A MODERN HIGH-FREQUENCY RECEIVER
INCORPORATING WAVE-CHANGE SWITCHING

THE T. & R.

BULLETIN

THE INC. RADIO SOCIETY OF GT. BRITAIN

AND THE BRITISH EMPIRE RADIO UNION

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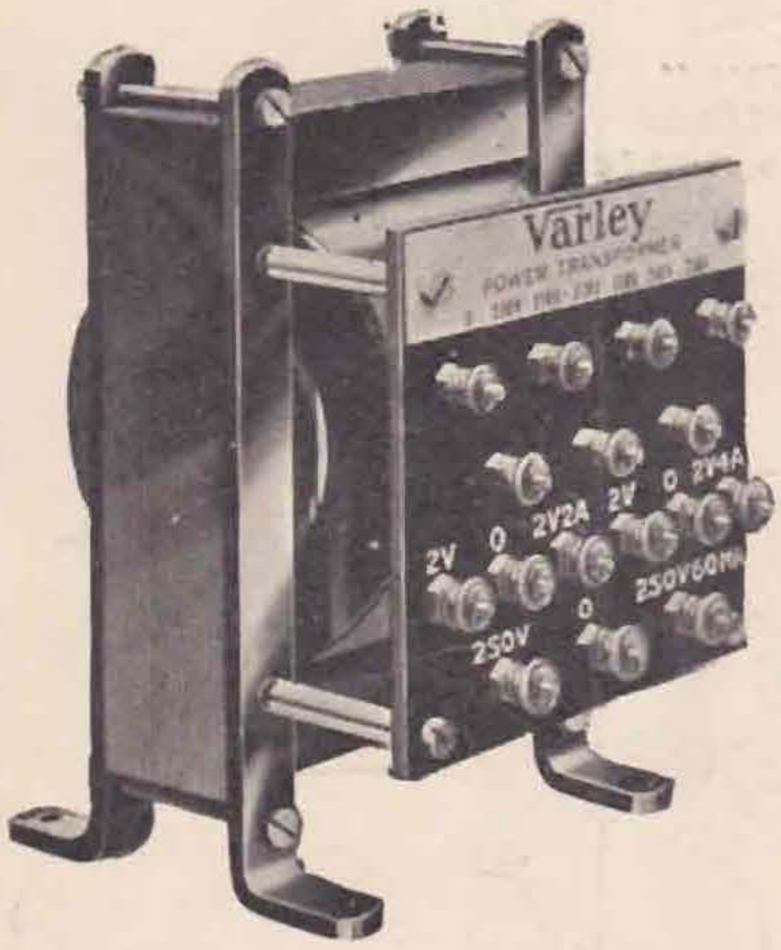

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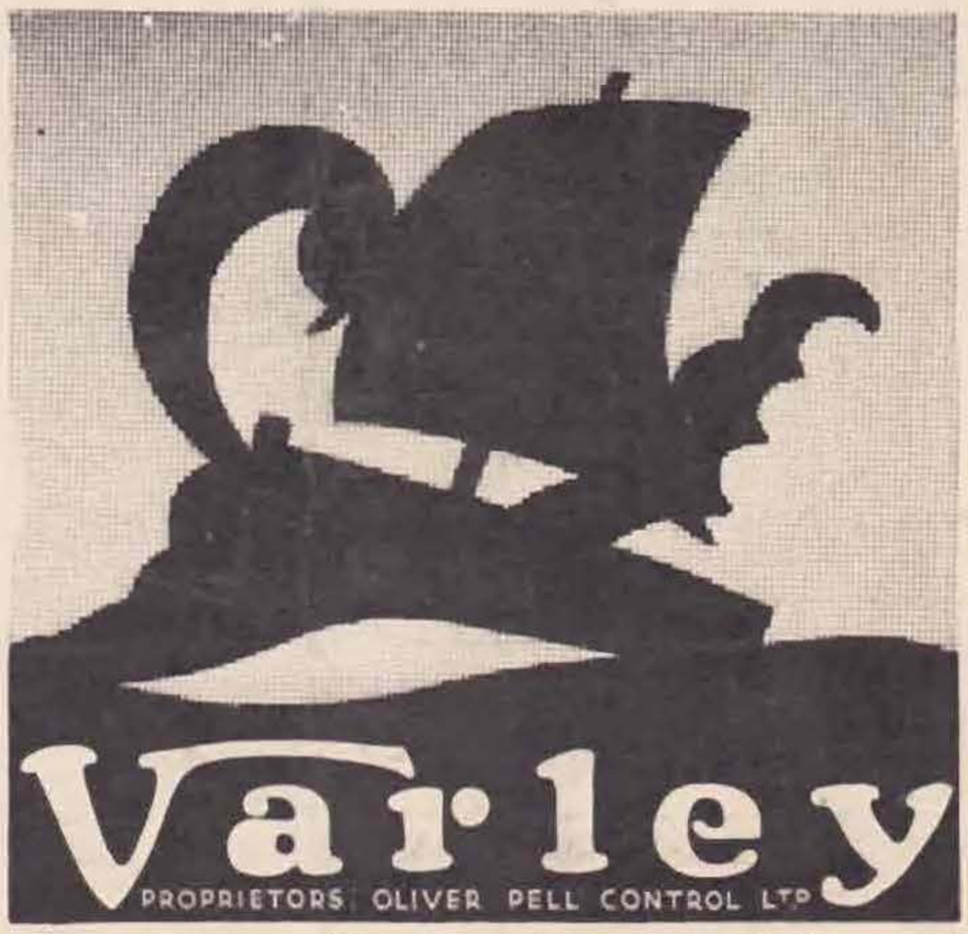

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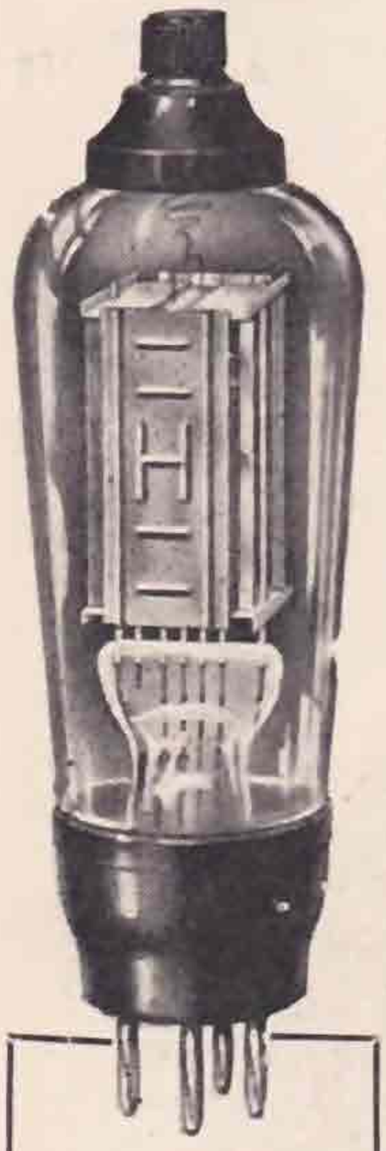

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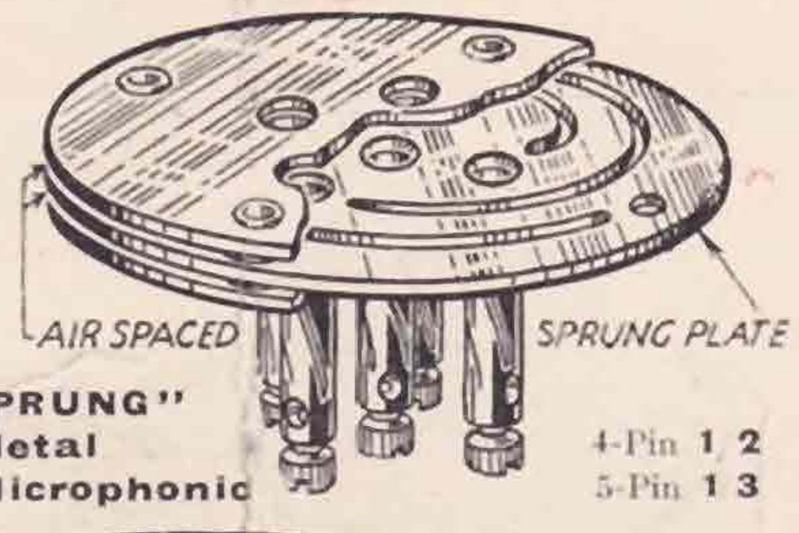

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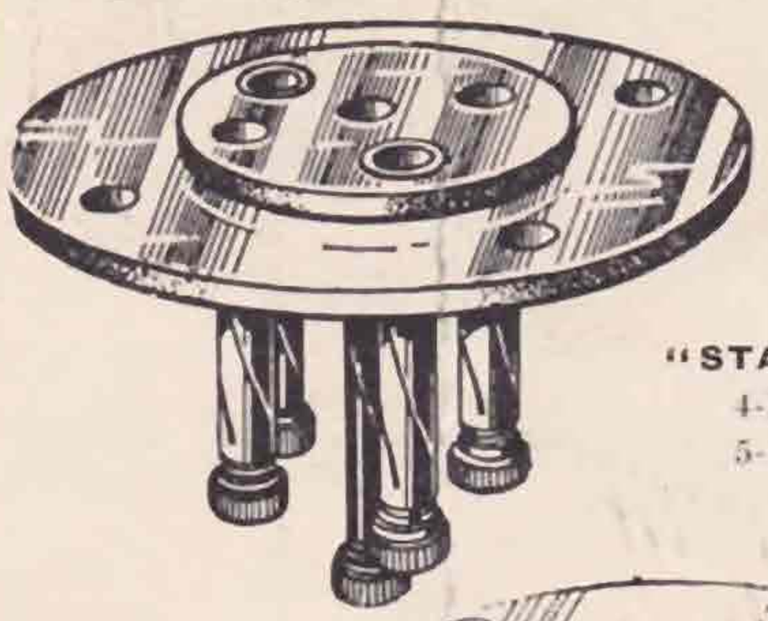

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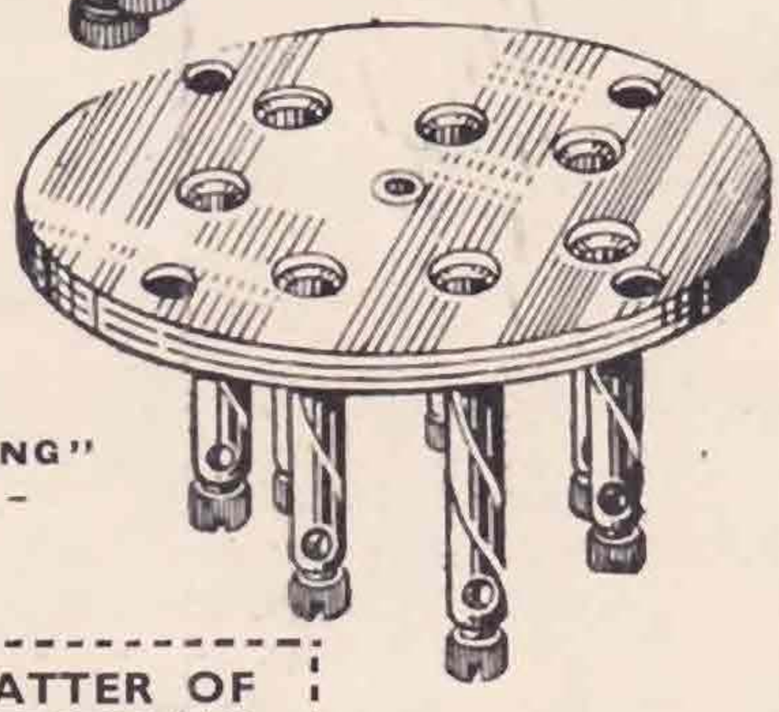

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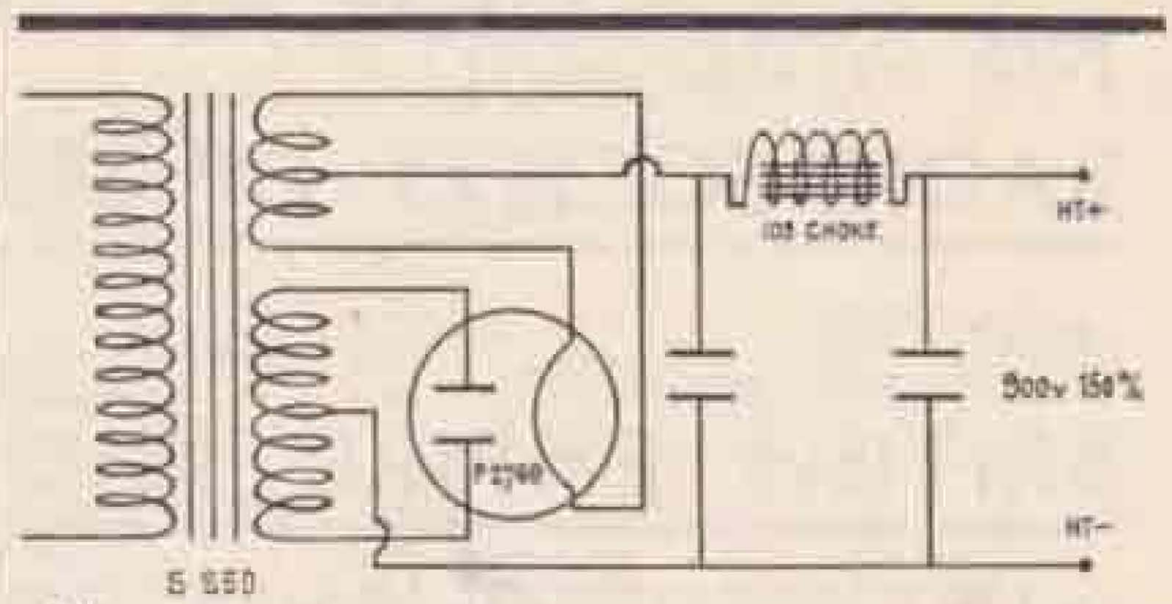

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R.S.G.B. CALENDAR.

Unless otherwise announced, all meetings are held at the Institution of Electrical Engineers, Savoy Place, W.C.2, commencing at 6.15 p.m. Tea is served at 5.30 p.m.

October 20. "Technique in Valve Manufacture." By Stephen de Laszlo, Esq., B.A. (Director High Vacuum Valve Co.).

November 24. "The Magnetron Oscillator for Very High Frequencies," by Eric Megaw, Esq., B.Sc. (Research Laboratories, General Electric Co.).

December 29. Annual General Meeting, followed by a lecture "Transmitting Valves for Amateur Needs," by L. Grinstead, Esq., (Transmitting Division Mullard Wireless Service Co.).

January 26. Presidential Address, followed by a lecture "Electrolytic Condensers" by N. C. Moore, Esq. (British N.S.F.)

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THE T. & R. BULLETIN

Honorary Editor :—
H. Bevan Swift (G2TI)

Vol. 9

Advertising Manager :—
Horace Freeman, Esq.

No. 4

CONTENTS.

WORKMANSHIP AND COMPONENTS.

WE have been much impressed with the very wide difference in workmanship displayed at the many London and Provincial stations it has been our fortune to visit recently. Roughly, amateur stations may be divided into two classes—first, the neat, tidy, and rather elaborate cabinet arrangement, complete with its array of meters and high-class components ; and second, the hay-wire collection of miscellaneous junk built up in most cases from remnants of ancient broadcast receivers, and the like.

Although we realise that the owners of many of the former type of stations are in a position to lavish money on their hobby, there are others in the same category who, although only able to spend a small amount each year, are able to produce results worthy of our highest admiration.

It is not to these members that our comments are now addressed, but rather to those who tend to throw together a few obsolete parts and trust to luck. It is true that some of the best-known stations in the early days were constructed in this manner, but to-day there seems to be no logical reason why an amateur station should be other than neat and well made.

Most of the persons we have in mind seem to revel in " jerry-built " sets, which are spread-eagled around the operating room, with long trailing leads going off at odd angles to batteries, amplifiers and doublers, with little attempt made to obtain a comfortable operating position, or an easy method of change-over. As a result, such stations provide but a poor advertisement to the casual visitor, and prospective new amateur.

There has always been a tendency amongst amateurs to build up rough lay-outs which, when they have worked, have been left severely alone for fear that were they assembled together properly, inferior results would accrue. We cannot accept this as a fact, for if the same lay-out and good components are used, improvements must follow.

Mention of components brings us to the second point we wish to stress, namely, that compromises are seldom worth while.

It does not seem generally known that the standing capacity of the frame and end plates of an old-fashioned variable condenser is often larger than the maximum capacity of the condenser itself when it has been reduced in size by the usual expedient of double spacing the vanes. Again, in the matter of inductances, we have often seen stiff wire used for the leads to the tank coils, when the coils themselves have been wound with wire half as thick. Many times during the past year we have been asked where obsolete types of valves, suitable for use in crystal oscillator and frequency doubler positions, could be obtained cheaply, whereas if the enquiring member had been prepared to expend a few extra shillings on a modern valve of the pentode class, greater efficiency would have resulted.

(*Continued on page* 114.)

A MODERN HIGH-FREQUENCY RECEIVER

Incorporating Wave-change Switching

PART I.

By G. A. Exeter (G6YK).

[Editorial Note.—*In the first part of this important article, Mr. Exeter deals with the theoretical requirements of a modern amateur receiver and describes for the first time the patented wave-change switch which he has developed. In our next issue we shall publish details of the circuit together with a list of the components used.*]

AT a recent London District meeting, some time was spent discussing various types of receivers used by members, and a general consensus of opinion indicated that good receivers were the exception rather than the rule.

On the transmitting side the simple Hartley, or tuned-plate tuned-grid oscillator, has given way to either the M.O.P.A. or the crystal-controlled arrangement, until to-day our bands are a credit to the amateur world, but unfortunately most of our receivers are little better from a design point of view than they were a decade ago.

Most of the receivers in use are straightforward affairs, with perhaps slight individual modifications, and in general consist of an autodyne with one or two stages of low-frequency amplification. For some reason, perhaps not wholly difficult to understand, the superheterodyne form of receiver has found little favour in this country, although it has obvious advantages.

Autodynes.

The fact that a receiver employing an oscillating detector is simple to construct, sensitive and easy to handle, has probably been the main reason for its long reign of popularity, but if consideration is given to some of its really bad points, we begin to wonder why it has survived so long. A receiver of this type can become a prolific source of QRM in itself in at least four ways. First, as it oscillates directly into its aerial system, it can cause annoyance to other listeners; second, bad contacts or broken strands of wire in the aerial or guy wires cause harsh cracklings; third, when the aerial sways in the wind the tuning is affected, making it extremely difficult to hold a weak signal; fourth, an oscillating detector valve, adjusted and loaded as most amateurs use it, is a good example of how unstable a self-oscillator can become.

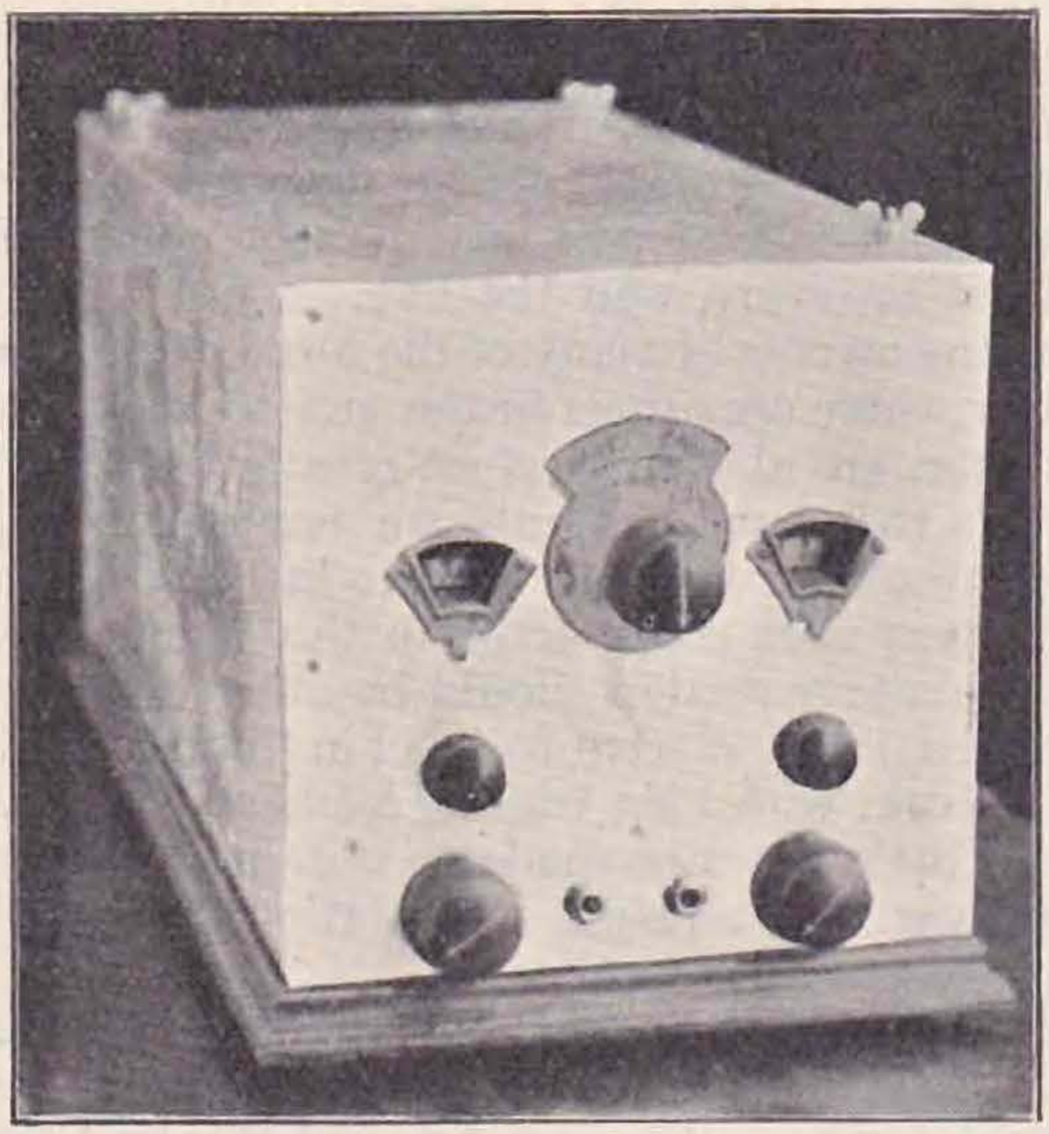


Fig. 1.

A front view of the Receiver. The wave-change switching is controlled by the central knob. The other controls are: Left, upper, Band spread; Left, lower, Reaction; Right, upper, Band set: Right, lower, Volume Control.

Detector Stability.

The first and most obvious improvement is to remove the aerial from the autodyne grid circuit, by imposing an H.F. amplifier; the second is to stabilise the detector oscillator, and in order to do this we can either use a separate heterodyne with its additional controls, or attempt to make it more stable by using "high c" in the tuned circuit.

Screen-grid Detectors.

Screen-grid valves used as culminative grid detectors, providing their impedances are matched, have received some attention on account of their sensitivity, and whilst admitting that this type of valve can be made to work in a more superior manner than a triode in an autodyne receiver, it has been found repeatedly that, owing to their microphonic construction, they are difficult to handle. In a receiver using a stage of H.F. amplification their slight sensitivity gain over a triode is more than offset by the gain of the H.F. stage, and the stableness of the ordinary type detector.

H.F. Amplifiers.

Much has been said for and against the use of high-frequency amplifiers in short-wave receivers, and the general idea seems to exist that background noises are increased and no gain is obtained. This is a fallacy, for if there is no gain in the signal strength obtained, why are background noises increased? Surely, if the latter have increased, the valve must be contributing something in the way of amplification, which proves that the signal itself has been amplified.

A little thought should render apparent the possible advantages of a high-frequency amplifier, and despite statements made to the contrary, a gain of signal strength down to 28 mc. is definitely

obtained. Furthermore, such an amplifier is capable of being adjusted so that the selectivity and consequent reduction of QRM makes its addition to a receiver practically a necessity. An H.F. stage makes it possible to receive a station which is separated by 10 or 20 kcs. in frequency from a local strong signal, whereas it would not be readable at all on an autodyne coupled direct to the aerial. Man-made static is reduced in intensity providing suitable input devices are used, and a signal to background ratio of favourable dimensions obtained.

Pre-selection.

A point to consider when using a plain autodyne receiver, is that a strong signal, not actually on the frequency to which the receiver is tuned, will overload the detector owing to the unselective properties of the circuit. This will cause the generation of spurious harmonics, and is responsible for some of the strange results obtained on the 28 and 56 mc. band.

Volume Control.

Another form of trouble which can effectively be dealt with by an H.F. stage is that of detector "blocking," on a strong signal, which is sometimes so bad that the signal is unreadable. It may be argued that an H.F. amplifier would make things worse if it were amplifying properly, and this view is correct, except that the H.F. valve can provide us with an excellent form of volume control, if the valve in question is of the variable mu class. This permits us to vary the amount of gain, thus enabling us to keep the signal within bounds. We must, however, guard against inter-locking between the H.F. and detector stages, as varying the bias on the H.F. valve, may cause detuning of the detector circuit. In actual practice, providing care is taken in the layout, and *perfect screening* is employed, it is possible to prevent any signs of interaction between stages. Whilst dealing with interference, it should be mentioned that the indefinable "mush" which is troublesome on most autodynes is invariably due to poor selectivity and not entirely to "valve hiss." A reasonably efficient and highly selective input system will accomplish wonders in reducing this form of trouble. The small amount of valve noise noticed with modern tubes is mainly due to the mica bridges used for the suspension of the electrodes, and is, we believe, being investigated at some length by the various manufacturers.

Input Selectivity.

For the past few years most amateurs have striven to obtain the best possible results from their aerial systems by adjusting and cutting the wires to obtain a little extra efficiency from their transmitters. At the same time their receivers have had to be content with what is available in the way of an aerial, and more often than not this has consisted of a short piece of wire hung up anywhere without regard to its length. It is agreed that this form of aerial will bring in signals, but it will not perform in the same way as one which has been carefully designed.

It is an accepted fact that an aerial designed to receive on one particular frequency will produce signals of good strength on that frequency, but its effectiveness falls away rapidly on either side. It is out of the question to erect separate aerials for each frequency or each band of frequencies in use, but the selectivity of the system can be increased enormously by loading the aerial. By this means energy is transferred to the receiver without undue flattening.

Fortunately we can still retain the major portion of the useful properties of a fundamentally well-designed receiving aerial that will work well on all amateur frequencies by employing the arrangement known as the "doublet aerial." This consists of a half-wave top connected to the receiver by feeders of the correct length for the frequencies in use. It is not proposed to go into a full description of this type of aerial, but to deal mainly with the "feeder" system of input to the receiver. Those seeking further information on receiving aerials and feeders are referred to Ladner & Stoner's recent publication, "Short-wave Wireless Communication."

When feeders are used to convey energy to the receiver, the input circuits should be arranged to make full use of the selective properties of the system, and this is best accomplished by using an H.F. amplifier and a coil which has its centre point earthed. This coil should be loosely coupled to the low potential end of the grid circuit. If correctly designed, this form of feeder system can be successfully operated in locations where local interference would make the more usual form of aerial and autodyne receiver incapable of receiving readable signals.

Low-frequency Amplifiers.

The low-frequency amplifier demands just as much attention in an up-to-date receiver as the preceding stages. The ordinary triode, when used as an amplifier, is quite reliable, but it has not sufficient gain to handle really weak signals. If two stages are employed, the noise level increases and, as a general rule, some form of instability manifests itself. There remains only one alternative, and that is to employ a pentode with its high stage gain and corresponding output. Correctly coupled and correctly filtered, a pentode will give all the amplification needed for headphone reception. The coupling may be of the usual transformer type, but this should be capacitively coupled, in the first place, to avoid noises due to electrolytic action taking place in the primary winding, and, secondly, because a high step-up ratio can be obtained. As a general rule threshold howl will be non-existent if this method is used.

The anode circuit should be matched up and the 'phone circuit isolated, whilst a filter in the 'phone leads will prevent capacity effects.

In the past some receivers have incorporated a form of audio selectivity device to combat interference, and whilst agreeing that this may be useful in certain cases, a really selective L.F. stage with a sharp "cut off" is a monotonous set to use. With such an arrangement the "life" seems missing from the signal, and wobbly signals are harder than ever to copy. Furthermore, the usual characteristic whine of a pure crystal-controlled signal is deadly to listen to for long periods.

Tuning Controls.

The inclusion of a tuned H.F. stage necessitates an additional control unless the two tuned circuits are ganged. For some reason ganged tuning on short wavelengths is not looked upon with favour in this country, but in practice it is quite easy to apply. True, the tuning, unless "trimmed," will not hold good on a selective receiver, owing to the

extremely rapid change of frequency over the tuning scale, but careful design will overcome this difficulty. The receiver which will be described later in this article has provision for the trimming of *each* frequency band, so that to all intents and purposes the tuning is constant and the receiver a one-dial job.

Wave Changing.

The three-stage receiver in question is an effort to obtain the maximum results possible from a straight layout. It incorporates a system of wave changing which is practically instantaneous and foolproof, thus enabling ganging of controls to be obtained with greater accuracy. Short-wave receivers in general suffer from the disadvantages of needing small capacity tuning condensers for easier searching, thereby limiting the frequencies covered by any one coil. Consequently an efficient receiver requires several coils to cover most of the high-frequency spectrum, as it is found that a coil tapped by means of a switch is distinctly inefficient. Switches in any case give rise to trouble through bad contacts and coupling effects. As a general rule plug-in coils are used, but owing to the fact that they are constantly handled, it is impossible to retain an accurately calibrated receiver.

These disadvantages have been overcome to a very large extent by the system of switching to be described. Once the coils have been made and adjusted they are never handled again, dead end effects are eliminated, contact troubles are non-existent and calibration remains accurate. With this receiver it is possible to calibrate on any band the scale reading of a well-known station of constant frequency, and after days or weeks of operation, to revert to that calibration with the filaments switched off and to find, when they are put on, the calibrated station within a cycle or two of zero beat.

The Wave-change Device.

This is accomplished by the simple and effective patented switching device employed, and it should be mentioned for the benefit of those who may doubt its worthiness that the idea has been worked on for about two years, and every conceivable objection thought of eradicated.

Briefly, it consists of one side of a disc carrying as many coils as are needed for the various ranges, arranged around its radius in equal degrees of arc. The mountings of these coils consist of plug sockets in insulated material which are themselves further plugs extending through the disc to the opposite side. The disc is mounted horizontally through a main carrying support by means of a spindle to enable it to revolve, and also through a round key bearing firmly screwed to the main supporting arm.

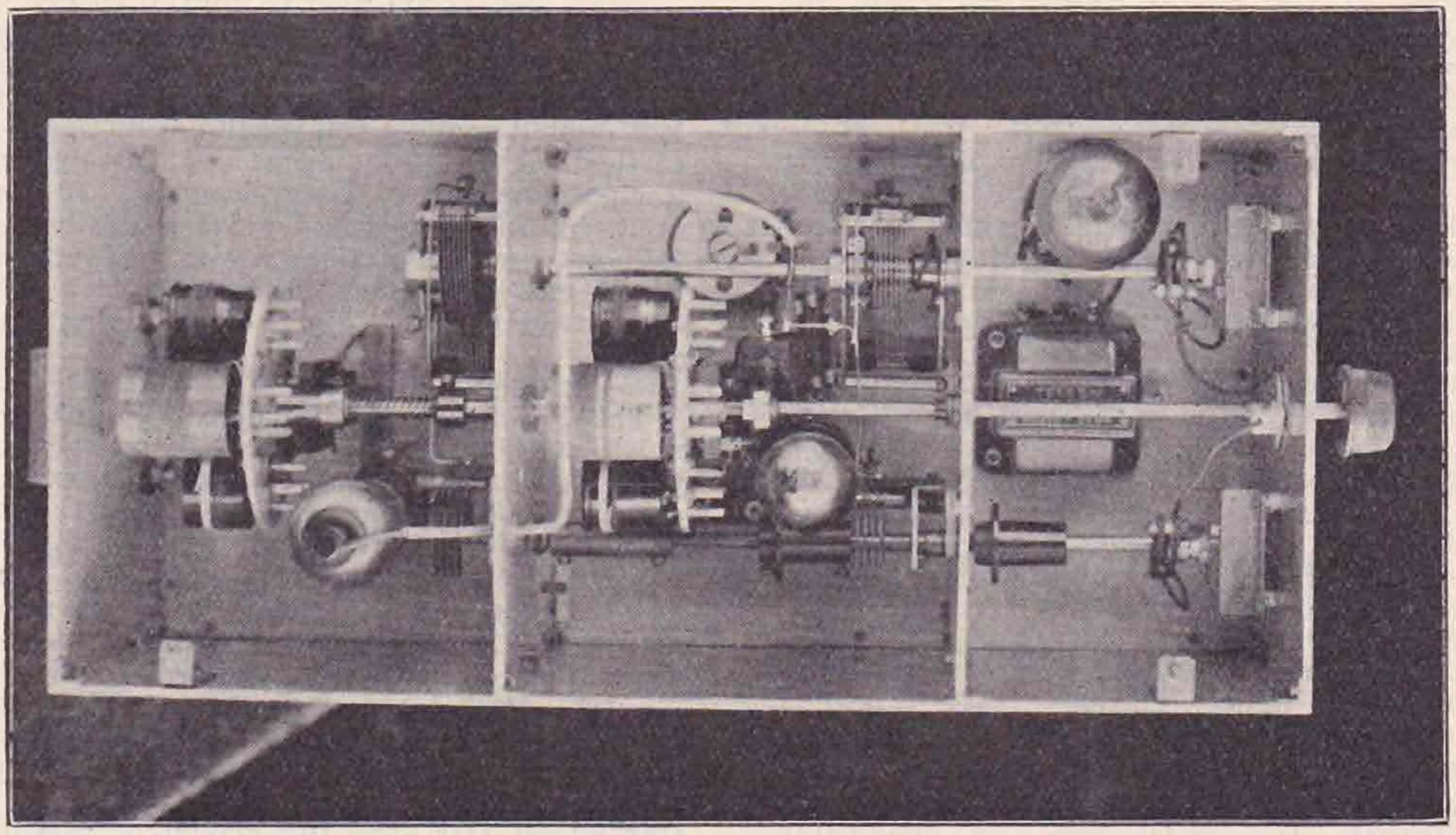


Fig. 2.
The Receiver viewed from the top, showing the wave-changing device. Note the two discs coupled together by means of the spindle.

This bearing is the locating bush for the contacts and has deep slots extending nearly along its full length. The slots are equal in number to the number of coils mounted on the disc, and are arranged radially to the same degrees of arc as the coils are positioned around the disc face. A pin of a size to enable it to just enter any of these slots is driven through the spindle a short distance behind the main disc, and the disc is locked on to the spindle in such a position that, when the pin is well home in any slot in the key bushing face, one group of plugs of one coil circuit will fully enter a corresponding set of sockets mounted on insulated material at the base of the main support.

A compression spring on the spindle tensions against a collar locked on the spindle and against the rear of the main supporting arm, thus keeping the plugs forced home.

The action of changing a coil is that of pushing against the spring tension, until the plugs clear from their sockets. This action is followed im-

(*Continued on page* 114.)

ELECTRON-COUPLED OSCILLATORS.

By G. G. Samson (ZL4AI).

Another page in amateur radio history has been written by the ZL4AO—G2ZQ combination. In our last issue we editorially enquired for an article on the subject of electron-coupled oscillators. Mr. Hunter (G2ZQ) noticed this comment, and mentioned the matter to Mr. Shrimpton (ZL4AO), of Dunedin, New Zealand, and as a result we are able to reproduce for the first time in this Journal a complete technical article with diagrams sent wholly by amateur radio. The method by which the information for the circuit diagrams was received is mentioned in the appendix.

MOST amateurs have an idea that an electron-coupled oscillator is difficult to construct, but actually it is one of the simplest forms of frequency stabiliser available, providing suitable valves are used. Unfortunately its output is very small compared with the normal rating of the valve employed, but when used in a crystal-controlled transmitter, this is no disadvantage, since the valves which would have been used as frequency doublers are now used as amplifiers.

The principal characteristic of this form of oscillator is its remarkable dynamic stability, which is just as good as most ordinary crystal oscillators, and in many cases superior. In a crystal oscillator the frequency is controlled entirely by the crystal, and for amateur stability no particular precautions need be taken with the rest of the oscillator circuit, but in the form of oscillator under discussion the frequency is determined by the circuit constants, and therefore its effectiveness depends to a large extent upon the mechanical construction of the circuit.

All components must be rigidly mounted and be of first-class quality. This applies particularly to the variable condensers, which should be of well-known make, such as *Cyldon* or *Eddystone*.

When the oscillator is used in a receiver it is desirable, though not absolutely necessary if the panel is rigidly fitted to the base, to use a flexible coupling between the condenser shaft and the dial. This precaution will prevent vibrations being transmitted to the condenser.

Plug-in coils are recommended, although self-supporting types may be used providing they are constructed from heavy gauge solid-drawn copper.

Indirectly Heated Valves.

Indirectly and directly heated screen-grid valves are suitable for use in these circuits, but of the two types the former is preferable. Fig. 1, which shows a Hartley electron-coupled oscillator circuit, is particularly well suited for receiver work, and can be used either as a H.F. heterodyne oscillator or as a beat oscillator. It may also be employed for frequency meter work.

The load from the oscillator should be taken from the plate through a small coupling condenser, and the position of the cathode tap B should be from a quarter to one-third the way up the coil from point C, although the actual position is not critical. For ordinary receiving valves a grid leak of 50,000 ohms will be found suitable. The plate R.F. choke must be of good quality, and preferably of the universal section-wound type.

When used in a transmitter where greater loads are required, it is preferable to make use of the harmonics generated by the oscillator, as this will lead to maximum stability being obtained. Harmonics are very strong, particularly the 2nd, 3rd, 4th and 5th, all of which are of sufficient strength to be used for our purposes. The third is preferred, as this appears to be the best.

Referring to Fig. 2, L_1 C_1 is tuned to, say, 2.4 mc. and L_2 C_2 to 7.2 mc. for third harmonic operation. Owing to the low output a high-stage gain should follow. This can take the form of a power pentode, which should give an output of approximately 3-5 watts.

Shielding.

Care must be taken to ensure that no feed back occurs between the plate and grid coils, and to prevent this condition arising a shield should be used between them. It is, of course, an advantage to shield the whole oscillator, and fortunately we in

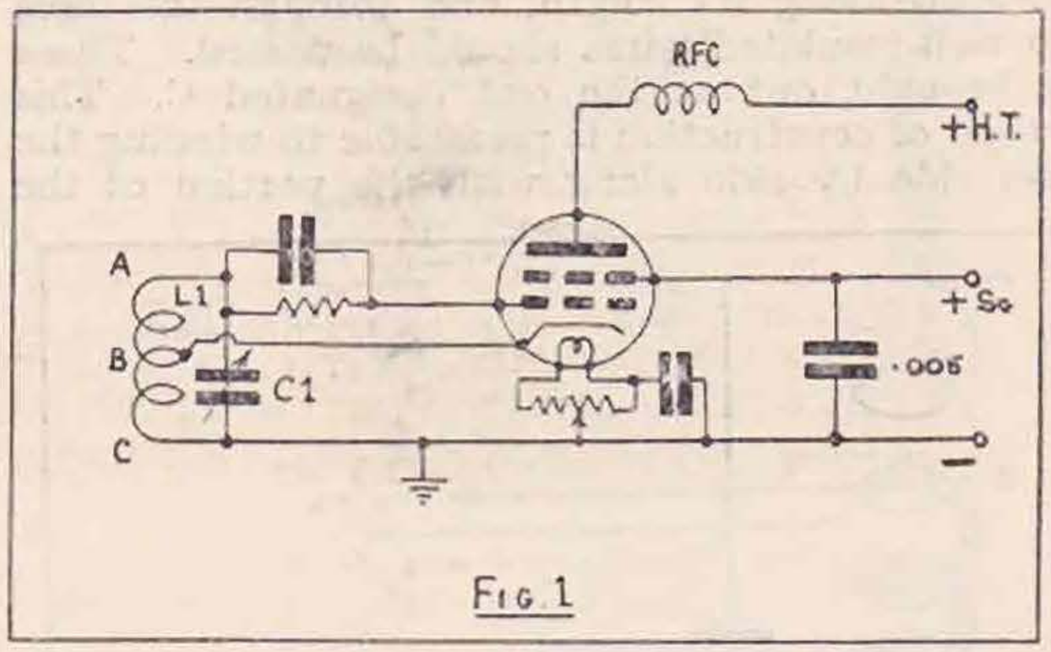


Fig. 1.—Hartley Type Electron coupled Oscillator. This arrangement is suitable for a H.F. heterodyne oscillator, beat oscillator, or frequency meter.

New Zealand are able to use a standard 5-lb. tea tin, which has seemingly been designed for this purpose!

Any type of indirectly heated valve is suitable, but if an external shield is not incorporated, this must be provided. When R.F. pentodes are employed the suppressor grid should be connected to the screen grid.

Directly Heated Valves.

Reference to Fig. 1 will show that our biggest problem, when using directly heated valves, is that of applying the filament supply to the valve when the filament (which now replaces the cathode) is above ground R.F. potential. Obviously we cannot allow the whole filament supply to be above R.F. ground potential, so the difficulty is overcome in the manner shown in Fig. 3. When the supply

to the filament is alternating the arrangement shown in Fig. 4 will prove suitable.

CONSTRUCTING THE INTERWOUND COILS.

It is recommended that these coils be made from copper tubing of the normal gauge used for other short-wave purposes. Before winding the coil

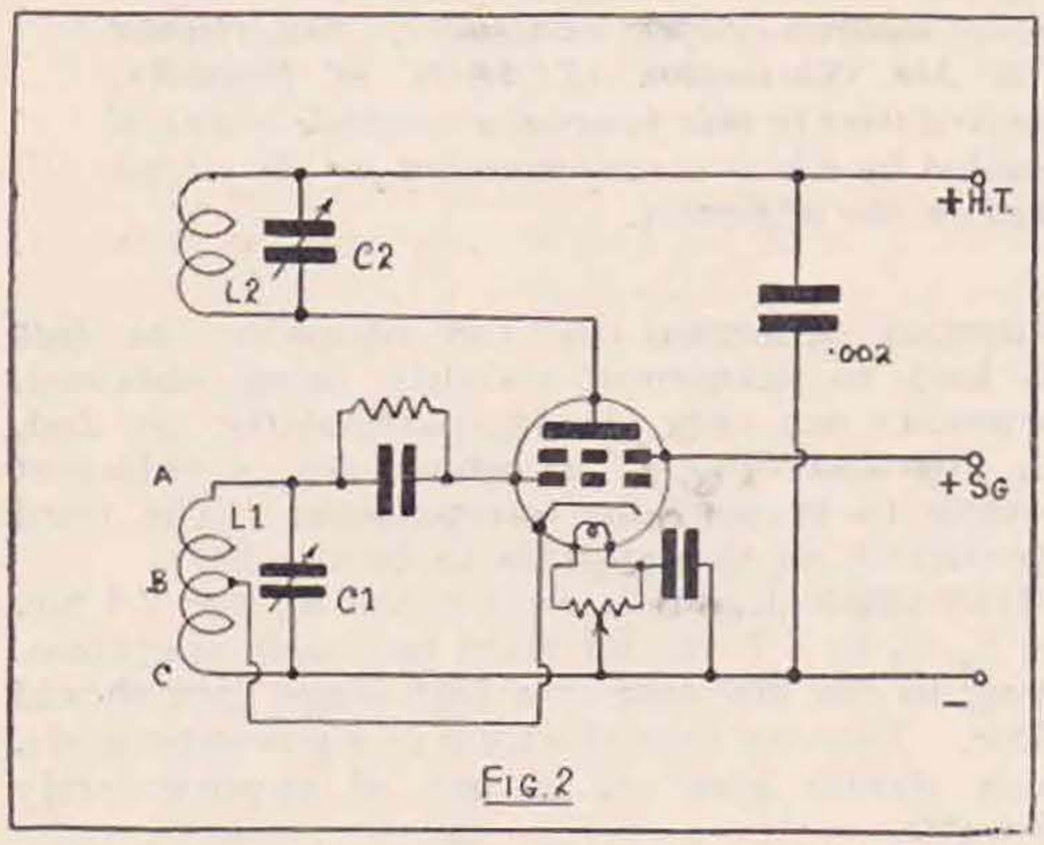


Fig. 2.—An arrangement suitable for use in short wave transmitters. Harmonics of the fundamental frequency are transferred from L_2 C_2 by any standard P.A. method of coupling.

to shape a hole should be drilled through the wall of the tube, at a point between one quarter and one-third along its length, and through this hole two well insulated wires should be passed. These are brought out at the end designated C. This method of construction is preferable to winding the wires side by side along with the portion of the

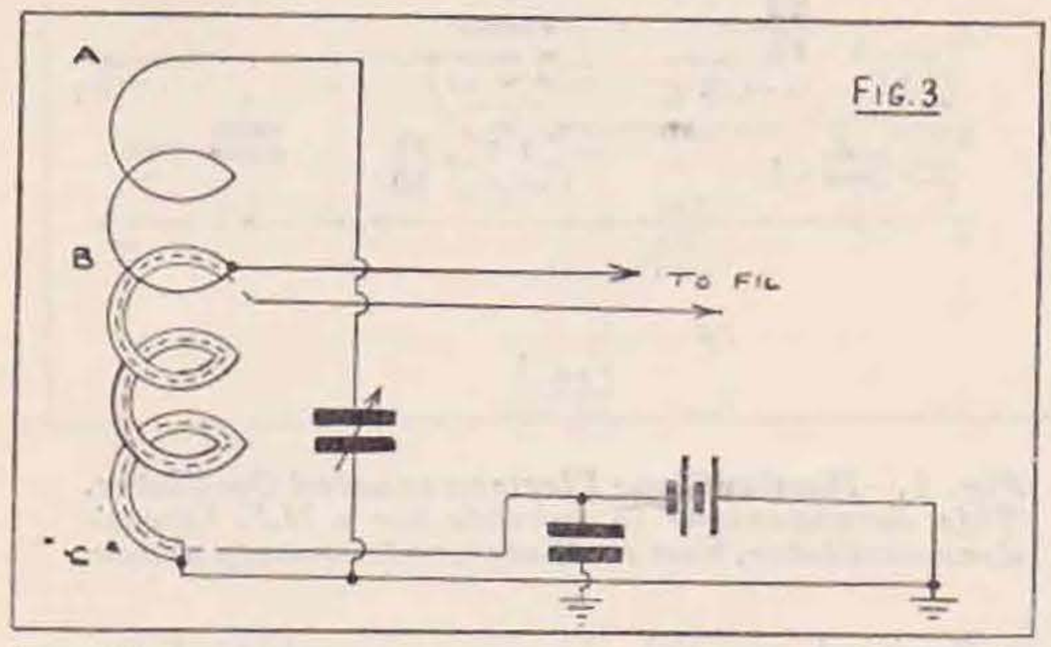


Fig. 3.—Method of connecting the interwound coils when directly heated valves are used. B_1 C_1 is interwound with D.C.

coil BC, as the skin effect will keep the radio-frequency inside the tubing. This latter is not a vital point providing the filament supplies are by-passed to ground as indicated.

Conclusion.

Now that large directly heated screen-grid valves are available, they can be used with advantage in electron-coupled oscillator circuits. Such an oscillator can conveniently be followed by two similar valves, such as the QB2/75, thus providing us with a 300-watt transmitter, which is flexible throughout the amateur bands, and which is capable of emitting signals at least comparable with the best type of crystal-controlled wave.

There is one point about this system which should be mentioned, and that is in connection with plate supplies. With an electron-coupled oscillator a more perfectly filtered supply is necessary, since we are no longer dependent upon the filtering action of the quartz. The construction of a perfect filter capable of giving 2,000 volts output is expensive, but when a multi-stage transmitter is designed using this system of frequency stabilisation it will be found entirely satisfactory if filter perfection is only sought after in the oscillator and grid bias supplies.

No amateur station can be regarded as up to date unless a super-heterodyne receiver employing both an electron-coupled H.F. and an electron-coupled beat oscillator is installed.

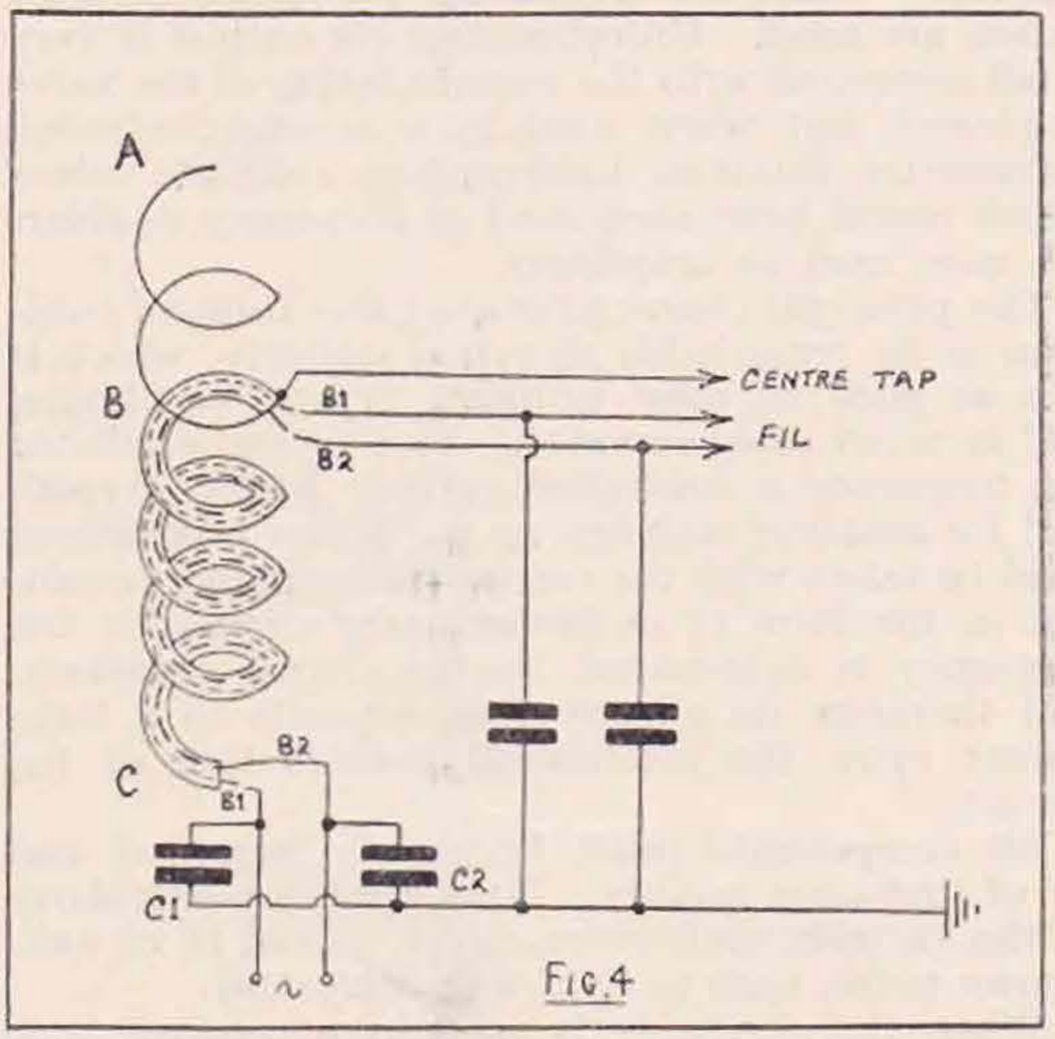


Fig. 4.—Method of connecting the interwound coils when directly heated A.C. valves are used. B_1 C_1 and B_2 C_2 are interwound with B.C.

Appendix.

The following method was used by ZL4AO in transmitting details of the circuit diagrams :—

Fig. 1.—Coil ABC, variable condenser across AC, A to grid-leak and condenser also to grid, B to cathode, C to earth, plate through RFC to positive, screen to screen plus and by-passed to ground through .005 mfd. or bigger, heater one side grounded through .005 mfd. or larger, C.T. resistor across heater, C.T. grounded.

Fig. 2.—Same as Fig. 1, except plate through coil L_2 (tuned by C_2), then by-passed condenser .002 mfd. to ground, plate supply across by-pass condenser, load coupled from L_2 by any ordinary method of P.A. coupling.

Fig. 3.—Grid plate and screen-grid connections as in Fig. 2, coil ABC as before, tuned by C_1, coil B_1 C_1 interwound with BC, B and B_1 to filament, C and C_1 to filament battery, C earth as before, by-pass C_1 to earth.

Fig. 4.—Coil ABC as before, coils B_1 C_1 and B_2 C_2 interwoven with BC, B to C.T. on C.T. resistor across filament, by-pass condensers across C.T. resistor, B_1 and B_2 to filaments, C_1 and C_2 to A.C. filament supply, C_1 and C_2 by-passed to earth.

Are you contemplating applying for an A.A. call?

A RECEIVER, TRANSMITTER & FREQUENCY METER FOR 56 MCS.

By J. NODEN (G6TW).

The author describes below a simple transmitter and receiver suitable for work on the 56 mcs. band. The principles explained have been used by Mr. Noden for some years, and as one of the pioneers in this field of research his views should prove of interest.

DURING 1929, the author, in collaboration with Mr. E. T. Somerset, commenced experimental work on the 56 mc. band, but at the end of a year, after numerous tests had been carried out with transmitters and receivers, co-operative experimenting ceased. Since that time, however, G6TW has continued his investigations of 56 mc. problems, and scarcely a week has passed without tests being conducted at various points up to 20 miles from the home station. The test transmissions on these occasions have been started up by Mrs. Noden.

With the knowledge that many amateurs are taking an interest in these frequencies, the writer decided to prepare a short article which would give constructional details of suitable gear for this class of work.

The sets to be described are simple to build and can be regarded as reliable for local work. The transmitter is identical with the one the writer constructed for display at Olympia in 1930, except that it was then designed for work on 1.5 metres. The present receiver and transmitter were exhibited on Messrs. Stratton's stand at the R.M.A. Exhibition this year.

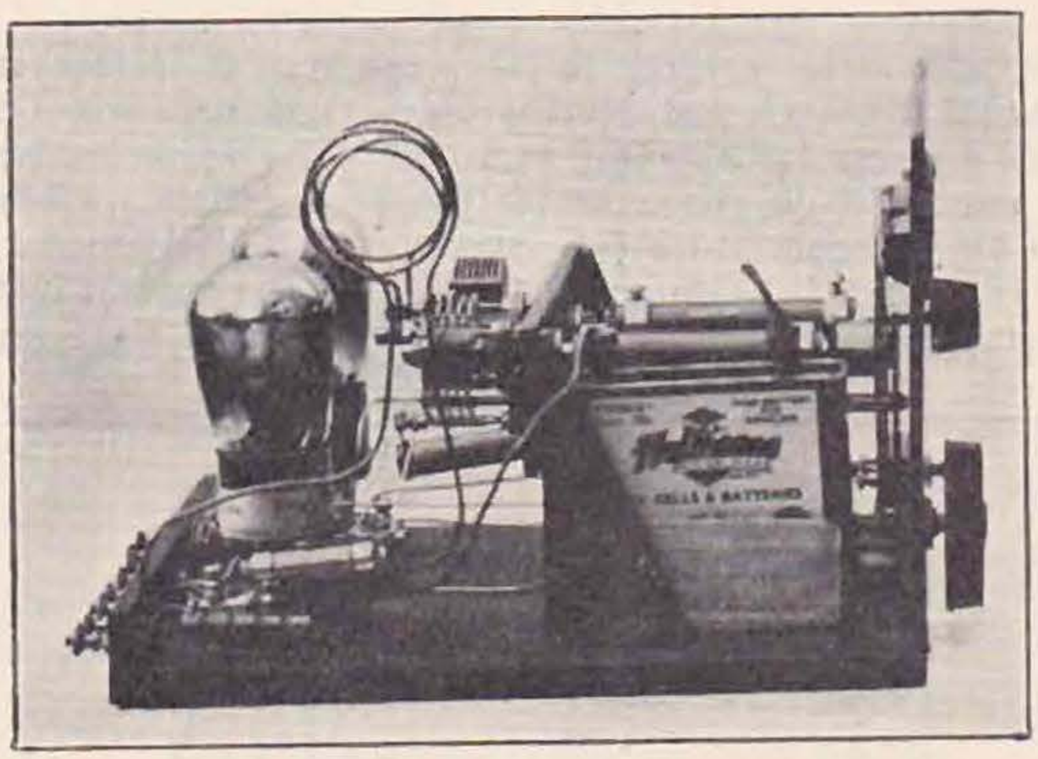


Fig. 1.
Side view of 56 mc. Receiver.

Before dealing with constructional details it is desirable to mention that, contrary to some opinions, the writer is convinced that there are no especial difficulties surrounding work on these relatively high frequencies. The most apparent difficulties concern tuning methods, and the fact that absorption effects are pronounced, but the newcomer should dispel the idea that communication outside the optical range is impossible. This is a fallacy and was proved incorrect by the author and others many years ago.

The Receiver.

This is of the two valve variety and employs the Ultraudion principle. Such a circuit lends itself particularly well for U.H.F. work, as the detector valve is subject to little damping; the small amount that does occur is often due to the filament. Furthermore, it is probably the only circuit which permits the use of a fairly large inductance. The receiver is illustrated in Fig. 1 and the circuit diagram in Fig. 2. The list of components employed is given below the circuit, but alternatives may be substituted with discretion.

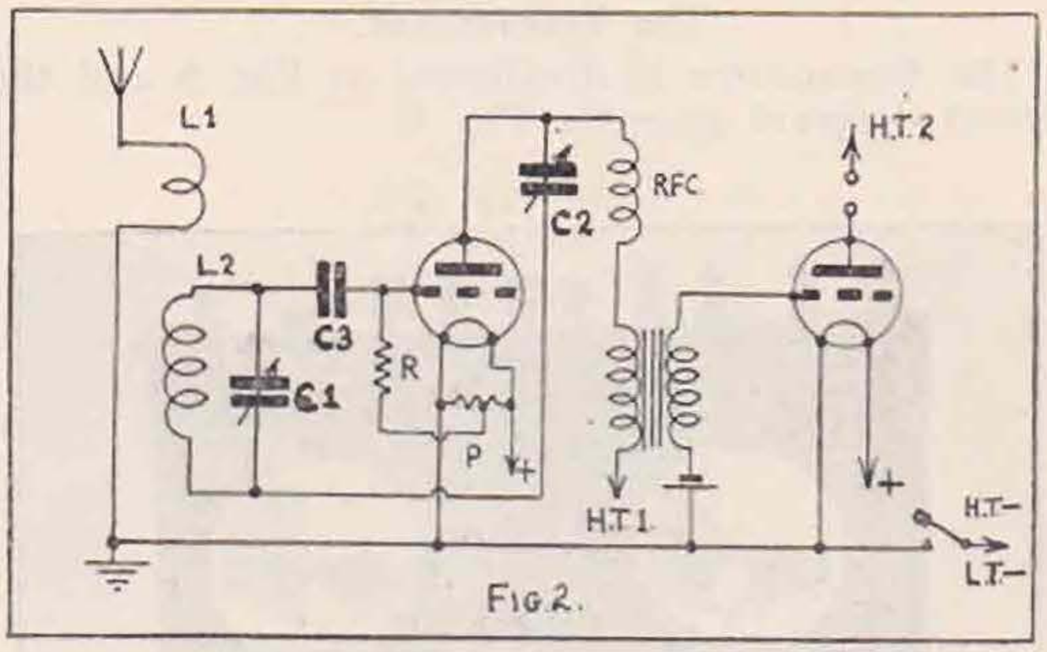


FIG.2.

Fig. 2.—Circuit Diagram of 56 mc. Receiver.

Eddystone—
C1 Microdenser type 900.
C2 Reaction Condenser type 840.
P Bias resistor type 938.
RFC Choke type 947.
Valve holder type 949 and 950.
Vernier Disc Drive type 933B.
Extension spindles type 943.

Varley—
Niclet LF Transformer type DP22

Pepper—
R 2 megohm Grid leak.

The layout of the parts is clearly shown in Fig. 3.

After marking out the base and front panel in the manner illustrated in Fig. 4a, the wooden brackets and condenser panel should be fitted (Fig. 4b). This panel should be of good insulating material, as it supports both variable condensers and consequently is under severe electrical strain. Low loss components and good quality slow motion dials are essential. The front panel can be made from any material, such as white wood, as it is at earth potential and is insulated from the H.F. parts by the extension handles. The variable condensers specified are ideal for the job as they are noiseless in operation, have low losses and are moderately priced.

L2 consists of* three turns of No. 16 s.w.g. copper wire, 1½ in. diameter, spaced ½. L1 is wound with a similar guage of wire but has only one turn and is continuous in length from L1 to the nearest earth

* When the receiver was tested it was found that the centre of the 5 metre band came in the middle of the condenser dial when only two turns were used for L2.

If so, consult the new Guide.

point of the receiver. P is a fixed potentiometer or bias resister and is tapped at one-third along its length, the smaller portion being joined to the positive side of the L.T. battery. This provides a simple method of obtaining valve stability. All connections should be soldered and carried out with stout wire, following the layout as closely as possible.

In operation it will be found that the detector anode voltage is somewhat critical; for smooth working a value of between 40 and 50 volts should be found satisfactory for most types of valves. Secondary oscillation will result if the voltage is too high.

The amplifier calls for no special comment as this is of conventional design. The transformer specified is suitable for either a triode or pentode output. A 6 volt grid bias battery should be fitted in the clip shown in the Figure 3.

Operation and calibration methods are discussed later.

The Transmitter.

The transmitter is illustrated in Fig. 5 and the circuit diagram given in Fig. 6.

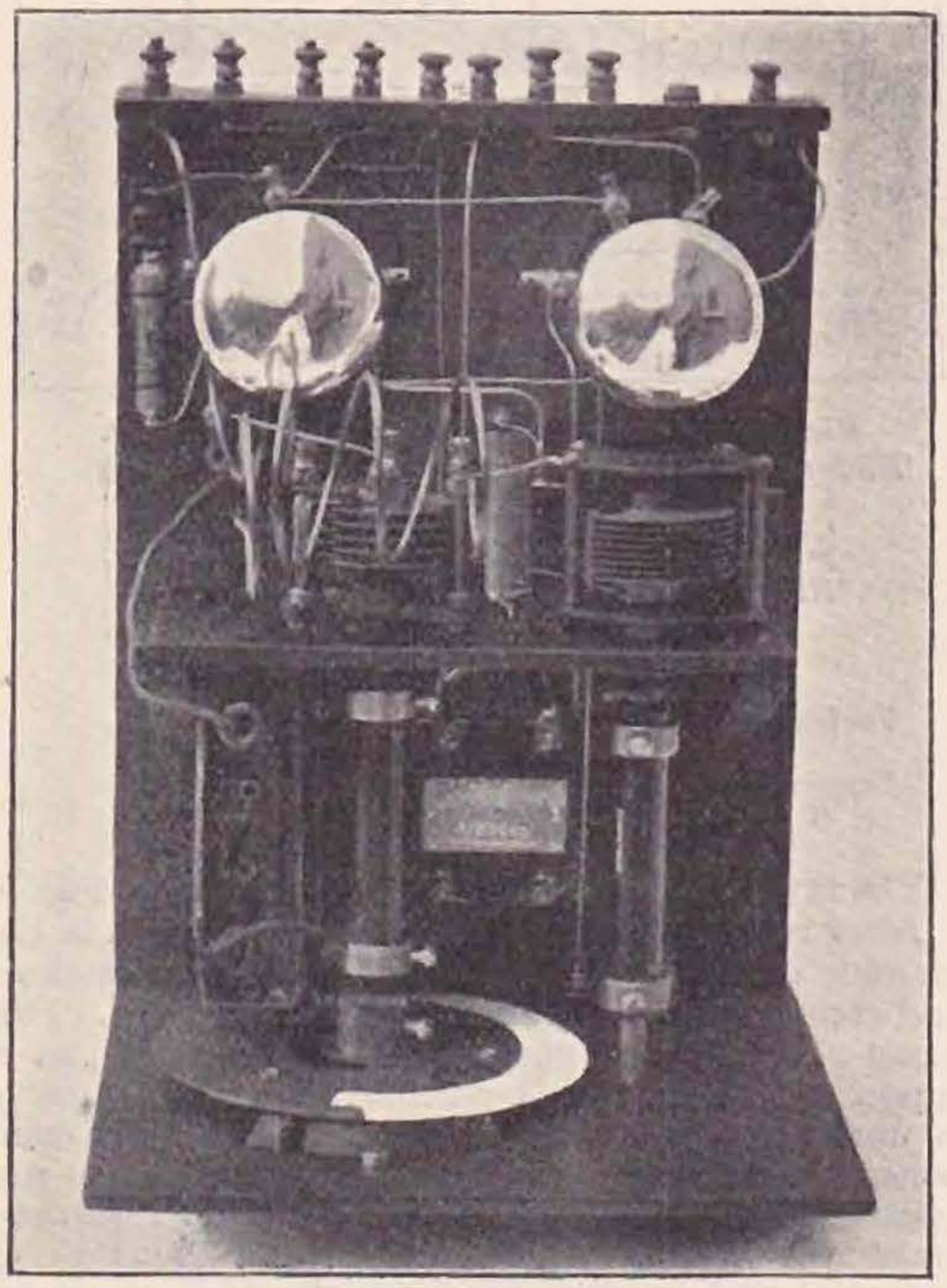


Fig. 3.
Top view of 56 mc. Receiver, showing position of all components.

The aerial system shown by dotted lines in Fig. 6 is not included in the base board arrangement, but can, of course, be catered for by increasing the width of the base. The oscillatory circuit consists of two inductances L1 and L2, and three condensers, C1, C2 and C3, one of the latter being variable. These components are symmetrically arranged in series resulting in a neat and compact layout.

The sketch (Fig. 7) gives the position of components and recommended dimensions.

The two stand-off insulators supporting L1, L2 and C1 are connected together by means of an

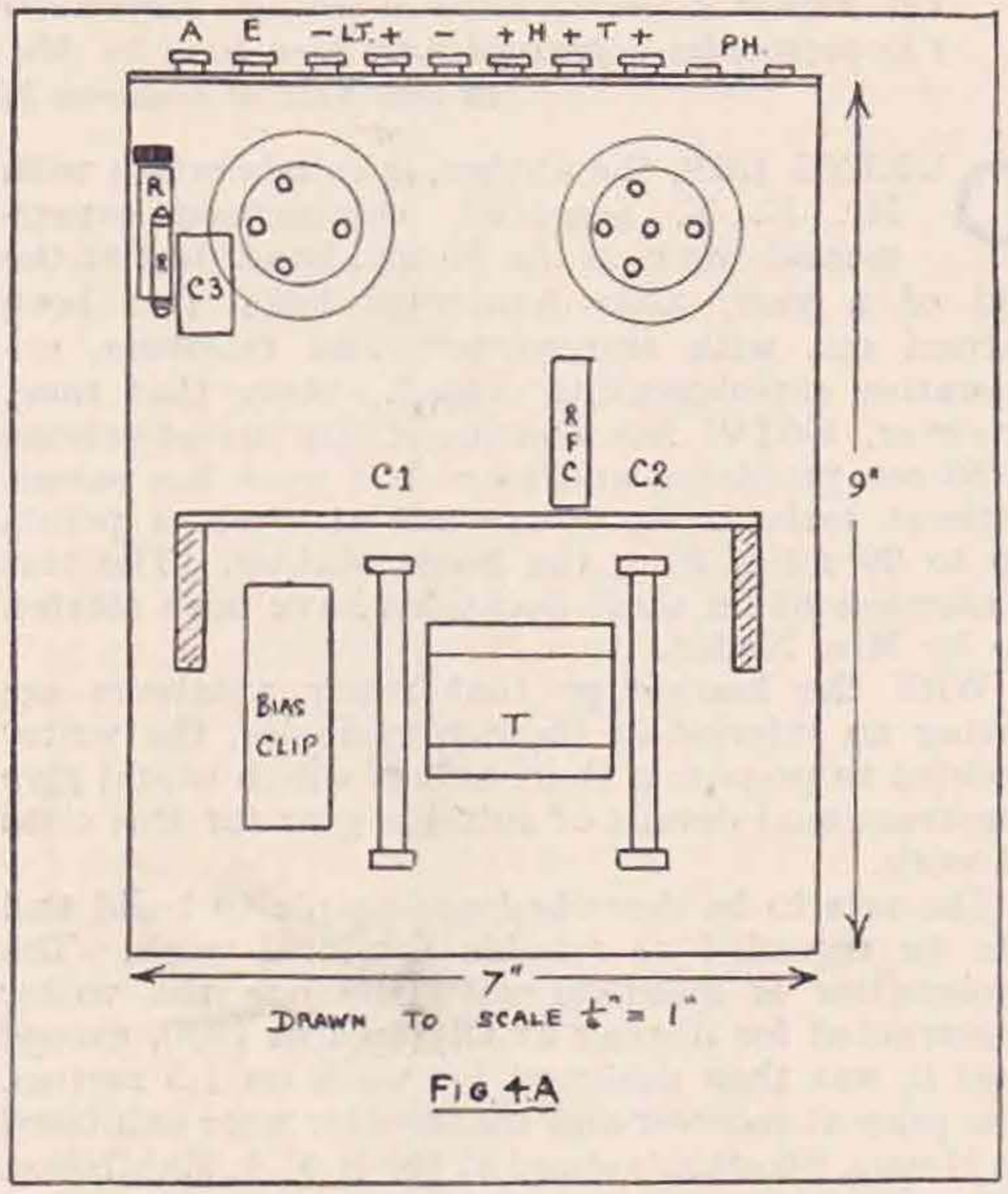


FIG 4A

Fig. 4A.—Lay-out of baseboard of 56 mc. Receiver.

ebonite strip drilled in the centre. A screw is passed through the centre hole, thus securing C3 and making for extreme rigidity. The valve holder is mounted on three small insulated pillars. Coils L1 and L2 consist of three turns, each 3 in. diameter, 3/16 copper tube, and when mounted the spiral must continue in the same direction. C2 and C3 are air

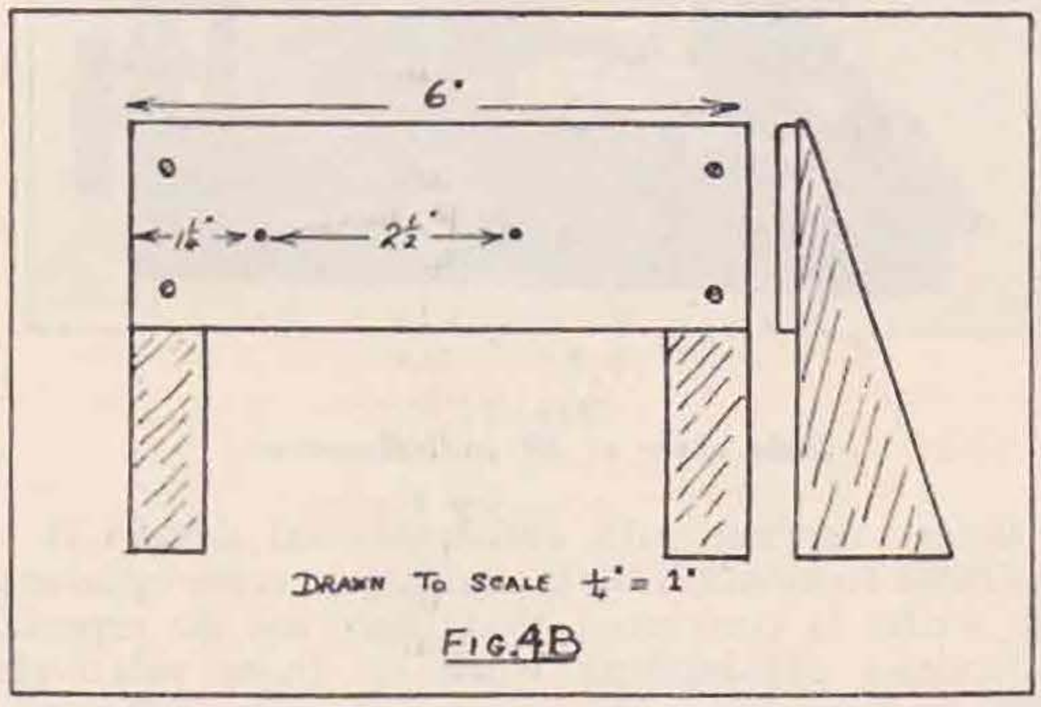


FIG.4B

Fig. 4B.—Details of Condenser Bracket.

dielectric condensers having a capacity of 12 mmfds. Other types may be used, but their value must not exceed 0.0001 mfd. If this capacity is used two turns only will be required. The grid choke HFC2 is similar to that used in the receiver, but can be home-made by winding a 2 in. single layer of No. 36

s.w.g. covered copper wire on to a ⅜ in. glass tube. The choke HFC1 can be wound on a similar tube with No. 38 or No. 40 s.w.g. s.c. copper wire, but consists of 14 sections of 10 turns each. A tube 5 ins. long will be found suitable. The space between each section should be ⅛ in. and the turns kept in position by means of shellac. Small brass ferrules should be fitted to the ends of the former, in order that it may conveniently be fitted into the spring clips fixed to the base board. This choke is probably the most important component in the set and great care should be exercised in its construction. Recently Messrs. Strattons have produced a honeycomb wound choke (No. 948) which has very little capacity, and this is recommended with confidence.

The leak R1 should be approximately 10,000 ohms, but must be capable of passing a current of 10 mas. The condenser may be of any variable type with ebonite ends and need not be a S.L.F. model. Plates should be removed until only one movable and two fixed remain, the fixed vanes being separated ¼ in. The leads to the coil sockets should be 8 ins. long and the coil 6 ins. in diameter and made from ⅛ in. wire. If constructed as described the tuning range will be approximately 4¾ to 6 metres. The whole should be mounted in a box 7 in. by 4½ ins. by 2½ ins. deep.

Calibration.

If calibration of the receiver and the meter against a standard is not possible, the method now to be mentioned will be found useful. Measure off 5½ metres of thin wire and mount this between insulators, securing them to two canes about three feet high. Keeping the wire taut, place the receiver under the centre of the wire (which is the nodal point) in such a position that a slight pressure will permit the receiver coils to touch the wire. Now set the receiver at minimum tuning and by means of headphones listen for a state of oscillation. Advance the tuning and bring the wire towards the coils, using an insulated rod for the purpose. When the receiver is tuned to exactly 5½ metres, oscillation will stop. This point should be noted on the condenser dial and other wavelengths obtained by cutting or lengthening the wire. A graph can then be plotted and the wavemeter calibrated from the receiver and the transmitter from the wavemeter.

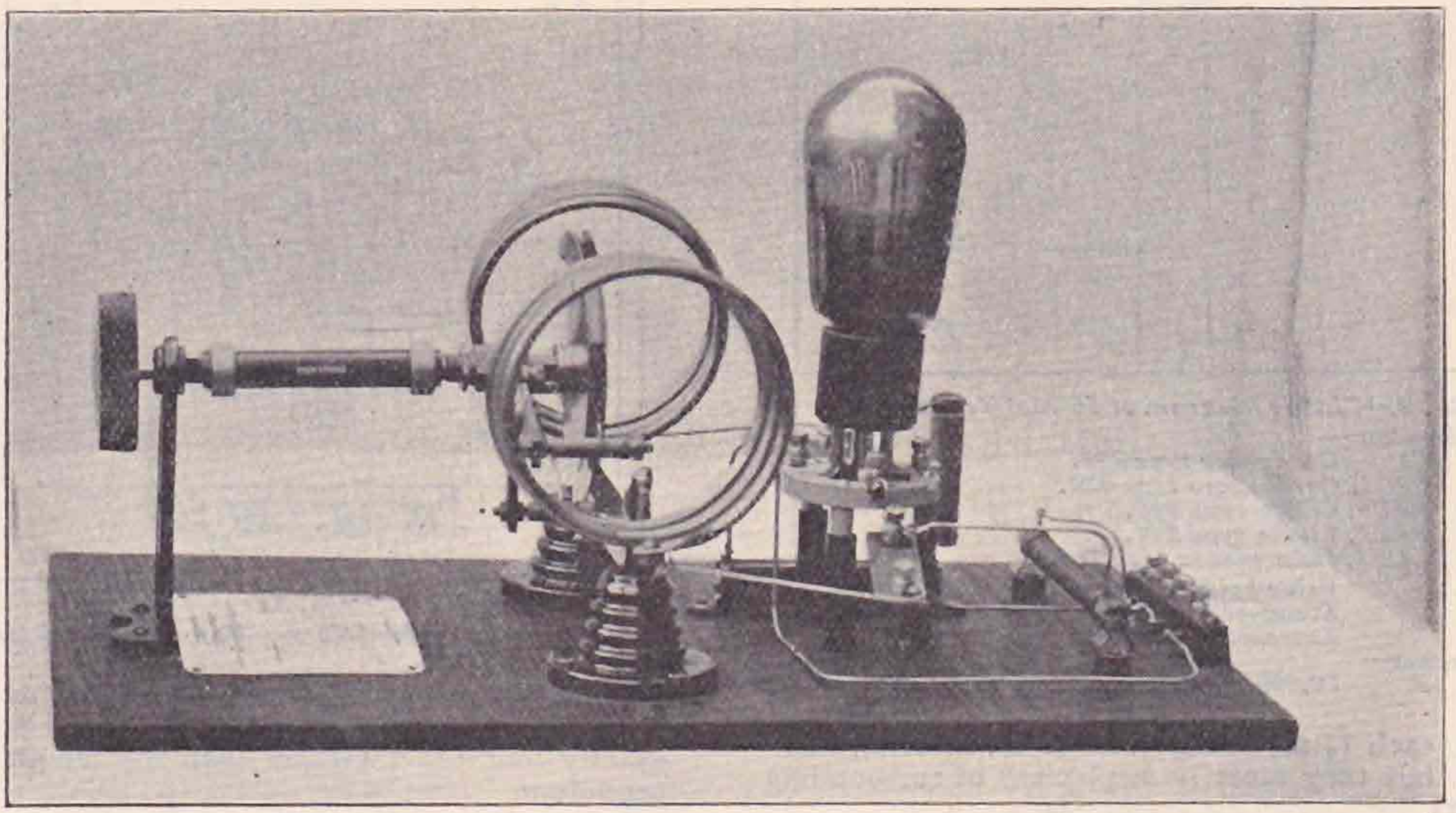


Fig. 5.
Side view of 56 mc. Transmitter, showing method of supporting the variable condenser, and tuning coils.

If alternative components are used care must be taken to ensure that no R.F. leakages can occur, which in effect means that the valve holder pillars and stand-off insulators must be of good quality.

Providing care has been taken in assembly, no difficulty should be experienced in obtaining oscillation when power is applied.

The Frequency Meter.

Before placing the transmitter into operation, it is necessary to check its frequency range ; furthermore, the amateur band requires locating on the receiver.

The following description of a simple yet effective frequency or wavemeter will perhaps prove of interest.

The meter to be described is of the absorption type (Fig. 8) and consists of one turn of heavy guage wire, and a small tuning condenser. To avoid hand capacity when in use the coil is mounted as far away from the condenser handle as possible.

Radiators.

Referring to Fig. 6, it will be noted that the aerial system is shown in dotted lines. The arrangement recommended for use with the transmitter described consists of two tank circuits coupled to L1 and L2, each coil having one turn and connected across a small tuning condenser. The aerial is joined as shown.

A good radiator is one that runs off from the transmitter at an angle of 45° and its length should be any multiple of the transmitted wave. Two

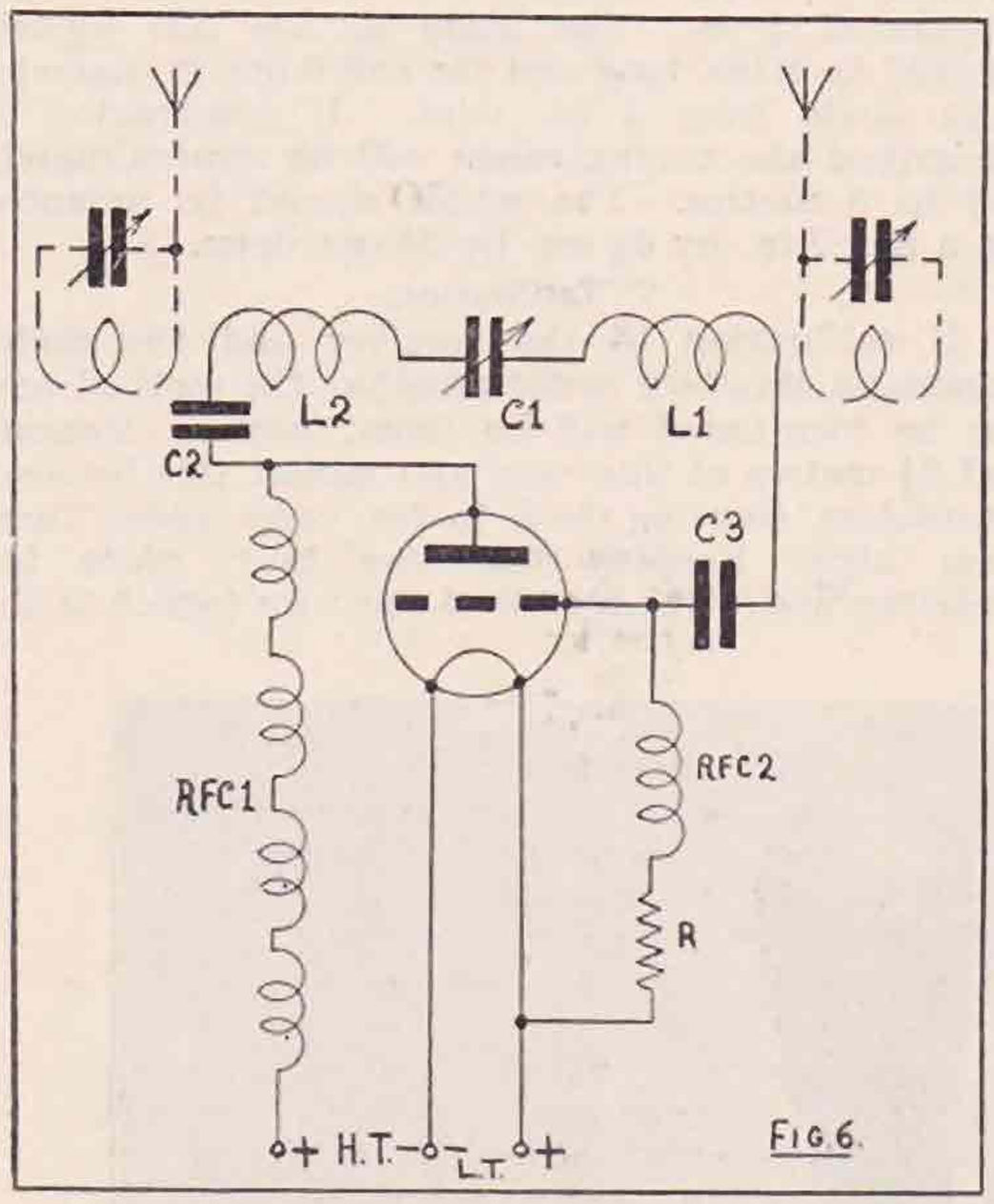


FIG.6.

Fig. 6.—Circuit Diagram of 56 mc. Transmitter.

Eddystone—
C1 Condenser type 922.
C2C3, Condensers type 929.
RFC1. Choke type 948.
RFC2. Choke type 947.
L1 L2, Inductances type 514.
Valve holder, type 951 with pillars.
Stand-off insulators type 916.
Extension spindle type 943.

Pepper—
R 10,000 ohm Resistance.

wires, each 1½ metres long, make an ideal arrangement, but they must be kept clear of surrounding objects.

General Remarks.

When using 56 mc. apparatus as much testing as possible should be carried out in the open air, because absorption, due to masses 50 to 100 feet from the station, will definitely reduce long distance working, and may confuse results.

An interesting story showing the effect produced by small moving objects is worthy of record. It

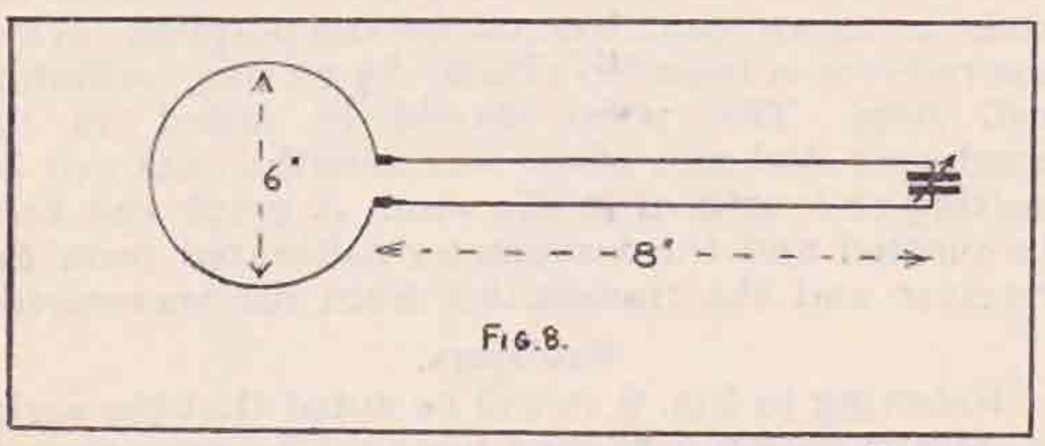


FIG.8.

Fig. 8.—Arrangement of Frequency Meter Circuit.

was found that the pendulum of a grandfather clock, 50 feet from the receiver but in the same plane, produced a synchronised beat in the headphones every time it passed the driving weight.

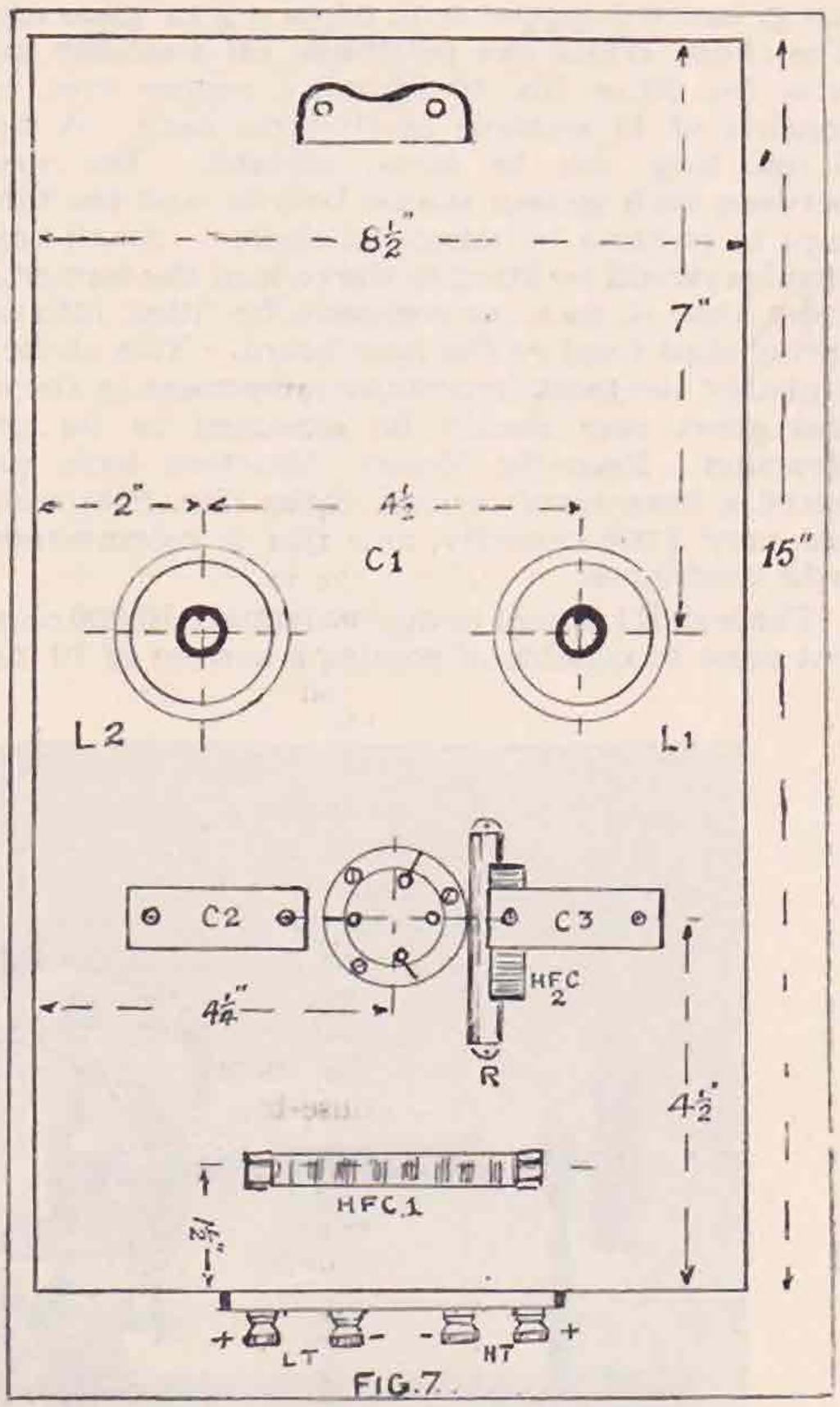


FIG.7.

Fig. 7.
Layout of baseboard for 56 mc. transmitter.

Investigation showed that the interfering points occurred when the wavelength of the receiver was exactly four times greater than the length of the pendulum.

In conclusion, the writer wishes to express his thanks to all who have at any time co-operated with him in his work, and will be grateful if others who are interested will compare notes with him on this subject.

Empire Calls Heard.

ZS4U (Boshof, during June, July and August):—

G5mp, 5vl, 5vp, 5wp, 5wq, 6dl, 6hp, 6ki, 6ow, 6tt, 6us, vu2bm, 2df, 2bw, su1zz, vs7gt.

G6OL (Felton, during August) :—

7 mc. : z11gx, 2ci, 2fr.

14 mc. : ve2ax, 2ay, 2ch, 2dw, 2ee, 2fe, 3ta, vp2mo, 2mr, 2nb, 6mo, vu2bm, 2fp, 2jt, zs1h, xzn2b, xzn2c.

Gi6TK (Belfast, during August and September) :—

7 and 14 mc. : su3rx, ve2ax, 2ch, 2dm, 2ee, 2fe, 2fg, 3jz, 3wa, vk2wu, vp2na, 4jr, 6mo, vu2bl, 2lx, 2mt, 3df, zc1a, zl3gm.

G5AM (Amberley, Sussex, August 26 and September 9) :—

1.7 mc. : g2ak, 2gd, 2gg, 2gp, 2gx, 2hq, 2kv, 2vo, 2wk, 5fi, 5mu, 5nc, 5oq, 5pk, 5rx, 5uk, 5um, 6fj, 5iy, 6pa, 6pf, 6rq, 6wq, 6zq, 6zr, 6zs.

"SOLILOQUIES FROM THE SHACK."

By Uncle Tom.

(Our highly-paid contributor breaks out again—but forgive him ; it's the effect of the moon.)

NOW for a winter's work ! Conventions, tennis, hikes, with or without YL's, holidays and the like are all dying off. Only the Rugger experts or the old fogies like myself who play indoor bowls can find much to distract their attention from radio from now on.

I want to make a serious appeal right at the start. *Don't* treat 56 mc. work as a summer pastime and let it drop off throughout the winter. Surely there is plenty that we can do. Even the Field-Day aspect of it need not be dropped, because there are plenty of days in the winter on which those who own cars can have very enjoyable runs out to the " high spots."

Personally, I vastly prefer winter driving. Mr. and Mrs. Week-end Motorist have laid their cars up to save a quarter's tax, and the roads are clear.

Another thing about 56 mc. work. Don't let's all go crazy on breaking DX records. Apart from the personal glory, they aren't the least use to anyone, as we have to go to spots which can't possibly be put into regular use. Let us try to develop the 100 per cent. reliable " house-to-house " aspect of 56 mc.

I know of one R.S.G.B. member who is quietly working away at a real he-man 56 mc. transmitter with two T.61 D's in push-pull and quite high power. Surely we have been trying to do too much with fly-power gear up to the present. " Let's get cracking," as my old Yorkshire friend used to say.

Sundry letters have reached your benevolent uncle—some friendly, some quarrelsome, but all full of the admiration that is so justly due to him. One reader quarrels with my dictum in last month's notes about soldered joints. You will remember that I said that it was actually *quicker* to use solder than to muck about with thin wire under terminals and nuts.

This gentleman puts forward another view. Says he : " Even Uncle Tom can't get away with the idea that it is quicker to *undo* a soldered joint than to slip a wire off a terminal ? Or does he just make a caustic remark to the joint and watch the solder melt ? "

Another reader suggests that for the benefit of all these young hams who claim to be the youngest holders of two-letter call-signs, I should run a " Kiddies' Korner " in the Bull. Personally, I'm agreeable, but the Editor would jib, I feel sure.

Yet another gentleman, a ship's op., writes to tell me that he has, at last, found a bad location. He rather begs my original question, because the " badness " is due to steel cranes, metal sheds, wire guy-ropes, gasometers, and the like. I never denied that one could find a location that was bad on account of what we can justly call Man-Made QRM.

But this man's further remarks go straight to my heart. He says " *Amateur* Radio, alas, describes our hobby perfectly. After all, the world judges by what it hears . . . and believe me, to hear some hams almost sending love and kisses at the end of a QSO gives me the willies. Furthermore, most of them QSZ their formula-QSO's, to make sure of the other chap getting every letter of something that is already known by heart."

He foresees the R.N.W.A.R. men blossoming out into pukka hams, after the shock of their " sweet 73's " and " dear ob's " being ignored has worn off.

Personally, I don't agree with making ham QSO's *entirely* business, but there certainly is too much slobber at the end of the average contact at present. For the love of Mike shorten down the " Hope hope 2 2 cuagn cuagn dear dear ob ob 73 73 gn gn . . .," etc. The only bit that I agree with is the " dear dear."

Our local QSO-machine, to whom I alluded last month, is still going strong. I notice that he never works the same man twice, so I suppose he'll have used everybody up by Christmas. Let's hope he doesn't take it into his head to start at the beginning again.

Last month my whack on the tub concerned " hay wire." This month it deals with " untidiness," not in relation to the wiring up of the gear, but the general arrangement of the station. We're not all professional carpenters and plumbers, but surely we can make things look a little more business-like than we do ?

How many hams take any trouble about arranging a really comfortable operating position ? I rather like the stations one sees occasionally with a kind of desk housing the receiver, monitor, key, switches and log-books. The transmitter need not be far away, but it looks better, and *is* better, not to have the whole collection of gear higgledy-piggledy on one bench.

I've a good mind to offer a prize for the best laid-out station. If any possible aspirants for that honour would like to send me photographs, I will see what can be done. (I have a stand-off insulator not in use at present, if that's any good to someone.)

Whack No. 2 goes to owners of bug-keys who can't use them. Why try to send fast before you have learnt to send proper Morse slowly ? It doesn't help things at the other end, believe me. Take your " bug " down in the cellar and practise on a buzzer before letting it loose on the unfortunate ether.

Cheerio, nieces and nephews. Uncle will have a nice surprise for you next month.

Mr. Basil Davis (G2BZ) reports that his call has been pirated. Information regarding the whereabouts of the unauthorised person using his call will be appreciated.

* * *

G6WY will call " Test Ten " every Saturday during December and January, commencing 12.00 G.M.T., at 10-minute intervals till 13.00 G.M.T. ; listening will be carried out in between these times. Reports are requested from any distance. An input of 150 watts will be used on 28,492 kc. Crystal controlled.

FROM ACROSS THE OCEAN.

By Yardley Beers (W3AWH).

GREAT interest has been shown in the single signal super-heterodyne which was developed by the A.R.R.L. This set is so called because it brings in only part of the signal on one side of the Zero beat. The S.S.S. is undoubtedly a partial remedy for the congestion on our bands, because of its great selectivity (said to be in the order of one kilocycle). In addition, it has a superior noise—signal ratio and has the ability to resist " blocking," so that one can " break in " with crystal oscillator and buffer stages in operation. As against these advantages is the fact that its high selectivity is only useful in the case of sharply-tuned signals. Broad transmissions take up as much space on the dial as with an autodyne. As a point of interest one of our largest manufacturers has a model on the market at so low a price that the factory is weeks behind in supplying the demand.

The A.R.R.L., together with individuals and local societies, is making every endeavour to clean up the air by persuading offenders with poor notes to adjust their transmitters. Although there is a slight improvement, much has yet to be done. Owing to lack of funds, the Government have not enforced the law as well as it might, but an A.R.R.L. Bulletin brings the good news that the Government have recently bought ten S.S.S., with the implied purpose of monitoring the bands. It is expected that it will be made compulsory in the near future to use smoothing apparatus in all H.T. supplies.

For local work it is the general practice over here to work only in that half of the band in which the transmitter is operating. Therefore, our 1.7 and 3.5 mc. bands are divided into two parts, which in general are not on speaking terms with each other ; for instance, C.W. stations do not operate in the portions of the bands normally used by telephony stations and *vice versa*. This arrangement is by " gentlemen's agreement " and except under extraordinary circumstances do the 'phone stations contact with the C.W. men. (On 14 mc. neither of these statements hold true). Because of the separation of the two types of stations there is naturally a certain amount of friction between them, however both parties are beginning to realise that this friction is detrimental to amateur radio as a whole, and an effort is being made to promote better feeling.

The World's Fair A.R.R.L. Convention held in Chicago during the first week of August was the biggest and best we have had for many years. The feature of the event was the code speed contest. After a preliminary test the competitors were divided into eight groups, each group competing for one of the silver cups donated by the exhibition authorities. The winner in the highest class established a new world's record by copying code at 57 words per minute with the allowable error of 1 per cent. By a strange coincidence, all the other cups were won by amateurs who normally use telephony, with one exception, and this was in the 20 word per minute class when the cup for that section was won by Miss Jean Hudson, W3BAK, nine years old, the youngest licensed operator in the world. (And the whole amateur world congratulates you, Jean.—Ed.)

The concluding event of the Convention was a well attended dinner, at which many prizes were distributed. Such well-known amateurs as Maxim, Reinartz, Schnell, Phelps, Hebert, DeSoto, and Wallace were amongst the speakers.

The World's Fair is too enormous to be described in a few lines, but it should be mentioned that it occupies a stretch of land 3½ miles long near the central business portion of Chicago along the shore of Lake Michigan, this land having been specially reclaimed from the Lake for the Fair. Brightly coloured modern buildings which form a memorable sight both by day and night, have been erected in all parts of the exhibition. Separate buildings house such widely varying interests as Art, Agriculture, Communications, Religion, Social Sciences and Transportation. There is offered also to the visitor a great variety of entertainment ranging from opera and symphonic concerts to athletics and a view of the night life of the streets of Paris !

In the Travel and Transport building the World's Fair Amateur Radio Council have erected the amateur stations W9USA—W9USB. The transmitters are : (a) 400-watt 3.5 mc. c.w. and phone ; (b) 1,000-watt 7 mc. c.w., and (c) 56 mc. c.c. phone. The receiving equipment consists of three single signal super-heterodynes, and in addition there is a large display of amateur and commercial equipment. A special meeting room for amateurs is available and is the Mecca for all who visit the Fair.

In the Electrical and Communications Building is located the commercial radio exhibits, the most interesting of which is a demonstration of the transmission of power by radio by means of an 18-k.w. 6½-metre transmitter. In the same building there is in operation a 9-centimetre " narrow casting " transmitter and receiver which has recently been put on the commercial market.

By now most amateurs are aware that our regulations have recently been revised. Most welcome is the news that from October 1 last, all American amateurs are required to transmit pure D.C. signals except on the ultra high frequencies. The long-awaited permission to use telephony on the band 28,000 to 28,500 kc. has also been granted. In future no special portable licences will be issued, but we shall be allowed to operate our portable stations under our regular licence. To distinguish portables from fixed stations they will transmit the break sign after their own call, following this by the numeral of the district in which they are operating. Permission has also been granted to operate 5 metre and three-quarter metre transmitters in aeroplanes without the necessity of a special licence. In addition, the whole system of issuing licences has been revised, with the result that it is now slightly more difficult for the unqualified and inactive amateur to obtain or retain his licence.

Three new medium power transmitting valves have recently come on to our market ; these are the E.R.RK 18, the Sylvania 830, and the RCA 800. These valves are larger than the UX210 but smaller than the 852 and 203A ; they have low internal capacities and comparatively high magnification

(*Continued on page* 114.)

The new Guide contains 48 *pages of information useful to every Member*

STATION DESCRIPTION No. 37.

G6YL

By One of Yourselves.

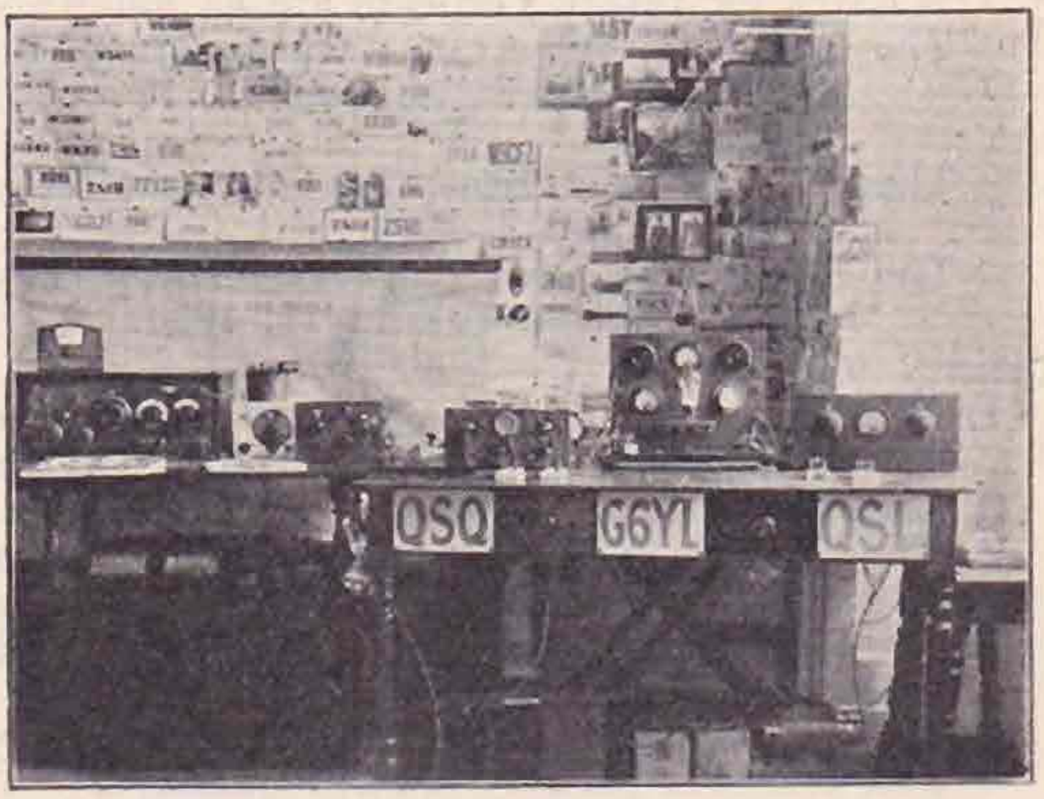
IT was in 1923 that Miss Barbara Dunn received her introduction to broadcast radio and, eventually, to the "Ham" game. She says herself it was "YLish curiosity" that prompted her to find out the meaning of certain scratchy signals which interfered with 2LO broadcast reception at her old home in Stock, Essex. Having discovered that these were spark signals of ships and coast stations, she deserted the ranks of the B.C.L. and set to work to learn the morse code, which was mastered entirely by listening on a crystal receiver on 600 metres and 2,600 metres (FL time signals). After five months of self-tuition, in spare moments, the code was copied at 20 w.p.m.

At Christmas, 1925, a short-wave receiver opened up fresh fields, and many members may remember useful reports, signed "B. Dunn," received between that time and 1927, when she was persuaded that it was time she should seek admission to the "Ham" fraternity. Her appearance at the county head post office, where she walked through the morse test with a solid copy at well over 20 per, must have caused almost as great a sensation in those circles as did the first QSO's with G6YL and the arrival of those first QSL's in the "ham" world. However, G6YL is not out for sensations. One of her chief interests in life is ham radio, and her enthusiasm is even greater now, if possible, than when she first hit the key at her old QRA in 1927 and hooked GI6YW on 45 metres.

The original transmitter employed an L.S.5 in a Hartley circuit, with about 350 volts derived from a Mortley rotary converter running off a 6-volt accumulator, feeding a half-wave VF Hertz. Some idea of the enthusiasm of those days may be gained when it is realised that the accumulator supplied current for the gennie, L.S.5, and the two bright emitters in the receiver, and had to be taken six miles to be charged. However, with the aid of a spare battery, this outfit did very good work on 45 metres with a maximum input of 8 watts. All Europe was worked and DX included contacts with NX1XL and U.S.A. first and second districts. In 1928, QRA was changed from the South to the present one in the far North.

Acton House is situated two and a half miles N.E. of the village of Felton and about a mile to the east of the Great North Road. It stands on a hillside which slopes down to the River Coquet and the sea, and can be seen for many miles to the south. The first thing which strikes one's eye as one walks along the drive is the antenna suspended between a 30-foot pole fixed up in an oak tree and a chimney, a slightly bent 60-foot AOG with an average height of about 40 feet. This gives excellent results, and after experiencing the force with which the breezes straight off the North Sea blow round the house, I quite understand why G6YL prefers it to Zepps, etc., with the self-excited oscillators which she is almost compelled to use owing to juice limitations.

Knowing G6YL as having been a most active member of Group 2B of the Contact Bureau, specialising in the collection of data on phenomena connected with fading, blindspotting, earthquakes, etc., one is not surprised to find that all the gear is more or less permanently connected up for consistent operation, with neatness and anti-haywire as the main points. Three separate transmitters are now in use, being arranged on one table with switches to connect H.T., aerial, key, etc., to any one of them. The change-over from one band to another is effected in a few seconds. The transmitters are, from left to right: firstly, a series-fed T.P.T.G., with one L.S.5 and interchangeable coils for 7 mc. and 14 mc.; this transmitter is used almost exclusively for 14 mc. work. Secondly, the original Hartley, using another L.S.5 and working on 7 mc.; and, thirdly, a parallel-fed T.P.T.G. with interchangeable coils for 3.5 and 1.7 mc. The same antenna is used for each band, best results being obtained with it tapped directly on the anode coil. A 32-ft. long earth lead, due to the height of the den above the ground, is used only for 1.7 mc. operation. Crystal control has been worked quite



successfully on 7 mc. and 3.5 mc., but G6YL agrees with G6FO's views in the May Bulletin, on the subject of low-power stations using C.C. in these days of high-power amateur stations' QRM, not to mention commercials.

The generator stands on a block of sorbo under the table, with a hefty bank of condensers and the accumulator alongside. Accumulators are now charged at home from the 100-volt D.C. lighting plant, but as they supply all the power to the transmitter, it will be understood that G6YL is essentially a QRP station.

The two short-wave receivers are situated on an antique "monk's seat" table alongside the transmitter table. One receiver is the old original two-valve set, with its V24 replaced with a P.M.2D.X., and with plug-in coils tunes continuously from 15 to 200 metres. The other is a midget detector and one transformer coupled L.F. set, with six-pin plug-in coils and band-spreading condenser, and the output from this goes to a change-over switch contained in the fully-screened monitor which is used for checking all transmissions. A 1.7 mc. crystal oscillator is kept permanently connected up and, used in

(*Continued on page* 114.)

R.S.G.B. CONTESTS 1933-4.

After careful consideration Council have approved the undermentioned rules for local Contests.

It will be noted that the 1.7 mc. Contest will extend over one week-end only; this decision was reached after a careful study of the last contest forms, when it was found that the majority of stations worked during the second week-end were the same as those worked during the first.

Council have decided that if this Contest is well supported, a further test may be arranged later in the season, in which case awards will be based on the results of the two Contests. No receiving event has been arranged in conjunction with this Contest, as the support given to previous contests of this type has been poor. Council are prepared however, to draw up rules for a Contest if sufficient interest is shown.

Receiving members will notice that the rules for the 3.5 mc. contest have been tightened up considerably. This was necessary because in the last Contest little real skill was required in order to log whole pages of calls heard, which in 90 per cent. of cases could not be checked.

Dates.

The dates for future Contests are as follows :—

The 3.5 mc. Contest (Transmitting and Receiving), November 4 and 5, 11 and 12, 1933.

The 1.7 mc. Contest (Transmitting only), January 7 and 8, 1934.

The Low-Power Contest (Transmitting only), March 3 and 4, 10 and 11, 1934.

General Rules for all Contests.

1. Entrants must be fully paid-up members of the Society, and be resident within the British Isles.
2. The British Isles for the purposes of all Contests includes England, Scotland, Wales, Northern Ireland, the Irish Free State, and the Channel Islands.
3. Contests commence at 1200 G.M.T. Saturdays and conclude at 2400 G.M.T. Sundays.
4. Entries will only be accepted on official log sheets which can be obtained free of charge from Headquarters, prior to the commencement of each specific Contest. They must be returned within 14 days of the conclusion of each Contest.
5. Proof of contact or reception may be required.
6. Contacts with, or calls from, ship stations will not be permitted to count for points.
7. Only one person will be permitted to operate a specific station during any one Contest.
8. Leading stations will be granted Certificates of Merit, whilst Trophies may be awarded at the discretion of Council.
9. Council have the right to amend or alter the rules at any time prior to the commencement of a specific Contest, and their decision will be final in all cases of dispute.

Rules for Transmitting Contests.

1. An exchange of reports (QSA, QRK and Tone) will be required before points for a contact can be claimed.
2. Only one contact with a specific station will be permitted to count for points during each Contest, except in the case of the Low-Power Contest, when the same station may be worked once on any licensed amateur band.

Method of Scoring for the 3.5 mc. Transmitting Contest.

1. No contacts with stations located in the British Isles will be permitted to count for points.
2. One point will be scored for each contact with Europe, two for Africa, three for Asia, four for America, and five for Australasia.
3. The total number of points so obtained will be multiplied by the number of countries worked, each American and Canadian district ranking as a separate country.
4. No competitor may use more than his licensed input power, and in no case more than 50 watts.

Method of Scoring for the 1.7 mc. Transmitting Contest.

1. No points may be scored for contacts with stations under 20 miles distant.
2. One point will be scored for other Inter-British Isle and European contacts, and five points for contacts outside Europe.
3. No competitor may use more than an input of 10 watts.

Method of Scoring for the Low-Power Transmitting Contest.

1. One point will be scored for each British Isles contact providing the station worked is more than 50 miles distant. Two points will be scored for contacts with Europe, three for Northern Africa (North of 20 degrees latitude), four for Asia, five for South Africa and Eastern America, and ten for Australasia, Central, Southern and Western America.
2. Any licensed amateur frequency may be used.
3. The high-tension voltage applied to the valve or valves delivering power to the aerial must not exceed 100 volts. Push-pull methods will be permitted.

Rules for 3.5 mc. Receiving Contest.

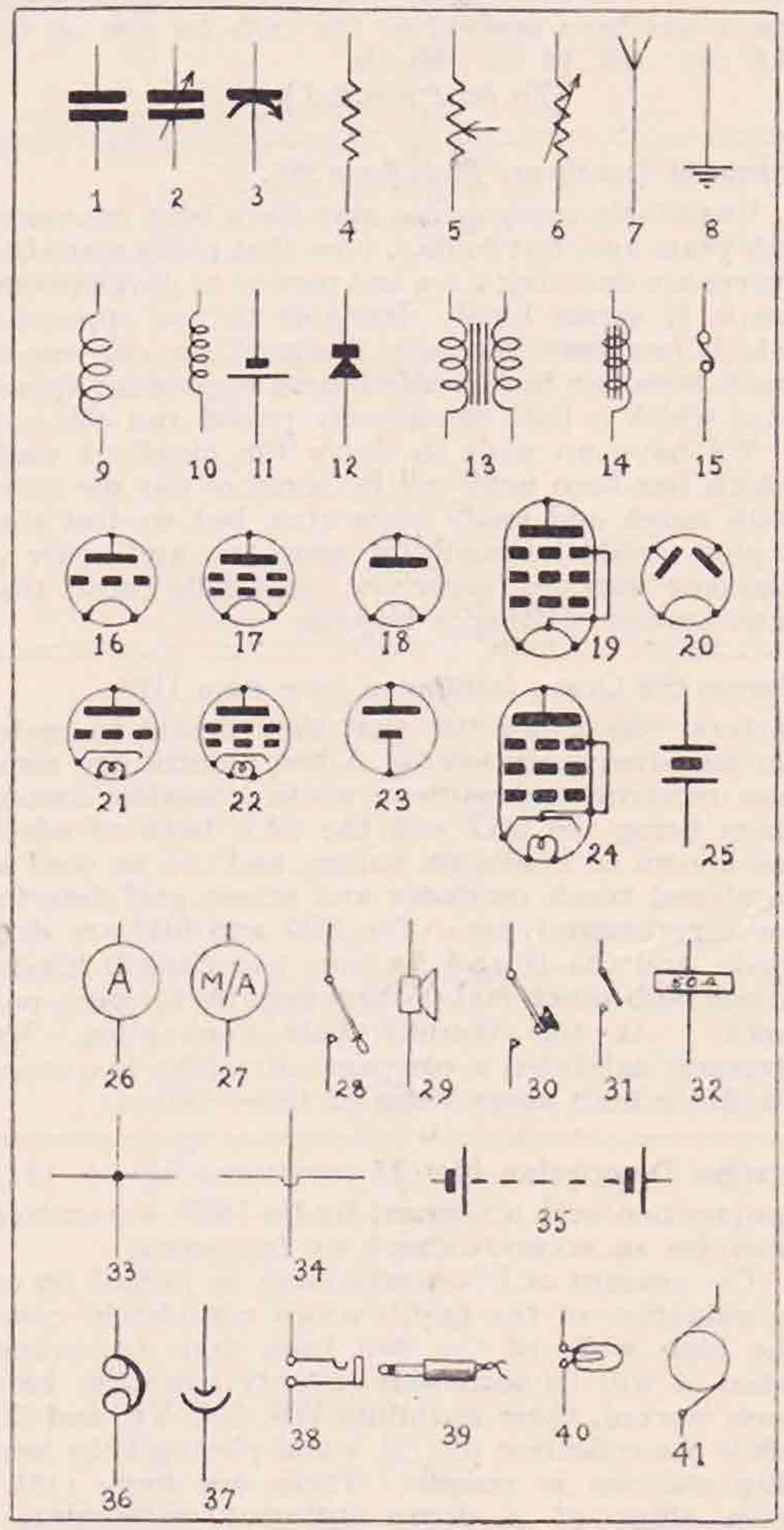
1. The same station may be logged only once during the Contest.
2. No points may be claimed for test or CQ calls heard.
3. No points may be claimed for the reception of signals from stations located in the British Isles.
4. One point will be scored for each station heard in accordance with Rule 5, if located in Europe, two if in Africa, three if in Asia, four if in America, and five if in Australasia. The total points so obtained will be multiplied by the number of countries heard, each American and Canadian district ranking as a separate country.
5. Points can only be claimed for stations heard in contact with British stations. The report (QSA, QRK and Tone) given by the distant station must be logged, together with the signal strength, and tone of the distant station.

Note.—It will not be necessary to log signals from the British station which is being worked.

Order a copy of the Guide when paying your sub.

THE PREPARATION OF CIRCUIT DIAGRAMS FOR PUBLICATION.

In publishing a list of circuit conventions which have been standardised for use in this Journal, we feel that a few words on the subject of preparing diagrams will be of interest to prospective contributors.



Drawings which are sent in with articles may be divided into two classes: first, rough sketches which require to be completely re-drawn and suitably framed; and second, those which are carefully drawn with infinite care, but cannot be used for one of several reasons. These latter are in the majority.

The main points to be borne in mind when submitting circuits for publication are:—

1. The conventions used must conform *in detail* with those here published.
2. If the finished drawing is to appear in a single column of the BULLETIN, its width must be exactly 5 in. If, as in the case of the main circuit diagram for a new receiver or transmitter, double column width would be desirable, the width of the finished drawing must be 10 in. When the block-makers receive the drawings from us, they are pinned up and photographed together, reduced to half their original area, and then process blocks are prepared for the printers. Care should always be taken to avoid drawing excessively thin lines, as these have the habit of disappearing when the picture is reduced.

CONVENTIONAL SIGNS FOR T. & R. BULLETIN CIRCUIT DIAGRAMS.

1. *Fixed condenser.*
2. *Variable condenser.*
3. *Neutralising condenser.*
4. *Fixed resistance.*
5. *Potentiometer.*
6. *Variable resistance.*
7. *Aerial.*
8. *Earth.*
9. *Tuning coil.*
10. *R.F. choke.*
11. *Cell.*
12. *Rectifier.*
13. *Transformer.*
14. *L.F. choke.*
15. *Fuse.*
16. *Directly heated triode.*
17. *Directly heated S.G. valve.*
18. *Diode.*
19. *Directly heated pentode.*
20. *Full wave rectifier.*
21. *Indirectly heated triode.*
22. *Indirectly heated S.G. valve.*
23. *Gas-filled relay or neon tube.*
24. *Indirectly heated pentode.*
25. *Quartz crystal.*
26. *Ammeter, voltmeter, etc.*
27. *Milliammeter, millivoltmeter, etc.*
28. *Hand-operated switch.*
29. *Microphone.*
30. *Key.*
31. *Relay contact.*
32. *Relay.*
33. *Connection in wiring.*
34. *Cross in wiring.*
35. *Battery.*
36. *Headphones.*
37. *Chemical rectifier.*
38. *Jack.*
39. *Plug.*
40. *Lamp.*
41. *Motor or generator.*

3. White opaque unlined paper and black Indian ink should always be used. Blue ink or pencil will not reproduce.

Many contributors to past issues of the BULLETIN have revealed themselves as competent draughtsmen, and a few as good cartoonists, but more often than not, their work has been either scrapped or entirely re-drawn for one of the above reasons. It is hoped, therefore, that these few comments will assist us materially in the reduction of labour and production costs.

There is always much more satisfaction if a member can point to an article which he has contributed, and say that the drawings are original work.

Members who do not feel competent to undertake the final preparation of drawings may, of course, continue to send rough sketches to Headquarters, where they will be re-drawn as heretofore.

A. O. M.

A Modern H.F. Receiver (*continued from page* 102).

mediately by the pin on the spindle moving from a slot in the bushing, rotating the spindle in either direction until the pin, which is riding against the key bushing face during the turning of the spindle, reaches a fresh slot, when it will be naturally pulled in by the spring tension. At the same time a different set of plugs on the disc are forced home in the group of sockets at the foot of the main support, and thus a new frequency band has been selected. The number of coils used is limited only by the physical dimensions of the disc, as a slight spacing from one coil to another is necessary. The number of leads taken from each coil is immaterial: all that is needed is more plugs on the disc for each coil and a corresponding equal number of sockets on the insulating support at the foot of the main bearing. They must, of course, be arranged symmetrically.

Any number of these switches may be ganged on the same spindle, and in this receiver two are used with one key bushing.

Provision has been made for four band changes, and the H.F. stage coils have five contacts, while those of the detector stage have the conventional four.

In the original receiver, under-base type valve-holders were used for the coil receptacles. Suitable sockets were obtained and machined to give a good fit for mounting at the support base. Thus coils made up on old valve bases can be, and were, actually used for this form of receiver, adjustments being easily made by withdrawing them from the disc sockets.

The receiver has been designed so that the switching may be operated easily and, furthermore, steps have been taken to eliminate the necessity of operating the controls from other than one side of the screening box. The wave-changing switch can be operated by mechanism from the side, but this has not been done for several reasons, although side operation is easier as only a knob requires turning. The rest of the operation can be effected by the use of suitable gears, but room was more valuable in this case, so the additional mechanism has been omitted.

H.F. Trimming.

Mention should now be made of the system of trimming used to enable the ganging to hold more easily. Each coil in the H.F. stage has a small pre-set condenser, in the form of a circular piece of brass or aluminium, fixed firmly inside the coil former at the bottom, and carefully insulated from any plugs or wires underneath it.

This is connected to the plug which goes to the grid connection on the H.F. tuning coil. A small piece of $\frac{3}{16}$in. square brass rod is cut to just fit inside the coil former, near the top edge, being held in position by screws, through each side of the coil former, which pass into the ends of the brass rod. This rod is tapped for a No. 6 B.A. screw through its centre, so that another piece of circular brass sweated on the end of the screw can travel up and down inside the coil towards the plate on the bottom.

The upper plate has a piece of thin mica glued to its underside, and the brass rod is connected to the earth side of the grid coil. A hole is bored in the screening box at the end just opposite the centre of the coil. Trimming is then effected by means of a piece of wood cut to the shape of a screwdriver and passed through the hole in the box. It is advisable first of all to experiment with temporary trimming in the shape of a small condenser across the band-spread condenser, before fitting the self-contained trimmers, as stray capacities in the coil windings may be sufficient to hold the tuning satisfactorily.

In this receiver the coils for the 7 and 28 mc. bands are not fitted with trimmers, but the arrangement has been applied to the coils for use on the 3.5 mc. and 14 mc. bands.

(*To be concluded.*)

Editorial (*continued from page* 99).

Unsuitable components may have been necessary ten years ago, but to-day, now that radio manufacturers are devoting time and money to development work, it seems highly desirable to use apparatus which has been specially designed for our needs. Such firms can be depended upon to produce apparatus which is both moderately priced and efficient.

We have no wish to decry the excellent work which has been achieved by some of our members with rough and ready apparatus, but we feel that a plea should be made for more law and order in amateur stations generally, especially now that inter-station visiting is popular.

Across the Ocean (*continued from page* 110).

factors, which indicates that they should be useful for high-frequency work. A few months ago some new receiving valves were made available, among them being the 2A7 and the 6A7, both of which are known as Pentagrid valves, and can be used as combined triode oscillator and screen grid detector for superheterodynes. The 2B7 and 6B7 are duo-diode, and the 19 and 53 have two class B triodes in one bulb which makes them suitable for push-pull work. At the World's Fair Convention, Mr. Reinartz exhibited a compact ultra high-frequency oscillator built around one of these valves.

Station Description No. 37 (*continued from p.* 111).

conjunction with a General Radio 558P wavemeter, provides an accurate check on frequency.

The amount of DX worked can be judged by an examination of the QSL's which completely cover the high walls of the den from floor to ceiling, when it will be seen that seventy countries have been worked, these including W6, CM, VK and ZS, while the collection of QSL's and photographs from ship stations is unique. There are forty QSL's from ships of a dozen different nationalities! Skeds have been kept with great regularity with ships sailing out to Australia via the Cape, across the Western Ocean and to the Far East. A W.B.E. certificate occupies an honoured position on the wall and a QSL is awaited from South America, so that a W.A.C. certificate can be claimed. All of which will give a good idea of the perseverance of the operator, particularly when one thinks of the competition a 10-watt station is up against in these days, when even our own "BULL" calls a 200-watt input transmitter "Medium Power"! However, DX is not the only interest at this station—snappy QSO's from any distance and any useful tests are all enjoyed.

HIC ET UBIQUE.

Quasi-Optical Transmitter at Olympia—W.A.C. Telephony Awards—W.B.E. Certificates—Armistice Day—M.R.S.G.B.—WX Code

Quasi-Optical Transmitter Displayed on our Stand at Olympia.

The Marconi Wireless Telegraph Co. have drawn our attention to the fact that the quasi-optical transmitter made by Mr. W. B. Weber (G6QW), of Bristol, and displayed on the Society's stand at Olympia, was similar to an original design developed by them in their research laboratories at Chelmsford, and illustrated by Messrs. Ladner and Stoner in their recent book, *Short Wave Wireless Communication*.

As Mr. Weber only claimed to have built but not to have designed this special exhibit no mention of this fact was made at the time of the display, but now that our attention has been drawn to the matter, we take this, our first, opportunity of expressing our regret that due acknowledgment was not given to the company concerned.

* * *

W.A.C. Telephony Award.

With reference to the paragraph in our last issue relating to Mr. Owner's claim for a telephony W.A.C. award, we understand the certificate has now been issued.

In mentioning this achievement, we stated that Mr. Owner was the first R.S.G.B. member to win the award, but we are now informed by Mr. Frank Neill (GI5NJ) that he was granted this certificate as far back as 1928.

Memories are short-lived in the amateur world, and our apologies are therefore extended to Mr. Neill for a misstatement of fact.

* * *

W.B.E. Certificates.

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

Name.	Call Sign.	Date (1933).
R. A. Holt ...	VK2HW ...	Aug. 2
F. M. Gray ...	VK5MU ...	,, 23
R. A. Hiscocks ...	G6LM ...	,, 26
H. Beaumont ...	G5YV ...	Sept. 8
R. Jardine ...	G6QX ...	,, 13

* * *

Armistice Day.

The R.E.F. announce that, on the anniversary of the Armistice, all French amateurs active on the morning of November 11 will cease transmissions for two minutes at 11.00 G.M.T. During this silent period carriers will be left on as a " manifestation of the silent presence of the amateurs at their posts."

The R.E.F. ask that amateurs throughout the world make the same gesture at the same time.

Notice to Small Trade Advertisers.

Notice is hereby given that as from the November, 1933, issue of the T. & R. BULLETIN, the rates for small Trade Advertisements, will be increased from one penny to twopence a word.

Capitals will be charged for at a price of 4d. per word, and the minimum fee for each insertion will be 3s.

DISTRICT CALENDAR

IN future we hope to include in this calendar a list of all local meetings arranged between the 20th of one month and the 19th of the next. D.Rs. and C.Rs. who wish mention made of their meetings are requested to forward information to Headquarters, not later than the first of each month.

CALENDAR

October/November, 1933.

October 21. Number 12 District, 7.30 p.m. at G5VY, 274, Mount Pleasant Road, Tottenham, N.17.

October 24. Number 14 District, 7.30 p.m. at G6UT, 28, Douglas Road, Chingford, E.4.

October 24. Number 3 District, 8.0 p.m. at Hope and Anchor, Edmund Street, Birmingham.

October 25. Number 15 District, 7.30 p.m. at G2IY, 2, Tring Avenue, Ealing Common, W.5.

October 25. Scotland, A District, 8.0 p.m. at 51, West Regent Street, Glasgow.

November 2. Number 13 District, 8.0 p.m. at West Norwood Brotherhood Hall, West Norwood.

November 5. Number 7 District, 2.30 p.m. at BRS.1158, " Whiteley," Selborne Road, Croydon.

November 13. Number 3 District, 8.0 p.m. at Hope and Anchor, Edmund Street, Birmingham.

Mem.R.S.G.B.

Council consider that corporate members should make use of an important privilege given them on election, by using the initials Mem.R.S.G.B. in all correspondence.

It is thought that if more use is made of these initials the work of the Society will be brought prominently before many prospective members.

It is realised that this privilege loses much of its effectiveness unless adopted by all members.

A Guide to Amateur Radio.

There are several small errors in the above pamphlet to which attention is drawn.

Page 21. Circuit Diagram.

The lead from the bottom end of C7 should be connected to H.T.—G.B.+, as well as to the right hand spring of the Key Jack.

Page 30. Circuit Diagram.

The H.T.—lead with resistance R should be joined to the centre point of C3—C3. The circuit as reproduced is correct, if used with the mains unit shown on page 74 of the September, 1931, T. & R. Bulletin.

Page 36, line 10, para. 2, right-hand column read : "recognised that transition from the B.R.S."

* * *

Proposed WX Code.

It has been suggested that a Weather Code would prove of usefulness if universally adopted, and the following is put forward for consideration :—

WX1	...	...	Cold
WX2	...	...	Rainy
WX3	...	...	Foggy
WX4	...	...	Cloudy
WX5	...	...	Windy
WX6	...	...	Dull, but fine
WX7	...	...	Clear
WX8	...	...	Dry
WX9	...	...	Sunny or hot

Combinations of these code signals could be made up to suit prevailing weather conditions, *e.g.*, WX15 would indicate cold windy weather.

It is proposed to circulate this code to the I.A.R.U. early in the New Year, but prior to that time suggestions for improvement are solicited by headquarters.

* * *

For the Small Trader.

It is felt that many members and friends of members who own private businesses would benefit considerably if they booked small advertisements in this Journal.

Arrangements can be made to display such notices in a frame at a cost of 4s. per half-inch. The wording of a typical advertisement of this class would appear as shown below :—

BUY YOUR COMPONENTS LOCALLY.
JONES (G7XA) OF BRISTOL
CAN SUPPLY YOUR NEEDS.

A maximum of 12 words would be allowed.

Businesses other than radio may conveniently be brought to the notice of members in this way, as may also information regarding suitable accommodation for holidays and meetings.

It is hoped that all members will endeavour to assist us in popularising what should be a useful feature of this Journal.

* * *

56 MC. Receiver Article Competition.

Members are reminded that entries for this competition, which was announced on page 48 of the August issue, must reach Headquarters not later than October 31. To date only one article has been submitted.

Malta Representative Appointed.

Mr. E. A. Haskell (BERS134) has been appointed B.E.R.U. representative for Malta. We understand that the British Government will shortly issue amateur licences to persons resident in the island or attached to the Fleet, but no details are yet available. Mr. Haskell will be pleased to hear from members who are on duty in the Mediterranean.

* * *

Representation in Northern India.

Lt. T. H. Beaumont (VU2FP) will act as B.E.R.U. representative in Northern India during the absence of Mr. McIntosh (VU2LJ) on leave. Mr. Pratley (VU2AH), our official representative, has been compelled to temporarily relinquish his office owing to service duties.

* * *

New D.R. for South Wales and Monmouth.

It is with regret we have to announce that Mr. Austin Forsyth (G6FO) has resigned his position as representative for No. 10 District, consequent upon accepting a business appointment in Bristol.

Mr. Forsyth's work is well known to most members, and it is almost entirely due to his energetic efforts that No. 10 is now one of our most active districts. We take this opportunity of thanking him for his past services, and wish him success in his new duties.

Fortunately, we have been successful in obtaining the services of Mr. D. Low (G5WU), of " Nantissa," Westbourne Road, Penarth, Glam., whose appointment as D.R. has been confirmed by Council.

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R.S.G.B. Reception Tests.

Further tests have been arranged and a list of periods and bands is given below. Details for new participants were given in the September issue of the Bulletin. Log sheets—quarto size—should be posted to Mr. T. A. St. Johnston, 28, Douglas Road, Chingford, E.4, by November 20, when the Budget will be circulated to all those participating.

LIST OF PERIODS AND BANDS.

Series 21.

Test Letter.	Date, 1933.	Period. G.M.T.	Band. mc.
A	Sun., Oct. 22	00.00-01.00	14
B	,, ,, 22	09.30-10.30	56
C	,, ,, 22	18.00-19.00	3.5
D	,, ,, 22	19.00-20.00	1.7
E	,, ,, 29	00.00-01.00	28
F	,, ,, 29	09.00-10.00	1.7
G	,, ,, 29	18.00-19.00	7
H	,, ,, 29	19.00-20.00	14
I	,, ,, 29	22.30-23.30	3.5
J	,, Nov. 5	00.00-01.00	7
K	,, ,, 5	10.00-11.00	56
L	,, ,, 5	18.00-19.00	28
M	,, ,, 5	22.30-23.30	1.7
N	,, ,, 12	00.00-01.00	3.5
O	,, ,, 12	08.00-09.00	14
P	,, ,, 12	10.00-11.00	7
Q	,, ,, 12	18.00-19.00	56
R	,, ,, 12	22.30-23.30	28

QRA Section.

Manager : M. W. PILPEL (G6PP).

NEW QRA's.

G2FS.—L. K. WINSOR, 74, Lucien Road, London, S.W.17.
G2HQ.—A. W. FAWCETT, 34, Wilkinson Street, Sheffield, 10.
G2MA.—D. D. MARSHALL, 8, Boclair Gardens, Hillfoot, Bearsden, Glasgow.
G2OF.—W. G. D'ARCY, 9, Addison Square, Leeholme, Bishop Auckland, Co. Durham.
G2XK.—E. KNOWLES, "The Caravan," Springfields, Hemsworth, near Pontefract, Yorks.
G5CP.—C. R. PLANT, 52, Bollin Drive, Timperley, near Manchester.
G5FC.—F. D. CAWLEY, 16, Beresford Crescent, Reddish, Stockport, Lancs.
G5IZ.—W. S. BROOK, "Fairhaven," Black Bull Lane, Broughton, Preston, Lancs.
G5JD.—J. DALTON, 13, Grove Street, Whitby, Yorks.
G5KH.—H. D. CULLEN, 144, West Hill, London, S.W.15.
G5KT.—K. T. HARVEY, 33, Howard Road, Westbury Park, Bristol. 6.
G5OA.—G. E. OAKLEY, "St. Bernards," Main Road, Kingsdown, Sevenoaks, Kent.
G5VV.—R. M. GELDERT, 8, Langton Road, Worthing, Sussex.
G6AS.—G. A. SWINNERTON, 109, Shireland Road, Smethwick, Staffs.
G6JD.—J. B. DUNCAN, 10, Corunna Street, Sandyford, Glasgow, C.3.
G6NR.—R. S. ROBERTS, 136, Cherrydown Avenue, London, E.4.
G6PS.—A. F. M. PARSONS, 22, Becmead Avenue, London, S.W.16.
G6SS.—G. A. KINGSBURY, 31, Salisbury Road, Southsea, Hants.
G6XB.—G. E. JONES, 71, Sandgate Road, Folkestone, Kent.
2ANK.—A. N. HARRIS, 164, Neville Road, London, E.7.
2AXQ.—A. CATTANACH, Kirkton, Grantown-on-Spey, Morayshire.
2BAX.—A. V. WHITE, 59, Phillip Road, Folkestone, Kent.
2BCM.—L. C. HODGE, 4, Tunnard Street, Boston, Lincs.
2BFF.—G. W. SLACK, "Inglenook," Racecourse Road, off Southwell Road, Mansfield, Notts.
2BFQ.—F. E. EDWARDS, 13, The Dell, Wembley, Mddx.
2BKT.—W. D. GILMOUR, 35, Grangecliffe Gardens, London, S.E.25.
2BPQ.—A. L. DAINES, 24, Pier Road, Rosherville, Northfleet, Kent.
2BUT.—G. H. SALTER, Netley House, Augre, Trinity, Jersey, C.I.

The following are cancelled: 2AAU, 2AZM, 2BCQ, 2BJR, 2BVD.

QRA's wanted: SU2GA, YA1AA.

Calibration Section.

Manager : A. GAY (G6NF).

Standard Frequency Transmissions from WWV.

We should be interested to know whether any of our members, resident in the British Isles, have succeeded in receiving the above transmissions. Given on a frequency of 5,000 kilocycles per second, with an accuracy of one in five million, they are ideal for the checking of frequencies of standard 100 kc. crystals without the complication of multivibrator circuits. From October to March the transmissions will be given from 10 a.m. to 12 noon, and from 8 p.m. to 10 p.m. (Eastern Standard Time). (Add five hours for correction to G.M.T.)

The Crystal Drive of G5SW.

In the May-June issue of the *Marconi Review* full particulars are given of the crystal drive circuits used at G5SW (which maintains a frequency accuracy of 4 parts in a million), together with details of a new type of mercury thermostat which controls the temperature of the oven better than one-tenth of a degree centigrade, utilizing a Thyratron as a final relay.

Indirectly heated valves are used up to the final amplifier, with a screened-grid valve as crystal oscillator. Another interesting feature noted is the use of H.F. transformers between each frequency doubler, the output winding being adjusted to eliminate a proportion of the lower frequency component. The method of screening each stage, the power supplies and the H.F. connections between stages is described.

The following valves were in use :—

Oscillator, VMS4, 200 v. anode, 80 v. screen grid.
3 F.D.'s and 1st amplifier, ML4, 200 v. anode.
Final amplifier, 4PX4's, 200 v. anode.

An output of 6 watts was obtained from the final amplifier.

A series of frequency measurements taken from October 21 until December 17 showed the maximum frequency variation to be plus or minus 50 cycles.

QSL Section.

Manager : J. D. CHISHOLM (G2CX).

We have had several enquiries lately concerning the reopening of the A.R.R.L. QSL Bureau for BRS and AA report cards, and we therefore wish to make clear the present position. Listeners' cards for all W stations can now be accepted for delivery, but we cannot at present be certain that cards for VE and other A.R.R.L. stations are also included in the new scheme.

We have endeavoured to obtain definite information on this point, but it is too early yet for the A.R.R.L. to have replied to our letter. Further announcements will appear in these notes next month. In the meantime we are accepting cards for these stations and forwarding to U.S.A. in view of the fact that none of the cards sent in the last month or so has been returned as undeliverable.

Obituary.

JUDGE BRADLEY.

It is with regret we have to record the passing of His Honour Judge F. E. Bradley. For many years he was a keen member of this Society, and his sudden death on September 3 will be regretted by all who knew him, either as an amateur or as a judge of the North-West Lancashire County Court Circuit. Our sympathies are extended to his widow and his only son.

CONTACT BUREAU NOTES.

By H. C. Page (G6PA).

IT has become customary for some few words from the Contact Bureau Manager to appear at the head of these Notes. This month there is really nothing he has to tell you of interest, and he does not propose to take up any of your valuable time telling you about it in many words.

28 M.C. Groups (No. 1).

G6VP (Manager).

Reports seem to point to poorer conditions again, which, however, have been encountered on other bands as well. Nevertheless, more and more are being attracted to the band, and better Groups and work should result. Passing to individual Groups :

Group 1*B*.—*G5SY* (*Centre*) says that once again the West of England has been a blank although a few commercial signals have been heard. G5QA, 6RP are active. In the September issue of the Bulletin, BRS689 claims to have heard the first W for some years. I would refer him to the March number under 1*B* Notes, when G5QA heard W8DDY on February 2, 1933. Confirmed.

Group 1*C*.—*G6VP* has had no contacts during the past month, but numerous European reports, both fundamental and harmonic are to hand.

G6WN states that little work has been done, and only one local contact effected. Three reports from the Continent have been received. They claim a better system of "locking," but do not supply any details.

G6BC. After two months inactive is again busy. He has procured a 14 mc. Xtal, and now uses CO.FD.PA, the transmitter exceeding all expectations in the matter of H.F. output.

He has met an unusual snag ; with 6 volts on the filament of the LS5 output stage, the set was hard to neutralise and erratic, so the transformer was rewound to give 5 volts as recommended by the makers (4½ volts ? VP.) ; now the output is much increased, and the stability all that can be desired.

(On 56 mc. using an LS6A with 12 watts it was noticed that the filament volts seemed high, actually 6.4 volts, a reduction to 5.8 volts to 6 volts also enormously increased the output.—G6VP).

Group 1*F*.—*BRS*25 has put in a lot of listening, but beyond G2HG has not heard anything. He is of the opinion that October will bring in the W signals again. No other member of his Group reports.

This concludes the Group reports to hand.

An extract from the log of G6WL has been passed to me, but I do not think that it should be published in full. Dating from June till the end of July, it shows many contacts with the usual 28 mc. stations audible with one exception.

On June 27, 1933, at 22.25 he heard W5UA, QSA5R5 T9.

The transmitter is the same for 28, 14 and 7 mc. a DO4OA in a parallel tuned ultraudion with 300 volts on the plate.

The aerial has four horizontal portions each 33 ft. long. The north and west portions join the right hand feeder, the south and eastern portions the left-hand feeder. These latter are 9 ins. apart and are 51 ft. long. The pick-up coil is parallel tuned for each band. He states that the same aerial works well on 56 mc., tapping the feeders directly on the TX coil.

Fading Groups (No. 2).

G6MB (Manager).

An interesting effect has been reported by ZL4AI (via G2ZQ) as having been observed on August 17 during the conjunction of the planets Venus and Jupiter. On that day all DX signals on 7 mc. band were extraordinarily weak, while VK signals, normally weak in ZL were received strongly. This was confirmed by W1FH in his sked with ZL4AI. Will any observer who noticed similar effects on the date mentioned please communicate with G6MB, giving details of his log and comparative observations on either side of the 17th ?

Beyond the foregoing there is nothing of outstanding interest to report.

As this is the last report which will appear under my hand, I will take the opportunity of thanking the various Group Centres and all members for their past support. I hope they will give the new Group Manager a full measure of support, and help him to make a real success of the amalgamated Fading and Atmosphere Groups.

Theory Groups (No. 3).

BRS865 (Manager).

As it is now three months since news of the Theory Group appeared in print, it is time that further information ought to appear, rather to justify its existence than for any other reason ! Activity has, of course, been curtailed owing to the usual holiday attractions.

In the first place our numbers are depleted, and we require more members for 3B. Since notes last appeared, G6ND has had to resign altogether due to business pressure, and YI1RM feels that he is not up to the standard required by the group. Now the mere request for members will, I am sure, bring no applications—it never does. Its high time Uncle Tom let fly again and groused about the lack of support of C.B. Is it generally realised that only about ½ per cent. of the membership of the R.S.G.B. seems to be interested in the application of mathematics to radio, that only about 5 per cent. concerns itself with C.B. at all ? Three members are wanted for 3B. Details of qualifications for membership appear in the C.B. notes of November, 1932.

Group 3*A*.—The letter budget for July, although not up to standard, was quite good, articles both theoretical and practical being sent in on B.K. oscillations by G6FJ and BRS1112. BRS497 (now 5AM) summarised the existing knowledge of the ionosphere with special reference to the measurement of the effective heights of the layers. The G.C. contributed his first article of two on valve voltmeters, discussing the advantages and disadvantages and errors of each type.

August was a blank month as everyone was on holiday, marrying, or moving ! The Group

resumed its activities in September, and is settling down for a spot of theoretical amusement.

Group 3B.—*G5OT* has taken over 6ND's post as G.C. and has not found his task an easy one. The original intention of the group was to study the theory of antennæ, but the shortage of members has compelled them to mark time, and *will* compel them to mark time if the apathetic section of this Society doesn't bestir itself a little. The G.C. has kept a letter budget going, and articles on radiation resistance, valve voltmeters, the stabilising of H.F. amplifiers, and in the current budget on losses in conductors and dielectrics, operational calculus and polyphase R.F. energy have been circulated.

To make sure that it sinks in, three more members are required for 3B.

Atmospheric and Fading Group (No. 6).

G2GD (Manager).

By the time these notes appear in print, I hope the reorganisation and amalgamation with Group 2 will be complete. I cannot let the occasion pass by without recording that I feel it to be a great honour to have been asked to carry on the work of the "Twos," and I trust I may prove myself worthy of their traditions of many years.

With regard to the past month's work in Group 6, further support for the Isobar Theory has come in, details of which are dealt with under the sectional reports. At the time of writing no letters have been received from any observers who have found that DX conditions are *good* on the 14 mc. band when AP is *not* uniform in the path of the wave at low levels. I should be very glad to hear from anyone who finds this to be the case.

Group 6A.—*G5MP* has found that African stations were logged more consistently than W's. Can this be because AP is more uniform over the former? He also finds DX on 28 mc. better in fine dry weather. Can this also be for the same reason?

BERS165 sent in a report in strong confirmation of the theory.

ZC6CN sent in an interesting report including a watch during the Solar Eclipse which occurred in August at ZC. He found no effect whatever on 14 mc. This seems to fit in with theory, for any recombination of ions at high levels would only be a slow process lagging behind the cut off of sunlight, by which time the sun would be re-appearing. He has also noted that the "fade out" of the 14 mc. band coincides with the local diurnal drop in barometer. He is watching this further.

Group 6B.—No report has been received.

Group 6C.—This group has been active, and reports have been received from the GC (2BCM), 2AGR, BRS1151, and G5OQ. The latter has been working more on the longer bands, but his lower power transmitter ought to prove of great service in discovering real DX conditions.

Ultra High Frequency Groups (No. 7).

G6XN (Manager).

All three groups continue to be active. A particularly interesting report is to hand from G2IG regarding D.F. work on 56 mc., and is reproduced in his own words. The G.M. would expect from theory borne out by some experience that the "characteristic angle" referred to depends almost entirely on the transmitting aerial. Also that except at short distances this will be affected by changes in the plane of polarisation of the wave. In following the methods described by G2IG it will be important to use aerials as described in his report. Longer aerials, though less convenient, can be used for D.F. work, it being found that very sharp minima are obtained when the aerial is in line or at right angles to the direction of the wave.

G2JH, G6XM, G2IC (with 2ASC), and the Newport and Bristol groups have achieved some fine long distance results.

From G6XM comes, as far as is known, the first report of differences between day and night working. This difference seems sufficiently definite to be disturbing, and it is hoped that further investigations will be made.

The reports of the several groups are as follows:

Group 7A.—Report on D.F. work from G2IG is as follows:—"The study of propagation phenomena at 56 mc. necessitates above all a knowledge of the direction from which the transmission is being received. In many cases, re-radiation, refraction and absorption would remain complete mysteries if no means could be applied to locating the direction of the transmission.

It has not been found essential to procure special D.F. equipment for the purpose. In fact, the identical receiver and aerial, as used for ordinary portable work, is employed with great success, as has been proved at several field-days in Kent. Two main requirements are: First, a rigid aerial attached to the receiver in such a manner that their relative positions cannot alter; and second, short telephone and battery cords, preferably screened.

The degree of accuracy obtainable with such apparatus when operated in the clear, free from metallic surroundings is generally 3 degrees, including compass error, when transferring the bearing to the map.

Three methods have been evolved experimentally from a large series of observations, using a super-regenerative O-V-Q. L.F. type receiver and a 3-ft. telescope aerial. The diagrams will indicate the results deduced. In Fig. I will be seen the variation of received signal-strength plotted against the angular horizontal displacement of the remote end of the receiving aerial. The two minima, which it will be noticed, occur 180 degrees apart, may be adjusted for relationship to the transmitter by the angle to the horizontal at which the receiving aerial is held. This seems to vary with individual receivers, differing slightly in form, but generally lies somewhere between 30 and 45 degrees to the horizontal. An experimental bearing is advisable, with the transmitter location in sight, when the minimum signal-strength position of the receiver aerial can be checked visually with the straight line to the transmitter.

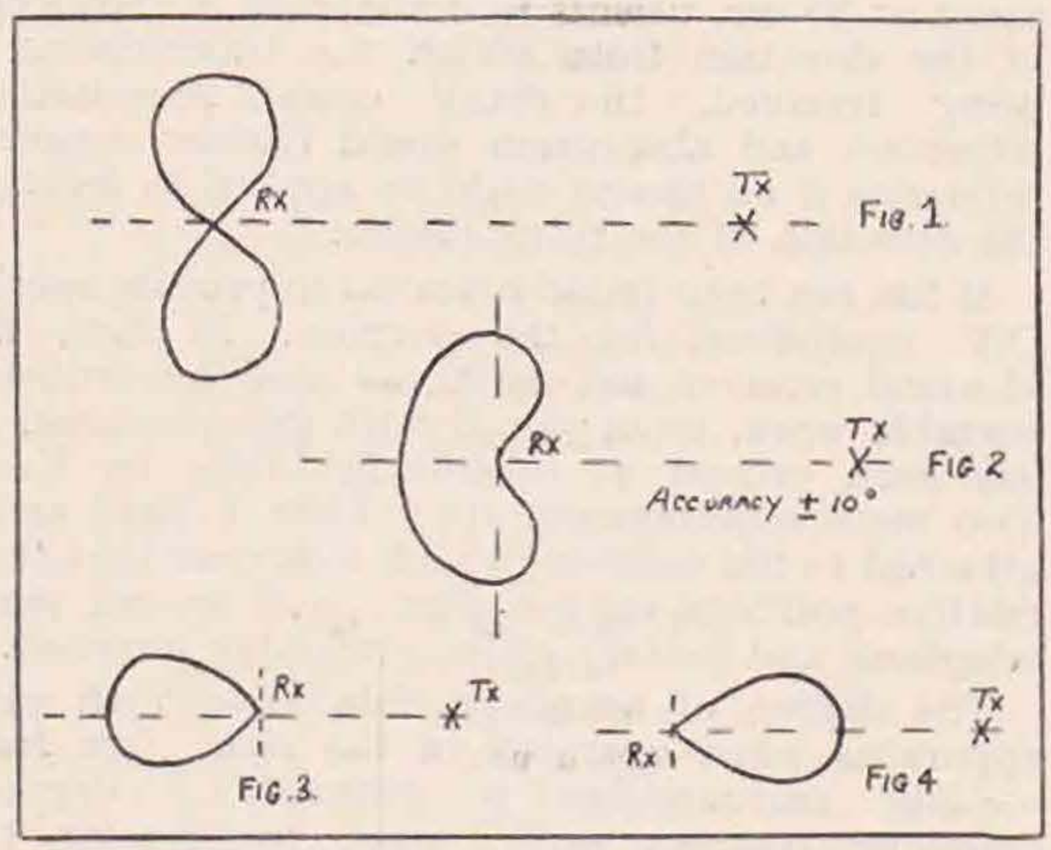
Should any error be obvious, the vertical angle must be adjusted by inclining the receiver aerial until the latter is pointing directly at the source of signals when the minimum is reached. Thus either a positive or a negative "zero error" may be compensated at the start. A fairly accurate estimate of the angle so obtained should be made, since it is sensibly constant, under average conditions, for any one receiver.

This angle will henceforth be referred to as the "characteristic angle" of the receiver, and unless otherwise stated, it may be assumed that any

observations mentioned have been taken with the aerial thus held.

Unfortunately, in order to achieve the accuracy before mentioned, a strong signal must be present, say R6 upwards, and another system had to be evolved for weak signals down almost to inaudibility.

Fig. 2 will explain the distribution of QRK when the maximum is only R5. Here it will be seen that the minimum remote from the transmission has disappeared, while the near minimum has broadened to such an extent as to obviate any degree of accuracy. It is advisable under these conditions to bisect the angle between the two positions at which the signal just rises to audibility. No great accuracy is possible, however, but a general rule of thumb can be used if tracing an unknown radiation, viz. : " Follow a direction away from the strongest towards the weakest signal."



In cases where the maximum QRK is no more than R 3-4 it is possible to plot a rather more accurate bearing by utilising the maximum shown in Fig. 2. With such weak signals the diagram in Fig. 3 represents fairly closely the state of affairs. It will be seen in this instance that the direction of the radiation is exactly 180 degrees from the strongest signal, while at no point on the opposite side is anything audible.

Perhaps the simplest method of tracking down a transmitter with mobile receiver is to employ the following, which although not sufficiently accurate for cross-bearing map work, is quite practicable for general D.F., say ±15 degrees. The receiving aerial is set at an angle below the horizontal, equal to the characteristic angle. Signals are then best received when the vertical plane containing the aerial is pointing directly towards the transmitter. See Fig. 4.

Generally the degree of accuracy of the foregoing does not depend on a signal strength, and is satisfactory up to very close proximity to the transmission. By means of any or all of the above systems it has been found possible to trace re-radiation from a great number of common metallic objects. Vertical conductors such as lamp-standards, gutter-pipes, telephone pole stays, etc., cause widespread distortion of the field, and in many cases while investigating propagation in the town, puzzling increases of strength have been attributable to such objects. In fact, quite often in various parts of a large town no signal is audible until a lamp or such like is approached, this being located after the first trace is heard by one of the D.F. methods."

BRS1047 is co-operating with G5FB, using a portable receiver on a bicycle. Signals were audible for 1¼ miles with no aerial. They disappeared at the bottom of hills, and under the tips of tree branches, but were audible when against the trunk of a tree, which presumably acted as a reflector. They did not appear directional. Using a wire round the bike as aerial, signals were audible at 4½ miles, there disappearing in a dip between hills.

G5MG and G5VY have been taking part in various tests. The latter is having success with a half-wave aerial attached to a 65-ft. steel tower, fed from a transmitter at the base.

G2JH is doing good work, getting good signals at over 20 miles. In the opposite direction the range is only one or two miles. This may be due to absorption in buildings, but if so, is very remarkable.

G.C. G6XN has not had much time this month for 56 mc. A report was received from G5QF (Totteridge, 8½ miles) of R6. F.D.'s and a neutralised P.A. have been constructed for 5 and 10 metre work, using A.T.40 valves. The crystal is on 85 metres. Trouble has been found with the P.A., but some output is obtainable from the FD, and a C.W. contact with G2OW, though only one mile, produced a very encouraging report. Modulation was weak, and search is being made for a suitable method of modulation.

Group 7B.—G2IC (with 2ASC) has worked 30 miles and been heard at 40 miles, using two C.T.25X valves in push-pull. He is testing a parallel tuned Ultraudion, similar to that used by G6FY in aeroplane tests over Folkestone, when signals were heard R9 at 60 miles. They report parallel tuning more efficient than series tuning for receivers.

G6BX and G6KU are working together. The former uses an Ultraudion in preference to push-pull, as it gives equal output and saves a valve. He finds a transmitter in an aerial in the attic better than long feeders or harmonic aerials. He is on regularly on Mondays and Thursdays from 2000 to 2030 G.M.T.

G2II is concentrating on methods of frequency stabilisation, using a 6240 K.C. crystal followed by two triplers consisting of American 47 pentodes in push-pull. Good results have been obtained with a MO-FD-PA, the MO being on 28 mc. He suggests that every worker on 56 mc. should carry out tests with a view to frequency stabilisation.

G5FI uses one P.650 in Ultraudion with 6 watts and an 8-ft. vertical aerial. G6YJ uses TPRG (push-pull) with the same input to S.P.55.R.'s. These two stations are co-operating with G6FO and G2XX of Newport, and G2IP, G5JU of Bristol. Contacts with Bristol have been made with great success, signals being R9. G2IP has been worked at Dundry Hill and also at his fixed QRA in Bristol.

G.C. G2KB is co-operating with G6YU of Coventry, and has erected a full wave V.F. aerial with the two half-wave portions in phase, with a view to obtaining a stronger ground wave.

Will members of 7B please be sure to send in their reports by the 15th ?

Group 7C.—G6XM has been heard at G6NF over very hilly country ; also G6XM finds that his

signals are R7 at night and only R5 in daytime, and would like to know if any other stations have noticed this effect of night and day on the strength of 56 mc. signals. He has also been QSO with G6GS.

G6DO has joined up and is co-operating with G6OM and 2AGT. He is using QRP and has been getting some very curious effects on his transmissions. G6MF is in touch with BRS1082, and hopes to be heard at the latter's station soon, distance approx. 42 miles. BRS1082 is still experimenting with receivers, but so far has not got a satisfactory one. BRS877 has completed his RX and hopes to hear GI6TK and others soon. He is in co-operation with GI5UR and G.C. GI5UR is QRT at moment owing to business, but hopes to get going soon.

GI6TK has just completed a new transmitter for fone and modulated C.W. and hopes to co-operate with G6WL, who is the nearest G 56 mc. station to Belfast. The distance is approx. 80 miles. A very portable O-V-I receiver is also being built, and a daily schedule is intended on 56 mc. soon. He would like more co-operation from local G's interested in 56 mc. work.

Receiver Design Group.

BRS981 (Manager).

The group at present contains but four members, G2NK, 2AAH, BRS1006 and 981, consequently our activities are strictly limited. However, we are tackling the receiver stage by stage, concentrating first on the detector stage. We are studying various detectors and are comparing their relative efficiency. So far, notes on the Class B valve as a detector are available. Tests will be made by means of local oscillators with controlled output, but already difficulties are apparent. Someone must be able to help. So I take this opportunity of appealing for more members.

Results.—BRS1006 has experimented with a Class B detector. Tuning coil and reaction must be carefully designed and built. The detector gives better results than most other methods. Damping is reduced, giving better selectivity and sensitivity. Distortion, too, is easily avoided.

Trade Notices.

We have received from MESSRS. COLVERN, LTD., their new catalogue describing Ferrocart Components. The fundamental principles of Ferrocart Coil efficiency and their application to band-pass filters is fully explained, together with notes on Intervalve Coupling, Superheterodyne Components, Ganged Coil Assemblies, and "Colpak" Tuning units. The whole should prove of much usefulness to those members who are contemplating the modernisation of either their shortwave or broadcast receivers.

Numerous circuit diagrams clearly printed are included, thus giving in one compact pamphlet a complete *vade mecum* of these highly-efficient components.

This catalogue can be obtained free of charge from COLVERN, LTD., Mawneys Road, Romford, Essex. Please mention this Journal when applying.

We have also received the new Mullard Valve Guide, a most interesting book, which should be in the possession of every member. Of handy pocket size, the book comprises no less than 88 pages packed with really informative material. A page is devoted to each standard receiving valve in the 2-volt battery range, the A.C. mains range and the D.C. mains range, the operating data and characteristics being clearly set out with a useful-sized characteristic curve.

The application of each type is explained and helpful advice given concerning such matters as grid bias voltage.

The technical appendix, occupying 34 pages, deals with numerous subjects of interest, including a handy method of calculating the correct ratio for output transformers.

Equally useful is a full list of Mullard Valves, with their equivalents in other makes, and a table showing which Mullard Valves are suitable for use in the principle types of factory-made and magazine receivers covering nearly 1,000 sets.

Notes on valve manufacture and a useful index go to make up one of the most attractive and valuable free catalogues ever issued, and we recommend all members to apply for a copy immediately to MULLARD WIRELESS SERVICE CO., LTD., 111, Charing Cross Road, London, W.C.2, mentioning this Journal.

* * *

"Your Microphone" is the name of an excellent little handbook published by *Electradix Radio.* This book has already run into six editions, and was originally known under the title "Marvels of the Microphone."

Valuable information is given on Broadcast, G.P.O. Moving Coil and Condenser types, and chapters are devoted to the Historical Development, Neophones, Noise Meters, Transformers, Deaf aids and special applications. Numerous circuits and technical data on such important points as transformer ratios help to make up a book which should be in the hands of every amateur. Mention this journal when applying to Electradix Radio, 218, Upper Thames Street, London, E.C.4, for a free copy.

* * *

Micromesh Valve as Detector.

Those who use all-mains receivers for amateur work know the difficulty in avoiding the modulation of a note. The source of this trouble is, more often than not, the detector, and we are always glad to find a valve which does not turn c.c. into r.a.c. The AC/HL has for some time been regarded as the only detector suitable for this work, but this has now a rival in the Micromesh HLA2. The HLA2 has a very high mutual conductance indeed, in spite of which it oscillates smoothly down to 28 mc.s, and does not modulate the note in the slightest. The internal capacity is slightly greater than that of the AC/HL, and it will probably be found that a higher anode potential is required to obtain a greater signal strength. The impedance of the HLA2 is 9,000 ohms, and the magnification factor 50—a mutual of 5.5 ma/v. This valve is certainly well worth a trial.

NOTES and NEWS from the BRITISH ISLES

DISTRICT REPRESENTATIVES.

DISTRICT 1 (North-Western).
(Cumberland, Westmorland, Cheshire. Lancashire.)
MR. S. HIGSON (G2RV), "Arvie," Ford Road, Upton, Birkenhead, Cheshire.

DISTRICT 2 (North-Eastern).
West Riding, Durham, Northumberland).
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.)
CAPT. G. C. PRICE (G2OP), 2, St. Anne's Villas, Hewlett Road, Cheltenham, Glos.

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), 63a, Kingston Rd., New Malden, Surrey.

DISTRICT 8 (Eastern).
(Cambridge, Huntingdon).

DISTRICT 9 (Home Counties).
(Bedfordshire, Hertfordshire, Essex, Buckinghamshire, Norfolk and Suffolk.)
MR. F. L. STOLLERY (G5QV), Beaumont Hall Hotel, Clacton-on-Sea.

DISTRICT 10 (South Wales and Monmouth).
MR. D. Low (G5WU), "Nantissa," Westbourne Road, Penarth, Glamorgan.

DISTRICT 11 (North Wales).
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)
Mr. T. Vaughan Williams (G6IW), "Malincourt," Grosvenor Ave., Rhyl, Flintshire.

DISTRICT 12 (London North).
Mr. S. BUCKINGHAM (G5QF), 19, Oakleigh Road, Whetstone, N.20.

DISTRICT 13 (London South).
MR. A. D. GAY (G6NF), 49, Thornlaw Road, West Norwood, S.E.27.

DISTRICT 14 (London East).
MR. T. A. ST. JOHNSTON (G6UT), 28, Douglas Road, Chingford, E.4.

DISTRICT 15 (London West and Middlesex).
MR. H. V. WILKINS (G6WN), 81, Studland Road, Hanwell, W.7.

DISTRICT 16 (South-Eastern).
(Kent and Sussex).
MR. H. A. M. WHYTE (G6WY), Killiney, Worsley Bridge Road Beckenham, Kent.

DISTRICT 17 (Mid-East).
(Rutland, Lincoln and E. Riding.)
MR. A. E. LIVESEY (G6LI), Stourton Hall, Horncastle, Lincs.

SCOTLAND.
MR. J. WYLLIE (G5YG), 31, Lubnaig Road, Newlands, Glasgow.

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

District Notes for publication should be written as concisely as possible and should be in the Editor's hands by the 25th of the month preceding publication. They should be of a general rather than personal nature. Individual reports from County Representatives will not be accepted for publication.

DISTRICT 2 (North Eastern).

THE Leeds group is being re-formed by Mr. W. A. Scarr (G2WS). Members in that area are asked to communicate with him, so that they may be advised of local meetings. His address is: 4, Ridge Mount, Cliff Road, Hyde Park, Leeds.

The Newcastle group met on September 3 at the usual N.E.A.T.S. meeting. The following are active on one or more bands: G2CO, 2KG, 2LD, 2PN, 2XT, 5LH, 5QY, 6AY, 6BC, 6GC, 6FG, 6YL, BRS991, 1213, 3AWA, 2ARQ, 2AYU. The latter awaits his full call. Very little new work has been done around Middlesbrough. G6ZT worked W with 2 watts, G2FO, 5QU, 5XT, 6CV and BRS1016 are active in various directions.

In Barnsley, G6PY is now on 14 mc., and will be on 7 mc. also shortly. The D.R. is still waiting to appoint a Sheffield sub C.R. Any offers, please?

DISTRICT 3 (West Midlands).

The absence of notes during the last two months was due to holidays and lack of reports. G6XJ is now on 1.7 mc. regularly at week-ends. 2AJI, of Coventry, is working 3.5, 7 and 14 mc. with A.A., and wishes to get in touch with someone in his district with 56 mc. experience.

MARS meetings are now being held on the second and fourth Tuesday in each month at The Hope and Anchor, Edmund Street, Birmingham, at 8 p.m. punctually, and visitors are welcomed.

No support has been forthcoming for the letter budget, so this has been reluctantly washed out.

DISTRICT 4 (East Midlands).

In Nottinghamshire G2JR and 2BMR are working on 56 mc., using PP TPTG and MOPA circuits. BRS1099 is anxious to arrange 56 mc. reception schedules. G6PZ and G2IO claim the first duplex telephony work on this band in their county. G6VB is busy with R.N.W.A.R. work. G5DM awaits a YI card for his W.B.E. BRS1153 is now 2BFF and G6MN is heard "*Deutch Sprechend*" on 3.5 mc. In Derbyshire, G2GU and BRS726 have daily schedules on 56 mc. The Northamptonshire activities centre around the Kettering Radio Society, whose highly successful Exhibition is reported upon elsewhere in this issue.

In Leicestershire most of the members are active again after summer vacations, and are looking forward to the winter season with interest. Individual reports are scarce, and the CR again appeals to the members to let him have a few lines by the 20th

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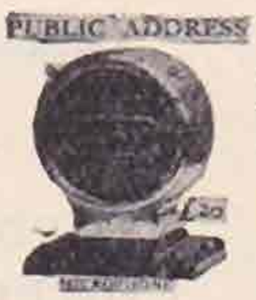

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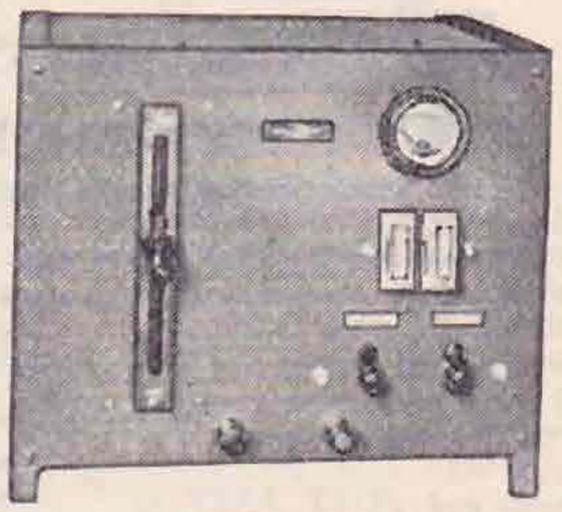

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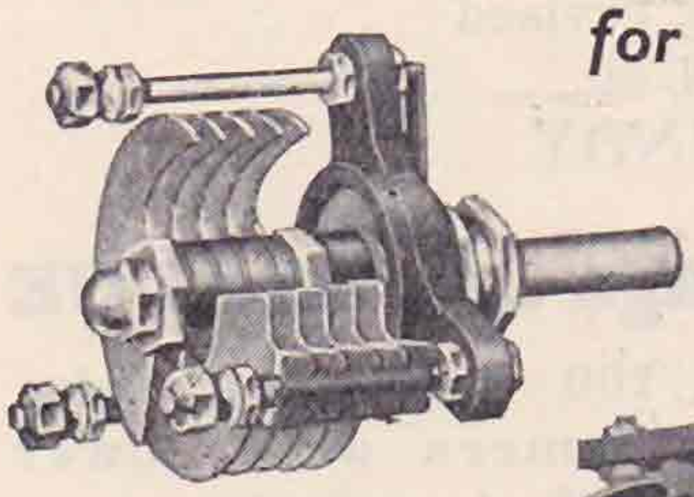

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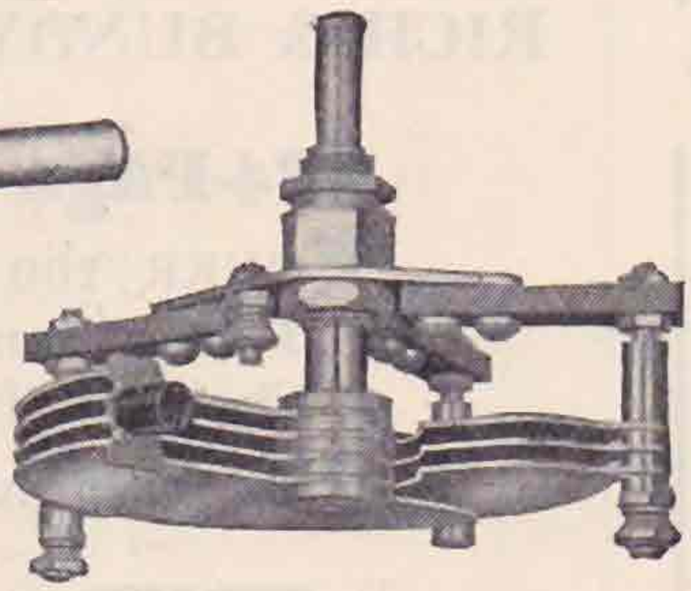

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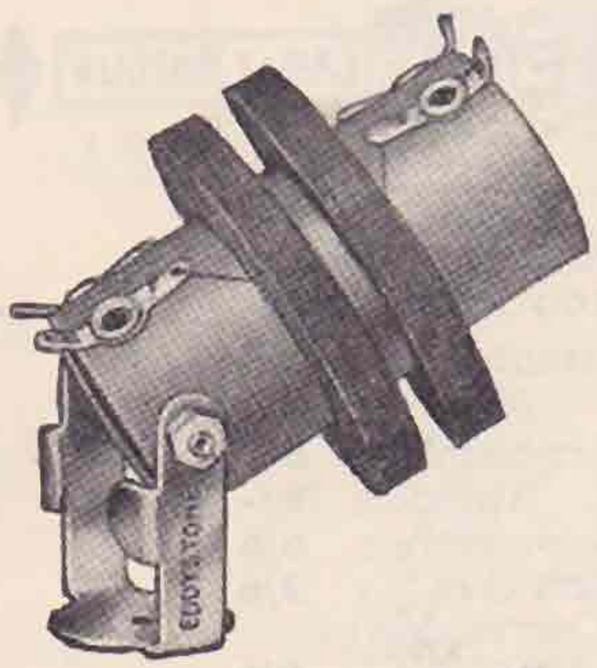

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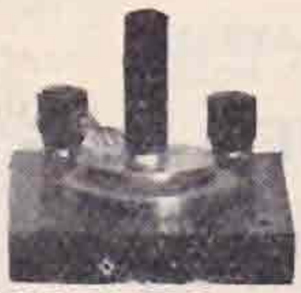

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of the month, giving details of their activity.

The 56 mc. band is receiving attention from G5VH, G6JQ and 2AFM. The first two stations having worked duplex fone.

The Leicester Experimental Short-wave Society is making good progress, and hopes by the end of the present year to have a membership of one hundred.

The following stations are known to be active :— G2JW, 5VH, 6GF, 6JQ, 2ADC, 2AFM, 2BHA and BRS884, 1190, 1191.

DISTRICT 6 (South-Western).

Many will have noted that there has been a change of D.R. in the district. Owing to recurring illness, G5QA has been compelled to resign. The present D.R. takes this opportunity on behalf of every member in the district of wishing him a very speedy recovery, and of thanking him very sincerely for the great effort he has put into the work, and for the success he has made of it. There is no doubt that the South-West is sitting up and taking notice, and this is largely due to 5QA's efforts. May he soon become his old cheery self again.

Now that G5SY has taken the duties of D.R., the district is left without a single C.R. In the past 5SY has been looking after Devon and Cornwall, while 5QA combined the D.R.'s job with that of keeping an eye on Somerset and Dorset. The present D.R. wishes to emphasise the fact that it is high time each of the counties had its own C.R. He has already circulated the members regarding the C.R. nomination forms in the Bull, and is hoping that someone in each county can be persuaded to take on the job of C.R. We want the South-West, even with its great geographical difficulties, to keep pace with (or even outpace !) the other districts. The best way of helping at the moment is to make use of the nomination forms. So let's hear from you.

It is difficult to ascertain at the moment how many members are active, as the Budget has not yet put in an appearance. This may be due to the change in D.R., but it is understood that a fresh book was sent off last month. In any case, it is hoped to have the system working smoothly shortly. Owing to the large number of contributors, it has been necessary to extend the period of circulation to two months, so that actually two Budgets are always in circuit. Should any member, who happens by accident to read these notes, find a stray Budget in his shack will he please send it forward without delay.

DISTRICT 7 (Southern).

The last monthly meeting of the summer season was held at Wittering on September 3, in glorious weather, and the 16 members and friends who were present spent a most enjoyable day. Bathing and cricket took up most of the afternoon, and the business meeting was confined to a short session on the beach after tea. The next monthly meeting is fixed for November 5, at 2.30 p.m., at Mr. Robin Weston's house, Whitelea, Selborne Road, Croydon, Surrey. Mr. Weston has some most interesting ultra-short wave and cathode ray gear, and an instructive afternoon is assured.

Several District No. 7 members accepted the kind invitation of No. 14 District to attend their monthly meeting at G6UT. This proved most enjoyable, and we take this opportunity of thanking Mr. St. Johnston for his hospitality.

Work on 56 mc. appears to have been shelved for the winter, and although we realise that this is inevitable, it seems rather a pity, as it leaves us in about the same position that we were this time last year, and the amount of progress is rather disappointing.

It is to be hoped that we can find time during the winter to carry on with this experimental work from our home stations, with improved gear and somewhat higher power.

The letter budget continues to maintain its high level of excellence, and the fact that the postage on it has now reached 4½d. says a lot ! All the letters are so good that it seems invidious to select any for special mention, but 2AJA's adventure series, in which he describes the process of gold mining and also has a few words to say on the futility of wars in general, is most entertaining, even if not strictly radio.

The question of interference to B.C. programmes is very much to the fore just now, and the D.R. would like to receive details of any *recent* complaints that have been received by members in his district. It appears that a number of members have received complaints in the years gone by, and have voluntarily kept off the air during the hours of the main programmes, without trying to effect any form of cure. This policy has a lot to recommend it in certain individual circumstances, but in others it is imposing a handicap on the amateur that is quite unnecessary. It is hoped that those who have overcome the troubles of key clicks, wipe out, etc., will forward particulars of the devices used to the D.R., who will see that they are brought to the attention of the Interference Committee.

DISTRICT 9 (Eastern and Home Counties).

The summer is ending, but Essex has in no wise been inactive. G2LZ and 2DQ have been heard switching on for a fraction of a second, uttering a few words, and then disappearing as suddenly as they came on ! It is believed they are trying a new system of modulation. We hear that a small member of our congregation (G6OA) was found wandering in Southend High Street, wearing a pair of headphones, glasses, and carrying a box (our reporter does not give further particulars). The rumour goes that he was trying to find what screening effects were produced by the trippers on 56 mc. waves ! G2KT and 2YI have been visited by mysterious howls in their 1.7 speech amplifiers. G5SN and 6GG have made short reappearances. G5VS has rebuilt and improved his transmissions. G6KV has been heard on 3.5 mc. Puzzling are the exploits of G6CT and 5UK, who raided the Leigh Church Tower one Saturday afternoon, a car was left at the foot with engine running connected to the raiders by a flex, meantime the other two, accomplices (G5VQ and 6IF) were heard working on 7mc. DX, and asking : " Have you heard our portable," which, by the way, was working on 56 mc. It was a soaking day, reports being only received from the intrepid BRS1011, who, under torrents, and half sunk in mud, was wandering in the wastes of Canvey Island, semaphoring the QRK. G2WG has been fitting his station up as a real palace, if you want a treat, go to see him. G6CT has just worked his first VK, congrats.

G2HJ reports that G2RL is about to commence transmitting. G5FB welcomes a new member to his district in G5RD, and states that 5VT and BRS1047, with a few others, are active there. G5MI (Ipswich) is testing and awaiting reports.

At the time of compiling these notes the D.R. was in the throes of changing his abode. He will appreciate reports of forthcoming tests compared to those of the past few months. New QRA for the winter will be Beaumont Hall Hotel, Clacton-on-Sea. Please send your reports to your C.R. before the 18th of each month.

DISTRICT 10 (South Wales and Monmouth).

As usual, direct reports are few, but the indications are that the district will be very active this winter.

On August 27 last, the 56 mc. nut was well and truly cracked when, after some "preliminary negotiations" with Bristol as to the exact whereabouts of five metres, the highly successful Newport-Bristol 56 mc. Field Day was held at Kemey's Folly, near Newport, 600 ft. above sea-level. Three portable stations were taken out, G2XX, 5FI and 6FO, with BRS727, 2BPG and G2PA as the respective assistant operators. From 11 a.m. to 6 p.m., QSA5 contact was maintained practically continuously with stations in and near Bristol, over distances up to 20 miles. G2IP was worked both from his portable location on Dundry Hill and from his home QRA, while signals were also reported from their home QRA's by G2ZX and 2AGM. G5JU was in operation at Portishead, 11 miles away, and was worked by all three stations on this side. Reception reports were also received from Bath, a distance of nearly 30 miles. G2XX, G5FI and G6FO were entirely battery-operated with less than 200v. and 4 watts in the oscillators, 'phone only being used, and signals were QSA5, R7-9 in most cases.

In view of the entirely unexpected result of receiving R9 reports from Bristol QRA's, a "QRA-to-QRA" test was arranged the following Sunday, but nothing was heard either in Newport or Bristol.

Fifty-six mc. activity has been considerably stimulated by these extremely interesting results, though future work is likely to be from home stations rather than by hiking gear up mountains.

From Swansea, G5PH reports that he is still working good DX on 14 mc. with QRP, and is also active on 3.5 mc. at week-ends. In this connection, will all members attempt this winter to make as much use as possible of 3.5 and 1.7 mc., particularly the latter.

The Blackwood Radio Club continues its work, and the members expect to be very busy this season. Mr. Mudford, their hon. secretary, sets a very good example by reporting *regularly* each month to his C.R.

On September 14, a meeting at Newport was attended by G2PA, 2XX, 5BI, 5FI, 5WU, 6FO, 6PF, 6YJ, and 2BPG, whom we welcome as a new member.

If I may be forgiven for striking a personal note, this is my swansong, and the present contribution is the last which I shall write as D.R. of this district. As most members know, I am leaving to settle in Bristol, and so the question of a new D.R. arises. The appointment will shortly be made, and I sincerely hope that the district as a whole will give him the same enthusiastic support which I have always had. From the amateur radio point of view, I cannot say how sorry I am to leave, and also how much I appreciate the very kind references which have been made to my efforts as D.R., a job which I have thoroughly enjoyed. I can only wish No. 10 the very best of luck in the future, and I am sure that, with the help and guidance of my successor, amateur radio will continue to be the live, progressive, happy thing it has been in the past.

Vy 73, OM's!

DISTRICT 12 (London, North).

Thirteen members were present at G5MG for the opening meeting of the season. It was decided to discontinue the Letter Budget in its present form owing to the delays (mostly unfair) which have occurred in connection with recent book budgets.

In future members are asked to forward, on quarto paper, a report to the D.R. to reach him by the last day of the month. This letter should contain items of general interest. On receipt of the reports the D.R. will prepare the budget, which will then be sent round *only* to those contributing.

The book budgets have proved very interesting, but because one or more members have delayed them, in some cases for as long as a month, it is considered desirable to revert to the earlier method.

The attendance at the first meeting was very poor, and unless better response is forthcoming in future it will be most difficult to deal with District matters in an efficient manner. The next meeting is fixed for October 21 at 7.30 p.m., when Mr. Vickery, G5VY, will act as host at 274, Mount Pleasant Road, Tottenham, N.17.

During that evening a discussion on 56 mcs. work will take place, and as this is a subject many members in other Districts are interested in, a cordial invitation is extended to them to attend, but please advise G5VY of your plans so that the necessary catering arrangements may be made. This applies to members in No. 12 who propose being present.

There are many members in the District who have never attended one of these meetings; a cordial welcome awaits them if they will come along. This applies especially to new BRS, who probably have many problems that require answering.

There is still much 56 mc. activity in the District, and a fair amount of liveliness on the other bands, but no work of interest is due for record. An attempt is to be made to bring at least one award into the District this season, our eyes being especially riveted on the 1.7 and 3.5 mc. trophies.

One final remark—no monthly report means no letter budget!

DISTRICT 13 (London, South)

With the return of the dark evenings, most of us will again be spending more time on radio than we have in the summer. Interest has been maintained, however, by the monthly meetings at the Brotherhood Hall, West Norwood (opposite the 'bus garage), and the attendance has rarely fallen below 30. During the winter it is possible that this figure will double itself, and all are invited to attend at 8 p.m., on the first Thursday of each month. Hear an interesting paper or discussion, and enjoy a rag-chew with the other South London hams. G2AI,

G2GZ, G5YH, G6AN and G6FU report active, but we believe there are one or two others in South London who *occasionally* press a key !

DISTRICT 14 (London, East).

At our last District meeting, held at Chingford, those present welcomed members from District 7, to whom a special invitation had been extended. At later meetings it is proposed to invite parties from other London districts in turn. Our esteemed member G6FY is very shortly leaving the country to take up a position at the Leyden University, Holland. His presence and co-operation will be greatly missed by all those who have been so closely in touch with him during past years; he will certainly be going carrying the very best 73 from all. Our genial Secretary was also present and joined in a general discussion on " Interference." G6LL exhibited the " District Film " which he has taken no end of trouble to bring up to date. Another Field Day is being arranged at Abbess Roothing on October 28 and 29. At the conclusion of the meeting G6FY delivered an amusing " technical " paper describing the manufacture and characteristics of a new iodine or bromide accumulator. A specimen was handed round and its claimed capacity was marvelled at. During the course of the lecture, however, it gradually dawned on all that Dr. Feraday was taking his last opportunity for " leg-pulling." The next District meeting will take place at 28, Douglas Road, Chingford, E.4, on Tuesday, October 24.

DISTRICT 15 (London, West and Middlesex).

The first meeting of the winter session opened with an attendance of fourteen. It was pleas ng to see one or two new faces, and it is to be hoped we shall have the pleasure of seeing them frequently.

Meetings have now been arranged for as far ahead as February, 1934, and will be held as follows :—

October 25 : G2IY, 2, Tring Avenue, Ealing Common, W.5.

November 22 : G6VP, " Holmlea," 12, Ferrers Avenue, West Drayton.

December 13 : G6CJ, The Cottage, Park Way, Long Lane, Hillingdon.

January 24 : G6WN, " Hills-View," 81, Studland Road, Greenford Avenue, Hanwell.

February 28 : G2LA, 303, Staines Road, Twickenham.

All these are Wednesdays, as this evening has proved to be the most convenient one for members. I would ask everyone to make an effort to attend, especially the newer member, for it is here that he can chat with those more experienced than himself, enabling him to gain knowledge he would otherwise miss.

Will those who anticipate attending any particular meeting arrange, where possible, to notify the host by card a day or so before ? It is felt that this will considerably help from the catering point of view.

The letter budget is still not getting the support it deserves. This is a great pity in view of the trouble G6YK goes to in replying to technical questions and even minor troubles of members when he knows full well that his endeavours are only read by two or three members. If you don't approve of the way it is run or you can suggest a better scheme, let's hear about it. If you want to save the stamp bring your letters along to the area meetings and hand them to us.

G6VP is giving 56 mc. a trial, but managed to find time for his usual DX on the lower frequencies. Congratulations to BRS1144, who has graduated to 2BGD, and BRS934, who becomes 2BFQ. The latter member is experimenting with receiving aerials in an endeavour to cut out neon sign interference. BRS1226 reports for the first time. G6WN has worked a few new countries, which bring the total up to 100.

Will anyone who may be interested in a Morse class please communicate with 2BGD, 32, East Acton Lane, W.3, who is trying to arrange one ?

DISTRICT 16 (South-Eastern).

Activity in Kent and Sussex on 56 mc. has been very high during the last two months, and following the successful tests between G2IC in Kent and G2FX in Sussex, when first two-way communication was established between the two counties, arrangements were made for portable apparatus to be taken across in a boat to Boulogne. The party, composed of G2IC, 2ASC, G6WY and G2ZQ went across on September 3. The land station was on the top of the high Folkestone cliffs operated by G6XO, another portable station was taken across to Calais, but unfortunately contact was not effected for some abstruse reason with any of the stations. Signals were heard a few hundred yards off the English shore by the land station.

DISTRICT 17 (Mid.-Eastern).

In the East Riding activity is being shown in most areas. A well attended meeting took place in Hull on August 20, at G6OY, and a 28 mc. Field Day followed on September 10. Three car parties were in operation, and these included G5FV, 6OY, 2ABK, 2ATK and BRS1165. BRS1118 and 2AUS remained at the home end, recording signals in various localities, results were, however, not up to the expectations anticipated by a previous rehearsal.

In Bridlington the 56 mc. band has a number of enthusiasts.

G5FV (Hull) is testing on ultra (centimetre) waves. Mr. Clarke is to be congratulated upon the manner in which he has stuck to 28 mc. during the past summer, and it is pleasing to know that success has crowned his efforts on several occasions.

During the coming winter the D.R. hopes to encourage telephony tests, especially on the 3.5 mc. band. At G6LI improved telephony systems are under test, the most interesting recent contact being with VU2FP. W.B.E. and W.A.C. phone awards are in view.

Many new members are welcomed, and several old members are congratulated upon obtaining full or A.A. licences. Lincolnshire notes are few and far between. The D.R. asks all who are active to report regularly to the C.R.'s.

SCOTLAND.

Since writing the last notes, very little news of interest has come to hand, and that " very little," curiously enough, has reference to 56 mc. In view of the projected aeroplane tests, interest in 56 mc. seems to have been kindled to quite a remarkable degree, and now no fewer than ten transmitting

and many BRS and AA men plead guilty to work on these frequencies. Messrs. G6IZ, 5FP and 6JX carried out some tests recently, making use of a motor-car travelling at a speed of from 35 to 40 miles per hour. No interference with the various RX was experienced from the car magneto.

"A" and "D" districts have resumed their winter meetings.

In the case of "D," these are held fortnightly and at various addresses, with respect to which information can be had from G6FN, the district officer. A new departure has been made in the case of "A" District, however. Owing to the increase in the membership of the district, and the difficulty of partitioning, it was found that the address of G5YG, where these meetings had been held previously, was totally inadequate in accommodation for the members attending, and consequently other quarters had to be sought. Finally, these were obtained in the Regent Tea Rooms, 51, West Regent Street, Glasgow, and at this address, "A" District meetings will be held at 8 p.m. on the last Wednesday of each month. Visitors from other districts, and from the South, will be cordially welcomed.

Northern Ireland.

It has been decided to commence a crystal register in Gi and for that purpose I shall be glad if you will send me a note of your crystal frequency as guaranteed by the manufacturers.

Gi5HV, 5QX, 6TK and 6YW attended convention and had a very pleasant time, and thank those who made their visit so enjoyable.

Gi6YW has recovered most of his gear from the N.F.D. transmitter, and is on the air with a temporary hook-up. In a very long report, 5QX comments on the poor conditions at present prevailing on 14 mc. and gives a list of countries worked before conditions became poor; these include a first contact with VQ4. He has been using a screen grid valve as an oscillator and finds it much more efficient than a triode. 6TK reports contacts with W1, 2, 3, 8, VE1, 2, SP, HB and U, using under three watts. BRS877 is engrossed in 56 mc. work and hopes to carry out tests with 6TK. After trying a half-wave Zepp, 5UR has returned to his old love—an end-fed Hertz, and finds DX coming once more! 6VG is W.T. on the Themistocles and is expected home from VK early in October. The annual general meeting of the R.T.U. was held on September 23, and amongst other things a competition was arranged, the idea being that members send in a claim for what they consider to be the best work they have performed during the period November 24 to December 15, inclusive, the Houston Fergus trophy to be awarded for the most meritorious performance. A vote of confidence with best thanks was accorded Gi5HV for his services as QSL Manager.

At the time of writing a station using the call XL5CU has been heard and signal strength and prevailing conditions point to a local pirate—information as to his identity will be passed to the right quarter.

Please report in good time for the next notes.

ENTERPRISE IN KETTERING.

PROOF that a small local society located in a provincial town can render yeoman service to the amateur movement was forthcoming recently, when the Kettering Radio and Physical Society organised a three-day Radio Exhibition in the Central Hall, Kettering.

Bearing in mind that the town has a population of only about 30,000 people, it speaks well for the enthusiasm of its citizens when 10,000 of them pay to attend such an exhibition.

The whole organisation was in the hands of the local Society's Committee, of whom Mr. R. Pankhurst (G5YF), the Secretary, is the best known.

Advance plans had been made to accommodate some twenty odd radio dealers located in the town, with the result that on the opening date the hall resembled Olympia in miniature.

The Kettering Society's stand was a great attraction, especially as it displayed the "Guide to Amateur Radio" receiver, transmitter and frequency meters.

A demonstration of television principles, a working example of the use of a cathode ray oscillograph and an harmonicgraph were other attractions.

The Secretary, R.S.G.B., was invited to attend on the last two days, and was thus able to place our aims and objects before the members of the local and other interested persons.

Broadcasting competitions for announcers, vocalists and comedians attracted many entrants, and these features, staged on each evening, amply demonstrated that much useful talent exists within their town. Mr. Alan Hutchen (now BRS. 1251), the Chairman of the Society, together with the committee members, are to be heartily congratulated on a very excellent performance, and we have no doubt that the lead given by Kettering will be followed up in other small provincial towns.

The Kettering Radio Society Stand.

In interviews with the local traders we were advised that the amount of business conducted far exceeded their most optimistic forecasts, and judging by the remarks made we have little doubt that next year they will ask for more space and a longer exhibition.

(*Continued on page* 131.)

Ten Cigarettes = One Guide.

Empire B.E.R.U. News.

B.E.R.U. REPRESENTATIVES.

Australia.—H. R. Carter (VK2HC), Yarraman North, Quirindi, N.S.W.

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

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

Canada.—C. S. Taylor (VE1BV), Stewiacke, Nova Scotia; R. Prissick (VE2CX), 27, Bellevue Avenue, Westmount, Montreal, P.Q.; S. B. Trainer (VE3GT), 4, Shorncliffe Ave., Toronto, 5, Ont.; A. E. Howard (VE4CJ), 2401, 25th St. West, Calgary, Alberta; and A. L. Cusden, (VE5HJ), 1465, 17th Avenue, New Westminster, British Columbia.

Ceylon and South India.—G. Todd (VS7GT), District Engineers Bungalow, Nuwara Eliya, Ceylon.

Channel Islands.—H. J. Ahier (G5OU), 4, Roseville Street, St. Helier, Jersey, C.I.

Egypt and Sudan.—Lt. E. S. Cole (SU1EC), Haking House, Abbassia, Cairo, Egypt.

Hong Kong.—A. P. Rosario (VS6AN), P.O. Box 391, Hong Kong.

Iraq.—S. A. Rance (YI2DS), A Bungalow, 203 Squadron, R.A.F., Basra.

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

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

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

Malta.—E. A. Haskell (BERS134) H.M.S. "London," c/o G.P.O. London.

Newfoundland.—James Moore (VO8AW), Carbonear.

New Zealand.—D. W. Buchanan (ZL3AR), 74, Willis Street, Ashburton; and C. W. Parton (ZL3CP), 69, Hackthorne Road, Cashmere Hills, Christchurch.

Nigeria.—Capt. G. C. Wilmot (ZD2A), Depot Nigeria Regt., Zaria, Nigeria.

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

North India.—2nd Lt. T. H. Beaumont (VU2FP) 1st Batt. Beds & Herts Regt. Jhansi, India.

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

Australia.

By VK2HC, *via* VK3WL, ZL4AO and G2ZQ.

Increased activity is noticed on 56 mc., particularly in VK2 and VK3, while 28 mc. shows signs of interest again. There is little change in 14 mc. and 7 mc. conditions yet, but improvement is noticed. 3.5 mc. holds good, but QRN will soon take charge of that band.

A very successful R.A.A.F. wireless reserve convention was recently concluded in Melbourne, with VK3OR winning the contest trophy. The VK3 division WIA are completing arrangements for the publication of a "ham" magazine. An Australian "five point relay" contest for the Fisk shield trophy will be held from October 21 to 29, each State acting as a team. A field day is planned in VK2 for November 5 on 3.5 mc. and will also include 56 mc. apparatus.

Australia (Western).

By VK6FO, *via* ZL4AO and G2ZQ.

Conditions prevailing here are still generally patchy. West and South African stations are contacted reliably. European stations are still absent from both 14 mc. and 7 mc. in Perth, though VK6FL in Geraldton, 300 miles North, has effected several QSO's. Asiatic signals are scarce, but VK6FO contacted VU3SM of the Andaman Islands; this is believed to be the first VK contact with these islands. One peculiar feature was noticed on the 7 mc. band on September 9 from 08.30 to 10.00 G.M.T.: all signals had a pronounced echo. The 14 mc. band is still dead, no signals being heard yet except an occasional VK. The WIA WA division held their annual exhibition in the Perth Town Hall on September 6 to 8, inclusive.

Burma.

By VU2JB, *via* VU2JT and G5BD.

Conditions in Burma during September were bad. Thunderstorms and a break in the monsoon made DX almost impossible. VU2LZ and VU2JB continue their broadcasts on 7 mc., the latter confining himself to Burmese programmes. (We consider that the amateur bands should not be used for regular broadcast programmes.—ED.) The message above was also intercepted by G6YL.

Canada (First District).

By VE1BV, via G6CW.

Conditions in Nova Scotia were very poor on 14 mc. during November, but the 7 mc. band was good at intervals for contacts with G. Most of the amateurs in the VE1 district are rebuilding for winter DX. The local club is going strong with a membership of 40. VE1EA is testing on 28 mc.

Canada (Second District).

By VE2BB.

Conditions on the DX bands have continued to be erratic. On 7 mc., VKs and ZLs have been heard between 11.00 and 13.00 G.M.T. and, occasionally, contacts made, but on 14 mc. nothing of real

interest has been heard. The 1.7 and 3.5 mc. bands have been good for local work. The aurora blanked all bands at the beginning of September.

Canada (Fifth District).

By VE5HJ.

Interest is being shown in the B.E.R.U. by many transmitting and receiving amateurs, and hopes are high that a good increase in membership will occur this winter.

VE5 is active on all bands, including 28 mc. The 1.7 mc. band is generally favoured for local work. On 7 mc. ZL and VK contacts are easiest to obtain, owing to location, but this advantage prevents QSO's except on rare occasions with G.BRS reports, either direct or *via* this Journal, are always appreciated by VE5 stations. VE5HJ operates on 14,224 kc. during the day and 7,112 kc. at night.

Ceylon and S. India.

By VS7GT.

Conditions have been approximately as previously reported, except that 14 mc. seems to have shown quite a welcome return to activity.

We welcome to the air Mr. E. Bedford (VS7EB), who formerly was known under a B.E.R.S. number.

No reports are to hand, though the following have been active : VS7CE, VS7GJ, VS7AL, VS7RA, VS7EB, VU2FY, VS7GT. May I once more appeal through these columns to all local B.E.R.U. members? Please keep me informed as to your activities and let me have a brief report by the 15th of each month.

The visit of Mr. Malcolm Frost aroused much interest.

Egypt.

By SU6HL *via* G5YH.

Despite poor conditions, a record number of SU stations have been active during the month. SU1CH, 1AQ, 1MM and 1SG carried out successful fone tests between Alexandria and Cairo, using 7 and 3.5 mc. SU1AA raised W1 on 28 mc., getting an R6 report. SU8MA, 1AA, 1AQ, 1SK and 2GA have all been active on 7 or 14 mc., whilst SU6HL has been busy moving under a new roof, which also shelters 2NP, 3AB, 3EH and 3RX; the latter hope to be B.E.R.U. members shortly. SU1WEM paid a visit to 6HL at Cairo and will be on the air soon, using a C.C. rig. ZC6CN is busy on 14 mc. and comparing conditions with weather dope. He wants skeds for 28 mc. tests and QSO's with VE and VO. He kept watch during the Solar eclipse, but observed no noticeable effect on signal strength.

Conditions during the month have been very bad all round. SU1AA's QSO with W1 at 00.30 G.M.T. is the only 28 mc. report. A few VE, VO and ZS stations have been raised on 14 mc., but no other DX. It is hoped to hold an SU convention in Cairo towards the end of the year.

Jamaica.

By VP5MK.

Conditions on 7 and 14 mc. were at their worst last month, although VP5PZ with nine watts had a series of good DX QSO's with Europe and New Zealand. VK5CC, 5NH and 5MK were active.

Kenya, Uganda and Tanganyika.

By VQ4CRH.

All stations report conditions during the month of August as being most erratic on both the 14 and 7 mc. bands.

For a few evenings from the 17th a slight improvement over previous months was experienced on 14 mc., and those who happened to be active on those nights found DX was good and plentiful.

Two stations in this zone took the opportunity during this lively period of annexing countries which are usually conspicuous by their absence when conditions are at their best; at the same time, these QSO's enable those concerned to qualify for their certificates. VQ4CRH with a VE for WBE and VQ4CRL a PY for WAC. Both these stations are now complete with WBE and WAC, who, together with VQ3MSN make three who hold both certificates out of a very small active membership. VQ4CRL is now QRO with 50 watts input and is satisfied with results despite bad DX conditions. He reports that from 20.00 G.M.T. onwards W's and G's came through well in spite of heavy QRN and it was always possible to contact them.

VQ4CRH has been watching for activity on the 28 mc. band, but no signals have been heard.

VQ3MSN has little to report as conditions in Tanganyika appear to vary in sympathy with those in Kenya. His experience over the last five years confirms the prevalence of almost the same state of affairs every year in a greater or lesser degree.

BERS175 reports heavy QRN on both bands with G signals in the majority since he opened his station early in August.

VQ4CRK has arrived back from his flying tour of South Africa and is already busy reorganising his station.

New Zealand.

By ZL4FD and ZL4AO, *via* ZL4AO and G2ZQ.

With the return of low-power DX conditions, the 7 mc. band is showing considerably more activity than during the winter months. The 1.7 mc. band, despite its advantages for inter-provincial 'phone and CW work, continues to be left almost completely "in the cold," while 14 mc. is now passing through that transition period peculiar to this time of year, when anything may happen. Pacific Coast U.S.A. stations have been heard as early as 19.30 G.M.T. QSO's with W's on this band are now confined to a short period centring about 20.30 G.M.T.

On 7 mc., telephony from G2LZ has been copied QSA5 R6 from 06.30 to 07.15 G.M.T. on one of the new type "single-signal" receivers. The outstanding selectivity performance of this type of receiver will undoubtedly result in the re-design of many receivers in the next few months. ZL4AO would like to emphasise this point to those who are inclined to grumble about "QRM from the other chap."

The 56 mc. band, it is rumoured, is to receive considerable attention from a number of ZL's in the near future.

The members of the Otago Branch of the Association mean to do big things on the occasion of the presentation of the much-coveted cup to ZL4AI, winner of the Senior Section,

B.E.R.U., contest held last February. An account of this presentation will appear in an early issue of *Break-in*.

As a result of the ballot taken during August, the Association is to approach the Post and Telegraphs Department with a view to having a channel allotted in the 14 mc. band for telephony.

Included in the contents of the September *Break-in* is an excellent article on " Power Supplies for Transmitters " by the technical editor, W. G. Collett (ZL4BP).

Nigeria.

By ZD2A *via* G5BJ.

Conditions on 14 mc. have been very variable, and poor on other bands. ZD2C, a new transmitter in the person of Mr. W. A. Phillips, Cable Station, Lagos, Nigeria, is welcomed on the air; he is C.C. on 14 mc.

Northern India.

By VU2LJ.

Conditions were very bad on both 7 mc. and 14 mc. during August. Watch was kept on 28 mc., but although commercials were being logged, no amateur signals were heard.

Broadcast telephony interference is on the increase on the 7 mc. band in India, and it is suggested that these transmissions should be restricted to 15 minutes per hour.

VU2CS is getting the Emergency Chain Scheme going again and asks all active members to report to him.

Northern and Southern Rhodesia.

By ZE1JE.

It is the general belief in some parts of the Empire that Northern and Southern Rhodesia are situated in, and governed by, the laws of the Union of South Africa. This is a fallacy. Northern Rhodesia is under Imperial Rule and Southern Rhodesia is a self-governing Dominion. Further, Southern Rhodesia is by no means a newcomer to the Amateur Radio World, for as far back as 1925 she was designated as Division 7 of the South African Radio Relay League, but owing to unsurmountable administrating difficulties arising, it was deemed advisable to disband the Division, which took place in 1932; since then it has not been found possible (although feasible) to form a Society in this country. The first African recipient of the much-coveted W.A.C. Certificate was a Rhodesian amateur.

There are 17 licensed amateur transmitters at present in Northern and Southern Rhodesia, seven of whom are members of the B.E.R.U., and an earnest endeavour is to be made to increase the membership in the near future. The following members are now active: ZE1JE, ZE1JF, ZE1JH, ZE1JJ and VQ2XD, all of whom are operating crystal-controlled outfits on 14, 7 and 3.5 mc. bands. Our winter season is now nearly over and with it the much-sought-after DX, static is becoming very pronounced and it is proving difficult after 14.00 G.M.T. to maintain contact with local stations in the Union of South Africa; our local is anything up to 1,000 miles. ZE1JF is very active on 'phone and is getting excellent reports on 7 mc.; he reports Eastern DX coming in after 14.00 G.M.T., and has worked several W6 stations, receiving reports varying from R7 to R3, also held sked with W6QD for six successive days. European stations on 7 mc. are now conspicuous by their absence. He also laments the fact that some W6 stations whom he worked some months ago on 14 mc. have failed to QSL, and in consequence he is not able to claim his W.A.C. G stations are requested to keep a look-out on 7 mc. band for ZE1JF and ZE1JE. No reports have been received from ZE1JH, 1JJ and VQ2XD.

News from Europe.

The President of the Danish National Society, E.D.R., advises us that the following has been elected to serve in official positions during the coming year: President, P. Heinemann, OZ4H; Vice-President, E. Eliæsen, OZ2E; Secretary, Fr. Flensborg, OZ1D; Editor, H. Fogedgaard, OZ7F; Treasurer, K. Schmidt, OZ7KIS; Committee, H. T. Petersen (OS7Z), S. Hasselbalch (OZ7T) and H. V. Hansen (OZ2VH).

* * *

Mr. R. Stuber, Foreign Correspondent of U.S.K.A. (Switzerland), reports the following new Executive appointments: President, F. Brocher, HB9V; Vice-President, W. Schneeberger, HB9G; Secretary, A. Wehrli, HB9AJ; Treasurer, F. Wolf, HB9Z; Traffic Manager, J. Lips, HB9J; Publicity Manager, J. Erb, HB9AF; QSL Manager, W. Frey, HB9AC.

The U.S.K.A. held their third national QSO Contest on June 11, when twenty stations took part in the event; " Radio fox hunts " have recently been held in Zurich and Geneva, when a specially-designed Goniometer-receiver was employed by most of the entrants. Aeroplane tests on 56 mc. are being arranged in Zurich.

In order to study the propagation of high frequencies in the Alpine districts, the U.S.K.A. Alpine Cup Contest was organised between September 5 and 9. The portable and mobile station, XHB9V, was installed in a motor-car and left Geneva on September 5. During its passage through the Alps three daily transmissions were made on the 3.5 and 7 mc. bands, and at these periods observations were made by all Swiss amateurs.

The best band for local work is found to be 3.5 mc.

At the present moment there are 40 amateur transmitting stations in Switzerland, 18 of which are crystal-controlled. The U.S.K.A. membership is nearing the 200 mark.

British amateurs visiting Switzerland are requested to communicate with the Headquarters of the U.S.K.A. at Post Box Zurich 22, all overseas amateurs are assured of a hearty welcome.

Enterprise in Kettering. — (*Continued from page* 128.)

The Central Hall is controlled by the Kettering Co-operative Society, whose President was an enthusiastic visitor.

Much of the success of the Exhibition can be attributed to the excellent publicity given by the *Kettering Leader and Guardian* and the *Northamptonshire Evening Telegraph*, which gave excellent notices both before and during the show.

We thank the organisers for giving us an opportunity of taking an active interest in this important event.

EXCHANGE AND MART.

NOTICE TO ALL ADVERTISERS.

Notice is hereby given that as and from the NOVEMBER issue of the "T. & R. Bulletin," the rate for "Small" TRADE advertisements will be 2d. per word, minimum 3s. Additional words 2d. each. If desired, first line will be printed in CAPITALS.

AUTOPLEX BUG KEYS, 10s. 6d. C.W.O. Money returned if not satisfied.—MARSHALL (G.2MA), 8, Boclair Gardens, Hillfoot, Bearsden, Glasgow.

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G5QV, changing QRA, offers 2,000-v. E.D.C. Generator, bedplate coupled ½ h.p. 230-v. D.C. motor; Starter; Resistances, etc. Fine machine (cost £40 new); £8 the lot, or near offer. 1xT 250 Valve, nearly new; 1 x 200 v. Voltmeter. All perfect for QRO and world DX.—STOLLERY, Beaumont Hall, Clacton-on-Sea, Essex.

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QUARTZ LENSES, 2s. 6d. Guaranteed to oscillate without reaction.—SMITH, Bryn Rodyn, Colwyn Bay.

SP55R RED SPOT VALVES.
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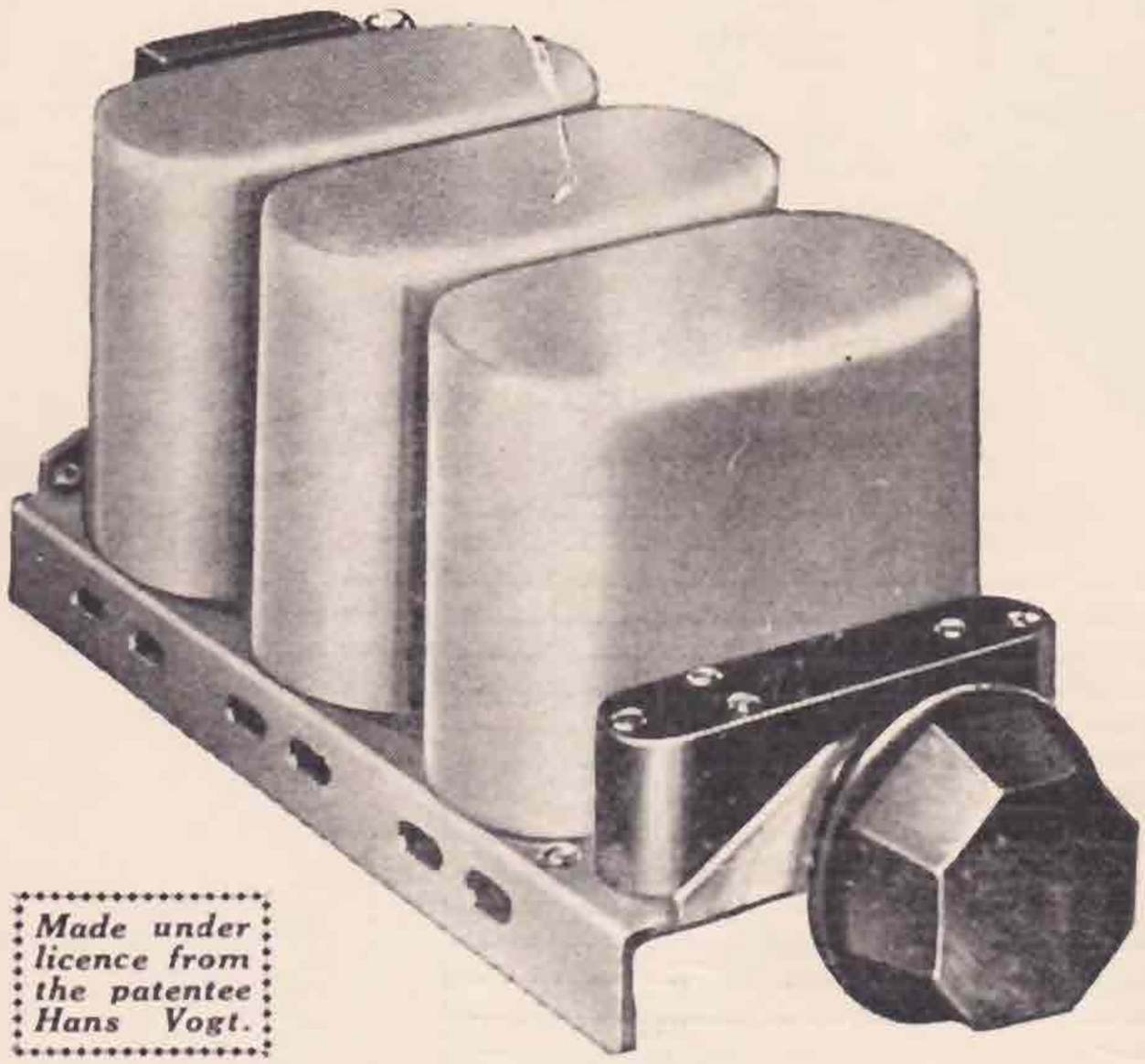

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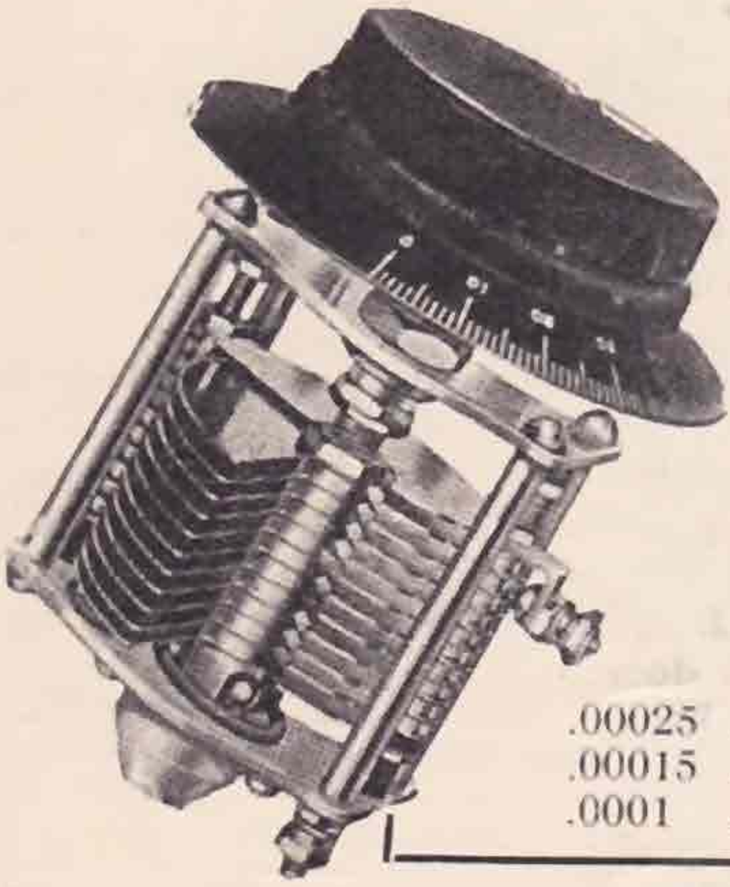

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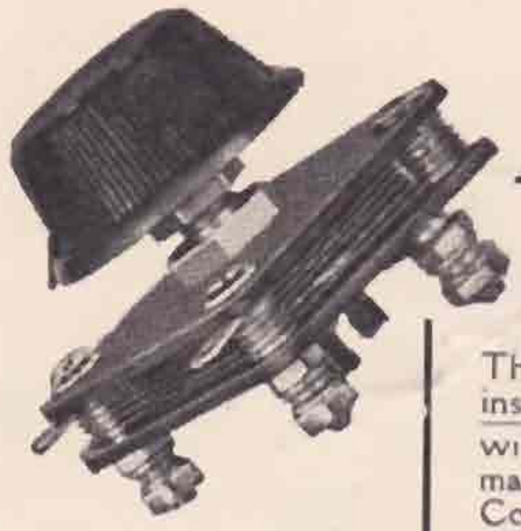


POLAR DIFFERENTIAL

The condenser with an insulated spindle. Constructed with the highest quality materials. Smooth action. Complete with knob. .0001, .00015, .0003 **3/-**

★ **The POLAR TYPE "E" SINGLE and TWO GANG S.W. CONDENSERS will shortly be available**

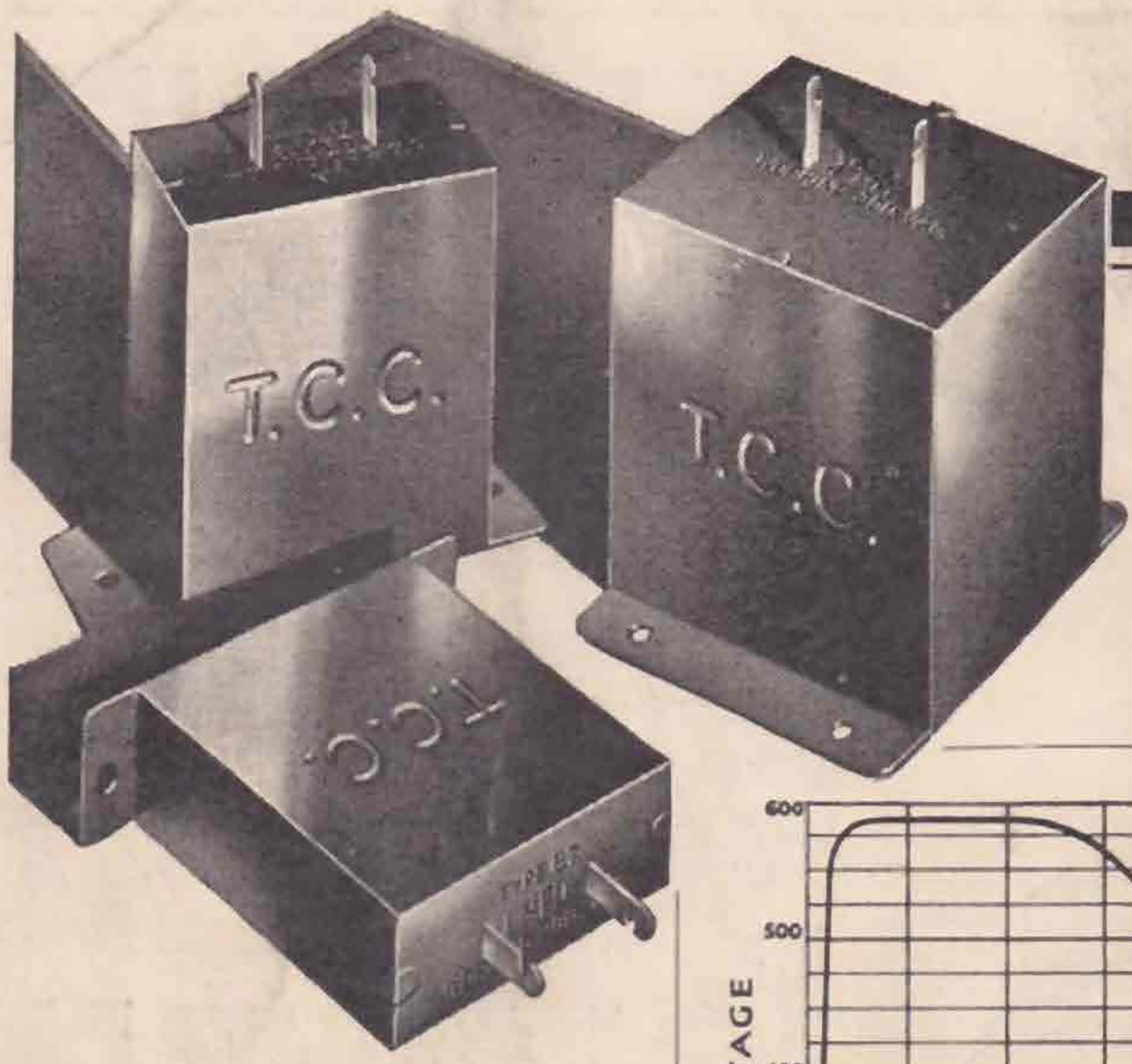
.00015 **5/-** 2 × .00015 **10/6**

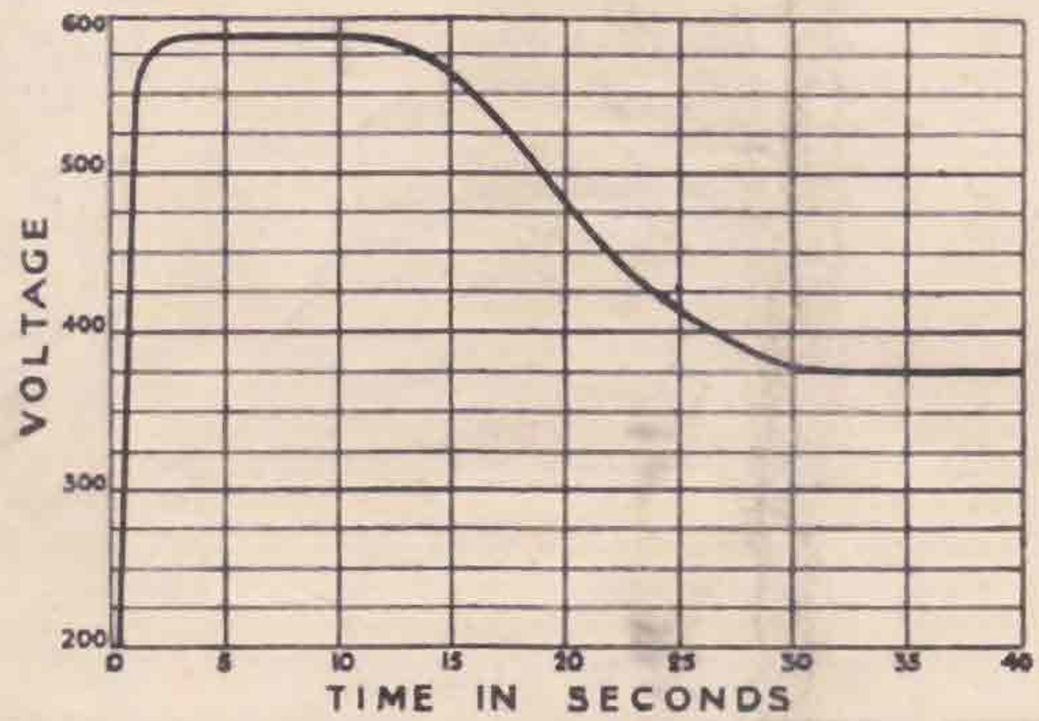
WINGROVE & ROGERS LTD.,

188-9, STRAND, LONDON, W.C.2.

'Phone: Temple Bar, 2244/5/6.

POLAR WORKS, OLD SWAN, LIVERPOOL





The above graph gives a typical example of the voltage overload when an A.C. Receiver is switched on.

SAFE!....against surges of 650 VOLTS

With the switching on of A.C. Mains gear, condensers and other components are subjected to heavy voltage surges—often as much as 600v. Such an overload may prove disastrous—and costly—to components in circuit. The T.C.C. Type 87 Condensers have been designed to safeguard your apparatus. They will withstand surges of up to 650v.—a valuable safety factor —Use the T.C.C. type 87 and be certain.

T.C.C.

ALL-BRITISH CONDENSERS

THE TELEGRAPH CONDENSER CO. LTD., WALES FARM RD., N. ACTON, W.3

Capacity Mfds.	Dimensions			Price
	Height	Width	Thickness	
	Inches	Inches	Inches	s. d.
0·1	1 3/16	1 1/4	5/16	2 2
0.25	2 1/4	1 1/4	5/16	2 4
0.5	2 1/4	1 1/4	7/16	2 6
1.0	2 1/4	2	11/16	3 0
2·0	2 1/4	2	1 1/8	4 0
4.0	2 1/4	2	2 1/4	7 3

♡ 3717

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