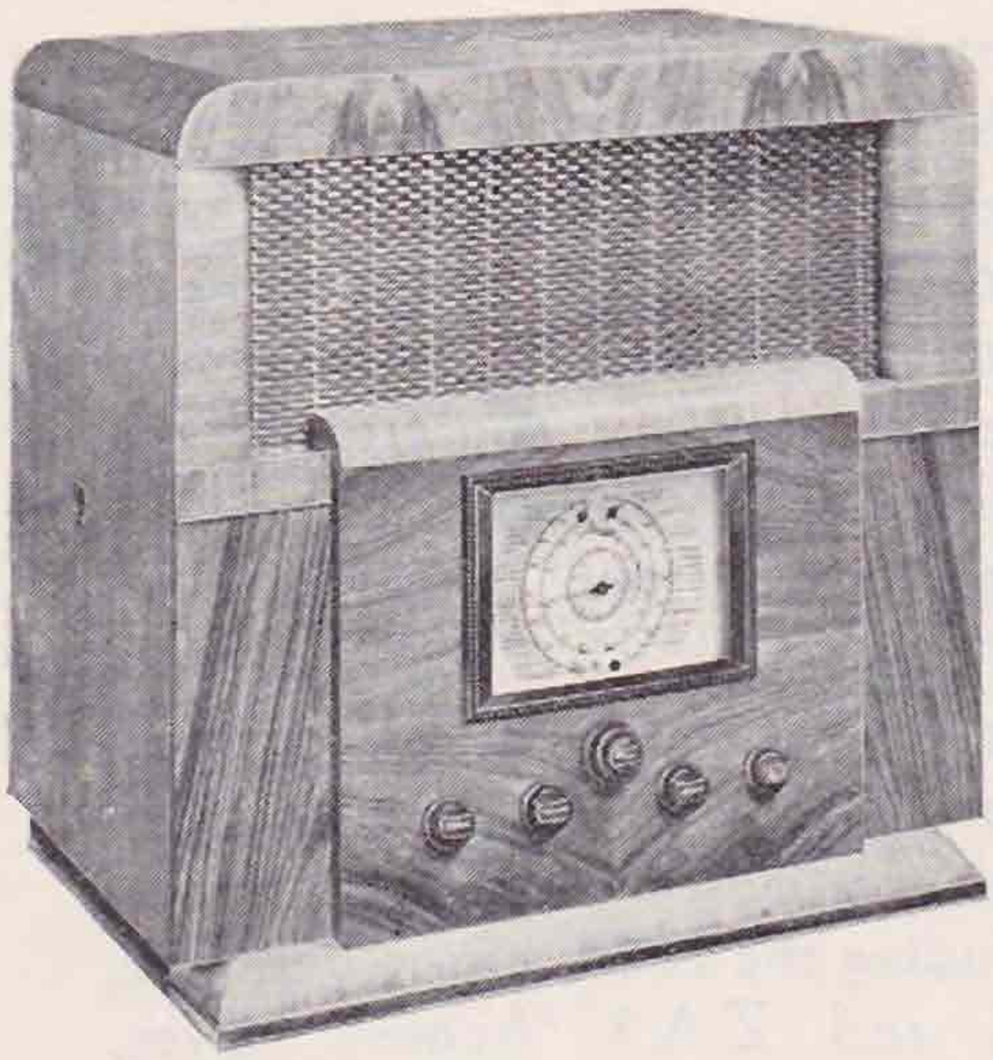
Laurie Jones (G5JO) and Eric Martin (G6MN) in an affectionate embrace.

This 5=wave band All=world "H.M.V." Receiver has fluid=light tuning device behind loud=speaker grille

THE success of "His Master's Voice" Model 481 5-wave-band All-World Superhet Receiver was so considerable that even "His Master's Voice" immense manufacturing resources were taxed to cope with the big demand. Its exceptionally fine performance on a wide wave range (7–2,200 metres) has secured for it continuation in the 1937/38 range of "H.M.V." models, as Model 496 AC. Among other refinements, the new model incorporates an extremely sensitive "His Master's Voice" fluid-light tuning device, skilfully concealed within the loudspeaker grille, and clearly discernible only when the instrument is switched on.



• *The Fluid-Light Tuning Device on Model 496 AC is clearly seen through the loudspeaker grille.*



A 6-valver with AVC (to counteract fading), Model 496 AC has five wave ranges: 7–16 metres, 16.7–53 metres, 46–140 metres, 185–560 metres, 750–2,200 metres, the first mentioned covering the Television Sound transmission. The instrument has separate bass and treble tone controls. A two-speed knob operates the main and vernier pointers on the large illuminated wavelength scale simultaneously. This scale is calibrated with many station names, it has vernier scale and incorporates coloured wave-range indicators and Fluid-Light tuning device.

The moving coil loudspeaker gives extremely natural reproduction, and this applies also to records, which may be reproduced through a pick-up connected to the receiver. There is provision for extra loudspeakers and, of course, ample power for operating them. The cabinet (size $19\frac{1}{2}'' \times 20'' \times 13\frac{1}{2}''$) is of walnut, selected for the beauty of its grain, and is a fine piece of furniture on its own. Voltage range: 200/250 AC 50/100 cycles; 3 watts undistorted output; consumption: 90 watts. Price 19 guineas, or by hire purchase.

"HIS MASTER'S VOICE"

"HIS MASTER'S VOICE" *All-world* RADIO

drunk by our hosts, and we responded by drinking to the R.E.F. (in champagne !). An hour later we moved on to F8QM, where we were again supplied with wine, while the station was visited in relays. F8QM is situated on the brow of a hill overlooking Paris, an excellent QRA, and as he works on the 1.7 Mc. band, it would be interesting to know if any G has heard him on this frequency. A feature of his station is the plug-in system of coils used in his TX ; all coils for one band are contained in a metal box which plugs into the front of the set, contact on the side of the box completing the circuits. From F8QM we were transported to F8GH, who works solely on 56 Mc. The operator is looking forward to his first G, QRA—QRA contact on that band. GH had arranged a shed for our benefit, but as we were about an hour behind time, we were unable to enjoy a QSO. F8GH's station is very neat, and QSL's bear testimony to its efficiency. More wine was provided here, but it was noticeable that there was not the same verve in some members of the party at this stage, a notable exception being the erstwhile parachutist of Brussels !

"La Vie Parisienne," Please!

The French amateurs we met included F8GG, 8VA, 8GH, 3CA, 8BO, 8QM, 8CP, 8KE, 8KQ, and 8OB, the latter, much to our delight, was able to speak English fluently, and when 5UK was not available, acted as interpreter. We took leave of our hosts at 7 p.m., and no doubt the inhabitants of Porte Gentilly wondered if another air-raid had started, as the air was full of CQ's, 73's, etc., sent on motor-car horns.

Once more the party broke up into various groups to seek their own enjoyment and diversions for the evening. One trip undertaken by the writer and G5UK, as well as by other members of the party, will remain impressed on his mind as the outstanding feature of the week-end. This was a night journey around the Exhibition by boat on the River Seine, but it is impossible to describe in words the beauty of the lighting effects. One saw fountains suddenly spouting up in the middle of the river, sending columns of water of every conceivable colour, hundreds of feet into the sky ; the golden tints on the Eiffel Tower and the kaleidoscope effect of the fireworks ; suddenly a speed boat, with a girl surf-riding, tearing its way up the river, swerving round the corner and disappearing from sight, in a spray tinted with every colour of the rainbow. It was certainly the most fascinating feature of the Exhibition.

Rumour hath it that the first to retire was a certain G complaining that the champagne of the afternoon had given him a cold. This at 9.30 p.m. Undoubtedly the *last* party to return was at 4.30 a.m. !

Monday.

Monday morning was again spent in sightseeing. Notre Dame was one of the places visited, but it was hardly recognisable with the thousands of seats erected in front of it, ready for the Passion Play which is to take place there very shortly.

In the afternoon the Television Transmitter at the Eiffel Tower was visited. A humorous note was struck here by a gendarme who objected to the grass being used for sitting on. When he enquired " Parlez-vous français ? " everyone replied in chorus " Non." However, G5UK was able to obtain an excellent cine-photograph of this gentleman.

This was the end of the official itinerary, and the journey back to the hotel was made by various routes ; some *via* the Amusement Park, where the perils of " La Cyclone " were chanced. It may be mentioned for the benefit of those who remember the " Great Racer " at Wembley that " La Cyclone " is nearly twice as steep, and much faster. One noticed that G2AX did not attempt to repeat his parachute descent of Brussels.

The boat train left St. Lazare at 8.50 *en route* for Dieppe and London. Once more we were lucky in obtaining sleeping bunks, and the fears of a Channel crossing were put aside in an endeavour to make up some of the sleep lost in Paris.

London was reached at six o'clock, and the party broke up for good. Good-byes were said, and fitting proof of the success of the trip was given by the expressions heard on every side that we would all meet next year, leaving G5UK, with the hope that he would again be able to arrange a trip of a similar nature.

Thames Valley Society

The Thames Valley Society inform us that the following meetings have been arranged to take place at the Albany Hotel, Twickenham, commencing at 8.15 p.m. :—

September 22 (Wednesday).—" The Manufacture of Thermionic Valves." By W. S. J. Nixon, Esq., of the G. E. Co. Valve Technical Department. This lecture will be illustrated by a special film.

October 20 (Wednesday).—" The Construction and Application of Home-made Test Apparatus." By Harold E. Stoakes, Esq., Chief of Test, Messrs. The Gambrell Radio Communication Co., Ltd., S.W.18. Apparatus will be on view.

November 21 (Sunday).—Members only. Visit to the works of Messrs. The Gambrell Radio Communication Co. Full details of times, etc., will be sent to every member.

December.—Special afternoon conventionette with annual dinner in the evening. Date and full programme to be announced later.

Non-members of Thames Valley Society are invited to attend the lectures. Membership is 3s. 6d. per year. Full details from Mr. James N. Roe (G2VV), Hon. Secretary, or Mr. H. M. Campbell (G8MK), Assistant Hon. Secretary.

Stray

Mr. J. W. Mavis (ZE1JE) asks us to mention that he has been off the air since March, and the numerous cards he is receiving do not refer to transmissions from his station, therefore, he is unable to QSL.

The August 56 Mc. Field Day

By J. N. Walker (G5JU)

AS far as can be judged from the many reports received, activity in the northern part of England was very high, but much lower in the South. This was undoubtedly partly due to the lack of high peaks in the southern parts of the country, and it is consequently more difficult for stations many miles apart to contact each other. Only one report has been received from the London area, but this one indicates that many stations were using the band on the Sunday, and it is assumed that no outstanding distance was covered, and nothing special occurred.

On the whole, conditions were fairly good, but fading was prevalent during Sunday morning and up until 16.00 B.S.T., whilst several mention that conditions improved as the day wore on, a peak occurring between 19.00 and 21.00, by which time many stations had closed down. It is interesting to record that 14 Mc., which had been quiet all day, also peaked at the same time. 28 Mc. was apparently quiet, but DX is being heard in the evenings on this band.

The longest contact recorded was between G6OKP on Snowdon and G2NFP on Skiddaw, a distance of 116 miles, low-power outfits being used at each end, with QRK's of R8 each way. G6OKP had a very busy time from the commencement at 20,00 B.S.T., working 2DC, 5FU, 5MQ and 6AA, all at home, the distances varying from 22 to 56 miles. G6CWP and G8JUP operating near Leek, Staffs, at a distance of 89 miles, were also contacted, with QRK's of R8. Although 6OKP was active until 02.00, and kept watch all night, no long-distance signals, or any at all, for that matter, were heard.

On the Sunday, besides 6OKP on Snowdon, many portables were active in the North. These included G2DCP, near Buxton; G6MXP, mobile in North Wales; GW2KDP, on Prestatyn Mountain; G6CWP, as above; and G8HT, near Llandudno. G5ZT deserted his usual location to try Beacon Fell, and was not too pleased with the results. All these stations had a large number of QSO's with each other, using telephony and M.C.W., and in most cases good signal strengths were recorded. G6OKP found Snowdon better for reception than for transmission, and the signals from 2KD, 2DC and 6MXP were so strong that no aerial was required on the receiver, and it was difficult to hear any other signals through them! The distances varied considerably, but many were near the 90-mile mark. Inputs of about 10 watts were used by the majority, although 2NFP and 5ZTP only used 1½ to 3 watts.

6CWP was disappointed at the lack of stations prepared to receive and send C.W. He used driven transmitters, one with 6A6 and one with 6L6 valves, but was compelled to use "back stop" keying, in order to make the signals readable on quench receivers. It is noteworthy that 6CWP worked 6OKP and 5MQ between 21.00 and 23.00 on the Saturday, but could not make contact during daylight on Sunday.

No northerly station reported hearing any station in the South, except that 5BM, working at home, was heard by 6OKP. No Irish or Scottish station was heard by anybody.

G6YL reported hearing G5QY only, despite many hours of listening. G5QY heard HB1AT at 18.22 G.M.T. R5/1; was this an harmonic or a record?

G5BM, at home, worked several stations, the furthest being G6IHP, Church Stretton, 56 miles. G2JL, near Newport, received strong telephony on a straight receiver from G6VF, Bristol, during Saturday evening.

The Bristol stations, including G6VF, 6GN, 2ZX and 5JU, had numerous QSO's, but heard no distant stations, except 5BM, who was heard by 5JU.

G2XC, Portsmouth, using a straight receiver heard a T9 carrier, at 17.15 B.S.T., on the 22nd, but it was so badly over-modulated as to be unreadable. Copying inverse Morse is extremely difficult, but it appears the signal may have originated from G2HV, who was working G5MA at the time. G5CM, near Guildford, heard G2XC, at RST 539X, distance 33 miles.

Around London, BRS2601 reported hearing many stations, the most distant being G5MAP, 35 miles, and G5RD, 25 miles. G6NF, 6OW and 8FV were heard calling "test DX 56 Mc.," but it is feared the desired DX did not make itself heard.

One interesting feature of the reports, which are available for the perusal and study of anyone interested, is the opinions given on quench *versus* straight receivers. The majority of the North Wales and Liverpool enthusiasts vote solidly for the quench type, but G6CW, 8JV, 2JL, 6VF, 5JU and others are equally convinced that the straight receiver is the better for long-distance reception. G2XC mentions that no stations have been heard in Portsmouth, using a quench receiver, but since installing a O-V-1 he has heard G2VH, G5XY and G6NZ, and made the first Portsmouth-Southampton 56 Mc. QSO with G8DM, with RST579 reports. G6OKP tried out a straight receiver on Snowdon, but only heard R2-3 signals on it, yet the same receiver has received C.W. from 2JL, 20 miles distant, with heavy screening, at R6.

Finally, read up particulars of the 56 Mc. contest on the 19th, and make a special effort to ensure not only a successful day, but also that greater activity takes place in the South. Also please check distances carefully, as it is noticed that the distances covered during the August Field Day were often greater in one direction than in the other!

Stop Press.—HB9J reports on the USKA test on August 14-15. He, operating HB1J, broke the Swiss 56 Mc. record in working HB1AM at a distance of 165 miles. Oh, yes—he *was* "up" a bit—at Santis, 7,500 feet! but then, one has to climb to get *anywhere* in HB.

For those who are interested in working DX from high places, HB1J mentions that HB portables are very frequently active from QRA's from six to nine thousand feet up.

The Month on the Air— August, 1937

By H. A. M. Whyte* (G6WY).

THERE are two star stations this month, both of them using genuine low power. G5FA obtained his W.B.E. and G8IL has worked 32 zones since March, when he was licensed, using only 350 volts on a 35T final.

The month produced much of interest. Africa came up trumps by producing signals from every active country in the continent, some of the best being CR7RA 14360, CR7RB 14300, CR7AL, and a real new one, VQ5KLB in the American 'phone band with a very chirpy D.C. note wandering up and down the band. He worked G2MI and G6WY in successive QSO's and gave his QRA as Box 81, Kampala, Uganda.

Another new one in Africa (or is it Asia ?) is VQ8AS in Salomon Islands in The Chagos group in the Indian Ocean. A most interesting story comes from VQ8AF in Mauritius about VQ8AS. Salomon Islands are a dependency of Mauritius, and there are only three white residents. Mr. Paul Caboche came on the air in October, 1936, with 9 watts from batteries, the sole means of communication with the outside world. Only one ship calls every four months and shortly after a visit trouble broke out among the natives. VQ8AS then tried to raise Mauritius and got QSO with FB8AD. The latter co-operated with FB8AB and both called Mauritius. VQ8AE answered and was asked to QSP urgent message to VQ8AF. Next day VQ8AF tried to get a message through to VQ8AS, but conditions prevented a solid copy, so FB8AD, who was standing by, put the full text through for him and eventually the ship was asked to return *via* 600 metres and the offending natives were imprisoned. Thus ended a real drama of radio.

There are several genuine ships active at present. HHX reported by many is cruising about the Atlantic, and has been heard off Newfoundland and Azores. OXVC was worked by G6WY when anchored at Gibraltar, and was using 3 watts. He has since QSL'ed and was actually in Gibraltar Harbour. Cards may be sent *via* G6WY.

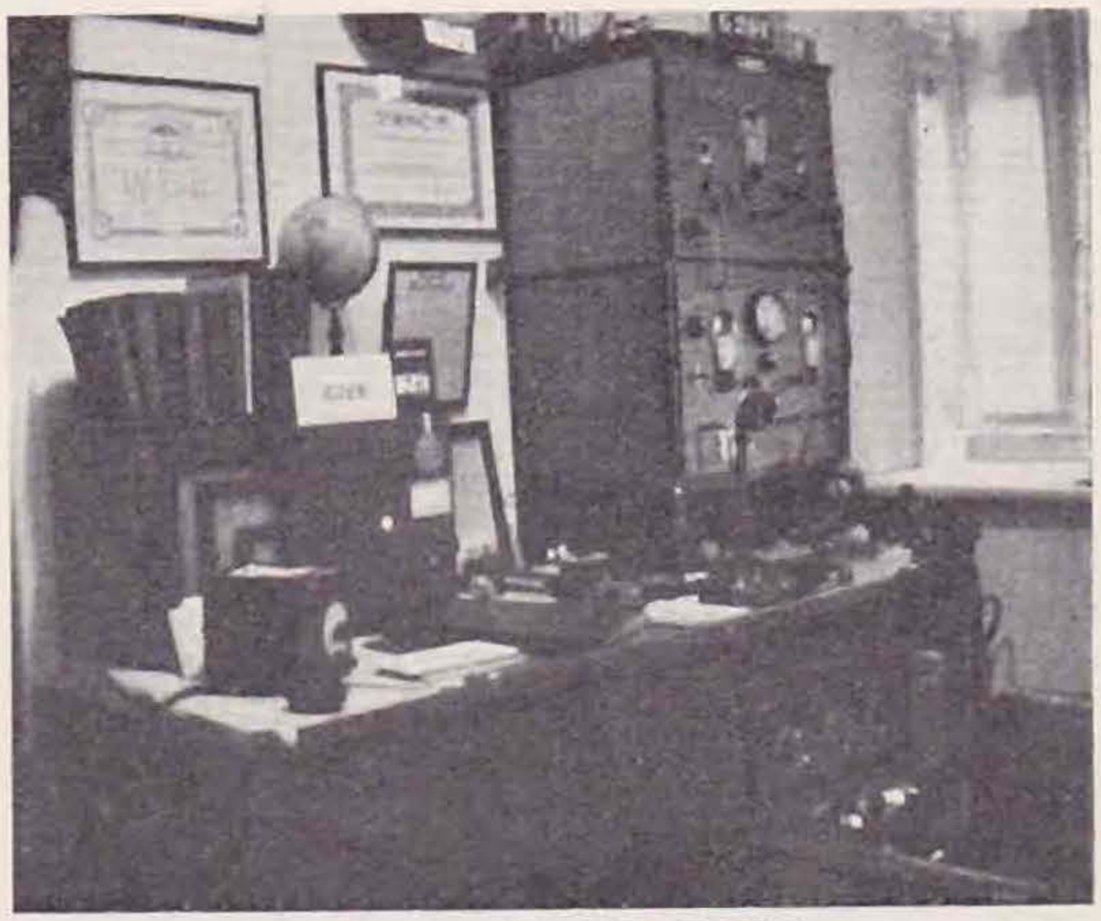
Sorry news comes to SU2TW and SU1WM, who both worked OY1B. It was stated in last month's Bulletin that this station was in Jan Mayen Islands, but LA3G, at present in England, informs us that Jan Mayen belongs to Norway and there is only one hut on the island and he cannot imagine that this station could have been genuine. It is also remarkable that no G station has reported this call. Another suspicious call is HZ5NI worked by G8GG on 14,100, but he faded out before details could be obtained.

BRS2138, of Ross-shire, has heard PK1ZJ and VS1AI on 'phone and FB8, J, VS7, HC, CE and YV on cw. G5FA has worked VQ3FAR three times during the month, and VQ3FAR'S old call was G5FA ! He heard KA1UP, HHX, VP3BG 14080, HJ1ABD 14140. On 7 Mc. he worked VO1M and VO4Y at 00.30 G.M.T. BRS1535, in Woking, tells us that VU2TZ gives his QRA as Quetta. He has also heard ZE1JA 14310, CR7RB, CR7AU 14395, CE3AR 14410, and reports that XG is Corsica ! 2AQW reports having heard 'phone from XG3BY in Corsica. We wonder ?

G5HH with 25 watts and a two-valve receiver has been working the usual run of DX and suggests that the R.A.F. exterminates SP1LM and his T1 note, and wants to know if the FB8 stations QSL as he has worked 4 or 5 and only had one card. Well, G6WY has worked 4 and had 4 QSL's. He tried to tell OK1SV that he was 100 kc. outside the band, but suggests a new " Q " code signal to make this point clear. Last month, certain remarks were made in this column about the reputations that G's have for keeping within the tolerances of our bands. In the first fortnight of August, 5 different G's were heard well outside 14,400 using ECO or MO. In no instance was the note good and the reason for their risk in some cases was to work FP8PX, who listens from 100 kc. outside the band. They raised him, but a certain G station working on 14,395 kc., our absolute limit, had to wait three weeks before he worked him, as each time FP8PX came back to a station on a higher frequency. We need not repeat that this is very dangerous practice in this country.

G8IL, the QRP exponent, received a message from VK2NO addressed to a listener in N. Wales, who had sent a report of reception of " VK2N "—on 'phone on 56 Mc. to VK2NO, as he recognised his voice hearing him frequently on 14 Mc. 'phone. The message confirmed the reception, stating that he was working VK2HL at the exact time stated, 20.22 G.M.T. with 100 watts input to a pair of 35T's and a beam aerial.

G6ZO, with his 25 watts, sends in a long report and has been very active, having now worked 38



G2UV, OF WEMBLEY.
Mr. W. E. Corsham is one of the oldest licence holders in the country. During 1921 G2UV competed in the first Transatlantic tests and won an award.

*9, The Mead, Beckenham, Kent.

States of U.S.A., and obtained S8 from KA1AN. He ran a schedule with OH3NQP, who was operating on S.S. *Marisa Thorden* crossing the Atlantic, and had a contact with TA1FD, who gave his QRA as Smyrna, Turkey. Let's hope he gets his confirmation! XTF5Q informed G6ZO that he was unable to give the name of his man-of-war, but would QSL. ZO has been working a portable in Dorset, as the G.P.O. would not accede to his request for permission to operate in the Scilly Islands. He has heard some good DX such as HK4LE 14040, HK4AG 14010, HK5DB 13990, VP2LA in St. Lucia 14000, HH2P 14120, VP2PF 14400, VQ4KTC 14390, VQ4CRU 14380, XU8VX 14400, PK1MF 14370, OXVC 14300, AR1K 14250 (no QRA given). He informs us that XZN3B is a pirate in London, N.W.11. He asks for details of FFK calling UPOL just outside the H.F. end of 14 Mc.?

G2ZR sends a long list through, and selected tit-bits are ZE1JS and ZE1JI 14360, CR7AR 14200, CR7RB 14280, VU2FX 14070, and on August 16 heard XG2BY and on the 20th XG3BY working G2AK. Who is this station? Fido, the DX hound, has been set on his trail. As well as the above, he heard EA9AH 'phone, HK2YC 14030, PK1BO 14100. G2ZQ received a card from ZE1JN to complete 100 per cent. QSL from all the stations in the call book in S. Rhodesia, and has since worked the newer ones not yet in the book! ZE1JA, 1JG and 1JI are the new ones, and ZE1JK will shortly be starting up. ZQ worked VQ3ALT who was using 5 watts on L.F. end of 14 Mc., and on 7 Mc. heard HH5PA, K6MOJ and B.C. station VP3BG on 14025 c.w.!

Many will remember XU3FK in Chefoo, who put a consistent signal through every evening last autumn. The local Telegraph and Police Departments raided him, confiscated his gear and fined him $50.00, so he hopes to get a post in Hong Kong and be able to operate a station without such petty annoyances. Chinese stations will no doubt be scarce for a while, XU8VX seems to be the only one reported this month.

A most interesting report comes from FN1C, who tells us that he is also licensed for operation on British territory as VU2GN. The French authorities sanctioned operation in Chandernagore, which is an area of about six square miles under French rule and the station opened up in April this year. He uses two RFP15's in the R.S.G.B. "DX 3" transmitter, with 30-35 watts input. He works on 14,200 kc., already recorded in this column. FN1C says that HS1BJ uses 300 volts only, and gives us some information about AC4YN. Station AC4YN is operated only by R. Fox, ex-VU2DR, who is rebuilding to an RK20 final; the old transmitter was a service-built job using bright emitter valves of the old T50 class. This transmitter was built and operated by E. Y. Neapean, ex-G5YN, and S. J. Dagg, who have both left. Reg. Fox intends to burn much "midnight oil" to give as many QSO's as possible for Zone 23. FN1C worked J8CF for a new country, but is under the impression that he worked a new French Colony "FJ8C," so here's enlightenment!

SU2TW worked J2CL and VO1F for new countries and heard ZZ2A working W2CJM stating he was off the coast of France. He has been chasing VQ3FAR, so far without success. XYR5KW, another boat on the H.F. edge of 14 Mc., informed SU2TW that he was yacht *Thea* bound for Istanbul. The SU's are after their pet pirate SU1PX, SU1HB arranged to meet him by appointment, but he did not arrive! However, he has since been silent. Other bogus calls are SU2LT and SU1FH. G8DJ, SU2TW's brother, heard CX2BK and VK2XU's 10 watt 'phone.

Eric Trebilcock, BERS195, the indefatigable listener in Darwin, heard 57 countries in June and 68 in July (see calls heard in this issue) and logged HHX off the Canaries. VK5NO is the call of the Mackay Aerial Exploration Survey Party which is now exploring the last remaining unexplored territory in Australia. They work on 7,330kc. and the operator, VK2BP, is anxious to work DX and is on the look-out each day at 08.00 G.M.T. The station is situated at Tanami on the borders of VK6/VK8, but is actually in VK8, and works with two 'planes, one of the calls being VHUXA. 'Phones reported by BERS195 are G2AK, G5TZ, G5VM (S8) and G6XR. He tells us to listen for VS4CS working 'phone in Sandakan, British North Borneo, in the middle of the 14 Mc. band. VK4KC on 14395 is another to listen for in Papua.

2ATI, our regular reported from Stoke, has heard VP5AD (L.F. 14), VS7MB, VU2FV, KA1UP, VS7RF, VU2FH, VU2FS, VU2LJ, on C.W., and many other regular VU's and VS2AK and VS1AI on 'phone. On 7 Mc. he reports VK3MR, VK3UL, W6JIC, and in a later report on 14 Mc. mentions KA1AN, ST2CM, CR7AY, and 'phone from FB8AH, PK2WL, KA1HF, PK3AA, all before a bad thunderstorm. As soon as the storm had finished the band went dead. G2IG having built a marvellous superhet with automatic coil change, signal modulator, and crystal filter, has heard VK8JX and V1BO, both of which sound a bit suspicious. W2DTB reported by radio that he had worked TG1S in Guatemala on H.F. end of 14 Mc.

Another signal from the Sudan will be heard in November. Ken Rancombe, ex-YI6KR, ex-ZC6KR will use ST6KR on 7 and 14 Mc. in Khartoum. A new country to look for will be Gold Coast, as G2TH left on September 1 and will put a station on the air.

BRS2763, whose address is Ham Hill, Snodland, Kent, has heard some good 'phones, the best being K6NZQ 14200, K6OQE 14250, CE3CO 14050, CE1AH 14150, CE1AO 14100, OQ5AA 14070, ZE1JA 14380 and YV5AE. He wants information on EL1XC heard on 14380 T6. BERS394, of Bombay, informs us that Mrs. Indumati Dharap has passed her Morse test and is awaiting her call—so it should now be possible to get that W.B.E.-YL certificate, mentioned by G2ZQ.

G6WY has added three new countries in VQ5, FP8 and OXVC at Gibraltar, bringing his total to 139. He has heard FR8VX 14350, RRFUJ 14150 (any details?), YV2CU H.F. 14, K4DTH 14380, HK4EA 14410 and worked CR7RA, CE3AR, ST2LR and others. FF8AH was heard working a string of W's on 14300 T5 giving his QRA as "station mobile in Sahara" QSL *via* CN8AH.

The list of countries will appear next month if at all possible.

All news for inclusion in this page must reach G6WY by the 25th of each month.

The 56 Mc. Band

By L. G. Blundell (G5LB).

WE are happy to include in these notes this month reports from well-known Empire and foreign stations, *viz.* VK2NO and ON4AP; both these having a record making transmission to their (or their country's) credit in recent months.

VK2NO writes that during a field day held by the N.S.W. division of the W.I.A. on June 27, several interesting "indirect ray" contacts were made between his station in Sydney and 2ZC in Newcastle. The airline distance being 70 miles "through" mountain ranges. The contacts were made from the normal fixed QRA's of both stations with vertical arrays. That at 2ZC being an "H" beam with reflectors, and at 2NO a twin dipole with "end fire" directivity.

However, *the* event of the day was the reception of an ICW test transmission from 2NO by 2DN in Denlilquin on the Victorian border, 360 miles away. The signals were heard twice in a period of 15 minutes at about R3 with severe fading. 2DN uses a five half-wave aerial and an orthodox quench receiver. In view of this event, the local division are running a special monthly DX test with hopes of new record-making QSO's.

VK2NO further mentions that during morning QSO's with 2ZC his signals show a variation of S6 to S8 plus on both tone and speech. At night his signals had a high speed fade with as many as nine or ten peaks during the length of a dash at average speed. He considers that the presence of a reflecting layer may be attributed to the cyclonic conditions experienced on the Eastern coast for a week previous to the date of the field day.

And now, taking a long hop (or skip) we have ON4AP's achievement. In his own words—"The first 56 Mc. QSO between Belgium and Holland was effected on July 13 at 20.30 G.M.T. I received PA0PBK's MCW at S6 and PBK was getting my 'phone at S8 with fading to S3. The distance being 170 kilometres (106 miles), this QSO also sets a record as being the best yet for any Belgian or Dutch station."

The transmitting equipment at 4AP is a C.C. 6L6 tritet, 807 doubler and PP class C.P.A., using two 801's with 50 watts input. Frequency is 56,124 kc. Receiver is a "hot" super-het. covering from 1 to 11 metres.

The best aerial yet used is a beam array of two vertical Zepps, with reflectors at a height of 40 feet. A very close second is a plain half-wave vertical copper tube at a height of 67 feet above ground and fed by means of a matched impedance twin line. The photograph shows the very business-like construction of both systems, but it is only fair to mention that "AP's" QRA is one that is usually only dreamed about by the average operator—being on top of a 300-feet hill!

For those who would like to "top" the above contact, 4AP is active every day except Thursdays at 20.30 and onwards G.M.T.

Our own observers are still finding plenty of interest in the band and G6DH provides some detailed information on conditions during July. He systematically logs all signals heard above 40 Mc., and during the month heard commercial and other signals up to and including 61 Mc.—the highest yet! Calls and frequencies are as follows:—

IES40, SPW41, IBD38, IBT49, HAS241, IBD46, IBE48, DGR (?) 61, Berlin vision and sound on 44 and 42 Mc., and other commercials not identified. In addition, several modulated carriers were heard in the amateur band with bad fades and QSC. Of these, one closely corresponded with transmissions as advertised by I1IRA, and another to tests made by I1TKM. On one occasion 6DH was able to pick out the letters TK and TEST, but car QRM prevented further identification.

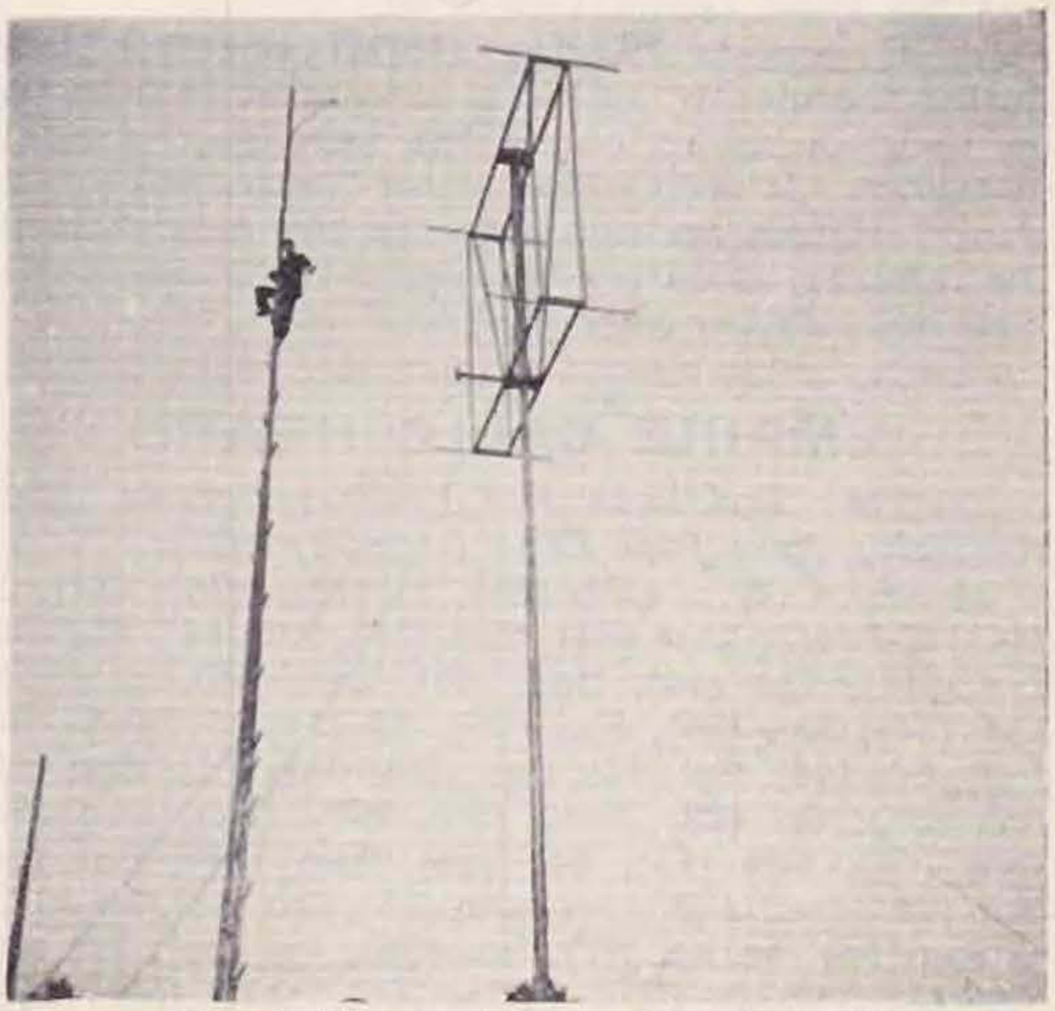
Schedules have since been arranged with the Italian station and checks are obtained *via* the lower frequency bands. DH also mentions that there are other Italian stations on 56 Mc. during the week-ends.

G5BM had a surprise awaiting him on his return from holiday. This was in the form of reports from two Czechoslovakian receiving stations, both giving him R7 W5 MCW. This was during a scheduled transmission with 5ML at 11.15 BST on July 18.

G2HG still manages to contact G6FL at frequent intervals. At the beginning of July he was in QSO with that station on three successive nights, although signals showed definite fading on each occasion.

The first 56 Mc. N.F.D. was, in view of the large number of log forms returned to H.Q. duly filled in, a great success. This was in spite of very discouraging weather condtions experienced by a large number of stations in various parts of the country. Most stations made a good number of interesting contacts, and it is hoped to present in the next issue a full story of the various activities on July 4.

Those 56 Mc. stations who are in the habit of arranging schedules with DX stations, please note that the publication of such will do much towards getting greater and more consistent activity.



The 56 Mc. Aerials used by ON4AP.

The 28 Mc. Band

By D. W. Heightman (G6DH).

LIKE the previous months this year, conditions during August were very. similar to those prevailing during the same month last year, but, due to somewhat greater activity abroad, more long distance contacts have been made in 1937. Towards the end of the month shorter distance signals became more scarce, while conditions for longer distances gradually improved.

As the writer was away at the beginning of the month he is grateful to those who sent in reports enabling these notes to be more or less complete.

Whereas last year, due to poor activity, the first W contacts after midsummer were not made until well into September, both G2XC and G6GO worked W1CCZ on July 30 this year. G6DH worked W3FVO and W9LQ on August 14 and W4ELQ on the 25th, while G2XC worked W3FVO on the 26th. On the evening of August 14 several W stations in the 1, 2, 3, 4, 8 and 9 districts were heard at good strength after 2000 G.M.T., and were still coming in at 22.30. G2XC reports hearing four W6 stations on the 25th.

On a few mornings conditions were fairly good for Australian and Far Eastern signals. VK3CP and VK3BQ were worked by G2XC on the 11th and again on the 13th by G2XC (who also heard VK3UD) and G6DH. VK3CP was worked on the 14th and VK3YP on the 25th by G6DH. On the 14th BRS2763 heard J2JJ and J2IN calling G6DH, but the latter did not hear them ; however, both G6QZ and G6DH worked J2IN on the 15th.

The activity in Africa appears to be fairly low, as the only stations reported are ZE1JU and ZS6AJ. ZE1JU, who was worked by G6NZ on the 15th, and by G6DH on the 21st and 29th was heard frequently working VK and other DX which was inaudible in England.

G6YL heard LU7AZ on the 18th and G6DH worked LU9BV, 9AX, 3DH and OA4J on the 29th, which made him WAC during August.

Other calls heard were K4EPO and K4DDH. European countries worked included D, F, OE, OK, HA, and YR. On no day during the month was the band completely dead.

G2XC reports hearing G6DH once or twice during the month, and it is of interest to note that on these occasions conditions were good for long distances. It seems that these " extended ground wave " signals are not heard to any extent during the summer, as during the winter G2XC and G6DH hear one another almost daily.

EMPIRE CALLS HEARD

Eric W. Trebilcock (*BERS*195), *Darwin, North Australia, from June* 11 *to June* 30, 1937.

14 Mc. C.W.: ei8b (55), 8j (43), g2dh (34), 2fz (44), 2hf (45), 2hw (54), 2im (56), 2it (44), 2la (44), 2nn (44), 2pl (44), 2pu (44), 2qt (56), 2th (56), 2zq (34), 5an (55), 5ha (56), 5il (54), 5rf (43), 5vn (53), 6dl (44), 6gl (44), 6gn (33), 6hb (55), 6qx (55), 6rh (56), 6rl (23), 6wb (55), 6wy (54), 6xq (34), 6yu (55), 8dt (43), 8fc (55), 8hn (44), 8ip (44), 8ob (44), gm6xi (55), ve3ahn (55), 4ro (58), 5mz (43), vq8as (56), vs1aa (57), ian (56), 4js (56), 7rf (56), 7rp (55), vu7fy (57), yi2ba (56), zb1h (55), zl2ky (55), 4gg (56), zs2x (34).

July, 1937.

14 Mc. Phone: G2AK (55), 5ni (57), 5tz (56), 5vm (58), 6xr (56), ve4bd (56), 5ot (57), vs1ad (57), 1ai (56), 2ak (58), 4cs (58).

14 Mc. C.W.: ei5f (56), 6f (55), 7j (44), 9g (57), g2by (55), 2 cl(44), 2dh (55), 2gf (55), 2gk (44), 2gr (55), 2hc (44), 2hi (44), 2im (44), 2it (44), 2jg (55), 2km (55), 2lb (54), 2lc (55), 2lk (44), 2mi (44), 2nn (55), 20a (54), 2pu (56), 2qb (55), 2qn (55), 2qt (55), 2th (55), 2uq (56), 2vo (44), 2xw (55), 2yb (55), 2zq (55), 2zy (54), 5ac (45), 5ad (55), 5an (56), 5bj (44), 5cu (55), 5dr (44), 5fy (54), 5gi (44), 5hh (55), 5il (55), 5jm (44), 5ka (55), 5km (44), 5lb (55), 5li (44), 5mo (55), 5pl (54), 5qk (55), 5sg (55), 5sr (55), 5th (56), 5ux (57), 5um (55), 5xw (54), 5yu (55), 5zb (54), 5zs (56), 6ag (54), 6bd (55), 6bi (44), 6bq (55), 6cj (56), 6dp (56), 6dt (55), 6dx (54), 6fq (55), 6gb (54), 6gm (54), 6gn (44), 6hb (55), 6jz (55), 6lc (55), 6lh (54), 6mc (55), 6mk (55), 6nf (56), 6qc (45), 6qx (56), 6rh (56), 6rq (55), 6rs (55), 6Sn (55), 6td (44), 6uf (55), 6vp (44), 6ro (55), 6wb (56), 6wr (44), 6wy (56), 6xp (54), 6yp (55), 6yr (55), 6yu (55), 6zs (55), 8ar (55), 8aw (55), 8az (55), 8bp (55), 8cz (54), 8do (55), 8 cp (54), 8gb (55), 8gd (44), 8hn (55), 8ii (55), 8ik (54), 8il (56), 8im (56), 8ip (55), 8is (55), 8it (44), 8iw (54), 8ix (55), 8jo (54), 8lp (56), 8my (55), 8nd (55), 8ob (56), 8oc (56), 8ox (55), 8pv (55), 8ra (55), 8sj (44), gm5ty (55), 5yn (44), 6bm (54), 6js (44), 6nx (44), 6xi (55), 8hp (55), 8sv (44), gw2ul (55), 8ct (55), Ve3abd (55), 3ahk (55), 3ig (54), 3ir (56), 3qh (55), 4abh (44), 4kz (55), 4ro (57), 5bi (55), 5vo (55), vp5jb (56), 5pz (55), vq4cri (54), 8ab (57), 8ae (56), 8af (55), 8as (36), vs1aa (57), 1ad (56), 1an (57), 2ae (55), 4js (56), 6ah (56), 6bc (56), 7gj (55), 7mb (56), 7ra (56), 7rf (56), vu2au (54), 2ba (44), 2fh (55), 7fy (57), zb1l (53), ze1jg (55), 1jn (55), zl1dv (44), 1dy (55), 1gi (55), 1ft (55), 2go (56), 2ky (56), 2qm (56), 3fz (55), 3jr (56), zs1ah (56), 5q (55), 6w (55), zu5L (55).

W. H. G. Metcalfe (*BERS*209), *3rd Indian Division Signals, Meerut and Chakrata, United Provinces, India.*

14 Mc. C.W. (Between July 9 and 16, 1937, at Meerut, near Delhi): vs1af (945), vs7rp (845), vk5hm (835), vq4cri (836), vq3far (958), vu2ae (846), vu2fh (958), zt5p (957), zs1ah (958), zs1an (946), ze1jk (846), g5yu (946). (Between July 22 and August 8, at Chakrata, in the hills): g2qa (946), 2yy (958), 2jg (947), 2qo (924), 2it (958), gm5yn (956), g5vn (946), 5yv (956), 6dp (946), 6vf (934), 6td (958), 6gi (945), 6ng (957), 6wj (956), 6rh (958), 6mk (946), 6wy (959), 6lv (936), 6ro (947), g8bp (957), 8pi (947), 8kh (957), 8pv (935), 8ks (956), 8ix (959), 8gd (949), 8hq (957), 8ho (944), gw8ct (946), 2gv (946), gm5yn (956), 8hp (957), vs7mb (745), 7rp (945), su1db (946), ze1ji (836), 1jg (957), 1ja (936), zu5aq (935), 1c (936), zd2b (957), zt2g (956), zs6j (959), 1an (745), 1ah (939), 6s (956), 1re (934), 5q (936), vk5jb (946), vq8asf (846) vu2fv (957), 2fb (958), 2fx (958), 2dr (959), 2au (959), 2ba (956).

14 Mc. Phone: vu2cq (959), 75y (958), zu1jr (948), vs2ak (946), 3ar (947), 1ai (957), ze1j (957), zd2b (947), g6af (824), 6xr (957).

28 Mc. C.W.: g2it (934).

Figures in brackets denote tone, readability and strength respectively.

A D.C. Ten Watt Two

V. O. Hawkins (2BVX).

Introduction.

THE writer, being blessed (!) with D.C. mains, has carried out a good deal of work in order to evolve a transmitter line-up which will take an input of ten watts with only 200 volts available for H.T. without the expense and clumsiness of a whole string of driver stages. The transmitter here described employs two receiving valves which are cheap and easily obtainable.

The Circuit.

The design uses two American valves, a type '43 as a regenerative crystal oscillator and a type '48 as a neutralised power amplifier. The '43, an output pentode with a 25 volt 0.3 amp. heater, is rated at 180 volts maximum plate voltage, and is used as the C.O. This is keyed in the cathode lead. Two features should be mentioned—the cathode regeneration circuit evolved by Frank C. Jones, the originator of the " Jones Exciter," is used, whilst the screen is fed by a potentiometer, instead of the usual series resistance. This greatly reduces key chirps, as there are no high voltage surges on the screen during keying.

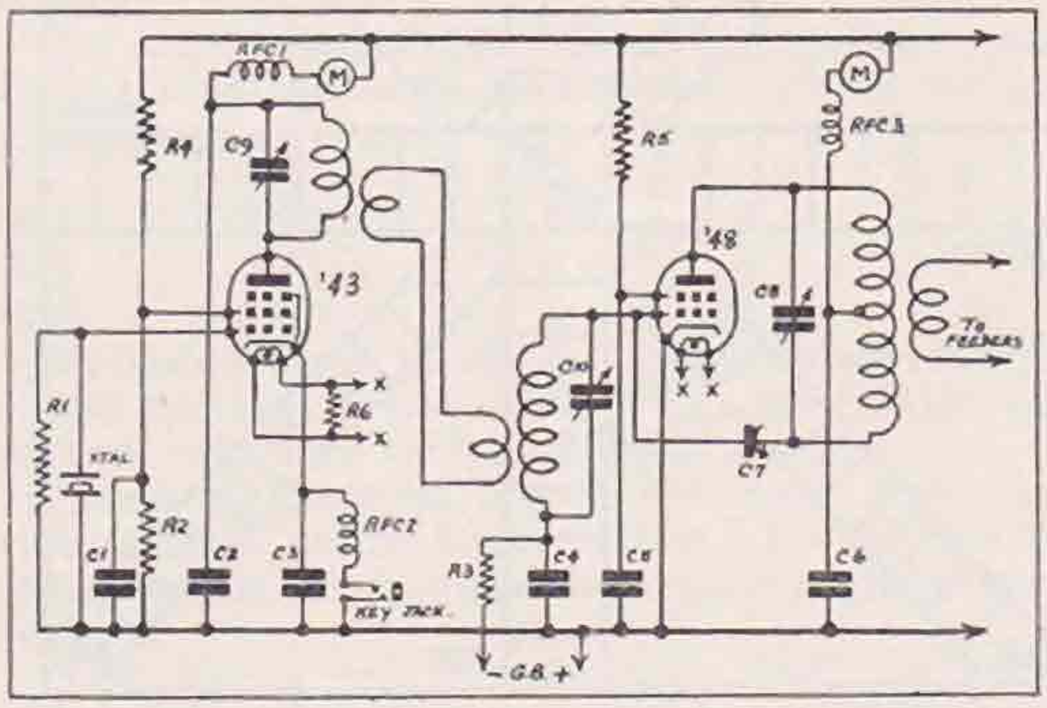


Fig. 1.

Circuit of two valve transmitter suitable for D.C. mains operation.

C1, 2, 4, 5, 6 = .002 μF.
C3 = .002 μF.
C7 = Neut. condenser.
C8 = .0001 μF.
C9 = .00004 μF.
C10 = .00016 μF.
R1, 4, 5 = 10,000 ohms.
R2 = 20,000 ohms.
R3 = 50,000 ohms.
R6 = 250 ohms, 10 watts.

The regeneration circuit consists of a receiving type R.F.C. in the cathode lead and a .0002 μF mica condenser, a combination which results in a 50 per cent. increase in oscillator output. The '43 is link-coupled to the '48, a tetrode with a 30 volt 0.4 amp. heater. Although designed for use as an output valve in 110 v. D.C. sets, it will stand 200 volts without any sign of distress when operated as a Class C amplifier, in spite of the fact that for Class A operation a maximum rating of 125 volts is specified !

In the transmitter it is used as a neutralised P.A., because the internal screening is not sufficient to prevent feedback. The anode coil is centre-tapped and the valve plate neutralised.

Construction.

The transmitter is built on a chassis 18 in. by 6 in. by 3 in. deep. Following the writer's usual practice the chassis is of plywood, and underneath, near the panel, is a strip of perforated zinc 3 inches wide, to which all " chassis " connections are made. Zinc appears to be just as effective as copper for this purpose and is, of course, much cheaper. On the extreme left, near the panel, is mounted the crystal holder, while a little to the right and a little further back is the '43. On the right of this is the C.O. anode coil. Just in front of these, on the panel, is the .00004 μF anode tuning condenser, while under the chassis, a little to the left, is the anode milliameter, and to the left of this, the key jack. The other oscillator components are mounted under the chassis in the wiring.

A vertical screen prevents any coupling between the two stages except that provided by the link, which consists of 1½ turns on the " cold " end of the anode coil and 4 turns very tightly coupled (inter-wound for preference) to the " cold " end of the P.A. grid. The reason for the unusually high link coil at the P.A. grid and the very tight coupling is partly to obtain more drive, and partly to match the low P.A. grid impedance. The grid bias for the P.A. is obtained by a 50,000 ohm leak in series with a 120 V battery. Neutralising is effected by a condenser formed by twisting two pieces of Glazite together for an inch or an inch and a quarter, with a 15 μμF variable condenser in series for ease of adjustment. The anode circuit of this valve is tuned by a .0001 μF condenser, and H.T. is fed through the centre tap of the anode coil. To connect this circuit to the aerial a stiff wire link supported on two midget stand-off insulators is used, the diameter being such that the anode coil can be easily withdrawn. The writer prefers this method to winding the link on the anode coil form as it is easier to adjust.

Coil Data for 7 Mc.

All coils wound on 1½ in. receiving formers :—
C.O. anode. 17 turns, 1½ turn link.
P.A. grid. 12 turns, 4 turn link.
P.A. anode. 15 turns, centre tapped.

Power Supply.

The '43 has a Bulgin 250 ohm 10W resistance in parallel with its heater to pass 0.1 amp., so that

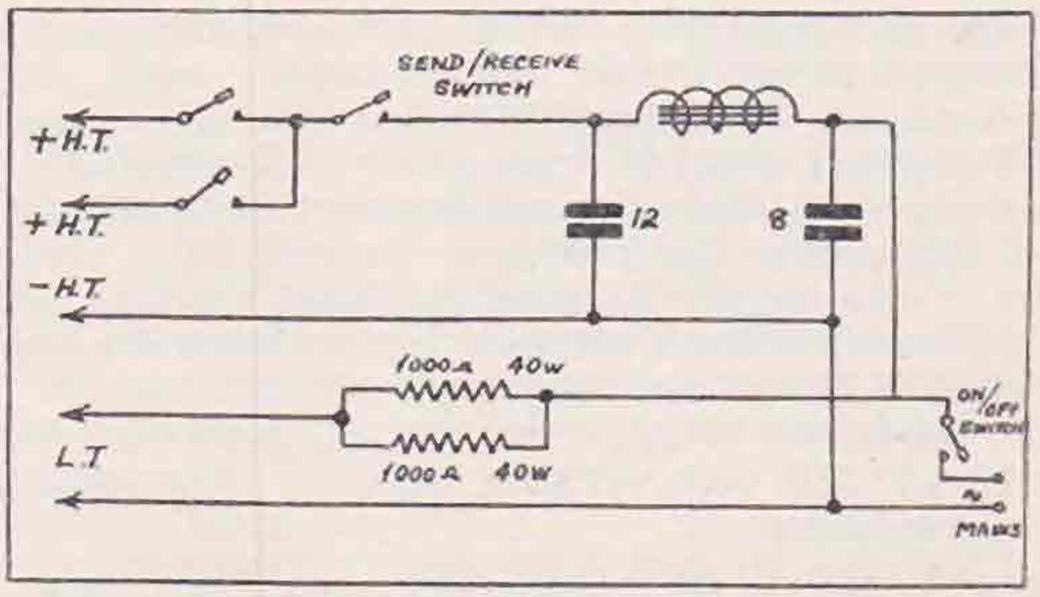


Fig. 2.

Suggested power pack.

the two heaters can be wired in series. Both are then connected in series with a pair of Bulgin 500 ohm 40W resistances in parallel. These each carry 0.2 amp. and when they are adjusted to obtain the correct heater current flowing, they should be adjusted together, so that each carries half of the total current. Although 0.4 amp. may be thought a high current drain, it will be found cheaper than using battery valves in most districts. The degree of high tension smoothing required depends on the roughness of the mains, but a substantial choke and two 8 μF condensers will be generally sufficient.

Operation.

When the transmitter is first switched on the heater resistance will smoke rather alarmingly, but this is quite usual for the resistances specified, owing to the string on which the wire is wound being impregnated with some kind of wax; this soon burns off. When the cathodes have reached operating temperature, apply H.T. to the oscillator and tune the plate circuit for minimum anode current. Then, with the full 120V battery bias on the '48, tune the P.A. grid circuit for maximum C.O. anode current. The next step is to neutralise the P.A. This can be done by watching the reading of the C.O. anode milliameter as the P.A. anode condenser is tuned through resonance, the neutralising condenser being adjusted until tuning the P.A. anode circuit through resonance does not affect C.O. anode current, HT. can then be applied to the P.A. and the anode circuit tuned for minimum plate current. The transmitter is now ready to couple to an aerial.

The following anode current readings are given as a guide :—

C.O. — 15 mA.
P.A. (unloaded) — 7 mA.
P.A. (loaded) — 48 mA.

Components Required for Transmitter.

5	.002 μF Mica	T.C.C.
1	.0002 μF Mica	T.C.C.
1	.00004 μF tuning	Raymart.
1	.00016 μF tuning	Raymart
1	.0001 μF tuning	Raymart
1	.000015 μF tuning	Raymart
3	10,000 ohm 1 watt	Dubilier
1	20,000 ohm 1 watt	Dubilier
1	50,000 ohm 1 watt	Dubilier
1	250 ohm 10 watt	Bulgin
3	4 pin coilforms	Raymart
2	Midget standoff insulators ...	Raymart
3	Radio frequency chokes ...	Raymart
1	Closed circuit jack	Bulgin
1	O-25 M/A meter	Premier
1	0-50 M/A meter	Premier
1	120 volt battery	Exide
1	American valve type '43 ...	——
1	American valve type '48 ...	——
3	4 pin V.H. English spacing ...	Raymart
2	6 pin V.H. American spacing ...	Raymart
1	7 Mc. crystal and holder ...	Q.C.C.

Components Required for Power Pack.

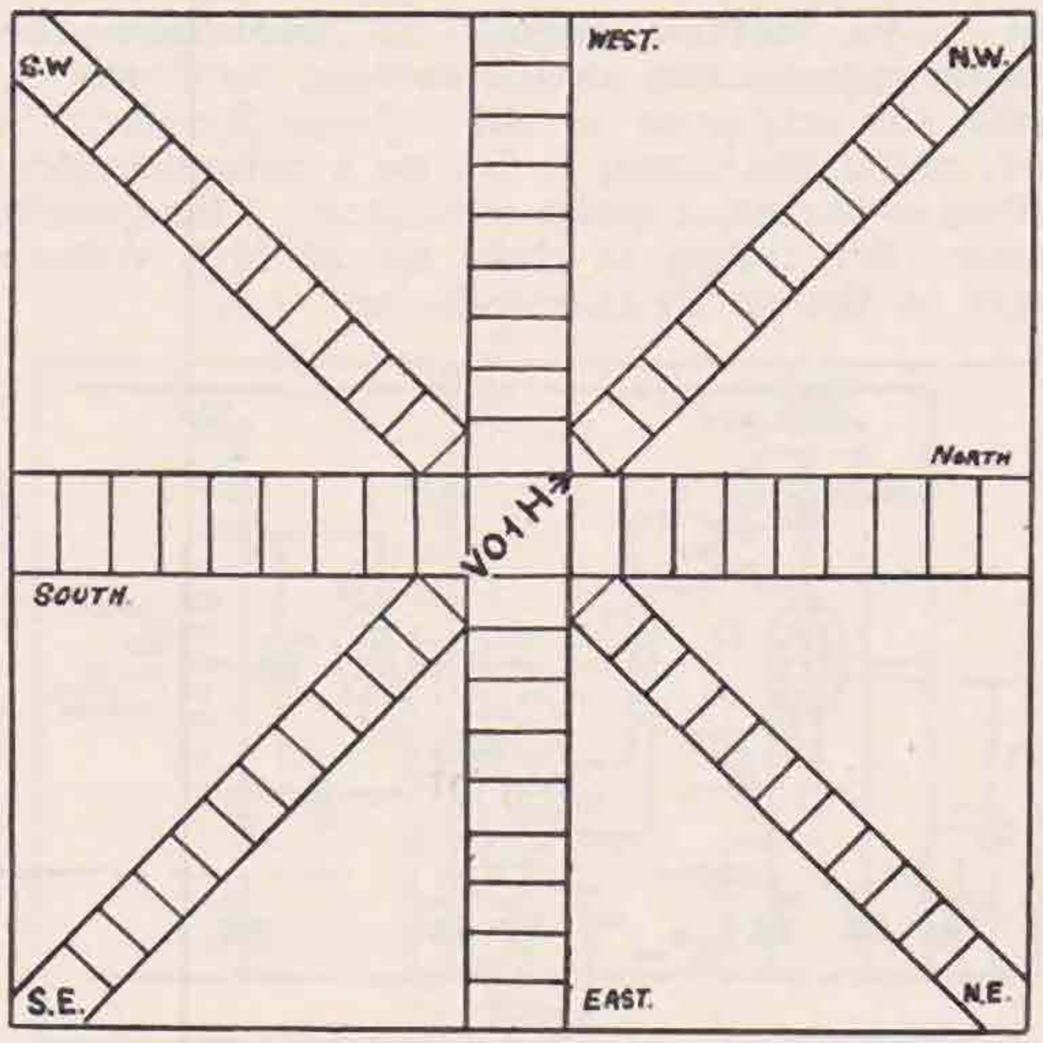
1	20 Henry 100 mP choke ...	Raymart
1	8 μF 350 volt working paper condenser	T.C.C.
1	12 μF 350 volt working paper condenser	T.C.C.
2	1,000 ohm 40 watt resistances...	Bulgin
4	Toggle switches	Bulgin
5	Sockets (2 black and 3 red) ...	Clix
5	Plugs to suit	Clix

To The Editor

A NOVEL DX CHART

To the Editor of The T. & R. Bulletin.

Dear Sir,—I enclose an outline of a DX chart that possibly may be of interest to members. You will note that it takes the form of the Union Jack, the design of which lends itself admirably to the charting of the performance of broadside, "X" pattern and other aerials. Each line on the crosses represents one thousand miles in the direction indicated, and by filling in the strength reports



in these spaces a picture of the aerial's performance in each direction may be obtained. The position of the Call Letters in the centre of the chart indicates the direction of the aerial under consideration. My own aerial is approximately North-West and South-East, as shown on the drawing.

It seems to me that if some such record be made from the QSL cards received, we could obtain greater returns for our expenditure of time and money.

Yours faithfully,
E. S. Holden (VO1H).

More About Telephony

In a letter to the Editor, Mr. Scholefield (G5SO) complains about the practice of certain British phone stations, particularly those working on 7 Mc., who sign off their transmissions without call signs, substituting Christian names in their stead. This unauthorised operation of amateur stations is liable to cause comment from official circles and is to be deprecated.

Low Power 7 Mc. Experiments

By R. F. Speake (G5IQ)

THE following is a report of some low power tests carried out by G5IQ of Wolverhampton, chiefly in conjunction with G2UQ, whose QRA is near Peterborough, a distance of about 80 miles.

Normal gear was used by G5IQ consisting of a medium powered CO. FD. PA., with Class B modulator.

An old mains auto-transformer had previously been dismantled and the winding increased by two layers of 16 gauge wire, suitably tapped.

The oscillator and doubler stages have their own power pack and in the preliminary experiments these were left unaltered, the auto-transformer being put in circuit to the power amplifier only to deliver 170 volts at 13 mA (2.21 watts) to the anode, the usual grid bias being retained.

After reducing the voltage gain in the speech amplifier until the carrier appeared to be satisfactorily modulated a test call was put out on the afternoon of Saturday, May 15, 1937, to which GM2MP replied reporting QSA5, R6, with good quality.

The same afternoon the following stations were worked with the same power input, giving reports of reception as stated :—

G.M.T.			QSA.	QRK.	QSB.
1515	G8NM.	...	5	8	—
1525	GM8JW	...	5	8	—
1600	G5YV	...	5	6	5-8

The power input to the P.A. was further reduced to 130 volts at 10mA (1.3 watts) and G2OB was worked, reporting QSB and QRK R4-8.

During the evening the 14 Mc. band was tried with an input to the final stage of 2.4 watts but no QSO resulted and no reports of reception have been received.

These results proved to be quite QRO compared with those obtained in conjunction with G2UQ the following morning, contact being established by answering his test call using 1.33 watts input, G2UQ reporting reception as QSA5, R7 solid, and suggesting further reduction in power.

The auto-transformer could not be used to give any lower voltage to the P.A. so the power pack was taken out of circuit and a 120-volt battery used, the power being reduced stage by stage.

The following is a copy of the log of the reports given by G2UQ.

Input to P.A.		Watts.	QSA.	QRK.
Volts.	mA.			
70	6.0	0.420	5	6
60	5.0	0.300	5	6
36	4.0	0.144	5	6
24	3.0	0.072	5	5
11.5	2.0	0.023	5	4-5
9	2.0	0.018	5	5

No alteration in the excitation had been made up to this point and the doubler was still running with about 8½ watts input. Reducing the input voltage of the P.A. to 4½ volts, 1½ volts and finally zero made little alteration in the report of reception. The P.A. appeared to be quite neutralised, a sensitive grid current meter showing no deflection when passing through tune. After this test it was decided to reduce the drive and, as a grid bias battery was now being used for H.T. supply to the P.A. the power pack to the oscillator and doubler was removed and the high tension battery used to supply these stages with 100 volts on the anodes of each, the oscillator drawing 4.5 mA and the doubler 4.0 mA, giving 2 mA of grid current from the P.A. grid, the bias voltage being kept 60 volts negative.

The full 9 volts of the grid bias battery was used to the P.A. anode and contact re-established, power being reduced still further with the results given below.

At this stage a visitor came to G5IQ's shack and can verify the voltages and currents in use for the remainder of the tests.

Input to P.A.		Watts.	QSA.	QRK.
Volts.	mA.			
9.0	1.0 approx.	0.009	5	5-6
6.0	1.0 ,,	0.006	4-5	4-5
4.5	1.0 ,,	0.006	4-5	3*
1.5	0.5 ,,	0.00075	5	2-3

Voltages and currents were checked, using *Ferranti* instruments, the milliameter being of the moving coil type, the volt meter being of 1,000 ohms per volt resistance and all battery voltages were measured as a check on the voltages printed thereon, the H.T. battery being found to be down.

The *total power input* to the three R.F. stages was under 1 watt for the last three tests :—

Oscillator	100 volts	4.5 mA	= 0.45 watt.
Doubler	100 ,,	4.0 ,,	= 0.4 ,,
Power amplifier	1.5 ,,	0.5 appr.	= 0.00075 ,,
Minimum Total for Three Stages	...	...	= 0.85075 ,,

Even with this power QSA5 was reported, G2UQ being able to repeat the particulars given by G5IQ.

The tests with G2UQ occupied well over an hour and contact was only broken three times by QRM, and then re-established immediately without resorting to any increase of power.

The same afternoon the 1.33 watts input to the last stage was reverted to and GM8HP, G8NA and G8KP were worked, reporting Q5, R8-9, Q5, R7, and Q5, R8 respectively. F3FA, F8ZK and ON4AK were worked later with similar results.

All contacts were made by making or answering test calls with the low power input and none were prearranged.

* *Overmodulation appeared to be the cause of this lower QRK.*

The weather at Wolverhampton was mild and dry but very dull, visibility being less than a mile, reception conditions did not appear at their best, and other stations were heard making similar comment during the afternoon.

The aerial system used was the conventional end-fed half-wave type about 38 feet above ground reasonably clear, with zepp feeders about 48 feet long inductively coupled and series tuned in each feeder. The feeder system was built to have an impedance of 600 ohms and the aerial lies on a line approx. 30° North of West to 30° South of East and is fed from the East end.

It has been suggested that the Class B modulation delivers considerable power to the P.A. tank, giving a controlled carrier effect and as good quality is reported the behaviour of a flashlamp bulb in the feeders appears to confirm this, certainly comparable results have never been experienced using low power with choke control, the experience of others making similar tests would be interesting.

Attenuation of the Ultra-High Frequencies by Hills

By F. H. Babcock (G8LI)

THE writer, in company with two friends, decided recently to attempt the somewhat difficult task of investigating to what extent 56 Mc. signals are attenuated by hills. The results of these preliminary investigations may perhaps be of some interest to others working on similar problems.

The tests took place in January, 1937, in the Lakes District of England, this area being selected because one member of the party resided in the locality, whilst the high ground offered possibilities of obtaining good heights between transmitter and receiver. These points could be reached by car, an added advantage.

A T.P.T.G. circuit was built up around a *Mullard* TZ 05/20, power being obtained from a car battery for the filaments and from a 400 volt generator for the H.T. A small petrol engine was employed to drive the generator.

A half-wave vertical aerial fed by ¾ wave feeders was used for all tests.

After the party had assembled at the transmitting point the aerial was erected, guyed to a large piece of board and weighted down with stones as a precaution against high winds. The petrol engine, which was started with a piece of rope round the fly-wheel, was throttled down to give a steady input of 25 watts.

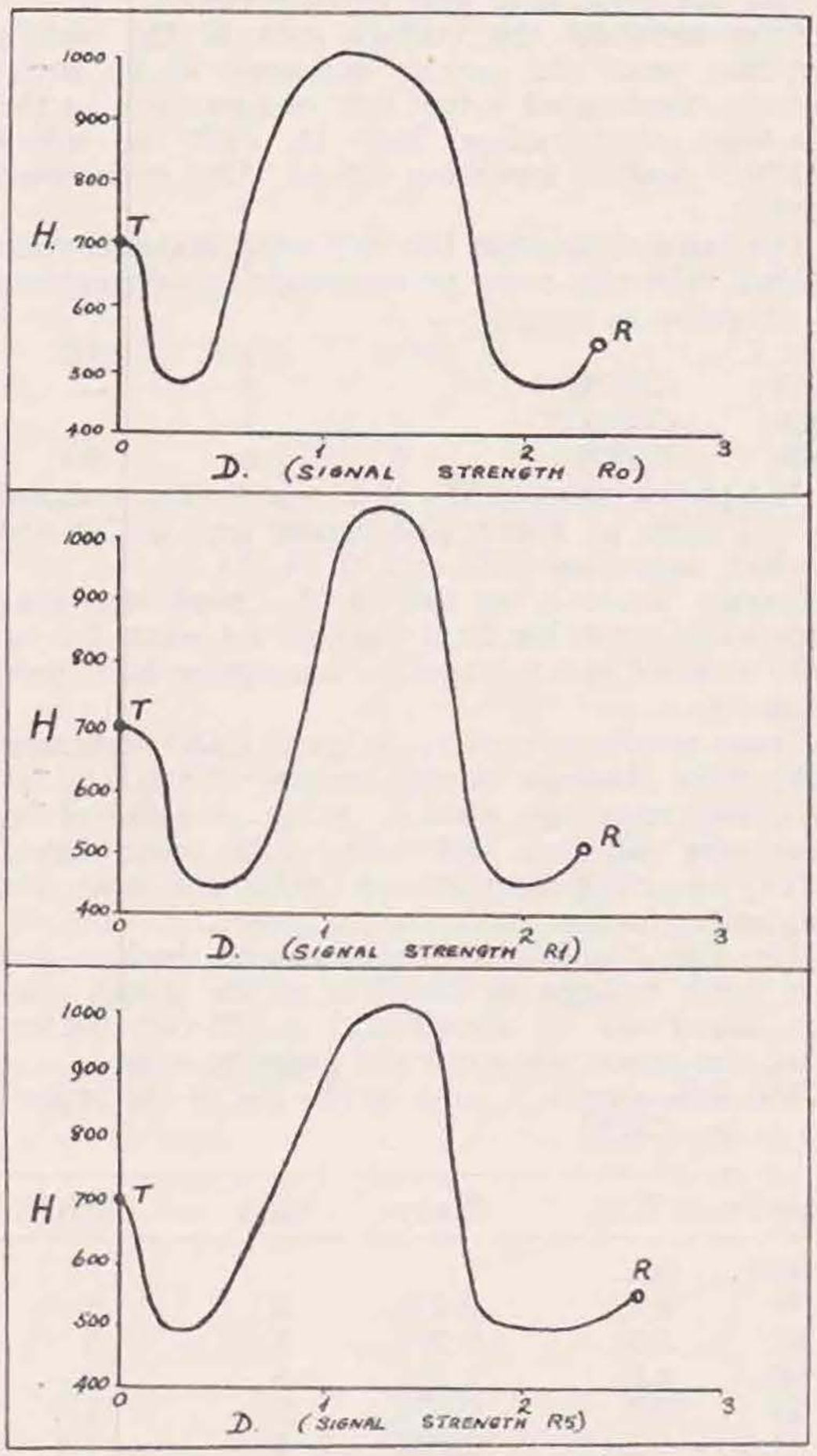
The receiving car party then moved off, stopping at intervals to take signal strength readings and position.

The routes taken were, for the benefit of those who know the district : (1) Birker Moor-Santon Bridge Road ; (2) Mockerin How to Honister Pass ; (3) the triangle of roads which include Keswick, Threlkeld and Stannah. The transmitting points were respectively (1) the highest point on the Birker Moor main road ; (2) the highest point on the Loweswater-Mockerin road and (3) the Stone Circle above Keswick.

The results obtained were plotted on graph paper from a series of six-inch to the mile maps. Some 20 graphs were drawn, up to 3 feet in length, showing the configuration of the ground covered at separate R strengths. Sometimes when nothing, was expected, a reasonable signal was obtained, whilst at other places the reverse was the case. Naturally all the graphs cannot be printed, but three are shown herewith, to give some idea of the results recorded. These are of the type which produced almost complete attenuation. Two theories which might explain the results are : (1) diffraction effects are obtained due to the intervening hills, or (2) the waves may bend only in a fixed radius of curvature.

The writer would be very pleased to hear from any other member who is working on this problem. A crystal-controlled transmitter is under construction with a view to making more accurate experiments later, and it would be of great assistance to us to hear of any previous experiments in this direction.

Editorial Note.—These interesting tests were conducted by Messrs. Babcock, G8LI, Quartermaine, BRS. 2872, and R. A. Fell, BRS 2826, members of the Marlborough College Wireless Society. The first two mentioned are operators of G5MS, the Marlborough Society station.



Three curves prepared in the Peak District showing the attenuation effects of 56 Mc. signals due to hills. The curves show the signal strength obtained on a receiver moving away from the transmitting point marked T. H indicates height above sea level in feet. D indicates distance in miles from the transmitter.

THE HELPING HAND

By Austin Forsyth (G6FO).

PART VII.—READERS' IDEAS AND GENERAL INFORMATION.

SINCE the inception of this series in March last, we have received a number of letters from readers, some containing suggestions and criticisms either as regards the articles themselves or in connection with circuits and apparatus, and others in which the writers have been kind enough to say that they have found the series both helpful and stimulating. All these letters have been most interesting and useful, even the one from a reader who considered that "The Helping Hand" was taking up too much space in The Bulletin. We did not quite know how to take this, but it transpired that the writer, himself an AA man, thought that the bulk of Bulletin space should be devoted not to the beginner but to the more advanced section of the membership, as it is on them that progress depends. While this is true to a certain extent, we still feel that the more we can put into print under this heading, in the way of useful information, the better it will be for those readers who evidently *do* read the section.

This month we propose dealing with a selection of readers' letters as, in our experience, if one member takes the trouble to write and express some idea or put forward a suggestion, it is fairly safe to assume that he represents a group of readers who are thinking along similar lines or are looking for information on that particular subject. In this connection we should like to emphasise how useful it is to have a regular flow of correspondence touching upon readers' own ideas and problems, as this is not only a valuable guide to what is wanted in the articles but also a very good way of circulating interesting practical experiences and methods of carrying out a particular job. Therefore, please do not hesitate to write; the more we hear from readers the better we are pleased. While we like to find on the mat an occasional postcard intimating that the articles are being eagerly read in a certain quarter, it is equally gratifying to have a letter dealing with a problem or outlining experiences with some circuit or other.

Now to business.

Frequency Meters.

G8ON sends the circuit of Fig. 1, which he says is an extremely stable oscillator of very simple construction, and uses an ordinary screen-grid valve. Its stability, in his experience, compares favourably with that of a conventional C.O. Does anybody recognise this as a modification of the dynatron oscillator, which was widely used some years ago as a driver for low-power transmission? Its disadvantage is the very low R.F output obtainable, but the arrangement is excellent in a frequency-meter circuit. We can remember using the dynatron oscillator with one of the original *Mazda* A.C./S.G. valves as a 1.7 Mc. transmitter for local working, an input of two or three watts being obtainable with absolute CC characteristics.

While on the subject of frequency meters, 2CHY writes to say that *Messrs. Strakers*, Ludgate Hill, E.C., have a very good assortment of graph paper for plotting the curves. The drawing of the curve is, as we pointed out in the original article, as important a part of the work as any other in making up a reliable frequency standard. It should be drawn on as large a piece of squared paper as is practicable and marked with a very thin inked line. We have seen curves, claimed to give an accuracy of some incredible figure, which were evidently drawn with a bricklayer's pencil, as the line was thick enough to obliterate at least one small square on the paper.

Several readers have mentioned a difficulty in

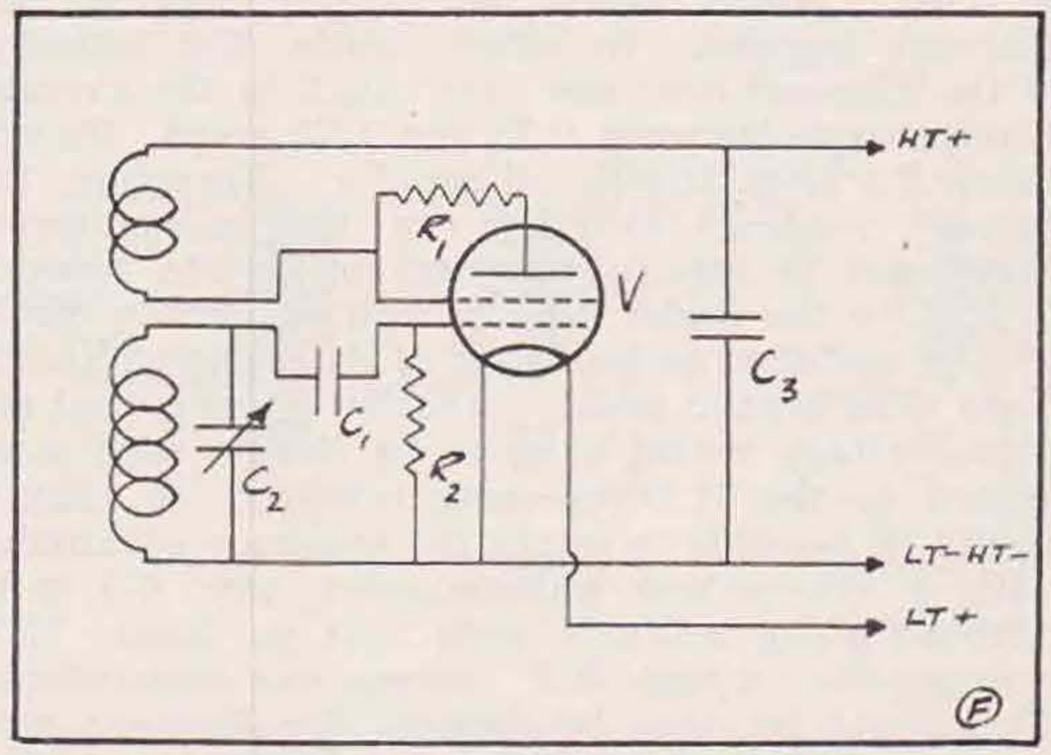


Fig. 1.
Stable oscillator circuit, by G8ON. R1 is 50,000 ohms, R2 100,000 ohms, C1 .0001 mfd., C2 25 μμF., and C3 .01 μF. V is a screen-grid valve.

drawing a smooth curve ; of course, it is almost impossible to do it freehand, unless one is a draughtsman and there are a fairly large number of points close together. Failing a set of curves as used in a drawing office, the next best method is to lay a flexible steel rule edgewise through the points and get the line that way. With a large graph, this usually means doing it section by section, which involves rather-too-visible joins in the line. Quite a good freehand curve can be obtained where there are a sufficient number of points, as would be obtained by using a 100 kc. quartz bar as the frequency standard, taking off its harmonics from the receiver, as explained in *A Guide to Amateur Radio*.

R.F. Ammeter.

From 2BAD comes the circuit of Fig. 2, which shows a form of R.F. ammeter having several useful applications. As will be seen, the valve operates as a diode, obtaining its filament current in the form of R.F. by virtue of the fact that the filament is in series with the feeder line or other R.F. circuit in which measurements are to be made. There are one or two possible snags—we have not ourselves tried it—in this arrangement, the most obvious one being that where R.F. currents up to about 1 amp. are involved, a valve having a 1-amp. filament would have to be used ; also, it is ques-

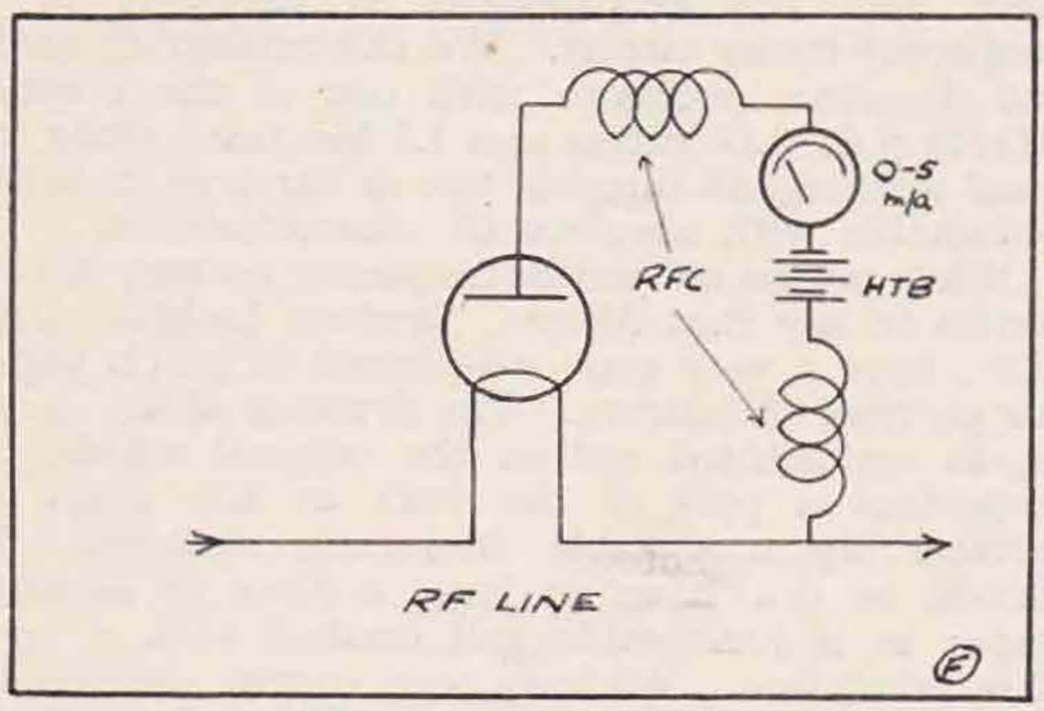


Fig. 2.

RF Ammeter, by 2BAD. The chokes RFC should suit the frequencies involved. See text for further details.

tionable whether in such a valve the amount of rectified current would be proportional to the filament heating. In other words, the emission of the filament does not vary much in the average 1-amp. valve between 0.75 and 1.25 amps., though below 0.5 amp. it falls off rapidly. Therefore, the current readings obtained on the milliammeter would not be strictly proportional to the amount of R.F. in the feeder line, though the device would still be useful as an indicator of its apparent limitations were kept in mind. Another point is that the plate voltage would have to be chosen with some regard to the R.F. currents involved, so that it would be possible to retain the accuracy obtainable with a low-reading milliammater, say, 0-5 mA., without going off-scale with that particular H.T. voltage when a high R.F. current was encountered. This could be done by feeding the filament with 1 amp. of D.C. current from a battery and then adjusting anode voltage to give full-scale deflection n the plate meter with that filament current. If n accurate D.C. ammeter of m/c. type were available, the plate meter readings could be plotted against D.C. filament current through the full effective range, the curve thus obtained being used to read off the R.F. current with the filament fed from the R.F. source to be measured. Under these conditions, the device would become a reasonably accurate instrument, though in an R.F. circuit precautions would be necessary to prevent by-passing, by building it on to the aerial tuning panel and keeping all components carefully insulated.

Useful Report Form.

BRS2905 offers some suggestions on the pertinent matter of reporting, and the type of QSL to adopt. His own scheme takes the form of a graph, as reproduced in Fig. 3, the idea being to take care of the case where observations are made on a given station over a period. This is, we think, an excellent suggestion, and to amplify the report we have added, as shown, the further details necessary to make it complete. The only disadvantage is that such a form cannot be easily accommodated on an ordinary card, though the sizes could be cut down a little. With the depth of the graph reduced, and close printing of the wording, a standard card size might be possible, but in any case such a report-form could be very cheaply produced in quarto-size sheets for general use. As is well known, there are certain listener organisations which supply their membership with printed report-sheets, but in our experience these suffer through a complete lack of the detail such as we give here, apart from the fact that very cheap paper is used.

Microphone Matching Circuit.

G6CL—the call-sign should be familiar to everybody !—uses an input circuit to his " 362 " PX.25 modulator valve which is rather interesting. It is given at Fig. 4, and, incidentally, this arrangement suppressor-grid modulates a final stage running at 60 watts intput on 14 Mc. The point of showing the input side of the modulator here is in regard to the fact that the two coupling transformers enable a very good match to be obtained between the microphone and the PX.25, resulting in the latter being more effectively loaded than if the first transformer were directly connected across its grid-filament. Though there is obviously a power-loss due to the extra transformer, which means that the grid-swing of the modulator valve is not as much as it should be, it is even then more than would be obtained by direct connection of the microphone transformer. It would appear that in this particular case the secondary of the microphone transformer happens to be a good match for the primary of the AF4, thus improving the over-all performance. Theoretically, of course, there is no limit to the number of transformers which could be so connected, provided they were properly matched, but actually in practice the output obtained at the end of the chain would be very low in the case of three or four, due to the power-loss at each transfer.

This discussion is really to show how it is sometimes possible in L.F. circuits to correct mis-matching, though probably more than one extra transfer would be scarcely worth while.

In connection with microphones and microphone circuits, it might be worth mentioning here that very often an L.F. choke, or an L.F. transformer, can be adapted for use as a speech transformer where the microphone is of the low-impedance type. Such a microphone requires a fairly high

step-up ratio, anything from 30 : 1 to 60 : 1, and if a spare L.F. choke is available having a good core and an inductance of from 10 to 20 henries, it is sometimes possible to put on a "primary" or microphone winding which will enable the choke to be used as a speech transformer. The choke should be of the type which comes to pieces fairly easily, and on which there is room to wind the extra turns. The old Formo chokes are what we have particularly in mind, as we have recently doctored one ourselves for the same purpose. The microphone had an average D.C. resistance of about 50 ohms, and a quantity of No. 26 enamelled wire was wound on over the choke coil—which now becomes the secondary of the transformer—till this resistance was obtained. The D.C. resistance of the "secondary," or choke winding, was 3,000 ohms, giving an apparent step-up of 60 : 1. The actual ratio depends, of course, on the inductance values of the two

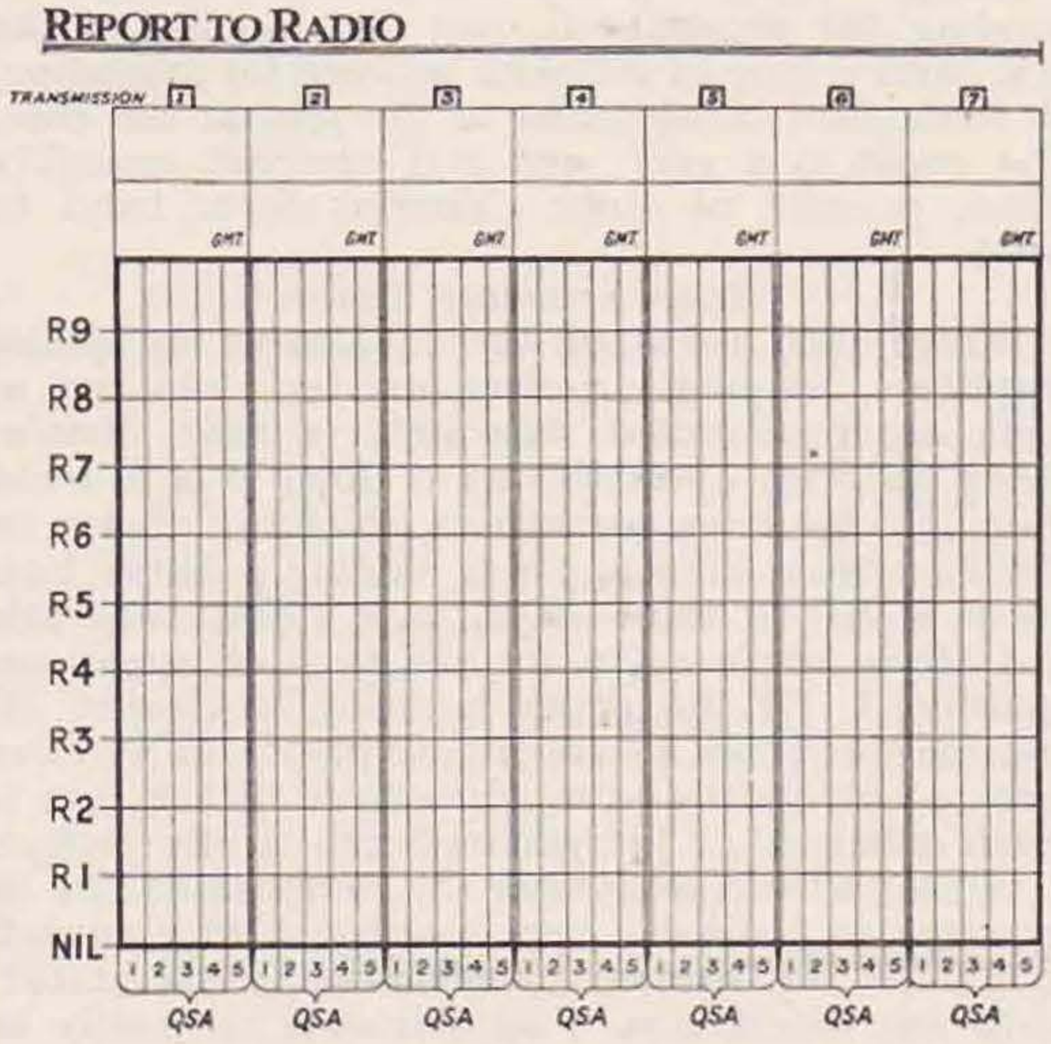


Fig. 3.

Report form by BRS-2905. Something like this should help to bring those cards back.

The curve above is a reception record of your signals for the period shown.
On.....at.....G.M.T. you had QRM.....QRN.....
QSB..... when working ..... on the ...Mc. Band.
Your RST-F was.....with Quality.....and Modulation ..... Reception conditions here at the time were ..... Your Test/CQ call on.....at.....G.M.T. was answered by..... Your checked frequency is.....kc., + or — .....kc.
You are above/below/same average level of stations received here from your district.
Receiver here..... Aerial.....
Your QSL will be appreciated. Can I assist you with any special tests? I am equipped for reception on .....Bands.

73,

(Signed.)

Address .....

windings, and their relative turns, *not* on the D.C resistance, which can only be used as a very rough guide to the amount of primary wire required. To get a better match, the amount of wire in the choke coil should be estimated, and from this the number of turns arrived at for the primary winding. Knowing the resistance of the latter, consulting the wire tables will suggest the gauge to use to get that resistance, the amount of wire involved being calculated approximately from the previously-determined number of turns, and the average diameter of the primary winding. After doing all this one usually finds that the winding space available is too small, and so you come back to the original idea of putting on as many turns as possible of light-gauge wire till about the required resistance results! The constructional part of the work involves taking the choke coil out of its case and removing the laminations of the core, in order to leave the bobbin clear for winding. The laminations should be taken out and put back in their correct order, as one side of each piece is insulated. The bobbin, on which the choke coil is already wound, can then be mounted in the chuck of a breast-drill held in the vice, and the primary turns put on immediately over the secondary.

Some makes of L.F. transformer also lend themselves to the same treatment, and though the resulting component is not perhaps a scientifically designed instrument, it is yet quite a serviceable microphone transformer.

Non-Technical Suggestions.

Taking a few points from other letters, several readers have asked for more detailed constructional articles, rather than the style of thing which we have been attempting to date. This has been to try and give generalised information which can be applied to individual cases, as we feel that the average reader of this section, though perhaps a beginner to transmission, will yet have a certain amount of experience behind him which should be such as to enable him to make full use of the series without our laying down "cast-iron" specifications. At the same time, when the stage is reached where practical data is being given on transmitters, modulators, aerial systems, and so forth, the treatment will be in the form of complete constructional articles, with photographs, which should satisfy correspondents under this head.

Other requests have been for articles on the actual mechanics of constructional work—soldering, the use of tools, etc.—but we feel in this connection that to take up space for such a purpose would not only slow up the series unnecessarily but also that

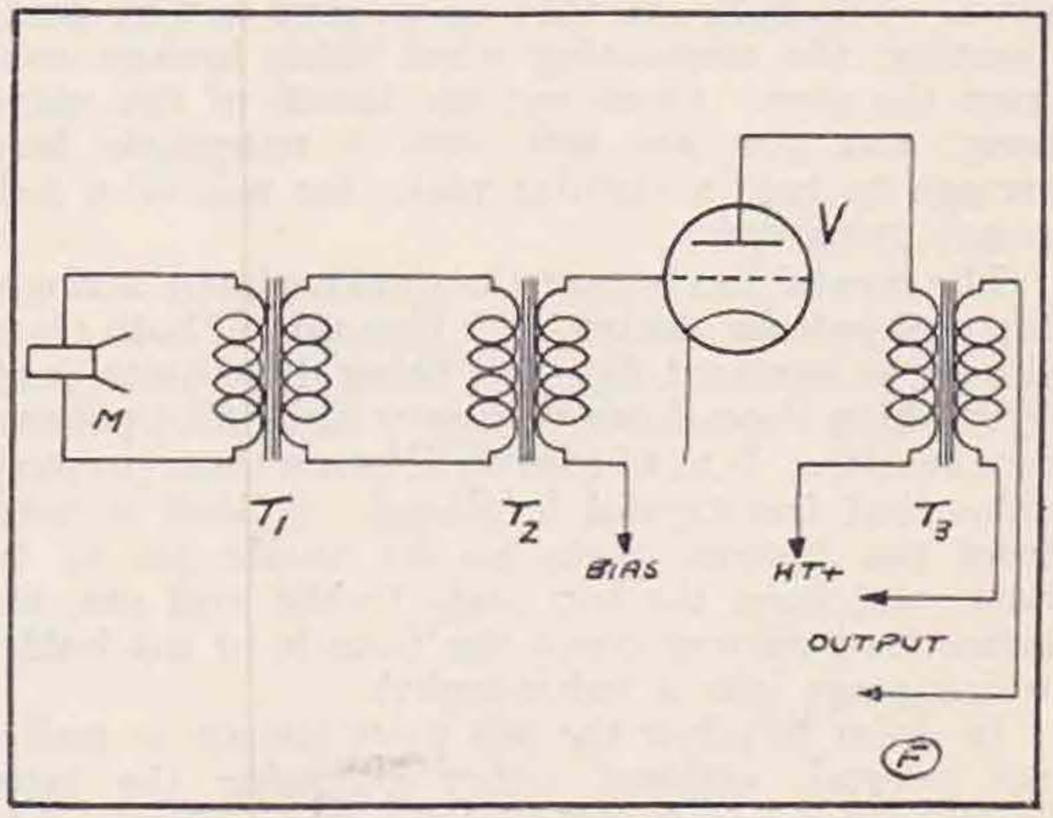


Fig. 4.

Microphone matching circuit, by G6CL. M is a carbon microphone, low-impedance type, T1 its associated transformer, T2 Ferranti AF4 and T3 Ferranti OP4. The valve is a 362 PX.25. See text for discussion.

it would not meet with general approval; for again, we think that most readers will have done quite a lot of radio construction of one sort or another before they joined the Society. In any case, much useful information is already available in the handbooks published by *Pitman*, *Newnes* and other houses specialising in technical and semi-technical publications for the amateur.

Another direction in which readers have expressed themselves is to devote some of the space to electrical theory and the fundamentals generally, but here again our own ideas are summed up in the paragraph above. There is such an enormous amount of published matter already on this very subject that we consider it would only be going over old ground again to deal with elementary electricity and mathematics in THE BULLETIN. In any case, if we did embark on it, we should feel all the time that we were talking above the head of the man who has forgotten how to solve a simple equation or use his log. tables. In other words, it would be difficult to know how much to leave unsaid.

* * *

As we have said, the points mentioned above are a selection from our correspondence of the last few months, and to those readers who have written us with regard to other matters which are not included in this brief survey we would say that, while they were interesting in themselves, we do not think that they need ventilation here as they have been replied to individually.

Let this not discourage further correspondence, however, as letters from readers are the surest guide in the presentation of a series such as this.

* * *

Now for a few practical ideas of our own which may be new to some readers. We pass them on in the hope that they may not only be helpful but also induce others to bring similar tips to light.

Home-made Crystal Holder.

It is not at all necessary to buy a crystal holder if you have a few burnt-out valves which are always on the point of being thrown away. Select one with a straight-sided base, such as the *Mullard*, and get the bulb out. The best way to do this is to let the valve float in hot water for a few minutes, thus softening the plaster joint between base and glass. The bulb can then be worked out by gentle twisting, the connecting wires being broken away from the pins. Clean out the inside of the valve-base, and you are left with a receptacle large enough to hold a circular plate the size of a half-penny lying flat.

The crystal lies between two such plates, acting as top and bottom electrodes. One side of both plates should be surfaced flat, this being done quite easily by rubbing them down on emery cloth till a polished face results. It is, of course, between these prepared sides that the crystal is placed. A lead is taken from the bottom plate to the anode pin in the base, and from the top plate to the grid pin, this latter lead passing down the outside of the holder, which plugs into a valve-socket.

In order to allow the top plate simply to rest on the crystal, without either clamping the latter down or tending to hold the plate up, the lead for it should be made of fine wire, not heavier than No. 32, and spiralled. From where it comes out of the side of the holder till the connection is made to the grid pin, the wire should be fixed in position with a smear of celluloid cement. "Durofix," obtainable at ironmongers, is very useful for this and a variety of similar jobs.

A crystal holder of this type can be made dust-proof by slipping a celluloid cover over the outside; certain makes of shaving-stick container are useful for this, as they give a jamb fit and can easily be cut down to the right size. A point to notice is that if the valve-base used is of the type which has the tops of the pins just flush with the inside surface, a strip of insulating material will have to be slipped under the bottom plate to prevent shorting. A piece of ebonite, fibre or paxolin will do quite well.

Even all this does not exhaust the possibilities of the holder! In tri-tet circuits, the cathode coil can be wound round the outside, and if a multi-pin base is used the windings can be so arranged that plugging in the holder one way gives tri-tet operation with the crystal, and the other way E.C.O. working. Close-coupled circuits can be arranged by winding the second coil over the outside of the first, with a strip of celluloid between for insulation, all leads then being taken to the pins in the base. The result is a very neat and compact assembly which permits of quick changing from band to band.

Cheap Screening Boxes.

Where such items of the equipment as speech amplifiers, frequency meters, exciter units and so forth are constructed separately, a neat, simple, cheap and very effective way of doing it is to build them into the large biscuit tins which can always be obtained from grocers for a shilling. These tins, about 9 ins. all three ways, have tight-fitting lids and allow ample room for the type of apparatus mentioned. If the paper covering is cleaned off and the tins given a coat of grey paint—as we have seen in one station—the appearance of the gear is much enhanced and screening is practically perfect. A further advantage is that the components can be mounted on a wooden base-board just large enough to fit the tin, so that construction is facilitated, while any alterations or adjustments can easily be carried out by removing the wood base.

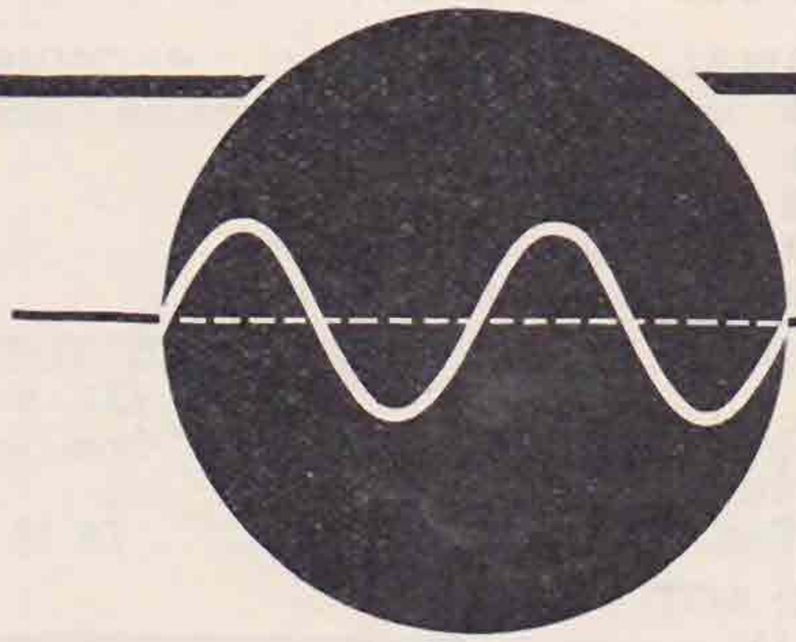
Centre-tap Resistors.

Resistances for finding the neutral point in the L.T. wiring of A.C.-operated gear are not only essential in speech-amplifier and modulator stages but should also be used across all valves fed with A.C.

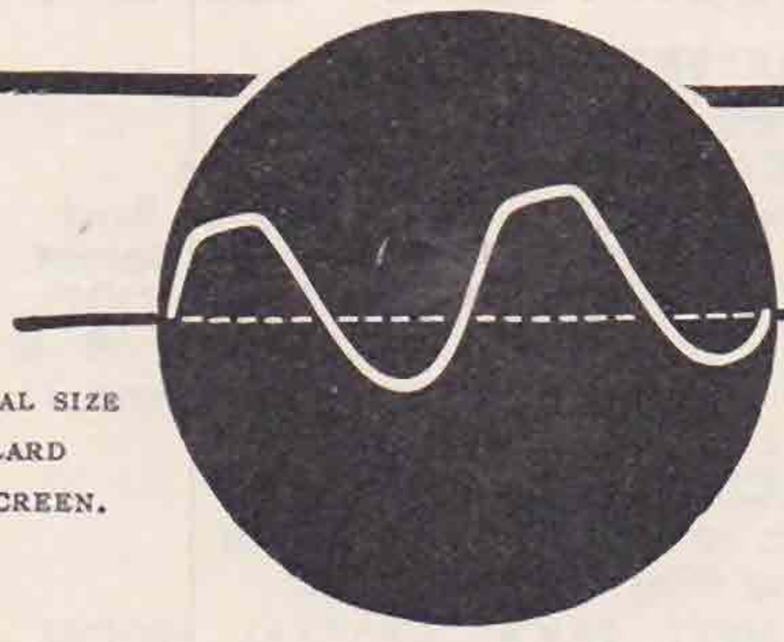
Such resistors can be home-made quite easily, using nickel-chrome wire which, incidentally, is useful for a variety of purposes. On 4-volt circuits, the "hum-dinger" should be of 30 ohms value, and on 6-volt, 50 ohms. No. 30 nickel-chrome wire will barely warm under these conditions and the winding can therefore be on a fibre strip or any similar insulating material, about ½ in. wide by 3 ins. long, with the turns slightly spaced.

The properties of nickel-chrome wire are not often found in wire tables, so that it may be helpful to those interested to state here that the resistance value is approximately 58 times that of copper, No. 30 being 12.7 ohms per yard, with a current-carrying capacity of about 200 mA. at 60 degs. F. The length of wire required for a 30-ohm resistor is therefore only 86 ins. The resulting strip resistor will be sufficiently pliable to enable it to be bent into a circle, thus saving space, while the simplest method of finding the neutral point is to "feel"

Seeing is believing !



HALF ACTUAL SIZE OF MULLARD E.40-G3 SCREEN.



Oscillogram showing undistorted wave form.

Oscillogram showing amplitude increased to point of distortion.

The Mullard E.40-G3 Cathode Ray Tube

makes visible the facts. Be sure of your H.F. output, percentage, modulation, etc. Check up for distortion and frequency drift. Know the facts about your transmissions and experiments. Accurate information is indispensable to the serious amateur no less than to the professional engineer.

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_____

for it with a flexible lead terminating in a clip. A clamping screw can then be fixed at this point, to which the permanent connection is made.

Nickel-chrome wire is obtainable from *Messrs. Lumen Electric Co.*, 13, Scarisbrick Avenue, Liverpool, 21, who have been previously mentioned in these pages as suppliers of useful items for the constructor.

Uses for Lead-in Tubes.

The tuning of a transmitter, particularly on 14 and 28 Mc., is made easier by the use of extension controls. These can be contrived very inexpensively by using the insulated sleeve from the cheap lead-in tubes now universally obtainable. They are usually about 7/24 in. inside diameter, so that $\frac{1}{4}$-in. spindles are an easy fit. Fixing is by drilling and tapping 6BA to take a grub screw.

The brass rods and terminals are also very useful in general constructional work, while the tubes have a number of uses besides those mentioned. They can, for instance, be cut down to make such things as distance pieces or small formers for H.F. chokes, though it should be noted in this connection that the dielectric value of "muckite" is not high!

Condenser Testing.

It may not be generally known that, provided the limitations of the method are understood, quite satisfactory testing of fixed condensers from 0.5μF. upwards can be carried out with a neon lamp and some source of D.C. supply—anything from 200 to 350 volts from batteries or power pack—sufficient to flash the lamp. The condenser to be tested is connected in series with the neon and the D.C. source. If the result is a continuous glow, there is a dead short in the condenser—very often the kind of short which does not show on an ordinary continuity test where the applied voltage is supplied by a single dry cell.

If the glow is intermittent, the "goodness" of the condenser is indicated by the frequency of the flashes. That is, a condenser which only allows the neon to glow about every 30 seconds or so may be considered a good one. Conversely, if the flashes occur more rapidly, the leakage is correspondingly higher. The duration of each flash is governed by the capacity of the condenser; in other words, suppose two condensers, one of 4 μF. and the other of 20 μF., are on test and the leakage through them is the same. Then the frequency of the flashing will be the same for both, but the duration of each flash will be longer for the large than for the small condenser. In the same way, for small capacity condensers, the duration is so slight that the glow cannot be seen, hence the fact that the utility of this method of testing falls off with condensers smaller than about 0.5 μF., though it is still a good test for continuity. Since the average neon only passes from 10 to 15 mA., no harm is done to the batteries or H.T. unit when a dead short is discovered.

In spite of the apparent difficulties of estimating both the frequency and duration of the flashing, it is interesting to note that after a little practice one can very quickly verify both the capacity and insulation resistance of a condenser, the latter of course only in terms of "good," "bad" or "indifferent," and not quantitively. To get an accurate idea of this, the test voltage should be as nearly as possible that at which the condenser is to be worked. The obvious thing to do, therefore, is to use as the D.C. source for testing the H.T. supply to which the condenser is to be connected, though this does not necessarily take account of peak voltages, which usually cause the breakdown of, for instance, smoothing condensers in the power pack.

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. It is emphasised that reports will be appreciated and are desired in order to ascertain useful range of transmission 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), 28, Douglas Road, Chingford, E.4. (Telephone: Silverthorn 2285.)

Schedule of Slow Morse Transmissions.

		B.S.T.	k.c.	Stations
Sept. 22	Wednesday	2315	1741	GI6XS
,, 23	Thursday	2200	7184	G6UA
,, 25	Saturday	2300	7145	GI5QX
,, 26	Sunday	0945	7155	GI5ÜR
,, 26	Sunday	1000	7260	G5JL
,, 26	Sunday	1015	1920	G6VC

		B.S.T. or G.M.T.	k.c.	Stations
Sept. 27	Monday	2315	1741	GI6XS
,, 28	Tuesday	2200	7184	G6UA
,, 29	Wednesday	2315	1741	GI6XS
,, 30	Thursday	2200	7184	G6UA
Oct. 2	Saturday	2300	7145	GI5QX
,, 3	Sunday	0945	7155	GI5ÜR
,, 3	Sunday	1000	7260	G5JL
,, 3	Sunday	1015	1920	G6VC
,, 4	Monday	2315	1741	GI6XS
,, 5	Tuesday	2200	7184	G6UA
,, 6	Wednesday	2315	1741	GI6XS
,, 7	Thursday	2200	7184	G6UA
,, 9	Saturday	2300	7145	GI5QX
,, 10	Sunday	0945	7155	GI5ÜR
,, 10	Sunday	1000	7260	G5JL
,, 10	Sunday	1015	1920	G6VC
,, 11	Monday	2315	1741	GI6XS
,, 12	Tuesday	2200	7184	G6UA
,, 13	Wednesday	2315	1741	GI6XS
,, 14	Thursday	2200	7184	G6UA
,, 16	Saturday	2300	7145	GI5QX
,, 17	Sunday	7945	7155	GI5ÜR
,, 17	Sunday	1000	7260	G5JL
,, 17	Sunday	1015	1920	G6VC
,, 18	Monday	2315	1741	GI6XS
,, 19	Tuesday	2200	7184	G6UA
,, 20	Wednesday	2315	1741	GI6XS

A Class "B" Modulator

By James R. Adams (GM5KF) and David J. McDonald (GM6KH).

IN these days of grid and suppressor grid modulation it must be a source of annoyance to those who use these systems that a reduction in power is necessary to ensure effective modulation. There are two alternatives open in order to maintain the output ; the first being to increase the operating voltage and the second to use plate modulation which invariably involves complicated and carefully built apparatus at some considerable cost. The writers therefore submit an amplifier using British valves which will give full plate modulation to a 10 to 25-watt carrier at a cost which will not be much in excess of that needed for the more simple types of modulation.

The layout consists of a high gain triode transformer coupled to a power triode driving an additional pair of triodes working in Class B. The first and second stages are conventional with the exception of choke output on the second valve, which has been incorporated to take the D.C. current from the driver transformer. Since battery bias is essential for the last stage, automatic bias on the second valve is dispensed with and use made of the battery, the valve being biassed for normal working.

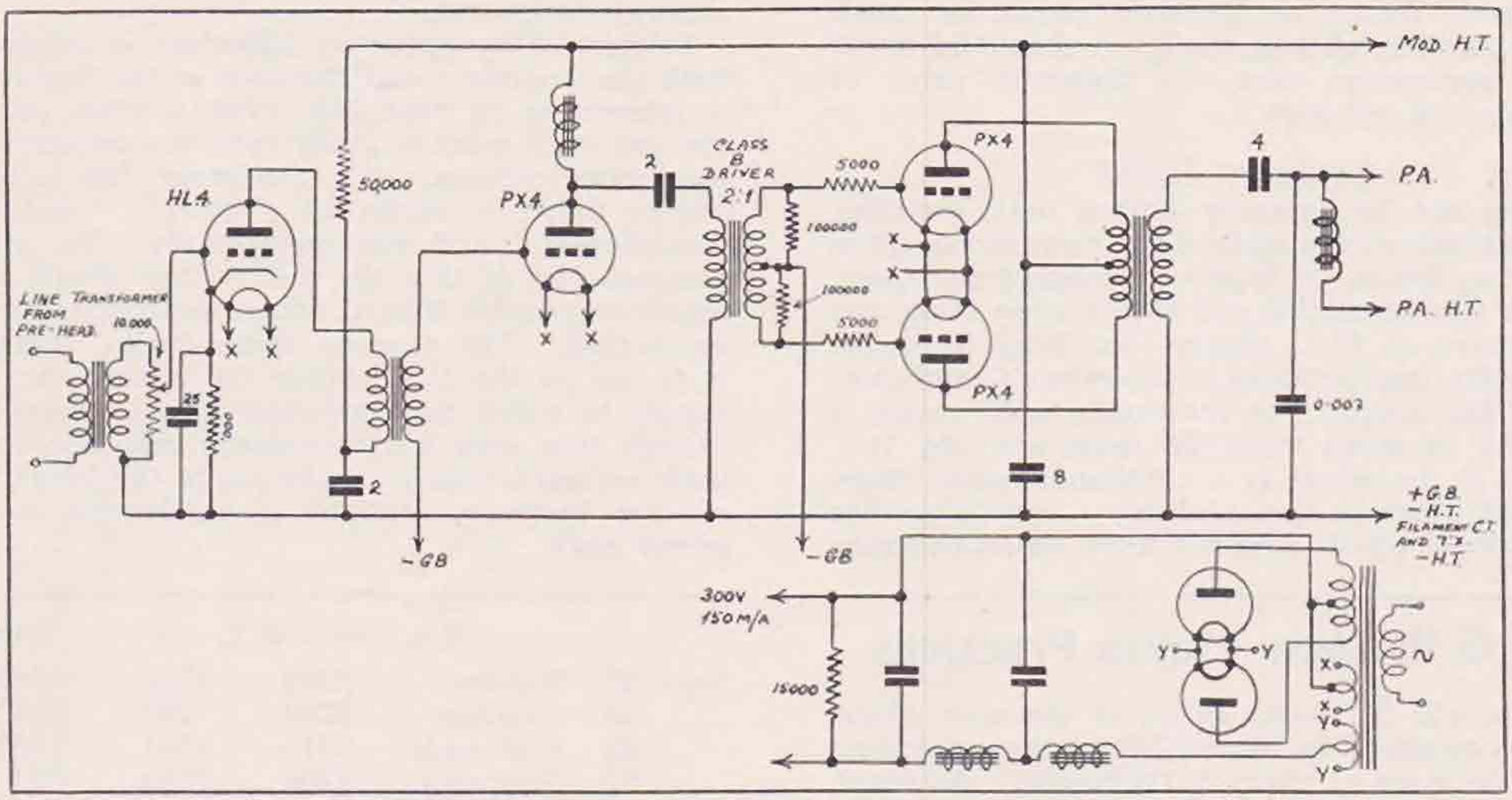
The last stage is biassed to practically cut-off, the point being determined from the characteristic curve of the valve. A point should be chosen where the curve begins to flatten out and as much bias should be used as is consistent with quality. For the PX4 suitable values are : anode volts 250, bias volts 45 : anode volts 300, bias volts 60.

The output transformer should be of good quality, as it has to pass a heavy current. One which will carry 100 mA. per side is recommended. Matching the impedance entails calculations too involved to enter into in this brief article, and a compromise is suggested in the use of one with a 1/1 ratio.

Plate modulation demands plenty of drive, also the emitted frequency must be absolutely stable. It is advisable, therefore, before attempting any system of modulation, to examine the transmitter for parasitics.

A separate power supply should be used, and this should be of good regulation, as the amplifier presents a fluctuating load. Further, as the current drawn will rise to the region of 100 mA., precaution in the selection of components is necessary.

A button microphone will load the amplifier, but if a microphone such as the transverse current type is used some additional amplification is needed. This can be of the battery pre-head type, coupled to the main amplifier by means of a step-down transformer, the output of which is stepped up again at the amplifier. (Audio transformers suitably connected perform the task quite well.) An alternative would be to include a further stage in the amplifier, but the elimination of hum and the "taming" of a four-stage mains-operated amplifier is a considerable problem.



A Class "B" Modulator Circuit giving Full Plate Modulation to a 10-25 Watts Carrier.

The amplifier under discussion has been in use for some time and has given every satisfaction ; the valves show no signs of distress, and the quality is of high order. Class B tends to give the voice a hard quality, but this is no disadvantage when overcoming QRM !

JZJ and JZK

We are informed by the *Kokusai-Denwa Kaisha, Ltd.*, of Japan, that JZJ is transmitting daily between 20.00 and 21.00 G.M.T. on 11,800 kc. with a power of 20 kw., whilst JZK works at the same time with a high-gain beam aerial directed on the British Isles. The frequency of the latter station is 15,160 kc. and power is 50 kw.

BOOK REVIEWS

THE SUPERHETERODYNE RECEIVER. Third Edition. By Alfred T. Witts, A.M.I.E.E. 182 pages and 98 diagrams. Published by Sir Isaac Pitman & Sons, Ltd., London. Price 3s. 6d. net.

One does not require to stress either the wide use of this type of receiver or the comparative complexity of its operation. Nor is interest in it confined to broadcast work, and a book such as this, now in its third edition, must have a wide appeal.

The present edition is much larger and more up-to-date than that which was reviewed in these columns in April, 1935. Modifications and many additions have been made, and the only error pointed out in the earlier review has been corrected.

To the chapter outlining the general principles has been added a description of frequency changing without rectification, as used in modern receivers. The treatment of "problems" is considerably extended, now including such objects as oscillator drift, variable selectivity, "all-wave" reception, car radio, and automatic tuning correction. Triode-pentodes, triode-hexodes, and delayed amplified A.V.C. are given fuller consideration, the description of Q.A.V.C. is modified, and a short description of the cathode ray indicator is included.

As one would expect, the chapter on modern receivers is very considerably revised as it deals with commercial receivers almost entirely.

A new chapter on maintenance covers a large number of the more easily detected faults and maladjustments. Another new chapter describes the circumstances governing the design of television receivers, and the special circuit arrangements thus arising. A German commercial television receiver is described and, though interesting, could perhaps be replaced by a British one with advantage in future editions.

The only other suggestion one feels like making for the improvement of what is already a very excellent book is that the "single-signal" type should receive a brief practical treatment, even if it is of limited interest.

The book is quite non-mathematical, and is concerned with the development, theory and modern practice of the subject.

Having criticised the rather high price of some books recently reviewed, it is pleasant to be able to recommend this book as very good value indeed, and a pleasure to read.

T. P. A.

HUMOUR CORNER

Dr. Lunt (ZT1Q) sends us the following copy of the wording on W6KRM's QSL card :—

"O Amateur, whose CQ's I have heard, beg of U to QSL ; Oh ! pse send me a card, For if U do not answer, it will be for Ur worse : I'll call the wrath of Jupiter upon U in my curse. As Nelson said at Waterloo in 1962, 'Up Guards and Atom' —so shall I of U—'Up Sturbs and Electrons'— and by the seven spheres May the heavens belch forth QRN, fit for Thors own ears ; May the sky be rent with lightnings, and the earth be rent with quakes. And Ur Aerial Mast be stricken, so that every Guy Wire breaks ; May Ur Radiation wither, and Ur Amps refuse to Amp ; May Ur bottles all Disintegrate, and Ur Lo-Loss Coils git cramp. May Ur power supply sizzle, and Ur Meters all go fut ; Ur Condensers stop condensing, and Ur Tuning ne'er stay put. And so, because you didn't write, things all turn out so bad, When this Male-diction comes to pass U'll wish U had. However, if U QSL, or send a word or two, I wish U VY 73's and I raise my hat to U."

Fortunately ZT1Q had already sent his card ! We doubt whether the above is original, but some may not have seen it before.

Trade Notes

All Naval Communication Reserve Unit Commanders in the 9th U.S. Naval District are now supplied with code training courses provided by Walter Candler, of *Candler Systems Co.*, Asheville, North Carolina. These courses will be used as an aid to instruction of personnel in the communication division of the Naval Reserve.

It is expected that the courses will aid in faster, more thorough assimilation of telegraphic fundamentals and technique as practised by expert commercial operators ; they are based on the Candler theory that code skill is a result of proper mental training. These courses are identical to those offered to radio amateurs by the *Candler Systems Co.*

Correspondence

MORE ABOUT 7 Mc.

To the Editor, T. & R. BULLETIN.

DEAR SIR,—I must congratulate your correspondent, Mr. K. M. Evans, on his outspoken comments anent the 7 Mc. band. Like the world, the band is all right, but unfortunately the same cannot be said for its inhabitants ! Without entering into a long discussion it is fairly obvious that most of the present trouble is due to phone—both British and European. We cannot control Continental amateurs, but we can at least put our own house in order, and I suggest that we do this in two ways : Firstly, by making all our newly-licensed stations serve a probationary period of 12 months on C.W. before granting them permission to use phone ; secondly, by restricting all phone operation to certain periods of the day.

I quite agree that the presence of more good operators on the band might go a long way towards improving the position. At the present time, broadly speaking, the band is regarded (in this country at least) as the " playground " of the G8's, and many old-timers consider it is beneath their dignity to operate there at all. I have tried to set an example by good sending and intelligent break-in operating, also by pointing out sins of omission and commission to offending stations. With a few notable exceptions the advice was badly received—probably because I was operating under a G8 call-sign at the time.

In conclusion, I should like to make a comment and a suggestion. The first, that good operating does not mean sending fast on a bug key, and the second, that members apply themselves to a closer study of the " Handbook of Instruction for Wireless Operators Working Installations Licensed by the P.M.G."

Yours truly,
ROBERT WEBSTER
(Ex G8CR).

(*Editorial Comment.*—Mr. Webster's suggestion concerning a probationary period has frequently been discussed by the Council, but there are many difficulties in the way.)

Wireless or Radio?

The letter from Professor Fortescue in our last issue raises an old controversial question which has been dormant now for some years. While our correspondent appears to favour the word " Wireless " the writer has always taken the opposite course and, in fact, was instrumental for the decision taken when the name of the society was changed from the Wireless Society of Great Britain many years ago.

The word " Wireless " was in the writer's opinion a most unhappy choice. It belongs to that class of negative adjectives which we are so fond of using. For purely temporary measures such as the " meatless day " during the War, they are quite suitable, but when applied to circumstances which may become permanent, they are liable to lead to awkward consequences.

When the first motor cars made their appearance, someone proposed to call them " Horseless carriages." Fortunately the name did not survive, or we should find ourselves saying we were hurrying to catch the No. 13 Horseless Bus !

The word " Wireless " can never be correctly applied, for the first thing apparent in a so-called " wireless " station is the amount of wire involved in connections and aerial. Of course, what was intended was the fact that there was no wire connection between the transmitter and receiver.

The word " Radio " is simple, and it is hard to conceive why our correspondent should consider that the word " Wireless " is simpler.

H. B. S.

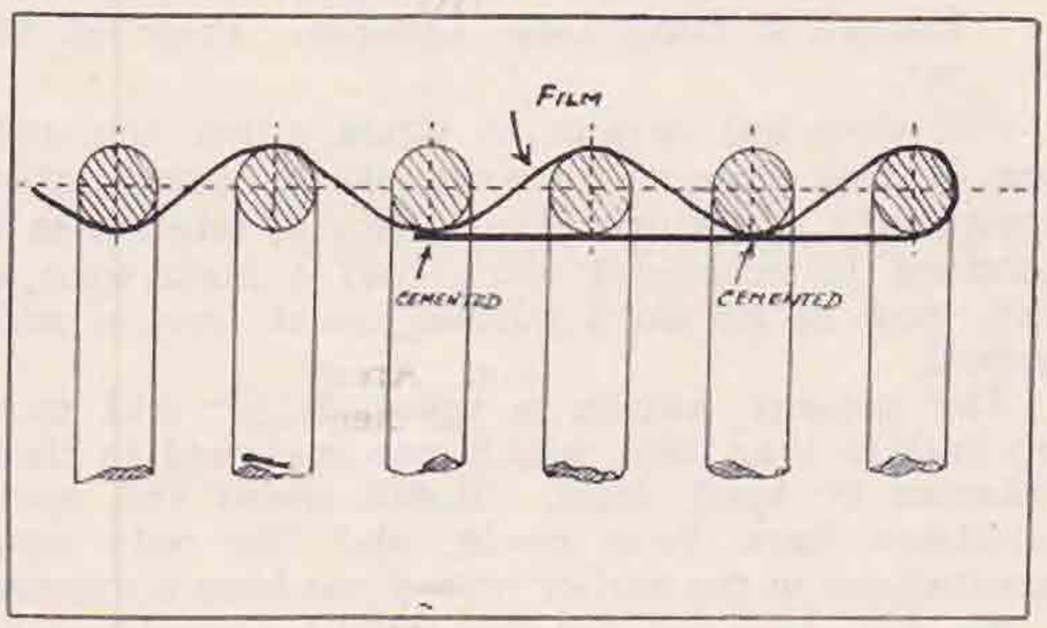
R.F.C. Wireless Section

The Secretary will be pleased to hear from any member who served in the Royal Flying Corps Wireless Operators Section during the Great War. The Annual Reunion takes place on October 30, at the First Avenue Hotel, High Holborn.

Bright Ideas

The following idea may be of interest to members who take an interest in home cinematography.

The writer, in the course of experiments with very low-C tank circuits, desired to construct as cheaply as possible a tank coil with a considerable number of turns. The following was the method eventually adopted.

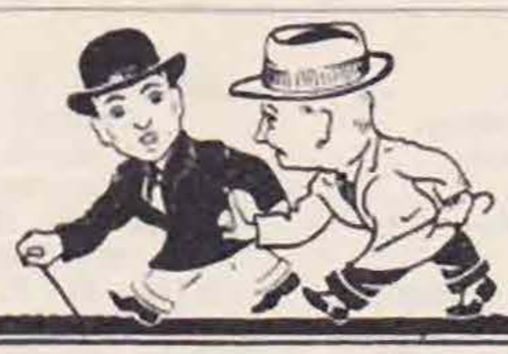


A suitable length of No. 12 s.w.g. copper wire, after stretching to remove kinks, was wound on to a former of the requisite diameter (an old cocoa tin was used), with the turns touching. The coil was then slid off and drawn out till the turns were spaced about the width of a turn apart, when the ends were bolted to a strip of ebonite of suitable length. Four lengths of home cinema film two or three inches longer than the coil were then cut off, and these were threaded in and out through the turns of the coil at intervals of 90 degrees round the circumference. The threading was found easier when the strip of film was bent in half and the threading done from the centre of the coil towards each end. When finished the ends of the film were bent over and cemented, as shown in the diagram. Amol-acetate will make a satisfactory cement in the case of *Pathescope* or ordinary celluloid film, but a different compound may have to be used with *Kodak* film. All traces of the emulsion must be removed from the points of contact before cementing is attempted.

The resulting coil is much more rigid than might be expected—it is, in fact, more rigid than many copper tube coils with considerably fewer turns. Purists and high-power men may object on grounds of efficiency, but with a power of 10 watts it has, to date, given no cause for complaint. 2BCQ.

Contests

The Tests and Awards Committee will shortly begin work on the rules for 1937-8 Contests. Among the minor problems which will engage their attention is the question of a 3.5 Mc. Transmitting Contest. Members interested in this band would assist the Committee by communicating direct with Mr. A. O. Milne, G2MI, " Twemigh," Kechill Gardens, Hayes, Kent, indicating their preference for either a local contest or a series of tests of an International character.

BETWEEN  OURSELVES

London Meeting

The opening meeting of the new Season will take place on Friday, September 24, when a discussion on recent 56 Mc. work will be opened by Messrs. E. H. Swain, G2HG and L. Blundell, G5LB. It is hoped that all members living within easy reach of London and interested in this subject, will make a special point of attending.

Tea will be served free of charge from 6 p.m. and the discussion will commence at 6.45 p.m. We would remind members that the Institution of Electrical Engineers is open from 5 p.m.

Recently elected London Area members are cordially invited to attend this meeting.

Our Twelfth Convention

A full account of our record 12th Convention together with a description of the work done on our stand at Olympia will appear in our next issue.

For the present we must content ourselves with a word of thanks to everyone who helped to make a success of these two projects.

QSL Section

Due to the illness of a member of Headquarters Staff just before the opening of the Exhibition an unavoidable delay has occurred in dealing with the despatch of QSL cards. We hope to clear the congestion within the next few weeks, meanwhile may we again ask all active members to keep a supply of stamped and addressed envelopes at the Bureau ?

High Power Permits

In submitting applications for an increase in power in excess of 25 watts members are required to note the following information :—

1. The application must be based on sound technical grounds. In this connection the notice published in the November, 1936, T. & R. Bulletin (page 197) should be studied.

2. Details should be given of past and projected experiments, with an explanation as to the reason why the present power is insufficient for the contemplated experiments.

3. Applicants must give an assurance that crystal control or some other recognised form of frequency stabilising will be used for high-power tests.

4. Applications must be addressed to the Secretary, R.S.G.B., and forwarded via a member's D.R., who is required to comment upon the application.

5. Members, after being recommended by the Council, must hold themselves in readiness for a G.P.O. inspection of their station.

The inspecting officer will, in particular, require to examine the station log and crystal certificate, and will seek evidence of past experiments and enquire for particulars of projected work. A log containing only a record of transmissions made, is not evidence of their experimental value.

6. The requisitioned higher power may not be used until a definite authorisation in writing has been received from the G.P.O.

7. The charges for high-power permits are given on page 414 of the March, 1937, T. & R. Bulletin.

Members are reminded that their applications, or a copy thereof, are submitted by the council to the G.P.O., therefore they should be written in official style and submitted as a seperate communication to any other correspondence forwarded to their D.R.

Careful attention to these points will facilitate due consideration of each application.

CALIBRATION SERVICE

Crystals should be sent direct to the Calibration Manager enclosed in a small tin, and securely packed to avoid loss in transit. The Society cannot be responsible for any loss that might occur in sending crystals through the post.

Return postage must be enclosed as postage stamps, and not attached to the Postal Order.

Calibration fees : 1.7, 3.5 and 7 Mc. crystals, 1s. 6d. ; 100 kc. crystals, 2s. 6d.

All communications should be addressed to :—

Mr. A. D. Gay (G6NF),
"Oak Dene,"
156, Devonshire Way,
Shirley,
Croydon,
Surrey.

See *A Guide to Amateur Radio* for particulars of frequency meters, etc.

New Members

Home Corporates.

B. G. Logan (G5GA), 12, Orchard Close, St. Stephens, Canterbury Kent.
E. T. James (GW5TJ), 11a, Victoria Street, Merthyr, Glam.
H. H. Myers (G6HF), 47, Belgrave Road, Bingley, Yorks.
L. J. Plunket Checkemian (G6ML), Westminster House, Uckfield, Sussex.
W. L. Hector (G8MX), Cromar, Hitchin Road, Letchworth, Herts.
G. E. Naish (G8OV), 46, William Street, Northam, Southampton, Hants.
A. J. Grant (GW8SO), 1, Tunnel Cottages, Blaenycwm, Treherbert, Rhondda, S. Wales.
B. W. Wynn (G8TB), 67, Old Lodge Lane, Purley, Surrey.
W. H. Dyson (G8TD), Mayfield, Reedley, Burnley, Lancs.
A. E. Ashfold (2BHA), 10, Alexandra Road, Canton, Cardiff, S. Wales.
V. S. Talbot Cribb (2BHT), 55, Knighton Drive, Leicester.
R. Howard (2CFS), 3, Greenhill Road, Harrow, Middlesex.
F. C. H. Hinton (2CMJ), Penrice, Broadlands Way, Taunton, Som.
C. J. Sanders (2CQG), Rodings, Roding Lane, Chigwell, Essex.
J. N. Prideaux (2CRC), The Three Horse Shoes, Lancing, Sussex.
H. Hinchliffe (2CUJ), "Bryn-A-Welon," Causeway Head Road, Dore, Sheffield.
W. T. Rees (C2UU), 82, Oak Street, Gilfach Goch, Tonyrefail, S. Wales.
E. A. Lever (2CVD), 75, Chiltern Road, Sutton, Surrey.
R. D. McMillan (2CWY), 17, Highfield Avenue, Golders Green, N.W.11.
J. Nash (2CXF), 1, William Street, Pendleton, Salford, 6, Lancs.

L. G. Shaw (BRS2991), " Glenbawn." Beech, Alton, Hants.
P. E. Chipperfield (BRS2992), Browneaves, Cranleigh, Surrey.
G. R. C. Parry (BRS2993), 476, Mill Street, Liverpool, Lancs.
A. Gilmour (BRS2994), 5, Chilwell Road, Beeston, Notts.
W. W. D. Moore (BRS2995), 36, Beechwood Crescent, Newport, Mon.
N. D. Whitehead (BRS2996), 35, Higher Swan Lane, Bolton, Lancs.
R. S. U'ren (BRS2997), 24, Clifton Place, North Hill, Plymouth, Devon.
R. L. Lamont (BRS2998), 34, Kelly Street, Greenock, Lanark.
D. J. M. Buddery (BRS2999), 57, Southtown Road, Gt. Yarmouth, Suffolk.
A. J. A. Evans (BRS3000), Dorset Lodge, Station Road, Wylde Green, near Birmingham.
R. Anderson (BRS3001), 13, Granby Place, Scarborough, Yorks.
G. J. Knapman (BRS3002), 26, Nesta Road, Woodford Green, Essex.
L. C. B. Blanchard (BRS3003), 122, St. Andrew's Road, Coulsdon, Surrey.
J. E. Long (BRS3004), 27, Uxbridge Road, Kingston-on-Thames, Surrey.
E. C. Grafton (BRS3005), 1, Burniston Road, Bricknell Avenue, Hull, E. Yorks.
G. A. Blackburn (BRS3006), 15, National Avenue, Bricknell Avenue, Hull, E. Yorks.
R. K. Braddon (BRS3007), Sydney Parade Avenue, Sandymount, Dublin, I.F.S.
G. Openshaw (BRS3008), 287, Wigan Road, Deane, Bolton, Lancs.
C. R. Stevens (BRS3009), 134, Berkshire Gardens, Palmers Green, N.13.
W. C. Greenock (BRS3010), 17, Kerrsview Terrace, Dundee, Angus.
B. Davidson (BRS3011), 242, Hilton Avenue, Aberdeen, Scotland.

Dominion and Foreign.

H. McTrusty (ST2BN), " B " Company, 2nd Batt. The Durham Light Infantry, Khartoum, Sudan.
D. S. Dhalla (VU2GJ), 640, Parsi Colony, Dadar, Bombay, India.
G. H. Doerfler (YM4AI), Zoppot, Roonstrasse 2, Danzig.
A. Chenik (ZS6Q), P.O. Box 745, Johannesburg, S. Africa.
J. S. Willcox (BERS409), 22, Lancaster Street, Kensington, Johannesburg, S. Africa.
M. H. F. Holden (BERS410), c/o 20, Mawdsley Street, Bolton, Lancs.

TECHNICAL ENQUIRY BUREAU

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

The Rules governing the service are :—

1. Questions must be written legibly and concisely on one side of the paper.
2. A sixpenny postal order must accompany each question.

   The postal order must be made payable to the R.S.G.B., and the letter addressed to Technical Enquiry Bureau, R.S.G.B., 53, Victoria Street, London, S.W.1.
3. The service is only available to fully paid-up members of the Society.

QRA Section

NEW QRA'S

G2AS.—H. V. Booth, 107, Oakland Road, Sheffield, 6, Yorks.
GM2KP.—G. A. Raeburn, " Ardbeg," Barbank Street, Portsoy, Banffshire, Scotland.
G2LH.—Transreceivers, Ltd., L. W. Hermes, Grange Wood Cottage, Ashtead, Surrey.
G2OJ.—Capt. E. A. Houghton, Barters, Minstead, near Lyndhurst, Hants.
G2RW.—A. G. Rowe, 52, Lynton Avenue, Romford, Essex.
G5II.—Same as G2LH.
G5IO.—Same as G2LH.
G5LG.—A. W. Lister, R.A. Mess, Whittington Barracks, Lichfield, Staffs.
G5RO.—R. M. Sutherland, 72, Mildenhall Drive, St. Leonards, Sussex.
G6AU.—C. C. Algar, 26, Quarry Park Road, Cheam, Surrey.
GM6CM.—J. McCammont, 22, Brandon Place, Bothwellaugh, Glasgow, Scotland.
G6KP.—A. J. Perkins, 67, Thurleston Avenue, Morden, Surrey.
G6NJ.—A. E. Dyson, " Alvary," 11, Melrose Avenue, Portslade, Sussex.
G6UP.—A. H. S. Scott, Thornden Estate Office, Ingrave, near Brentwood, Essex.
G6WX.—W. H. Malcolm, 52, Second Avenue, Copsewood, Coventry, Warwickshire.
G8JH.—G. F. Budden, 61, Carlton Avenue West, Wembley, Middlesex.
G8JN.—D. C. Hutchison, Gresham Lodge, Station Road, New Waltham, Lincs.
G8LN.—(ex. G2AI)—A. Kempton, 24, Edison Grove, Glenmore Park Estate, Plumstead, London, S.E.18.
G8MU.—J. C. Egerton, " Fairway," Bucklesham Road, Ipswich, Suffolk.
G8NO.—R. Postill, Tonbridge School, Tonbridge, Kent.
G8OQ.—Wm. Price, 95, Ewhurst Road, Brighton 7, Sussex.
G8PI.—P. Halligey, Room 1, Block 7, R.A.F., Duxford, Cambs. (Reported incorrectly as G2PI in July list.)
G8PJ.—W. R. Worden, 2, Dulverton Avenue, Coventry, Warwickshire.
G8PL.—L. A. Kippin, 24, Percival Road, Romford, Essex.
G8QC.—(G6ZA), L. A. Lafone, " El Beit," Chalfont St. Peter, Bucks.
G8QP.—L. L. R. Dean, " Rye Harbour," Downs Road, Slough, Bucks.
G8QT.—G. B. Boothroyd, 21, Longley Road, Huddersfield, Yorks.
G8RC.—J. R. E. Driscoll, " Montazah," St. Charles' Road, Brentwood, Essex.
G8RD.—F. Capes, 28, Knight Street, Grimsby, Lincs.
G8RZ.—H. R. Fox, Jubilee House, High Harrington, Cumbs.
G8SH.—P. Newton Nield, 5, Park Street, Loughborough, Leicestershire.
G8SM.—A. Mears, 34, Vine Road, East Molesey, Surrey.
GW8SO.—A. J. Grant, 1, Tunnel Cottages, Blaenycwm, Rhondda, S. Wales.
GM8SQ.—G. Proctor, 7, York Place, Dunfermline, Fife, Scotland
G8ST.—P. D. G. Frazer, 7, De Freville Avenue, Cambridge.
GM8SV.—A. G. Fowler, Roadside Cottage, Birse by Aboyne, Aberdeenshire, Scotland.
G8SX.—H. S. Wood, 22, Lingwell Avenue, Middleton, Leeds, Yorks.
G8SZ.—S. Whitehouse, 105, Lake Street, Lower Gornal, near Dudley, Staffs.
G8TC.—M. H. Parsons, The Retreat, Hudd's Hill Road, St. George, Bristol 5.
G8TI.—J. W. Archer, 138, Hatfield Avenue, Fleetwood, Lancs.
G8TJ.—A. Garnock-Jones, " Brentwood," Sandfield Park, Liverpool 12.
G8TL.—C. H. L. Edwards, 10, Chepstow Crescent, Newbury Park, Ilford, Essex.
G8TP.—P. H. Askew, 96, Main Street, Sedbergh, West Riding, Yorks.
G8TR.—S. Allen, 57, Ripley Street, Warrington, Lancs.
G8TU.—H. E. Short, 23, Rosebery Road, Exmouth, Devon.
G8UA.—H. Tee, 104, Rectory Road, Burnley, Lancs.
G8UF.—G. Cunliffe, 173, Harrowby Street, Farnworth, near Bolton, Lancs.
G8WO.—Wm. C. Pond, " The Homestead," 458, Green Lane, New Eltham, London, S.E.19.
2AMX.—W. H. Morehouse, 2, Beech Avenue, Crosby, Liverpool 23.
2ARA.—A. R. Drake, 27, Beresford Road, Harrow, Middlesex.
2AUP.—H. J. Hinks, 58-60, Christchurch Road, Ringwood, Hants.
2AVQ.—E. J. G. Tucker, Greenloaning, Craigavad, N. Ireland.
2BBN.—M. A. Newman, 3, Cambridge Avenue, New Malden, Surrey.
2BIP.—R. M. Bangay, Officers' Mess, R.A.F., Honington, Bury St. Edmunds, Suffolk.
2BOZ.—J. E. Bazley, 2, Bagnell Road, Kings Heath, Birmingham.
2BRF.—J. Francombe, 22, Deane Croft Road, Ruislip, Middlesex.
2BTZ.—A. W. Hartley, 35, Essex Park, Finchley, N.3, London.
2CMG.—G. A. Tibbitts, 70, Wormholt Road, London, W.12.
2CMW.—J. F. West, 231, Dock Road, Tilbury, Essex.
2CSD.—R. Brett, 48, Fordwych Road, Brondesbury, N.W.2, London.
2CTA.—G. A. Wood, 23, Cyprus Avenue, Finchley, N.3, London.
2CUB.—F. A. Beane, c/o British Short Wave League, Ridgewell, Halstead, Essex.
2CVI.—H. Whitaker, 10, Ighten Road, Park Lane, Burnley, Lancs.
2CWA.—H. G. Mepham, 33, Balaclava Road, Derby.
2CWK.—R. V. Greenwood, c/o National Provincial Bank, Ltd., 208-9, Piccadilly, W.1.
2CXM.—A. E. Campbell, 14, Parkside, Alkrington, Middleton, Sussex.
2CXO.—A. E. Ward, 81, Wicklow Drive, Leicester.
2CXP.—E. T. Webster, B.Sc., Ph.D., 5, Diglands Avenue, New Mills, Stockport, Cheshire.
2CXR.—H. G. Mappin, Mundays, Writtle, Essex.
2CYJ.—John Eddy, 55, Greenback Avenue, Sipson, Plymouth, Devon.
2CYP.—C. A. Heathcote, Marlow Cottage, Lostock Hall, Preston, Lancs.
2CYY.—A. J. Walker, " Briarfield." Perrylands, Horley, Surrey.
Cancelled : G6PJ, 2ABF, 2AFN, 2AIQ, 2AKY, 2APM, 2AUQ, 2AWI, 2AZF, 2BBX, 2BFC, 2BPH, 2BRJ, 2BXF.

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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.)

DISTRICT 5 (Western).
(Hereford, Oxford, 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).
(Berkshire, Hampshire, Surrey.)
Mr. E. A. Dedman (G2NH), 75, Woodlands Avenue, Coombe, New Malden, Surrey.

DISTRICT 8 (Home Counties).
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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).
Capt. G. C. Price (GW2OP), The Mount, Pembroke Dock.

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

DISTRICT 12 (London North and Hertford).
(North London Postal Districts and Hertford, together with the area known as North Middlesex.)
Mr. S. Buckingham (G5QF), 41, Brunswick Park Road, New Southgate, N.11.

DISTRICT 13 (London South).
Mr. J. B. Kershaw (G2WV), 13, Montpelier Row, Blackheath S.E.3.

DISTRICT 14 (Eastern)
(East London and Essex.)
Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4.

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).

SOUTHPORT.—The recently formed Southport Amateur Transmitter's Association is making good progress and the following reports have been received from members who are active :—

G2IN is on 1.7 Mc. and building low power transmitter, 2LM who is active on all bands arranged to lecture on "Electrons" at the September meeting; 5ZI, using an input of half a watt (5 milliamps at 100 volts) has obtained reports of S5 from Preston, Blackpool and Burscough and covers Southport at R9 plus. He hopes to reduce power soon! 6SQ is making many contacts on 1.7 Mc. with good strength, 8JY is confined to 1.7 Mc. at present and using an input of 25 watt. 8QG is testing three types of modulation. G5OP is back on the air with a new all-wave transmitter working Duplex on 1.7 Mc. 2ANA has completed his transmitter and is now awaiting full licence, 2CWN, who is building a crystal oscillator, is working hard at C.W. for his licence.

Blackpool.—The Blackpool and Fylde Short Wave Radio Society is organising a D-F Field Day for the Autumn on 7, 14 and 56 Mc. with the object of obtaining a comparison between these bands. G5SO is on 3.5, 7 and 14 Mc. with his new transmitter and an RME69. He has changed his QRA to within about 200 yards of 6VQ who as a result has had to buy a Tobe super in order to receive anything other than "G5SO calling test"! 6VQ is working DX on 14 Mc. and looking for Asia for WAC and WBE. 5MS has been on 14 Mc. at intervals, 6MI is QRT for the summer season, 8AK is doing a little QRP, DX on 14 Mc., but finds that 10 watts on a battery valve as an F.D. is apt to spoil the valve, 8GG has erected a W3EDP aerial and finds it infinitely superior to anything previously tried—the transmitter is on 14 Mc. mostly with occasional spells of 1.7 Mc., 8NU is putting his transmitter on 14 Mc. for some DX, BRS 2928 is now 2CWW, the B.F.S.W.R.S. is 2CYA—in the name of BRS 2269. 2CUI is testing a COPA and listening on all bands.

The District now has six fully licensed stations regularly active and twelve AA stations, but there are one or two people who do not join in activities

8GG will be pleased to see them at any time or to receive reports from them.

Liverpool.—No reports have been received this month, but members are reminded that the Meetings commence again in September and they will receive due notice of the date and place of meeting.

Manchester.—No reports have been received this month and this is no doubt due to the suspension of Meetings.

FORTHCOMING EVENTS.

Sept. 15-25.—Scottish Radio Exhibition, R.S.G.B. Stand No. 11, 2.30 to 10 p.m. at St. Andrew's Halls, Glasgow.
,, 22.—District 14 (East Essex Section), 8 p.m. at G2LC, 24, Percy Road, Leigh-on-Sea.
,, 22.—District 15, 7.30 p.m. at new Club Room behind 143, Uxbridge Road, West Ealing.
,, 23.—Bristol Propaganda Meeting, Kings Corridor at 8 p.m.
,, 23.—District 12, 7.30 p.m. at the Orpheum Cinema, Temple Fortune, Finchley Road, N.W.11.
,, 24.—London meeting at I.E.E. Informal discussion on recent 56 Mc. experiments, at 6.45 p.m. Tea at 6 p.m.
,, 28.—District 14 (East London Section), 7.30 p.m. at G6UT, 28, Douglas Road, Chingford, E.4.
,, 29.—Scotland "A" and "E" Districts. 7.30 p.m., Room "A," The Institution of Engineers and Shipbuilders, 39, Elmbank Crescent, Glasgow.
,, 29.—Scotland "H" District. 7.30 p.m. at District Clubroom, Bank Street, Kirkcaldy.
,, 30.—District 13 (Anerley, Tooting, Balham, Kennington and New Cross Areas), 8 p.m. at Brotherhood Hall, West Norwood.
Oct. 3.—Scotland "F" District, 7.30 p.m. at the County Hotel, Stirling.
,, 3.—District 7, 2.30 p.m., at The Tumble Down Dick Hotel, Farnborough, Hants.
,, 6.—S.L.D.R.T.S., 8 p.m. at Brotherhood Hall, West Norwood.
,, 7.—District 5 (Bristol Section), 7.30 p.m. at King's Corridor. Lecture by H. A. Malpass, Esq., on "Fifth Dimension and Radio Wave Behaviour."
,, 13.—Scotland "H" District, details as above.

DISTRICT 2 (North Eastern)

Barnsley.—There is very little to report this month except that G6PY is rebuilding, and 2AHT awaits his call. Activity on 56 Mc. is improving.

Leeds.—It is suggested that a "hamfest" be held in Leeds, and members from Bradford and other places to attend. It is proposed to hold this on a Sunday afternoon in November. Please send your suggestions or criticisms to 2AHL, 59, Cameron Street, Leeds 9.

Reports are as follows, G6XT on 14 Mc. but having Zepp trouble, 6MY grinding crystals, 5MY on 14 Mc. and making bug keys, 2XY hopes to be on higher power soon, 8OG trying to work other DX than W!, 6GA testing push-pull RFP60's, 2AHL rebuilt transmitter using 240 volts batteries; results are very satisfactory with 362 Type P2 as a PA.

Sheffield.—Activity is increasing but no reports are to hand. Meetings will be held at the Angel Hotel commencing September 30 at 7.30 p.m. All members are asked to be present at the business part of the meetings.

Huddersfield.—The last meeting was held at the TR's new QRA and was attended by the usual enthusiasts. It is proposed to exchange visits with the Barnsley group during the winter. G5VD had an interesting visit from W8ITE, 6RO and 8QT are active on CW. Where is the Letter Budget ?

Bradford.—It is suggested that during the winter months meetings be held at the stations of some of the local members. If interested please advise G6KU. Two offers of accommodation are already forthcoming. The Bradford Radio Society will soon be starting the winter session and all members are invited.

G6XL and G6KU have completely rebuilt their stations in preparation for the winter. 6BX is active, on most bands, and 2QM has returned from a weeks holiday with the Fleet. A visit was paid by G5VU of Nottingham.

Many stations in the area are active, but no reports are made; if these notes are to be representative, some indication of the activities should be made to the TR at regular intervals.

DISTRICT 4 (East Midlands).

Members are reminded of the important meeting which is arranged for 3.30 p.m. at the Trent Bridge Hotel, Nottingham, when the winter's programme will be discussed on the lines indicated in the August Bulletin.

G2WS, 6CW and 8JV are active on 56 Mc.and any listening stations hearing these calls are asked to send reports without delay. G2WS.

DISTRICT 5 (Western).

It was decided at the last meeting to again take a stand at the forthcoming Bristol Radio Exhibition, which runs from September 8 to 18, and the Committee are busy making the necessary arrangements. The new Guide will be obtainable here and from local officers.

The Morse classes will commence in the near future and the names of intending participants are required as soon as possible.

The Crystal Register has now gone to print and copies will shortly be available. It has been decided to charge 3d. to R.S.G.B. members and 6d. to non-members, in order to cover expenses.

Activity on 56 Mc. in Bristol continues to increase, G6GN being the latest recruit. G6VF was recently heard across the Channel by G2JL on a straight receiver. G5WI is out of hospital and resuming

amateur activities, although it will probably be a long time before he is fit again. G5KT visited Paris with G5UK's party and reports having a very good time. W3KT recently paid him a visit.

A very interesting lecture is being given on October 7 to which R.S.G.B. members only can be admitted.

G2IW has become T.R. for Bath and local reports should be sent him. He is active on 7 Mc. telephony. G8JQ is away on a Mediterranean cruise and intends visiting ZB1 friends.

Closer co-operation between Bristol and Bath members is desired, in all spheres of activity.

Cheltenham.—Activity here is concentrated on 56 Mc. G5BM has received two reports from OK which checks, whilst 8ML using a transceiver with 110 volts H.T. on Leckhampton Hill has put S7 signals to 6IH, 52 miles distant. 8DT also contacted 6IH from Breedan, distance 44 miles. The 56 Mc. band is rapidly opening up and every effort should be made to tabulate results.

G8DA is studying figures, 6ZQ is recovering from an illness, 5BK and 8LB are preparing for winter activities.

DISTRICT 6 (South Western).

The C.W. section of the R.S.G.B. "G2CI" 56 Mc. Cup Competition was held on Sunday, August 22. Those on the air were G2CI, 2JM, 5AK, 5QA and S5Y. The event proved much more difficult than the 'phone part of the contest. The results were: 2JM 56 points, 2CI 57, 5AK 20, 5SY 21. This means that 2JM has won the "G2CI" cup with an aggregate of 288 points, the others in order being: 2CI 275, 5AK 211, 5SY 198, 5QA 147.

We wish to thank all who have helped to make this competition so interesting and hope that next year there will be more members in a position to compete. Interesting reports were received from 2CFG of Weston-super-Mare, BRS2338 and BRS2339, of Dartmouth. The contest coincided with the 56 Mc. tests organised by G5JU but nothing outside the District was heard with the exception of a wobbly unmodulated carrier which was logged at the L.F. end of the band by both 2JM and 5SY. 2JM and 5SY were 50 miles apart so it *might* have been a DX signal.

Exeter.—The meeting on the first Wednesday of the month was well attended, and the members were extremely interested in a talk given by VU2EB on radio conditions in India, with special reference to amateur work. 5QA continues to experiment with 56 Mc. gear.

Torquay.—It has been decided that the winter meetings shall start in October, so will members keep a lookout for notices to that effect later? 5SY has been carrying out 56 Mc. C.C. tests and has now succeeded in getting quite a lot of RF on that band, using 6L6s as doublers from a 3.5 crystal.

North Devon.—2CGA has just passed his Morse test and now awaits his full call. He is the first of the AA group to qualify, and will start on 1.7. The monthly meeting was held at 2ADJ, Northam, on August 11. 6GM attended, and brought 5UM. Those present were: 2ADJ, 2BAD, 2CBK, 2CGA, BRS2442, G5UM, 6GM and 6FO. All enjoyed this, the biggest meeting so far. The only absent member was 2CHY and she is building a very fine station for all band working.

The Letter Budget appears to have caught on, and if any other member outside this area would like to join in, please communicate with 6FO. All members report active. 6GM has started grid modulation on 1.7, 6FO has the new transmitter working well, and raises 14 Mc. DX in the early mornings.

DISTRICT 7 (Southern).

We start the new season with a meeting at the Tumble Down Dick Hotel, Farnborough, Hants., on Sunday, October 3. Please make every effort to attend as there are several important matters to come up for discussion, including the appointment of a new T.R. for Guildford, and planning the programme for the winter meetings.

Croydon.—Several members have been away during the past few weeks so reports are scarce. G8GD has been active with a 99-ft. end on aerial which is badly screened and about 20 ft. high. He has raised PY, W6, W7, ZS, VK, on 14 Mc. with only 8 watts. 5AN is back from the I.O.W., and chasing DX, FP8 and FR8 being two of his latest additions, bringing the total countries worked to about 80. 2KU, back from a trip in Europe, is finding two dipoles at an angle of 90 degs. useful, thereby being able to put a strong signal where necessary. Other local members can be heard most days, but no reports are forthcoming.

Southampton.—Local activity seems at rather a low ebb owing to holidays, but the following reports have been received. G5OB is now active on 7 Mc. 'phone, and is very pleased with his T20. G2VF continues to work DX on 14 Mc. CW. (he is still waiting for those cards for WAC). G8OV still very active on 7 Mc. 'phone. It is rumoured that G8QW has his meals brought into the shack. (Judging by the number of contacts he has made on 7 Mc. 'phone, rumours may not be far wrong!) G2IL and G5PT are active on 7 and 14 Mc. respectively. It is proposed to compile a local crystal register. Will all transmitters and A.A. licensees please let the T.R. have a card giving frequencies. G8DM is rebuilding for increased power and preparing for 28 Mc.

DISTRICT 8 (Home Counties)

A very interesting District meeting (attended by 15 members) was held at the usual venue in Cambridge on August 6, when many matters of interest were discussed including advance details for the district P.D.M. to be held in 1938. A sale was also held of sundries provided by G2XV, half of the proceeds going to the district fund. Offers for similar sales were made by 2CGO (for the September meeting) and 2BQC (for the October meeting). Presumably the holiday season is still with us as the number of stations reporting activity remains very low, nevertheless activity on the air seems to exist, and several new call signs are appearing, which it is hoped will be enrolled into the fold of members in the district at an early date. Will some member who is in personal contact with these new stations please make an endeavour to persuade them to come along to our next meeting?

G2PL is to be heard more frequently operating on both CW and phone on the two popular bands, with occasionally the voice of a YL at the "mike" who is claimed to be a "cousin" (Query!). 5JO continues with aerial experiments mostly on 14 Mc., 5DR awaits a 50 watt permit but does good work on

QRP in the meanwhile, 5OV maintains his daily schedule with VK2XU, 8ST is a new call to be heard doing good work, 2XV continues with 14 Mc. phone and has been recently testing out on 7 and 3.5 Mc. 2CGO awaits his Morse test, and is preparing a CO, FD, PA in readiness for the word "go."

From the Peterborough area comes the news that G2NJ has secured a permit for 50 watts and has rebuilt his gear, he has also followed the example of 2UQ and purchased a "Sky-Buddy" receiver, BRS2075 is constructing a SS receiver.

Please do not forget the next district meeting to be held at "The Fitzroy Arms," Fitzroy Street, Cambridge, on October 1 at 8 p.m., when *all* members in the district will be welcome. At this meeting it is hoped there will be sufficient support from the Bedfordshire and Peterborough groups to discuss the possibility of an occasional meeting being held in their localities, so come along and let us see if such an idea is possible.

DISTRICT 9 (East Anglia).

Owing to the fact that August is the month for holidays and only two reports of activities have been received, these notes must necessarily be much shorter than usual.

We are happy to welcome new members in the persons of G8AG, G8KB, G8MU, all of Ipswich. Also BRS2946, of Felixstowe. Lowestoft adds the name of Mr. R. Thompson, BRS2971, to the list. Now perhaps we can hope for more notes!

G5IX has returned from abroad and is progressing with the construction of his new U.H.F. receiver.

G2XS is still gleaning information regarding petrol or oil-operated generator plants. G5UD, of Swaffham, finds business is taking up most of his time. 2ABX, of Lynn, is again very active.

At Ipswich G8MU is operating a 56 Mc. station, and runs skeds with G6DH, of Clacton, with some success.

Will all members please make a special point of reporting to the Scribe early in the month, thereby facilitating the work of compiling and writing these notes? The latest date for sending in reports is the 25th of each month.

DISTRICT 10 (South Wales and Monmouthshire).

Notes are very scarce for this month, probably on account of holidays, etc.

Swansea.—A D.A.S.D. member on a brief visit to Wales spent several evenings with GW2UL, who escorted him around many of the Swansea stations.

Congrats to 5KJ who is now W.A.C. and W.B.E. on phone. 2UL still requires South America for his W.A.C. phone. Station visits are now the order of the day, and 2AJN, 8NP and 5BI recently paid a visit to 5VX, 5PH, 2UL and 5KJ, and a very enjoyable day was spent. Particularly interesting was the array of directive aerials in use at 2UL. He is now running phone "skeds" with SU and VS1.

Cardiff.—Congrats to 2BSN, who is now 8UH, and putting out some good phone on 7 Mc. from his new QRA. Other stations active are 5BI, 6ON and 8NP, while a new A.A. is welcomed in 2AJN, who is shortly applying for his full licence.

Penarth.—Stations active are 5XN and 8AM, while 2CMX has applied for his full licence. We wonder what has become of 5WU? If he sees this perhaps he will get in touch with the Scribe.

Newport.—2UL is now using a 6L6 modulator with some success, and active on 1.7 Mc., and on 56 Mc. using a long-lines oscillator. He has heard phone from 6VF Bristol at S8 on this band. 2XX is on 3.5 Mc.

2NG, 5BI, 8AM, 2BQB and 2CMX recently paid a visit to 2JL, and saw the much talked-of 6L6 amplifier really working.

Blackwood and District.—8PU is active on 7 Mc., while 8CT and 6BK are still working DX on 14 Mc. Congrats to 8CT on obtaining W.B.E. after such a short time on the air. 2NG still working plenty of DX, and recently had a report of S8 from PY. Also using grid-modulated phone on 7 Mc. 2ABI is applying for a full licence.

DISTRICT 12 (London North and Hertford).

The next district meeting will be held on Thursday, September 23, at the Orpheum Cinema, Temple Fortune, N.W.11, at 7.30 p.m.

LONDON MEETING

Friday, September 24th, 1937,

at

I.E.E., SAVOY PLACE,

Victoria Embankment.

Tea 6 p.m. Commence 6.45 p.m.

56 Mc. Discussion

The D.R. and T.R.'s were pleased to meet so many members of the District at Convention and Radiolympia.

Activity for the month seems to be on the increase.

G2VD has W.A.C. and W.B.E. three times using 25 watts and an indoor aerial.

G5FA has qualified for W.B.E. and worked five continents in 23 hours using 10 watts.

G8DR has transferred his activities to 14 Mc. with satisfactory results and only requires Asia for W.A.C. G5RR, late of Croydon, will shortly be operating his transmitter in this district.

G6QM spent a very enjoyable holiday in Antwerp and visited a number of Belgian amateur stations. He wishes to record the appreciation of the hospitality of ON4CC. G6QM is rebuilding his station, having now a 25 watt permit, and hopes to leave D.C. mains behind with the aid of a suitable converter.

DISTRICT 13 (London South).

A meeting of the Central Areas took place at the Brotherhood Hall on August 19 and was very well attended. We were pleased to welcome G8CS and

8GX from Bexleyheath. These two members have now definitely become adopted to South London and we look forward to seeing more of them at future meetings. Most of the evening was spent in discussions on 56 Mc. work, and it is interesting to note that a considerable percentage of amateurs in District 13 are conducting experiments on this frequency.

At this time of the year, with Convention and Radiolympia over, one's thoughts naturally turn to the progress made by the District during the last twelve months. In this respect we feel that South London has acquitted itself well. The plan of campaign has been similar to that adopted in past years and has been carried through to a successful conclusion. Many new members have joined the District and many valuable suggestions have been made for the future welfare of the R.S.G.B. in South London. Perhaps the most important change which has taken place is the introduction, on January 1, of the T.R. scheme. There was a considerable amount of criticism when the scheme was suggested, but in the last eight months it has proved itself of immense value and we are glad to say that many members have benefited considerably. It was agreed that at the end of twelve months a special meeting of the T.R.'s and the D.R. should be called to discuss the advisability of continuing the scheme ; it is hoped to hold such a meeting in the early part of December. It should be clearly understood by members that the responsibility of electing T.R.'s rests with them and that it is always open to any member to nominate a person for this office. A further announcement on this point will be made at a later date. When reviewing the past year we must make mention of the S.L.D.R.T.S., whose meetings are so very well attended on the first Wednesday in each month. We do feel that there are few Districts which can boast of such a successful society within its boundaries in addition to the usual District meetings and activities. No further comment in these columns on N.F.D. is necessary ; the event was in every way eminently satisfactory.

No reports of outstanding interest have been received this month. G8LN is ex G2AI at a new locality in Plumstead. 2ZQ scored 31,000 odd points in the first three week-ends of the D.J.D.C. contest. 2BKB has now received an artificial aerial licence for the 28 and 56 Mc. bands. We are pleased to hear that BRS2941 has now received the call sign G8WO. Congrats. and good luck, O.M. It will come as a great surprise to most members to hear that G2TH, T.R. for the Wandsworth Area, is leaving for the Gold Coast almost immediately. We are exceedingly sorry to lose him, but we wish him the very best of luck in his new job. The D.R. takes this opportunity of thanking him most sincerely for all his work on behalf of the District ; he has certainly done more than his share, and there is no doubt that everyone will be on the look-out for " Toc H " from his new location.

The next Central Areas meeting will take place on September 30 at the Brotherhood Hall. There will be no Area meetings in October as a District meeting has been arranged and will be held towards the end of the month. The agenda will include a junk sale and the presentation of the South London Trophy to this year's winner. It is earnestly hoped that there will be a good response to the sale, as it is vitally important to maintain the District Fund in a solvent state. Here is *your* opportunity to do South London a good turn and at the same time clear some of the surplus gear from your shack !

DISTRICT 14 (Eastern)

East London.—No meeting was held during August, and little activity has been reported. Offers to help and for loan of apparatus should be made at once to the D.R. as it depends on such offers whether the Society is to be represented at the Radio Exhibition to be held at Romford by A. H. Silcocks & Son, Ltd., from October 6 to 9. Such offers need not be confined to District 14. BRS3002 has sent his first report.

East Essex.—In this area activity has been rather spasmodic owing to holidays, there is therefore not much to report, G2KT, 2UK, 5QK, 5UK, 6IF and 8RT have been on 7 or 14 Mc. at various times. G2LC has W.A.C. twice within two weeks on 14 Mc.

The Southend Radio Society held another of their very interesting D/F Field Days during August.

The T.R. has received the certificate presented to the N.F.D. station, G5UKP, by the Swiss Society for working the most Swiss portables, and this will be formally presented to its rightful owner—the licensee—at the September meeting. At this meeting also some suggestions and offers of help will be welcomed regarding a proposal to run slow morse classes for BRS and AA stations.

Congratulations to G2KH ex 2CLN of Southend. He is already on 7 and 14 Mc. C.W.

DISTRICT 15 (London West, Middlesex and Buckinghamshire).

The September meeting will take place at the proposed West London Club Room and the address will be found under Forthcoming Events. It is hoped to see a good gathering at this meeting so that it will be possible to take a representative vote concerning its suitability to the area. A free car park will be found a short distance away.

BRS2697 is now 2CZG, while 2CCK reports for the first time. *West London.*—G6CO sees visitors on Wednesdays, 2CCK waits Morse test, 2CMG getting going in new QRA, G6WN still on both 14 and 28 Mc. *Middlesex.*—G2NN away, 5ND reports active, 2CZG busy with transmitter,G6LJ reports holiday, business trip, building receiver, improving transmitter, Convention and another holiday. How's that ?

Reports are few ; maybe the operators are away, or was it the Exhibition or Convention that caused intervention ?

DISTRICT 16 (South-Eastern)

With another Convention behind us, the D.R. hopes that all who made the effort to attend enjoyed themselves, and trusts that by this time next year the District will be in an even stronger position than it is already.

Hearty congratulations to J. E. Bryden (2BOL), of Rochester, upon his article, " Remote Control by Radio," which appeared in the August *Bulletin*. The gear described was exhibited on the Society's

stand at Olympia, and was used to control the lighting effects on a large map of the world arranged along the back of the stand. The transmitter and receiver excited considerable attention, as well they might, for both showed sound technical ability in their design and construction.

Ashford.—G2KJ and 6SY both active on 1.7 Mc. No report from the rest of the group.

Brighton and Hove.—The 56 Mc. Field Day arranged in conjunction with Kingston and District took place on Sunday, August 29, but at the moment no news is available of how things went except that G2HV, operating portable on 56 Mc. on The Dyke, Brighton, contacted 5IS at Boxhill, Surrey. Following are active: G2HV, 6RM, 8AC, 2CXX, 2BRB, 2BBN and 8OQ. Congratulations to BRS1852 on finishing tenth in the B.E.R.U. receiving contest.

Gravesend.—General activity, but nothing special to report.

Heathfield.—BRS1173 is receiving good signals from G5MAP on 56 Mc. at a distance of 35 miles, but so far has not succeeded in hearing any other DX signal on this band. 2BRI has been in charge of a radio-controlled model of the *Queen Mary* at Southampton. Article on the gear, O.M. ?

Horsham.—2CIL reports that on August 22 the following stations were heard on 56 Mc.: G2MV, 2HVP, 2KI, 2HG, 5MAP, 5RD, 5HF, 5NF, 6VA, 8OS, 8FV and 8MV (2KI, 2HG and 5NF were on CW). The receiver in use was a single-valve quench. 8OS, of Billingshurst, is active on 56 Mc. most Sundays, using MCW and 'phone.

Eastbourne and Lewes.—G5IH on 14 Mc., also 2KV of Polegate, while 2AO is rebuilding. 2BIU and 2CSI also report.

Tunbridge Wells.—The D.R. has had several visitors recently, amongst whom was W5FWG, who is at present living in the town, and engaged on survey work in conjunction with an oil prospecting scheme. 2UJ has a 66-ft. Zepp. in use, and finds it good on both 7 and 14 Mc. The 33-ft. Windom, which has been such a good performer on the latter band for some time has shown marked signs of inefficiency recently, although nothing can be found to account for it. Do aerials grow less effective with age! 2UJ would welcome any experiences. 2AKQ has built a 60-ft. mast on the lines of the popular "ARRL" model, and the modifications necessary with the additional height have proved satisfactory.

Whitstable.—The 4th anniversary meeting of the W.R.A. was held on August 14, at 2BUC. All the local group with 5PY and 2UJ were present. 2BBT showed interesting films of local activity, and some time was spent in discussions of a technical nature. Best of luck to G5CI, the call of 2BUC, who thereby becomes the first licensed member of the W.R.A.

DISTRICT 17 (Mid-East).

G6AK is now acting as District Scribe and all reports should reach him by the 25th of each month.

Boston.—The only report from this area comes from G6LH who has been inactive owing to vacation and his duties.

Sutton and Mablethorpe.—G5CY is active on all bands and anxiously awaits the 28 Mc. band to open up again. His best DX for the month is VS on phone. G5BD is QRT at present and is having a new shack built specially for experimental purposes. G2FT owing to pressure of business is temporarily QRT but will be active again next month.

Cranwell.—The only report from Cranwell comes from H. E. Bennett who has been on vacation with QRP transmitter using a 6A6 and has worked all Europe on 7 Mc.

Brigg.—G8AP has rebuilt the station into a self-contained unit fitted into a bureau and proposes building a class B modulation unit for phone.

Horncastle.—2AAS is concentrating on code in preparation for full ticket. G6LI is engaged upon the construction of a transmitter for 28 and 56 Mc.

Grimsby and District.—The following stations report active, G5GS, 8JN, 2VY, 6AK, 8CI, 8PV, 2HU, 6YN, 5SX, 6RN and 2AZH. Special mention must be made of the DX worked by the latest call in the District G8PV whose licence was issued on June 1. This station has already worked PY, LU, VE, W, SU and XU; a fine achievement. It is interesting to note that G2VY has received reports from Australia and New Zealand on the reception of the N.F.D. 7 Mc. transmitter.

The new D.R. G5GS hopes to make a tour of the District during the next month for the purpose of making personal contacts.

DISTRICT 18 (East Yorkshire).

Hull.—Once again there is very little to hand concerning the activities of the local group.

Those who have been heard active are probably still awaiting a holiday and of them we have heard G6OS still winging his way to the remote corners of the earth and working stations we do not even hear. We are pleased to hear G2QO on the air again after a long absence and hope he will look us up soon.

May we again ask those who have news to let us have it by the 25th, please.

DISTRICT 19 (Northern).

Reports are again scarce, as many members are still on holiday. We are very pleased to welcome ZU6L to the District for a stay of a couple of years or so, and he has already had many personal QSO's.

Stockton.—G6ZT is active on 56 Mc., and trying to reach to Thirsk (about 30 miles). G2FO has worked HK and several PK's on 14 Mc. G8GL continues his good QRP DX. by working XZ and ZS on 6 watts on 14 Mc. G8OH is testing a new full-wave aerial on 14 Mc. BRS2859 has obtained his AA ticket. Also active are G5XT, G5QU, G8CL, 2CBA and 2BQO.

Newcastle and District.—2BGG is in hospital, and we wish him a speedy recovery so that he can get his new A.C. super het. completed. G8SG started well on 14 Mc. by working a W6 for his first W QSO! 2CKC has rebuilt, and has applied for his full ticket. G2GC and G5HB visited G5QY, and the former reports that he will be active in his new QRA in a few weeks' time. G5RI continues his aerial tests, and is active on 28, 14 and 1.7 Mc. G6YL has spent a lot of time on 56 Mc., and has heard G5QY there (QRB 26 miles) quite con-

sistently. She is also active on 28 Mc. G6IR has installed 866's, and has been working plenty of South American DX., including HH. G5QY has been on 56 Mc. most of the month, but is still trying to hear G6YL. He has had a new aerial up to work some of the dead spots on the old one, and added three new countries in a couple of days. BRS2217 has been listening on schedule for G5QY on 56 Mc., but no success. He is making a new receiver and applying for his AA licence. G2XT is contemplating a rebuild and some 14 Mc. DX. Others active are G2PN, 2CO, 6UD, 5AC, 8JO, 8IF, 2YY, 2LD, 5AY.

The local club—the N.E.A.T.S.—has been reorganised, and it is hoped to make the meetings much more interesting than of late. 2BGG continues as Hon. Secretary.

Northern Ireland

Many members are on holiday, getting "coloured," which suggests the following little puzzle for those who know the code: The body is black, the tip is black, the dot is black, and the whole is the number of reports received this month.

Scotland

The Society will be represented at the Scottish Radio Exhibition, which will be open from September 15 to 25, in the St. Andrew's Halls, Glasgow. The stand is No. 11, and we hope to meet many members during the run of the exhibition. All West of Scotland members should now have received a circular regarding the exhibition, etc.

Meetings are now being generally resumed and mention will be made of all information available at time of writing under the respective districts.

"A" District.—Activity in the district continues at a high pitch and the recently licensed members are doing some good work. Meetings will resume for the season on September 29 at 7.30 in Room "A," Institution of Engineers and Shipbuilders, 39, Elmbank Crescent, Glasgow. As several important matters will be dealt with, it is hoped that members will make a point of being present. It is hoped to be able to make an announcement regarding holding additional meetings about the middle of each month.

GM6ZV had an enjoyable meeting with W3KT who was touring in Scotland. W3KT asks him to convey 73 to all GM stations whom he has worked.

"B" District.—Details of meetings had not come to hand when this was written. GM6BM had a lucky escape from injury when his aerial was struck by lightning, he also had another thrill the same week when he was QSO XU8RL in Shanghai. GM2OX has taken charge of 56 Mc. activities and hopes to receive the support of all interested members.

"C" District.—It has been decided to hold meetings on a three weekly basis, every third Monday. Four meetings during the season will be held in Forfar and the balance in Broughty Ferry. Talks are to be arranged and the first, on aerials, will be given by GM6RI. Practical demonstrations of transmitter adjustment will also be made. It has been arranged for slow morse to be transmitted from GM8CF on 7030 kc. at 20.30 G.M.T. for a few Sundays on a trial basis. In addition, this is to be supplemented by at least half-an-hour's oscillator practice at the beginning of each meeting. Good support, it is hoped, will be forthcoming for these activities.

"D" District.—No news is to hand at time of writing.

"E" District.—Meetings are on the usual joint basis with "A" District, and details will be found under the heading of that district.

"F" District.—Meetings resumed in September, and will be held monthly on the first Sunday at 7.30 p.m. in the County Hotel, Stirling. GM6RV is now W.A.C. and W.B.E. on telephony and is doing considerable work on aerials. GM6XW is also testing an aerial, in this case a Windom. GM8HP and GM2UD are active. GM6NX took part in the D.J.D.C. contest. Mr. G. L. Zech, 2CIH, is now GM8TT.

"G" District.—Mr. A. Anderson (BRS2205) and Mr. D. S. Bruce (BRS2663) have been granted the A.A. calls 2CXC and 2CXZ respectively.

"H" District.—Meetings will resume on September 29 at 7.30 p.m. in the District clubroom, Kirkcaldy, and thereafter every fortnight. Activity in the district runs high. 2ANL reports having had a visit from G5MH, who was touring in Scotland.

New Members

For the benefit of the many new members who are joining our ranks we would mention that meetings are held in most towns at least once a month. New members are invited to get in touch with their D.R. with a view to being introduced to local members.

Empire B.E.R.U. News.

B.E.R.U. SECTION REPRESENTATIVES.

Antigua, Bahamas, Bermuda, and Eastern Part of British West Indies : A. Tibbits (VP2AT), High Street, St. John's, Antigua.

Australia : Sub Representatives : J. B. Corbin (VK2YC), 39, Mitchell Street, McMahon's Point, Sydney, N.S.W. ; G. Ragless (VK5GR), South Road P.O., St. Mary's, S.A. ; J. C. Batchler (VK7JB), 21, Quarry Street, North Hobart, Tasmania.

Burma : W. G. F. Wedderspoon (VU2JB), Government High School, Maymyo, Burma.

Canada : C. B. Dowden (VE1HK), 49, Walnut Street, Halifax, N.S. ; Earle H. Turner (VE2CA) 267, Notre Dame Street, St. Lambert, P.Q. ; W. P. C. Andrew (VE3WA), Dominion Boulevard, South Windsor, Ont. ; F. Taylor (VE5GI), 4374, Locarno Crescent, Vancouver, B.C.

Ceylon : R. M. De la Pole (VS7RP), Tamaravelly Group, Dolosbage.

Channel Islands : J. le Cornu (G2UR), 1, Les Vaux Villas, Valley Road, St. Helier, Jersey.

Hong Kong : G. Merriman, (VS6AH), Box 414, Hong Kong.

Irish Free State : Captain G. Noblett, M.C. (EI9D), Barley Hill House, Westport, Co. Mayo.

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

Malaya and Borneo : J. MacIntosh (VS1AA), Posts and Telegraphs, Penang, S.S.

Malta : Lieut. R. F. Galea (ZB1E), 20, Str. Collegiata, Birchircara.

Mauritius : V. de Robillard (VS8AF), Box 163, Port Louis, Mauritius.

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

New Zealand : R. T. Stanton (ZL3AZ), 17, Martin Avenue, Beckenham, Christchurch.

North and South Rhodesia : R. A. Hill (ZE1JB), P.O. Box 612, Salisbury, S. Rhodesia.

North India : J. G. McIntosh (VU2LJ), Bukhia Tea Estate, Letekujan P.O., Assam.

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

South India : J. S. Nicholson (VU2JP), c/o Kanan Devan Hills Produce Co., Ltd., Munnar P.O., Travancore.

British West Indies (Eastern Group)

By VP2AT.

News this month chiefly concerns the activities of Barbados stations. During the recent disturbances there, the VP6 amateurs came to the assistance of the police. When the land telephone lines were cut by the rioters 6TR acted as H.Q. in town and so made it possible to pass important messages to other parts of the Island where 6MR, 6FO and 6NW were stationed. 6FO and 6TR were in constant contact for 36 hours during the worst period. Needless to say the amateurs concerned were highly commended by the police for their good work.

Again during some earlier, but more serious disturbances in Trinidad, when communication between San Fernando and the capital, Port of Spain, was disrupted, 4TX, a temporary station, together with 6TR and 2LB, ran regular schedules with each other. Luckily it was not found necessary to utilise this circuit.

VP6TR, who was on holiday in St. Lucia during part of July, was able to keep in touch with his home station through VP2LB. 6TR was able to return this favour, when later on 2LB visited Barbados.

6FO and 6NW are building portable rigs, which seem popular in VP6 just now.

In Antigua, 2AT has returned to town after eight months in the country. He hopes to be regularly on the air, and to be able to renew the skeds with G through 5KJ. He is now using an 89 crystal tritet/ECO with two 45's in the final on 14,316 kc., but expects another crystal near the H.F. end of this band.

2KM in St. Kitts (VP2K—) was able to broadcast accounts of the day's play in the recent Leeward Islands cricket tournament.

In St. Lucia, 2LA and 2LB are still active. The former is using a 6L6 crystal tritet oscillator on 7,010-14,020 kc. with an input of 20 watts. 2LB operates on 7,084-14,168 kc. using a 6F6 C.O. and two 41's in the final. He hopes to be on 14 Mc. soon. 2LA is temporarily in Dominica (VP2D—) and expects to get someone there interested in amateur radio.

Conditions during the month have been poor and DX has been scarce, although 6TR reports having worked I1EC on 7 Mc., which is quite unusual for this band at this time of year.

The following are fake calls :—VP2BC, 2AB, 2FP. The call VP2BC is believed to be in British Honduras. The genuine VP2 calls are as follows :—2AT, 2BX, 2CD, 2DA, 2TG ; 2KM ; 2LA, 2LB ; 2GA and 2GB.

Ceylon.

By VS7RP.

Conditions for July have again been most variable. QSB has been very rapid at times and several QSO's badly spoilt. Towards the end of the month signs of increased QRN were noticed. QRM from phone and commercial stations is on the increase and it is indeed difficult to get CW signals through this barrage. VS7MB, VS7GJ, 7RA, 7RF, 7JW, 7EB and 7RP are active and all of these stations at some time or other during the month, have made useful contacts mostly on 14 Mc.

VS7MB, who is the only one to send in a report this month, had contacts with PK, K6, G, VQ4, VQ8, VS2, XU8, HA, I, VQ3, D, SP, W6, ZT5, VK3, PAO, OK, W8, XZ, VU, J and VS7.

7RP has once again confined his attentions to 14 Mc., and has contacted XU8, VQ8, VK2, 3 and 6, CR9, FB8, OE3, SV2, K4 and 5, U4, PK1, W6, YR5, ZE1, ZU1, VS2 and 7, and VU2 and 7.

VS7RA and 7RP do not in future intend sending QSL cards first for obvious reasons, but all cards received will be acknowledged.

Irish Free State

By EI9D.

We miss EI7J, who has now left Sligo, to live at 152, Bishop Road, Bishopston, Bristol. We are very sorry indeed to lose him, but wish him the very best of luck in his new surroundings. We look forward to hearing him with a G call in the very near future.

EI8G is active again from his new QRA, and is mainly on 28 Mc.

Whilst the usual activity prevails amongst stations, there is nothing of special interest to report.

Kenya, Uganda, Tanganyika and Nyasaland

By VQ4CRH.

There is little to report on actual activities owing to lack of reports. VQ4CRI, the most active station for some weeks, has been getting good DX and is now awaiting his VK QSL to enable him to put forward his application for W.B.E.

We extend a hearty welcome to three new members in VQ4CHS, VQ4KGM and VQ4KTC and wish them the best of luck.

Congratulations to VQ4KSL, who is now both WBE and WAC. KSL is returning to college in W and hopes to be on the air with a W9 call.

The following stations will be closing down shortly owing to the periodical home leave :— VQ4CRO (already left for South Africa), VQ4CRB, VQ4CRR and VQ4CRH, all for Blighty.

A large number of QSL cards have been received by the writer for VQ4BP. For information of senders this station is unknown and it is requested that if further contact with this station is obtained the address (other than *via* RSEA) would be welcome by VQ4CRH.

Malaya and Borneo

By VS1AA.

VS1AM and 1AN have both left Malaya. Best of luck to you both. 1AA had a most pleasant personal QSO with 1AN and wife, who were on their way to G. by air. 1AI has been heard working 'phone. 1AF has contacted some good DX and has spent some time experimenting with RK25 as a doubler and an 89 as tritet or E.C.O.

VS1AA worked VK5LJ, 3BQ, 3CP and 3BW on July 18 on 28 Mc. Both 1AF and 1AA worked W1, which is unusual DX even on 14 Mc.

Malta

By ZB1E.

The new licence conditions are out and with effect from the first week in August. All the old licences have been withdrawn and each holder has been issued with a new licence embodying the new regulations. The use of the 28 and 56 Mc. bands is now permitted and the previously wide "buffer edges" on the 7 and the 14 Mc. bands have been reduced in accordance with the latest G.P.O. grant. (Splendid work.—Ed.)

The regulations stipulate crystal control of the transmitter and all holders of experimental licences granted in Malta must belong to the local branch of the B.E.R.U. A special supplementary licence for permission to use telephony may be issued to applicants who have been in possession of a licence for and have been active on C.W. for not less than one year.

Throughout the month of August conditions on both the 7 and 14 Mc. bands have been below the average and only an occasional faint signal was heard on 28 Mc. around 17.00 G.M.T.

We have had the pleasure to welcome G8JQ who, whilst on a pleasure cruise, called on ZB1E for a personal QSO ; and also BRS981, a keen "televisionist" who is at present on the Mediterranean Station. We hope to see more of you, OMs, and you can be sure of a warm welcome at ZB1.

Rhodesia

By ZE1JB.

No notes have been written for several months because no information has been received despite requests. The writer understands that objection has been taken to the way in which he has dealt with the notes because certain stations have not had their activities reported in full detail, particularly with reference to 28 Mc. operation. He would like to say that there is a special section in this Journal for 28 Mc. reports and that in his opinion the B.E.R.U. Notes Section is not the place for such information.

There are two new licencees since the last notes were written, one being ZE1JA, Mr. P. W. Moores, of the Beam Station, Salisbury, who was at Ascension Island operating under the call sign VQ8A and thereafter ZD8A. The other is Mr. S. N. Potterton, of Bulawayo, whose call sign is ZE1JI.

There has been very little activity in this country so far as is known, but DX is beginning to come in again now. Several amateurs have gone over to telephony and the honours seem to be divided between the use of Class B and suppressor grid modulation. The most recent additions to the 'phone group are ZE1JN and ZE1JA, the former using suppressor grid and the latter Class B with a pair of 46's modulating a pair of PX25's in the final. It is rumoured that even our old friend ZE1JJ is to use 'phone in the near future. JA has a really commercial-looking station finished in battleship

grey and he uses the RME69 receiver with its DB20 preselector. This is a very nice instrument to handle and the results on it are very good. JA is on the lookout for schedules with British amateurs.

ZE1JY has constructed a type of beam aerial consisting of four half-wave 14 Mc. aerials erected horizontally, one pair above the other half a wave apart and fed in phase. This appears to give him very considerable directivity in the direction of North America and he finds that he can work North American 'phone stations at an average strength of RS57 at times when other amateurs (and he himself, when using his ordinary aerial) can hardly hear them. JY is shortly to erect a rotary beam. While on the subject of aerials, JA has noted an interesting fact which appears to be due to the polarisation of the waves; with a vertical half wave aerial on 14 Mc. he gets S5 reports in England, whereas with a horizontal doublet his reports go up to S7 or S8. JA has considerable screening in the direction of England because his house is situated directly behind the beam aerials with their reflectors. These are vertical and JA considers that they obviously absorb vertically polarised waves, but do not have any effect on horizontally polarised waves. It was prophesied when JA commenced transmissions that he would not be able to work England through the beam screen, but he has succeeded in convincing the pessimist that he was wrong.

ZE1JR did a considerable amount of 28 Mc. work during the S.A.R.R.L. contest in which he scored 10,752 points. His nearest Rhodesian rival was JJ with 450, but it is believed that JJ was not actually competing in the contest. JR worked between 50 and 60 different stations on both 'phone and C.W. in all districts during the contest. He is expecting his new HRO receiver.

South Africa

Division One.

ZS1AN requires QSO's with G or any European station on 7 Mc. He complains that although he hears and calls Europeans he never contacts. ZS1B now operates a bug and prefers it to a straight key. ZT1B reports DX on 14 Mc. during the last two weeks of July was excellent.

The 7 Mc. band, as usual, has been full of QRM mainly on account of a few stations holding duplex telephony QSO's lasting over an hour at a time. Stations wishing to work local duplex should go up to 3.5 Mc., as it is not playing the game to choke up an already congested band, particularly when the QSO refers to everything but radio, even going so far as to grumble when some other station causes QRM on their signals.

ZS1B received a report on his signals from an SWL which read as follows:—"Hrd u calling CQDX ur sigs fb but although looked over the band could not hear CQDX answer you!"

A few pirate stations have been active here lately, but due to stern measures being taken this evil appears to have been stamped out.

ZT1E is on the air again with good quality 'phone.

Division Five.—ZU5L has been very active on the 14 Mc. band, some of his DX contacts being unusual for this time of the year. ZU5AC is testing musical frequencies on 3.5 Mc. ZS5AK has been testing on 1.7 Mc. with ZT5R. ZU5D has been active on 7 and 14 Mc. BERS393 has his new RX working which brings DX in like local stations. The following R.S.G.B. members have also been active: ZS5Z, 5R, ZT5R, 5V, ZU5AF, 5D and 5Q.

ZU5Q.

Division Six.—Membership of the African Radio Research Union is steadily increasing, especially in the Natal Divisions, whilst from the Cape Province, Orange Free State and Transvaal districts many applications have been received.

The administration of the Union is in the capable hands of the President, Mr. Oscar Egenes, ZT5R, and members greatly appreciate the good work he is doing on behalf of the South African amateur.

All members of the A.R.R.U. observed a silent period recently, as a mark of respect to the late Marchese Marconi. The work of Marconi will ever be remembered by radio amateurs. His was a life which produced amazing results of achievement for the advancement of amateurs, and incidentally, but by no means least, the amenities of civilisation. Both his amateur outlook and his international genius can ill be spared. He will go down in history as the conqueror of time and space, and as one of the greatest of the world's sons. The present amateur acclaims his greatness, but the future amateur will, no doubt, acclaim it in even larger measure.

ZS6C and ZS6AM have now settled in their new locality, and they hope to be active again within the next few weeks. ZU6C is getting his station ready for the coming DX season.

ZT6X is on 14 Mc. again, and has contacted a fair number of DX stations. He recently landed a National C.R.M. Oscilloscope, and intends using this piece of apparatus not only on his transmitter, but for reception purposes as well.

ZT6AQ is expecting to obtain good DX results with his new one-valve transmitter, the tube being a 6L6. Mr. Cook recently received a severe injury to his hand, and we sincerely hope that he will soon be able to use his key again.

ZT6AD, who has been active on 14 Mc., is endeavouring to obtain the W.A.Z. award.

ZS6T contacted a few G and PK stations on telephony, and has received some surprisingly good reports. His frequency is 14,360 kc.

ZU6V recently made his first English contact, by working G6FB. Other 14 Mc. DX included J2, XZ2, W9, V57, K6, VU2, W5, VK4, OH5, D3 and W8. The average report was S6. ZU6V was a candidate in the Stork Derby, and received a bonnie wee daughter!

ZS6Q is testing musical frequencies on 14 Mc., and the quality of the transmissions is exceptionally good.

Any items of interest for these notes will be greatly appreciated by ZU6V, Box 4020, Johannesburg.

ZU6V.

South India

By VU2JP.

Conditions have been rather unsettled due to light monsoon which is, however, making up for

lost time. VU2GJ is a new member together with 2LK, and several others will be joining at an early date. The following stations are active and have passed the test:—VU2FH, 2FQ, 2AU, 2GB, 2LK, 2GJ, 2FX. BERS285 has received his licence and is now VU2GB. News has come to hand of our first VU/YL, who has passed the exam. and now awaits a call-sign. Rumour has it that she did eighteen words a minute after four days' study! VU2FH recently visited 2AU in Poona, where he collected a 7 Mc. crystal. FH, who has kept skeds with AC4YN in Tibet, is using a Jones exciter. 2FQ is using a Cossor 240B as CO and modulator with good results on 7 Mc. BERS259 is working up the code for his exam. Unfortunately we are losing 2AU, as he is being transferred to Quetta for health reasons.

Egyptian Notes.

Conditions on 14 Mc. during the past month have shown some improvement. although they are still erratic. W6, VK and J stations have been worked for the first time this season. 28 Mc. has at last broken through, W2, U8 and G stations having been heard. Owing to several members being absent on leave, the notes this month are somewhat shorter than usual.

It is understood that SU1AM is still in Europe, and may prolong his stay until the end of the year.

SU1AX is making steady progress and is now experimenting with telephony. Unfortunately he will shortly be leaving us for rather a long period.

On his return, SU1KG started a rebuild with rack and panel mounting. At present he has successfully completed the first three stages, which will continue to do service until all components are available for the last stage, a T55.

SU5NK, 1RD and 1TM are all still away at the time of writing these notes, but the latter is expected back very soon.

From SU1RK comes the good news that he hopes to be on the air again in the near future after a long absence, due to moving from Port Said to Cairo. He is now awaiting the arrival of gear, chiefly for the modulator.

SU1RO's activities have been somewhat curtailed owing to pressure of work. He has however been on 28 Mc. and had a QSO with a G station. Apart from this, nothing else of interest is reported.

SU1SG has been experiencing various troubles with his modulator, but nearly all of these have been cleared up and he is now putting out a fine phone signal. A recent contact with LU has made him WAC on phone, so the QSL is eagerly awaited. His schedules with GW2UL show that conditions this month have been rather poor between 18.00 and 19.00 G.M.T., though some improvement is noticed at a later hour.

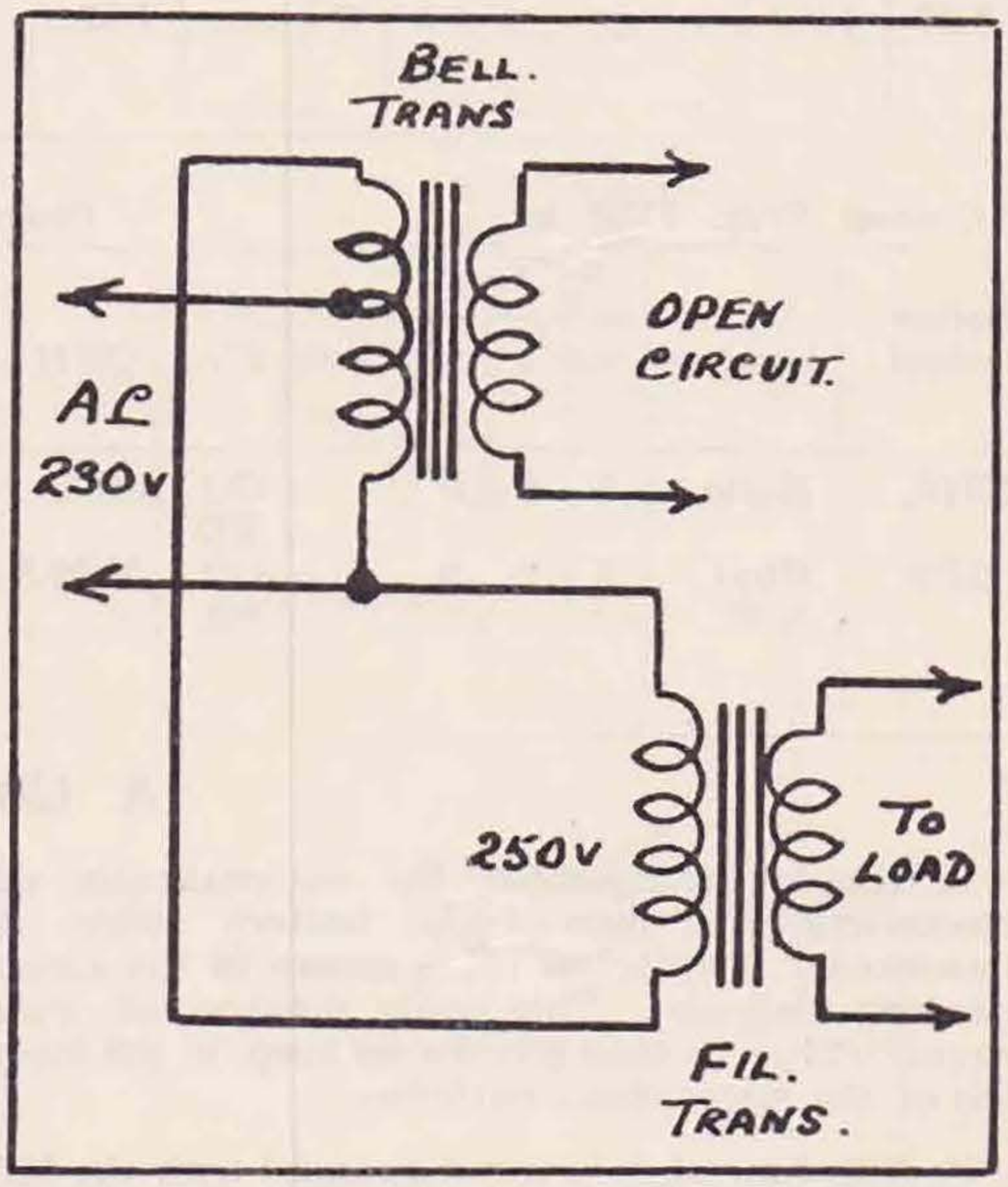
SU2TW has been kept QRL in camp, so his activities have been cut short. He, however, almost WAC in two hours just recently, the missing area being Asia. He is still held up for phone by several items from G, so is filling in the time experimenting with different kinds of aerials. He has now received his WAC certificate and is awaiting his WBE. Congratulations, OM.

SU1WM has been fairly active and has taken advantage of the slight improvement in conditions. He recently regretted passing over a PY he had worked the previous night and so missed the chance of WAC in an hour. However, phone QSL cards are now to hand for WAC and these are being submitted for approval.

SU1WM.

Bright Ideas

The writer, wishing to work a 250-volt filament transformer from 230-volt mains, hit upon the method illustrated in the accompanying diagram. The idea is, in essence, the using of the tapped primary of a mains transformer as an auto-transformer to step the 230 v. up to 250 v. Any mains transformer with a tapped primary winding could be used, but a bell transformer is quite



satisfactory since only a small amount of power has to be handled. The 0-230-volt section of the primary was connected to the mains and the 0-250-volt section to the filament transformer.

It must not be lost sight of that, although only the primary of the bell transformer is being used, it is handling power, since it is still acting as a transformer. Its rated power-handling capacity should, therefore, not be exceeded, and for this reason the secondary should not, in general, be used.

2BCQ.

DIAMOND AERIALS—(*Continued from page* 129)

couple this to a vertical aerial. The system works perfectly, but has the disadvantage of being a one-band affair, which was useless to the writer. He can recommend it, however, for transmission or reception, more particularly the former, as the waste of upwards of 50 per cent. of the incoming power in the resistance is avoided, and a good all-round aerial produced, with a maximum in the direction at which the diamond is pointing.

AN AMATEUR LOG BOOK

One of the most interesting and useful accessories in the amateur station is the log book. A little time devoted to entering notes daily is well worth the trouble involved; experimenting is valueless unless a true record of adjustments is kept.

The writer finds that a good quality exercise book, ruled with faint blue horizontal lines only, is ideal for the purpose. One costing about half-a-crown will accommodate nearly 3,000 entries.

The left-hand pages are ruled as in Fig. 1, and headed "Incoming Signals." Likewise, the right-hand pages are ruled as in Fig. 2, and headed "Outgoing Signals." Members of R.E.S. Propagation Section will have noticed the fading and atmospheric codes, described in a recent issue of THE BULLETIN by G2GD. These are found to be extremely useful, and are recommended to newly licensed members commencing a log.

G5OQ.

FIG. 1.

Receiver 0.V.2 Indoor Aerial. *Incoming Signals.*

Date	*Time*	*cld/clg*	*His sigs.* *r*	*s*	*t*	*Phone*	*QRG*	*System*	*His* *TX*	*Inpt*	*Condx* *Lcl*	*DX*	*WX*	*Wind*	*Fad*	*X's*	*Remarks*
1.3.37	1710	test	5	6	9	—	14 Mc.	cw.	CO PA	40	—	FG	rain	W	nil	1	only sig. audible
5.3.37	1500	,,	5	5	9	—	7 Mc.	,,	TP TG	7	Gd	Pr	clr	SW	—	nil	—

FIG. 2.

Crystal Freq. 7126 kc. *Outgoing Signals.* *Valves :*—59-PX25.

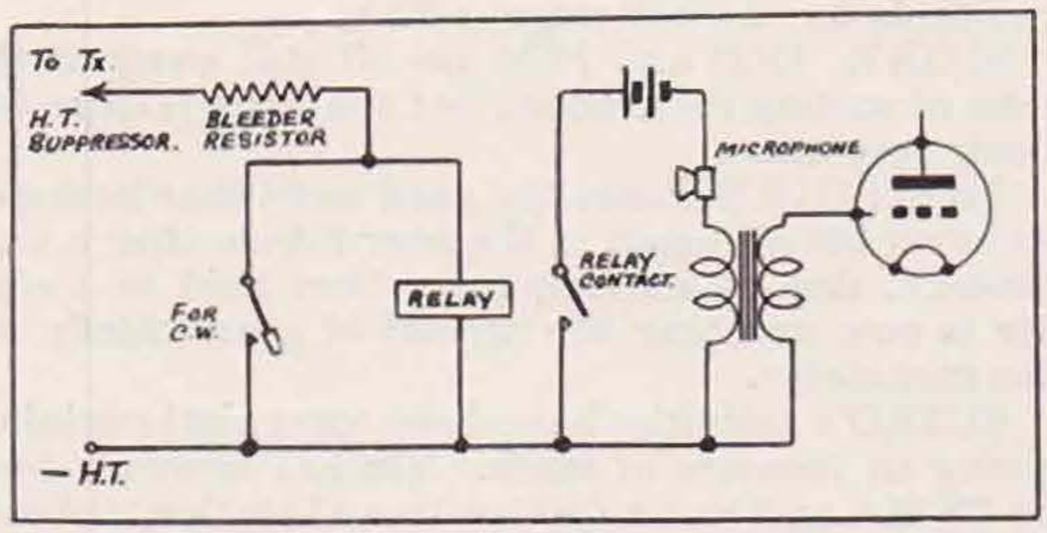
Station worked	*Location*	*My sigs.* *r*	*s*	*t*	*Phone*	*C'c't*	*QRH*	*V'ts*	*mA.*	*W*	*System*	*Aerial*	*Cpse*	*QSO No.*	*Remarks*
ZB1E	Malta	5	6	9		CO FD	14253	300	33	10	cw	2BI Wind.	—	3401	long chat
G2FF	Rhyl N.W.	5	8	9		CO PA	7126.5	300	,,	,,	,,	and Collins coupler	—	3402	good qso no qrm

A USEFUL HINT

A simple arrangement for automatically disconnecting the microphone battery when the transmitter is switched off is shown in the accompanying diagram. This easily constructed guard circuit will more than pay for its keep, in the longer life of the microphone batteries.

A 500 ohm relay is wired in series with the H.T. supply to the suppressor grid of the C.O., and is adjusted to operate on about 3 mA.

The contact springs of the relay control the microphone and the method of operation is self-explanatory. The short circuiting switch prevents



the relay from operating when C.W. is being used.

N. H. B.