

**THE T. & R.**

# BULLETIN

THE INC.  
**RADIO SOCIETY**  
**OF GT. BRITAIN**

AND THE  
**BRITISH EMPIRE**  
**RADIO UNION**

Vol. 8 No. 6

DECEMBER, 1932 (Copyright)

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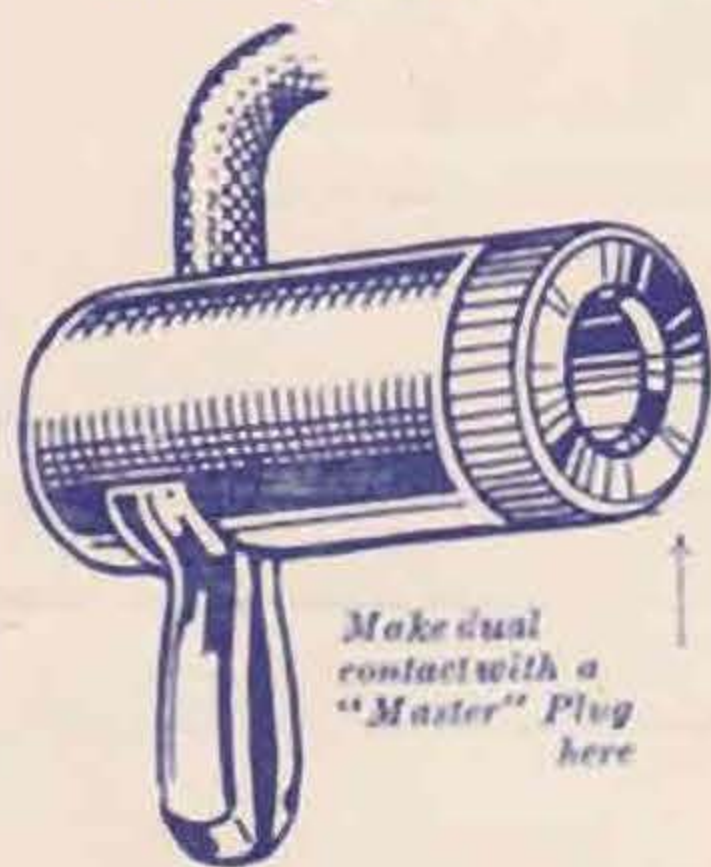
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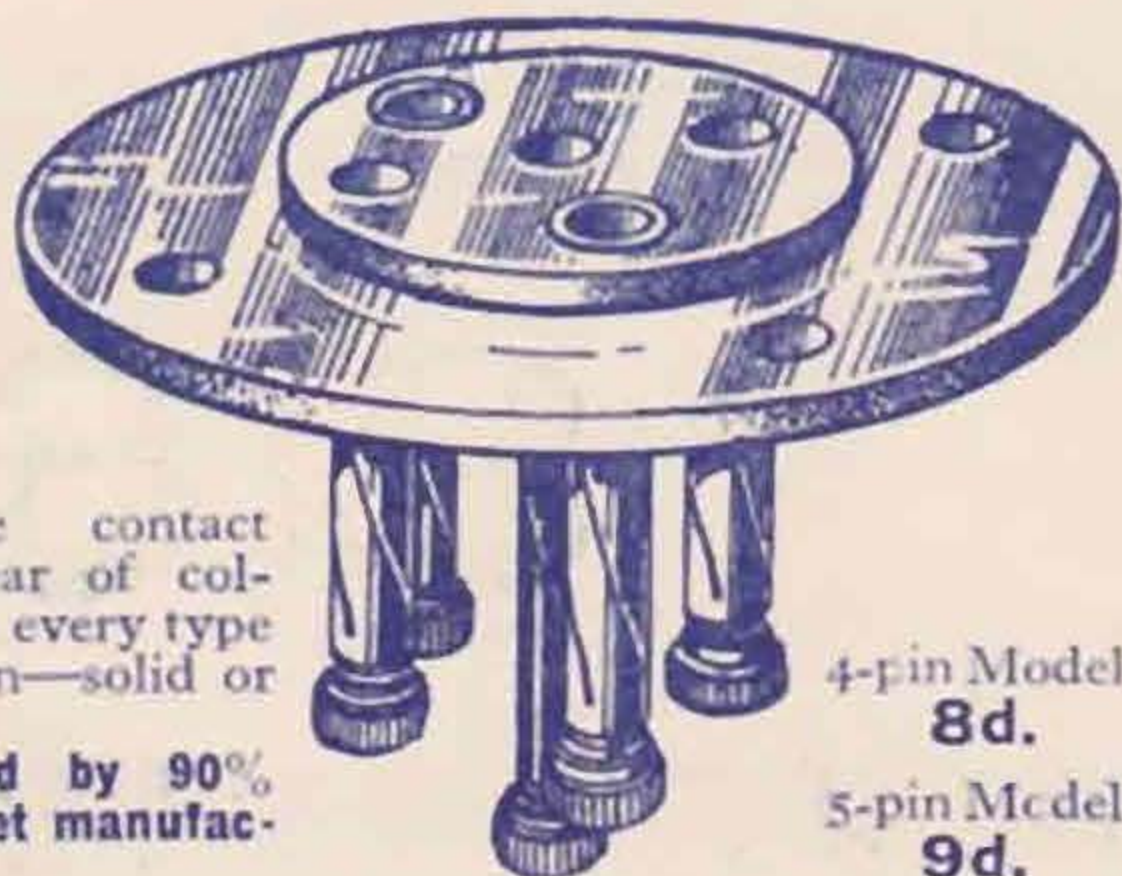
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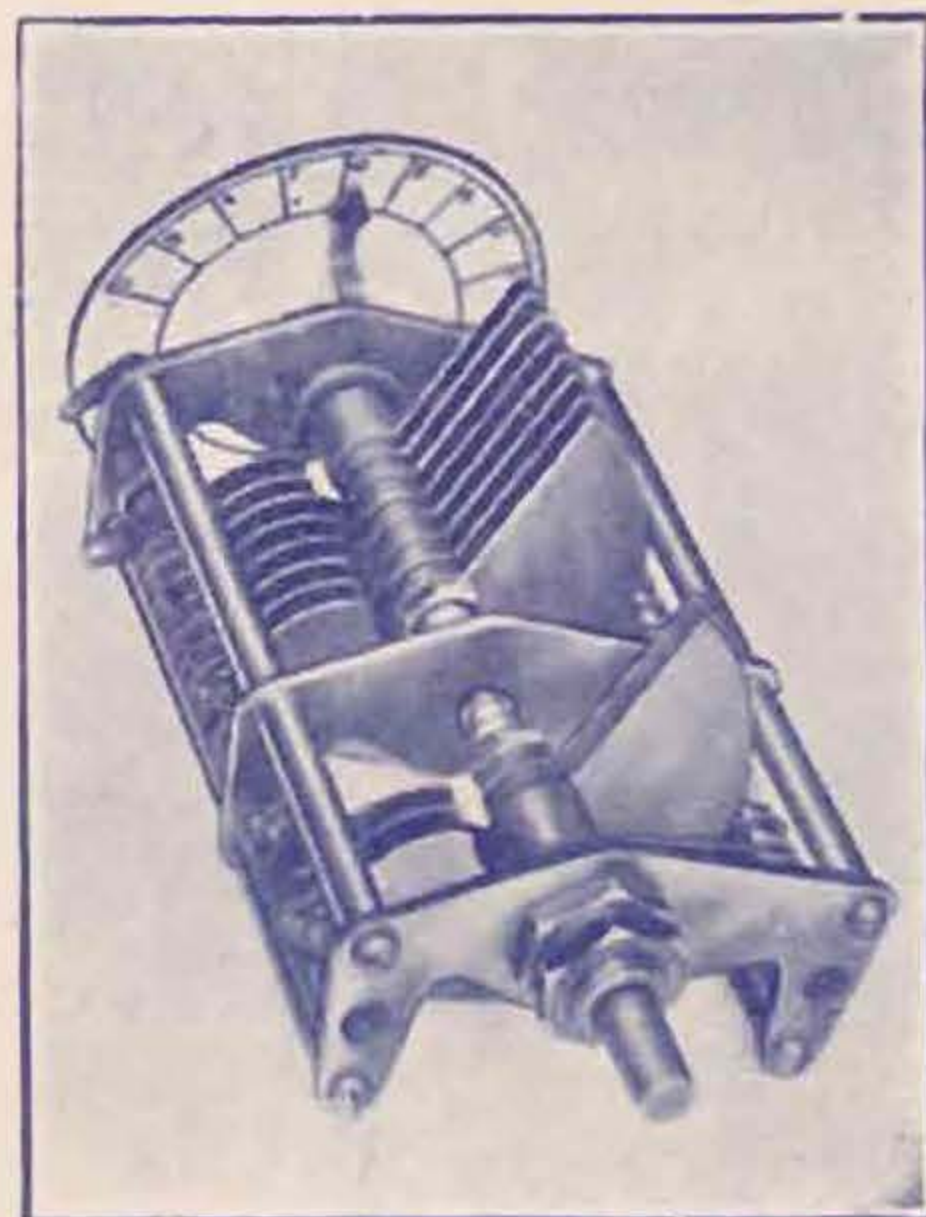
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53, VICTORIA STREET, LONDON, S.W.1. (PHONE: VICTORIA 4412)

PATRON: H.R.H. THE PRINCE OF WALES, K.G.

### 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.*

December 20. Annual General Meeting.

Lecture by Dr. E. H. Reyner.

"International Co-operation for the Study of Radio Propagation and Developments in the Measurement of Frequency."

January 27. Subject to be announced later.

February 24. "Cathode Ray Oscillographs," by L. H. Bedford, B.Sc., of the Cossor Valve Company.

March 31. Subject to be announced later.

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All correspondence should be addressed to The Secretary (or other officer concerned), The Radio Society of Great Britain, 53, Victoria Street, London, S.W.1. Insufficiently addressed letters may be considerably delayed.



# Bulletin

*The only Wireless Journal Published by Amateur Radio Experimenters  
in Great Britain*

*Hon. Editor pro tem.: The President.*

*Temporary Editorial Committee: J. J. Curnow (G6CW), J. W. Mathews (G6LL), A. O. Milne (G2MI).*

*Advertising Manager: H. Freeman.*

DECEMBER, 1932.

Vol. 8. No. 6.

## CONTACT BUREAU

**W**E often wonder whether our members generally fail to appreciate the many advantages to be gained by belonging to the very important section of the Society known as Contact Bureau. Evidence is frequently forthcoming in letters and other ways that if more were to participate in the work of the various sections a lot of queries often put to us would be avoided. Started by Mr. Allen in the early days of the BULLETIN, this institution had for its object the banding together of workers who wished to tread some definite path in radio work. What better method could be devised for securing progress than by united association of this kind? Yet, from the reports of the numbers composing the various groups, it would appear that comparatively few of our seventeen hundred members appear to avail themselves of this advantage. Indeed some of the sections have had to be discontinued from lack of support. Not a very encouraging state of affairs for those who are spending all their efforts in endeavouring to make the section instructive and effective.

"If thou hast knowledge let others light their candle at it," wrote Shakespeare, and the words have special significance to Contact Bureau and the Society generally. It is our duty as members to help others with the knowledge we possess, and this is why we urge all who can to join one or other of the groups to add their mite to the common fund of knowledge and the excellent work done by the group managers. Under both Mr. Allen and Mr. Powditch the section made considerable

progress, and under the present able hands of Mr. Page it has lost none of its usefulness. However, if you study his report any month you will observe that in many of the groups reports are lacking, showing a sad falling off in interest. Take, for instance, the present rage over 56 mc. Everyone is more or less interested in it and hunting for all possible information upon the subject. How much easier it would be for all to immediately join the group concerned and pool their information in the

common cause! All this would come before the group manager concerned who would co-ordinate the information received month by month and write up a report to the interest of all. Whatever line of investigation you undertake you will find a group to deal with it. If there does not happen to be one, a section will be created. All you have to do is to write to Mr. H. C. Page (G6PA) and he will advise you.

Please do not think your assistance is not required, for it is. It is one of the ways you can do your duty as a society member. We have all got to do our bit of work in the common cause. We are doing ours writing this. Others are doing theirs by serving the Society in various capacities. C.B. group managers are doing theirs often with scant encouragement in their efforts. Are we going to let them down in their efforts upon our behalf? They want our full encouragement in their work, and we hope this appeal will help to foster increased interest in our Contact Bureau. Now (to use a radio phrase) WHAT ABOUT IT OMS?

### Presidential Greetings.

This being our last issue before Christmas and the New Year, the President desires to send all members of the Society, both at home and overseas, his best wishes for a happy Christmas and a prosperous New Year. To all officers of the Society, District and County Representatives, contributors to the "Bulletin" and CB and all others who have so generously helped him in the work of the Society during the past year, he sends his grateful thanks and hopes that they will be able to continue their kind assistance through his remaining year of office.



# A STABLE TRIODE FREQUENCY-METER

By A. D. GAY (G6NF).

*A description of the new R.S.G.B. instrument which has an accuracy of 1 part in 10,000.*

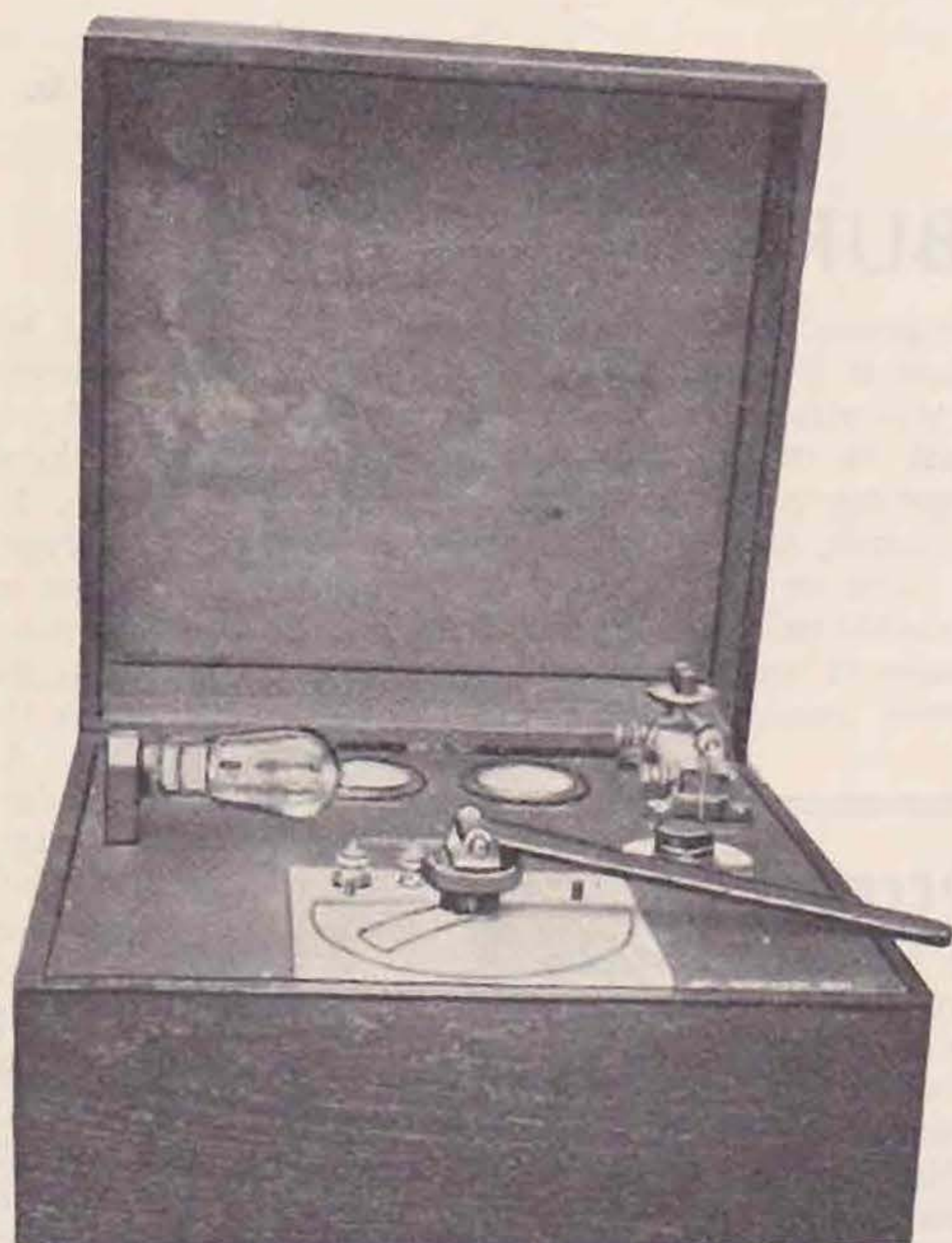
The design of a laboratory frequency meter of high accuracy which will maintain its calibration from day-to-day, within reasonable limits, is governed principally by the choice of components. The simplest form of instrument would consist essentially of a coil and calibrated condenser of rugged construction, this, together with an indicating device such as a thermo-junction and

Both the dynatron and the electron-coupled oscillator necessitate the use of a coated filament type of valve and these valves invariably show a gradual decrease of emission during life, which will sooner or later affect the calibration of the frequency meter. Unfortunately, the thoriated tungsten filament has become almost obsolete, with the exception of the LS5 and larger class of valve, so that one is restricted to the use of the triode for stable emission over long periods. It is no exaggeration to state that valves with thoriated tungsten filaments are stable for years, and instances of their use for 5 years continuously are known.

Whereas the dynatron and electron-coupled frequency-meter is undoubtedly adequate for all amateur purposes, it was felt desirable to adhere to the triode oscillator, owing to more satisfactory class of valve available for long-period stability. Furthermore, the use of large-lumped capacities is impracticable in the former type of instrument, either for ensuring additional stability or opening out the scale of the variable condenser.

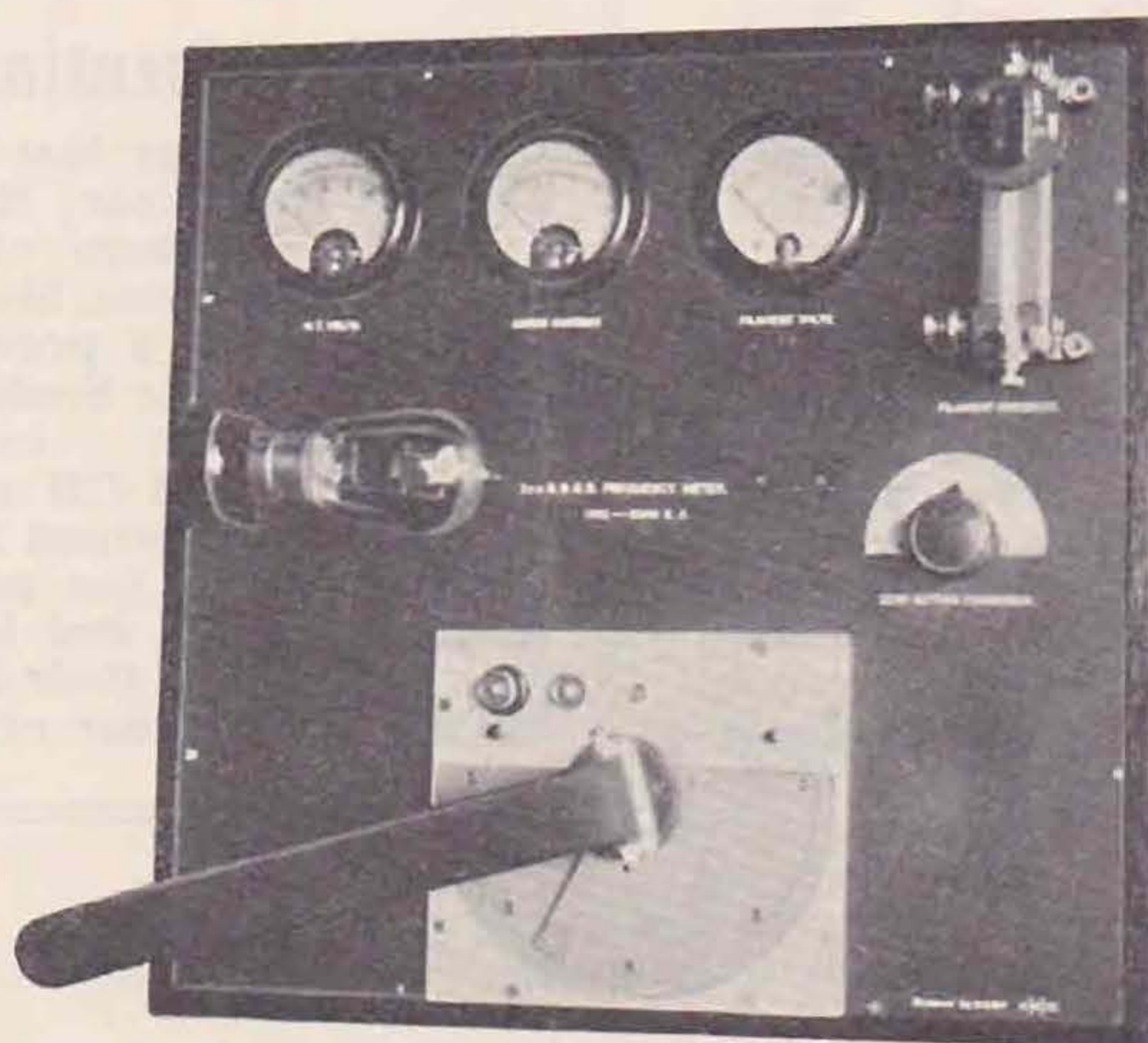
## Variable Condensers.

Whatever type of variable condenser is used, S.L.F., Log-mid-line, etc., the use of a lumped



micro-ammeter, forming the usual type of precision instrument. This type of frequency meter has several limitations, the most important being the necessity for a separate coil for each band of frequencies to be covered.

The use of a valve for generating oscillations over a band of comparatively low frequencies and the utilisation of successive harmonics to cover several higher frequency bands are more satisfactory methods, providing the oscillator can be made reasonably stable. Much has been written about the negative resistance or dynatron characteristic of the screen-grid valve and with reasonable care in design a frequency meter employing this type of oscillator will be found to have a high degree of accuracy. More recently we have seen the electron-coupled oscillator principle, described in QST, July, 1932, and utilised as a frequency meter.



capacity will alter the curve considerably; by using a straight-line-capacity condenser of 200 m.m.f., with a fixed capacity of 300 m.m.f., a practically straight-line variation between capacity and frequency is obtained, a somewhat useful consideration.

There are two variable condensers incorporated in the frequency-meter, a small one of 32 m.m.f.



maximum capacity for adjusting the zero, if necessary, in cases of extreme temperature variation. The other is a special 200 m.m.f. precision condenser, with 6-in. vernier scale made to our specification by Messrs. Gambrell Bros., Ltd.

The zero adjusting condenser is a Hammarlund Precision Midget, selected for its sturdy construction. A smaller capacity would have been quite suitable but practically unobtainable. The frequency meter is calibrated with the vanes of the midget condenser half in. This allows adjustment to be made for plus or minus variation.

The calibrated condenser has a 6-in. vernier scale calibrated to  $180^\circ$ , with the vernier reading as usual in tenths, this gives an equivalent of approximately 350 cycles per one-tenth of a division, and as close as one could wish to read to maintain a high degree of accuracy; 350 cycles represents 0.01 per cent. of the fundamental frequency.

The condenser vanes are made from polished copper and completely screened in an aluminium box. Keramot insulation is provided for the fixed plate assembly. The principle of the construction follows the new Gambrell type of precision variable condenser very closely.

A long handle is provided and can be clearly seen in the two photographs. This is mounted on a swivel joint on the top of the condenser knob and provides an effective slow motion for obtaining zero-beat adjustments.

#### Construction of Coil for Frequency-Meter.

The anode and grid coil windings consist of 17 turns and  $13\frac{1}{2}$  turns respectively, wound with 26-gauge enamelled wire upon a 2-in. diameter Keramot former. The former is 3 ins. long with a wall thickness of  $\frac{1}{4}$  in. The two windings are

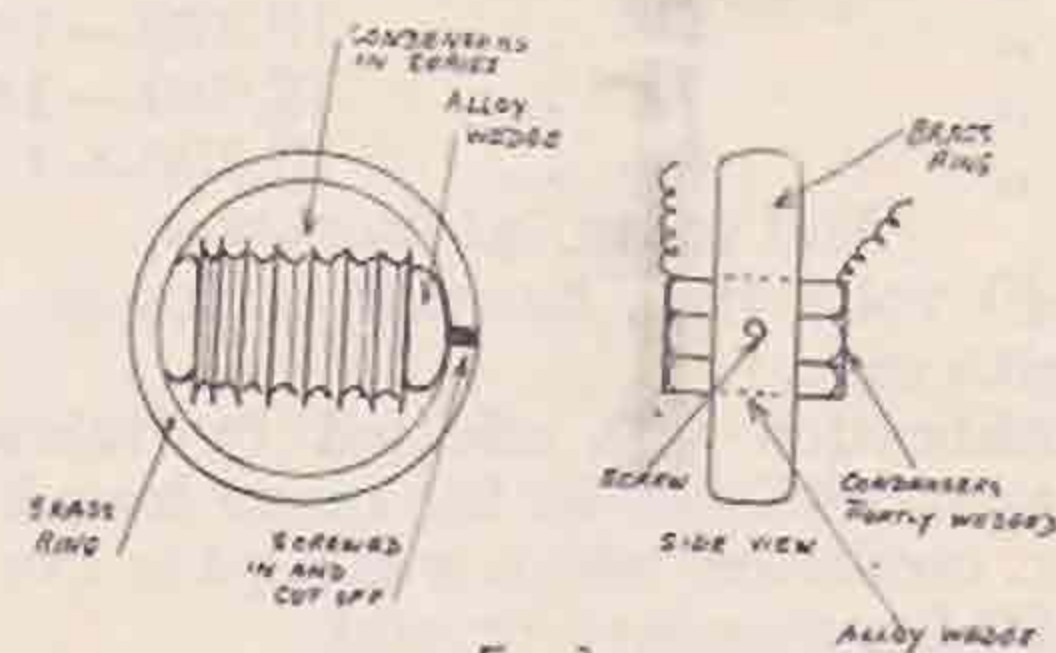


Fig. 2.

spaced 1 in. apart and wound in grooves, which have a pitch of 1-32 in. The wire is firmly wound on the former and the ends taken twice through two small holes drilled  $\frac{1}{4}$  in. apart in the final groove and then taken through the interior to soldering tags, spaced equidistant round one end of the former. Fig. 1 should make this quite clear. The other end of the former is drilled and tapped 4 B.A. for the two screws which hold it to the underneath of the panel.

#### Fixed Capacities across Grid and Anode Coils

In order to render negligible any slight expansion changes which might take place in the coil former and windings and which might vary the inductance

and distributed capacity, two fixed capacities of 300 micro-microfarads are employed. One of these capacities across the grid coil in conjunction with the 200 m.m.f. variable condenser produces a practically straight-line frequency variation. The other 300 m.m.f. condenser is connected across the anode coil.

It is obvious that these capacities must be free from any inherent variation due to temperature or humidity effects. Ordinary receiver type condensers are not sufficiently constant for this purpose. Fixed air di-electric condensers are suitable providing they are of good construction; inexpensive types are likely to be very troublesome and worse than ordinary small receiving types for constancy.

The type selected for the frequency meter being described is the Dubilier W650, and is contained

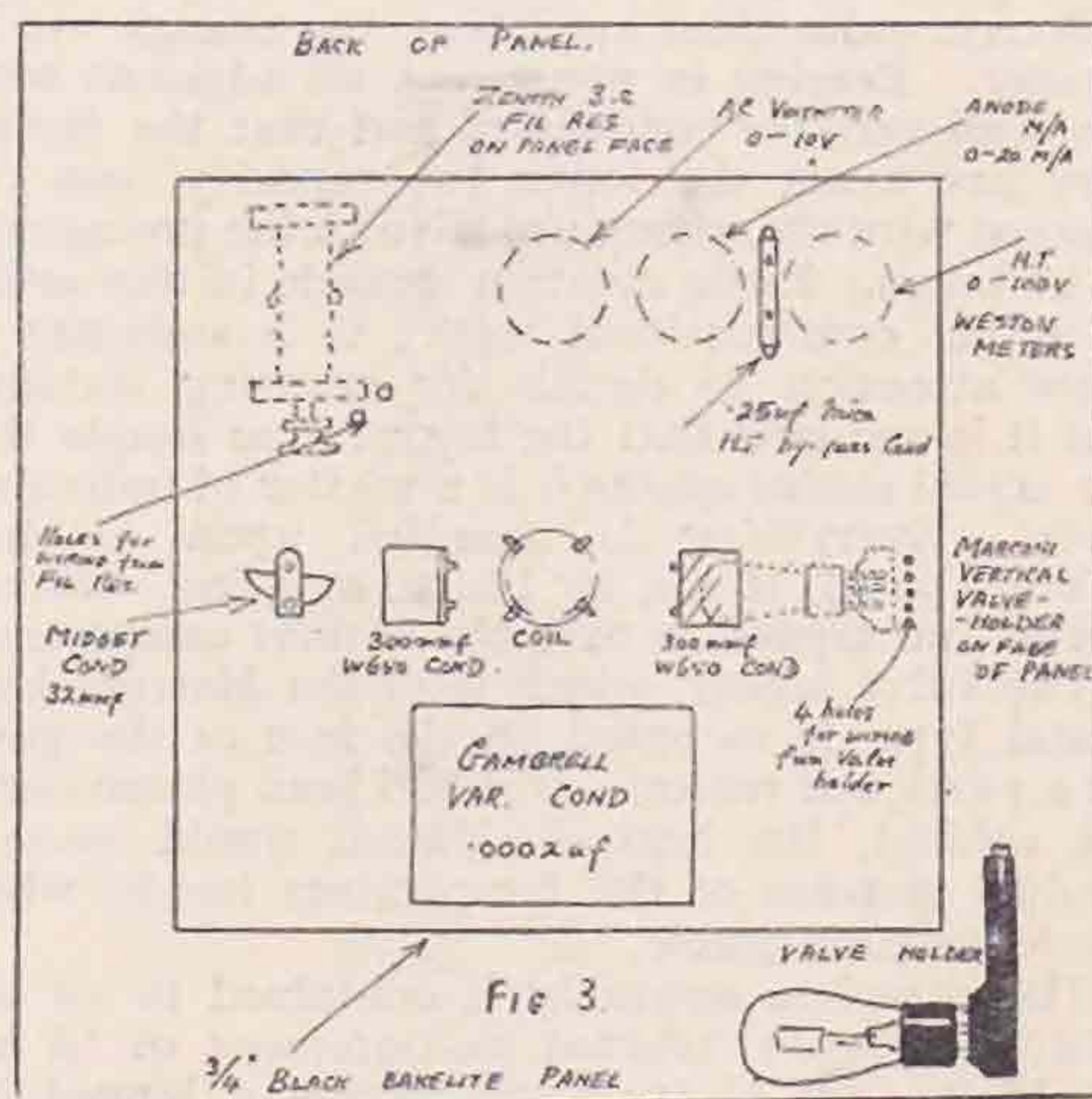


Fig. 3.

in a small wooden box filled with wax and with an ebonite lid. The constructional features consist of a number of capacities in series tightly clamped with a brass ring and alloy wedges. Fig. 2 shows the construction of these condensers.

In addition to these capacities, a 0.25 m.f. mica condenser is placed across + and - H.T.

#### Constructional Details

Fig. 3 indicates the arrangement of the various components underneath the panel. In addition to an H.T. voltmeter and milliamp-meter, an A.C. voltmeter is provided for maintaining the filament voltage at 5 volts exactly, a filament resistance of 3 ohms allowing adjustments to be made for mains fluctuations.

The employment of A.C. for heating the filament was considered more desirable, owing to the long periods over which it was necessary to use the frequency meter. The consumption at 0.8 amps off storage batteries, for long periods, is attended with some inconvenience, and it will be appreciated that each time the instrument is switched on, it takes nearly 30 minutes to reach stability. A slight degree of modulation, due to A.C., is apparent on the carrier; this is for some purposes an advantage, but where pure c.w. is required, a change-over switch in the filament circuit might be incorporated,







## "IT IS A LONG LANE . . ."

By HECK.

I MUST have dozed. DX was rotten and the band was uninteresting. I suddenly became aware of the presence of someone else beside me and turned to see a young fellow standing about two 'phone cords away. He looked quite a sensible sort of chap, one would have said, but he smiled with an unearthly smile, though one could not have accused it of being heavenly either. His eyes had a fanatic light and his fingers moved slowly past one another as if slowly turning something.

"Hello," I said, "who are you?"

"Urs hamfully, I. B. Beeress," said the lad, with a smile fuller than ever with ham spirit, and handing me a QSL card.

"Sit down and lets get this straight," I said, taking the phones off the old head and pushing the cigarettes behind the receiver.

"Vy psed 2 rpt dr OB," said the whatsisname, sitting on the edge of a chair and eyeing my pile of blank QSL cards. The words had a familiar sound, though the second was not spoken, but expressed by clapping the hands together twice; they brought to my mind a picture of the sunny south, flocks of gondolas and their young, and whatnot. Well, I should have to do my best.

"No makada Italio—makada English," said I, in the modest way one treats another's language, and trying to twist the old dial into a care-free smile.

"Sri OB ur sigs QSD," smirks the blighter, with that affection for the Q code which denotes recent study.

"Uh-Uh," I temporised, and then, as a wave of recognition swept over me, I remembered the old days in Prague with the Czechs and Czech-mates. "Ah, Czéchské," I gargled. "Whyuv notske sayné thaát béforak," with, I must confess, quite a slight feeling of irritation. After all, the blighter might have said "O.K." or something to make it easier; but even then, of course, his nationality might have been mistaken.

He sat there getting sullen—that quiet sullenness which godes no bood. I was annoyed. Yes, definitely and consciously annoyed.

"Churt," I said, at last, as my feelings oozed over their pent-up-ness, "Kagoshima avenida bij grafie directo widerstandsverstärkers, and if that is not O.K. you can QSK muy pronto." And I turned in an abrupt, if dignified manner to the receiver, and the cigarettes, again.

"QSK—QSK," he laughed, "sure es foto fr foto"; and as the words fell on my ears I felt my whole body grow tense. Something came over me—I know not what it was—I did not see it—but I knew from the rushing sound in my head that the blood was draining from my face.

"Foto fr foto," I whispered in that quiet hiss that signifies the approaching crisis, and finally, "Foto fr foto."

My hand crept along the table and I felt something stiff and cold being enveloped by each finger slowly in turn. I heard a yell of rage—it must have been my own—and I stabbed again and

again at the quivering mass on the mat. As I staggered back in horrified retreat the floor came up and hit me.

As consciousness dawned I found myself lying uncomfortably across the receiver and in my hand I realised was that bloody horror. Slowly I brought it within the distance of distinct vision. It was a card from BRS (what do you want to know for?). Unfortunately, there was no body.

## Low Power Contest.

Members are reminded that the R.S.G.B. Low Power Contest commences at 12.00 G.M.T. on January 14th. Full particulars and rules governing the competition will be found on page 89 of the September issue of the Bulletin.

## Reception Tests

Dates and periods for the next tests are given below. It will be noticed that 56 mc. periods have now been included and it is hoped that stations will be on the air at the times indicated to enable receiving stations to give reports. Reception Tests, it should be pointed out, give an opportunity to transmitters to obtain reports on their signals from all parts of the British Isles and from several European countries—provided, of course, that the transmitter also sends in his reception logs. Participants of these tests should send their logs to T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4, by January 9. New participants can find on reference to the May issue of the BULLETIN the detailed procedure to be followed. Logs are circulated in Budget form to all participants.

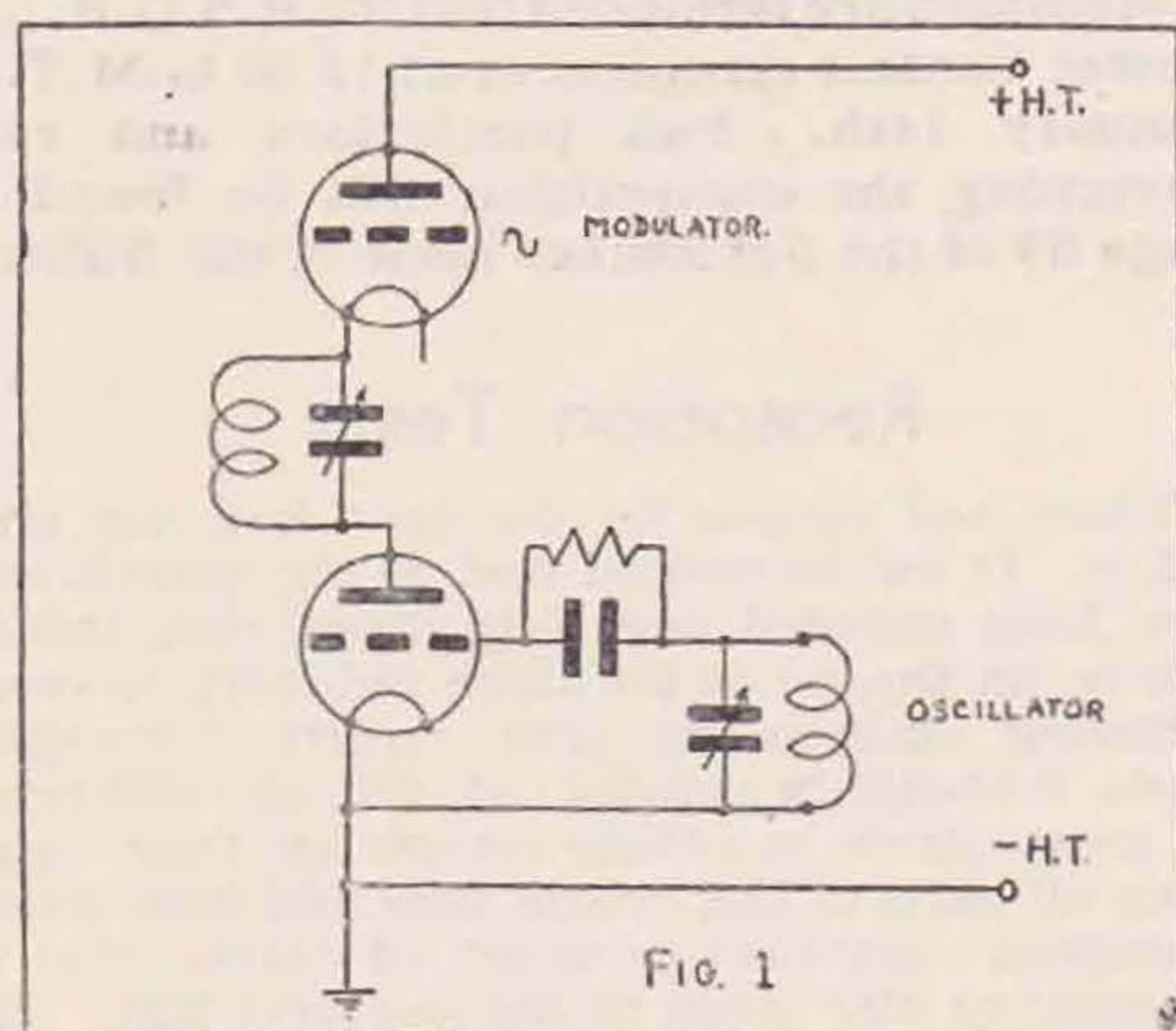
RECEPTION TESTS. SERIES 13.			
Test Letter.	Date, 1932.	Periods and Bands.	
		Period G.M.T.	Mc. Band.
A	Sat., Dec. 17	23.00-24.00	1.7
B	Sun., Dec. 18	00.00-01.00	7
C	Sun., Dec. 18	09.00-10.00	3.5
D	Sun., Dec. 18	11.00-12.00	56
E	Sun., Dec. 18	12.00-13.00	28
F	Sun., Dec. 18	15.00-16.00	14
G	Sat., Dec. 24	23.00-24.00	14
H	Sun., Dec. 25	09.00-10.00	1.7
I	Sun., Dec. 25	10.00-11.00	56
J	Mon., Dec. 26	09.00-10.00	7
K	Mon., Dec. 26	11.00-12.00	28
L	Mon., Dec. 26	12.00-13.00	3.5
1933.			
M	Sun., Jan. 1	00.00-01.00	1.7
N	Sun., Jan. 1	09.00-10.00	14
O	Sun., Jan. 1	10.00-11.00	7
P	Sun., Jan. 1	11.00-12.00	56
Q	Sun., Jan. 1	11.30-12.30	28
R	Sun., Jan. 1	18.30-19.30	3.5



# SERIES MODULATION.

By P. JOHNSON, G5IS.

A few months ago experimental telephony on 56 mc. was started at the writer's station. A 10-watt push-pull circuit was used for the oscillator and a plate supply of 50 m.a. and 200 volts was necessary for it. A power pack capable of delivering this was available, but when the question of modulation arose it was found that the power pack would not deliver the goods for modulator and oscillation on choke control. A 500-volt, 120 m.a. supply was available, however, and the use of a voltage dropping resistance to the oscillator feed would have been a simple solution.

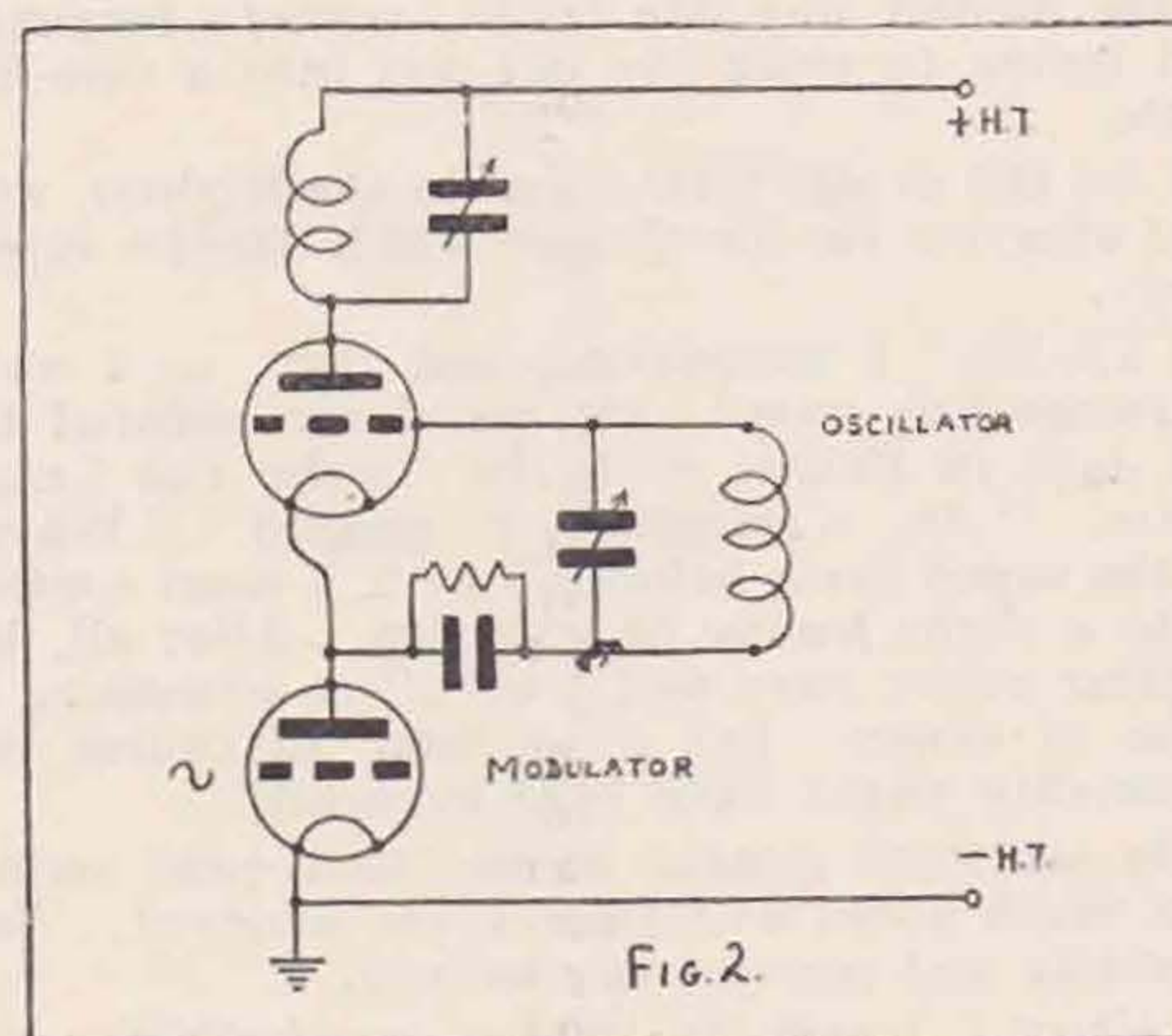


Way back in the early radiophone days a system called "series modulation" was known to the writer but never used, and probably little used by anyone else. The circuit as commonly shown in technical books is Fig. 1. It will be seen that the modulator is at high potential above earth, and any apparatus in metallic connection with its grid or filament must be carefully insulated from earth, and the operator must use care to avoid shocks. The idea of reversing the positions of the modulator and oscillator was an obvious one. The circuit shown in Fig. 2 is the result. The modulator filament is now at earth potential, and any apparatus connected to its grid and filament can be handled without danger. The oscillator circuits are positive above earth, and since the tuning control knobs are the only portions of the circuits that one would have to touch in operating, provided grub-screws are well sunk below the insulation of the knobs, the circuits can be tuned without shocks. The filament supply to the oscillator must be well insulated to withstand the full potentials developed across the modulator, but since the average amateur transmitter is supplied with A.C. for filament current, all that is necessary is to be sure the filament transformer has adequate insulation between the secondary and primary and core. The modulator filament supply needs nothing in the way of special insulation.

The 56 mc. transmitter was set up as shown in Fig. 3. The push-pull oscillator is shown above

the two paralleled modulator valves. The H.T. is fed to the oscillator through an H.F. choke and from the filament centre-tap is taken the connection to the modulator anodes, negative H.T. is connected to the modulator filament centre tap. If, now, we consider the flow of anode current we shall see that, starting at H.T. negative, it flows to the filaments of the modulators, across to the modulator anodes, thence to the oscillator filaments, across to the oscillator anodes and through the milliammeter to H.T. +.

The action of an oscillator is commonly known to amateurs, as also is the action of a modulator. As the oscillator draws H.T. current from a D.C. supply we can regard it as a resistance, and it behaves as a fairly constant resistance for various H.T. voltages. If we regard the oscillator as a resistance of fixed value, and the modulator as one of variable value (as it actually is when we vary its grid potential) we have Fig. 4. If the value of  $R_2$  is reduced a greater current will flow through  $R_1$  and  $R_2$ , and vice versa, when the value of  $R_2$  is increased, a smaller current will flow through  $R_1$  and  $R_2$ . Consider now the oscillator and modulator. If we make the grid of the modulator less negative than the normal negative potential, a



greater current will flow through the oscillator and modulator, and as we are regarding the oscillator as a fixed resistance, the potential across it will vary according to the IR drop.

Now, since the H.F. output from an oscillator follows the anode voltage with practically a straight-line characteristic, then our variations of voltage on the modulator grid should be reproduced in H.F. on the oscillator anode circuit. Of this, more anon.

The 56 mc. outfit was put into operation, and very excellent results obtained with it. A number of South London stations on 56 mc. were worked with it, and reports as to quality and depth of modulation were most satisfactory. Some tests were made with G6NF, about three-quarters of a mile distant, and the 56 mc. phone sigs received at his station were amplified and relayed on the



3.5 mc. band to G5YK at Cambridge, and a QSO was easily accomplished, G5YK transmitting on 3.5 mc. and listening on 3.5 mc. and G5IS listening on 3.5 mc. and transmitting on 56 mc. with G6NF as the relay. This test was first made on May 29. On June 5 the same test was made, and on the same date, on 7 mc., G2KO, of Yorkshire, was worked in the same manner. On June 18, G6NF and I amused ourselves very considerably with a 56 mc. relay on the 1.7 mc. band. No announcement was made regarding the fact that it was a relay and on

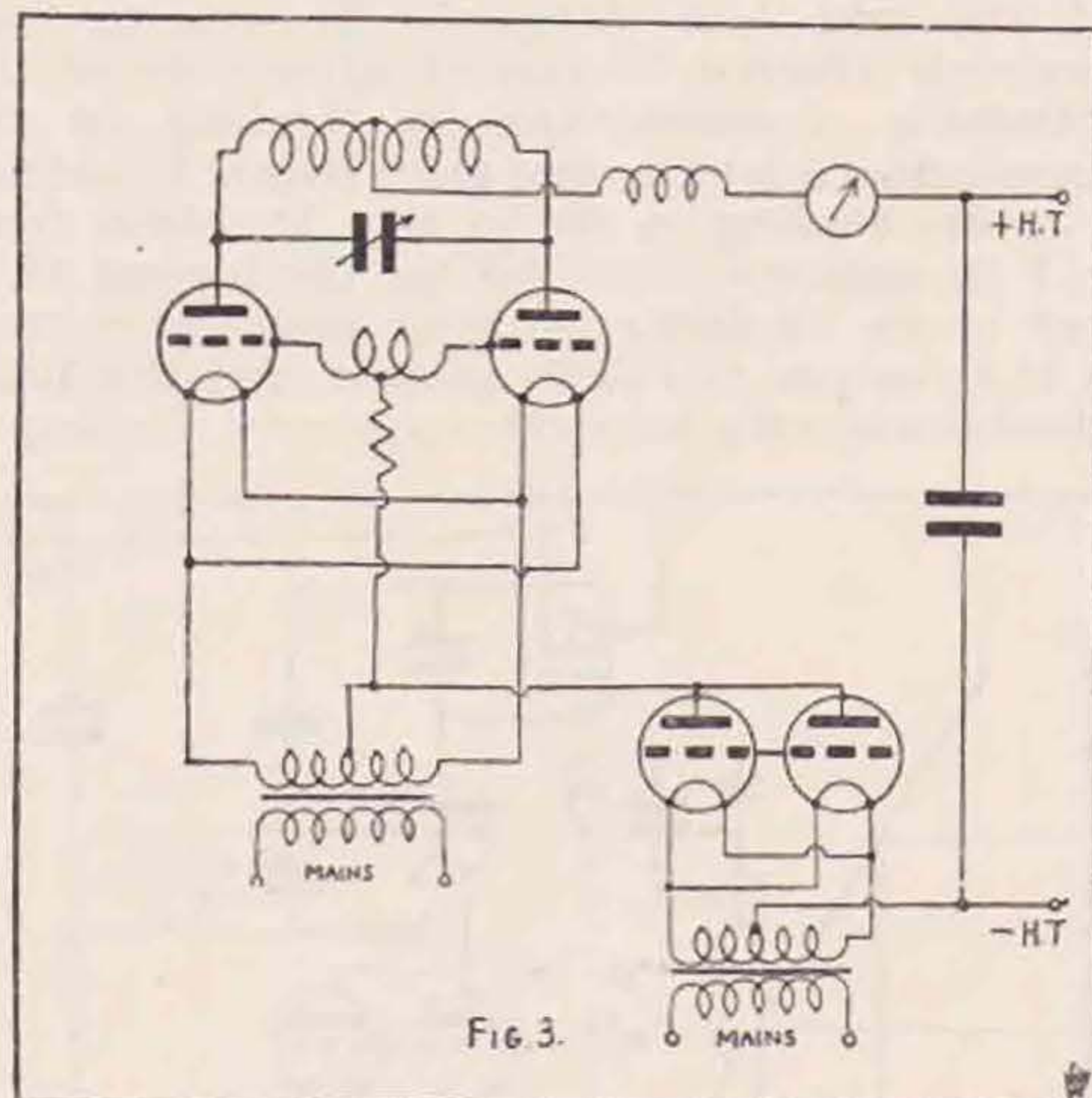


FIG. 3.

that date, and subsequently, no less than ten stations were worked on 1.7 mc., the said stations being unaware that they were receiving relayed 56 mc. phone! One or two three-cornered QSO's were made with G6NF as one of the corners! The expedient of using different controlling crystals in his transmitter made it possible for G6NF to put my sigs out on a slightly different frequency to his own phone. The agility shown by G6NF in changing over from relay to straight phone on these occasions is best left to the imagination!

The success of the 56 mc. phone led the writer to try out series modulation on other bands. The 7 mc. band was next used, and very gratifying reports received. The transmitter used was a T.P.T.G. with locked frequency by a C.O. and F.D. The input to the oscillator was around 20 watts, and British and Continental stations reported excellent phone. The system was then used on 14 mc. with the same type of transmitter. With an input of 20.1 watts, SU6HL was called, and he reported excellent phone at R7. A few days later, VE3HE was heard calling "CQ Europe" on phone. He came back to my phone call and reported R5, this with an input of 21 watts. A phone test call was made a few nights later and SU1EC came back on the key with a report of R7, excellent phone and reception on the loud-speaker. My input was 14 watts. The writer thought it worth while to investigate the system more closely. The 7 mc. transmitter was used and was loaded with the aerial to similar conditions as it would be when in operation on the air. The valves in use were: Oscillator, a W.E.211E,\* and modulator, two WE.211E's in

parallel. Firstly, the anode voltages across the modulators and across the oscillator were plotted. The total H.T. was kept constant at 1,000 volts by means of a variable choke in series with the primary of the H.T. transformer, and the voltage was corrected for each reading made. A high resistance voltmeter was connected across the modulator from the anodes to the filament centre tap and the grid bias on the modulator varied. The anode volts curve was found not to be particularly straight. Next the anode volts curve for the oscillator was taken with the voltmeter across the H.F. + terminal and the modulator anodes. It will be seen from Fig. 5 that the curves are pretty much what one would expect, and for any given grid bias point the voltages on the modulator and oscillator curves add up to the total applied voltage, i.e., 1,000 volts. The modulators ran into grid current at -6 volts, so no reading was taken beyond this point.

Now, previously in this article it was stated that the H.F. output should follow the applied anode voltage to the oscillator, so the writer thought it would be a good idea to try it out with the circuit under discussion. A circuit with a thermo-couple ammeter was coupled to the oscillator anode coil, and attempts to take a curve were made, but owing to the large variation in H.F. output between maximum and minimum input and the difficulty of reading the lower end of the scale on the thermo-

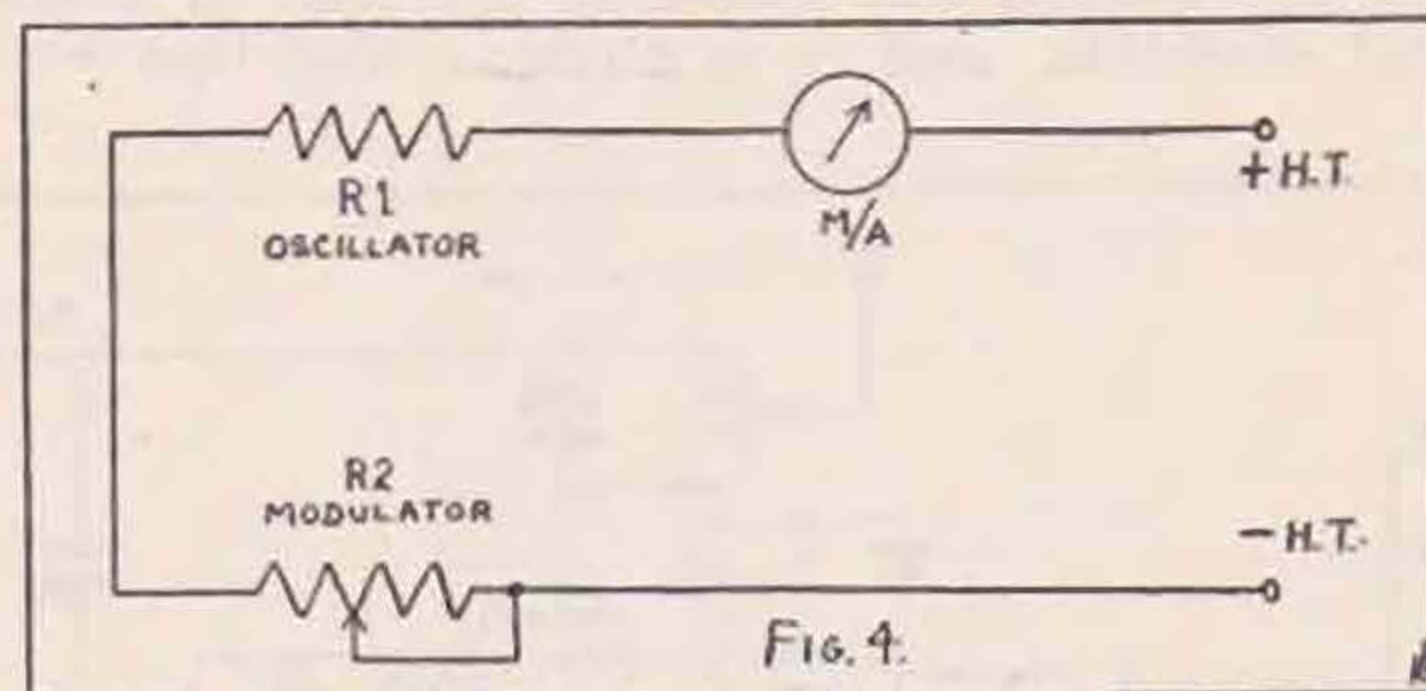


FIG. 4.

couple meter, the attempt was abandoned. The next attempt was with a Weston Galvo and crystal across a coupling circuit. The crystal, of synthetic galena, was tested for stability and found OK. The galvo was easy to read over the whole of the scale. The meter circuit was very loosely coupled to the transmitter so that -10 volts on the modulator grid, practically full power to the oscillator, produced full scale reading on the galvo.

The characteristic curves for most crystal detectors show "bottom bending" for very tiny currents, but the writer considered that this might be neglected since as the reading of 1° on the galvo represented 20 microamps and the detector curve would probably be straight over this point. The H.F. output against modulator grid volts described the curve shown in Fig. 6. It will be seen that it is practically straight over the greater portion,

type; he points out, however, that any other type of valve will operate just as well.

The characteristics are as follows—

- Fil volts 10.
- Fil current 3.
- Anode volts 750.
- Anode current, 65 m a
- Maximum Anode Volts 1000.
- Maximum Anode Dissipation, 65 watts.
- Average Grid bias -30 volts.
- Amplification factor, 12.
- Output as oscillator, 59 watts.
- Power output, 4.6 watts
- Impedance at 65 m a, 3,000 ohms.

[\* In response to our request, Mr. Johnson has supplied details of the WE211E valve for the benefit of those unfamiliar with this



"bottom bending" fairly sharply, but note that it is straight over a greater portion than is the H.T.

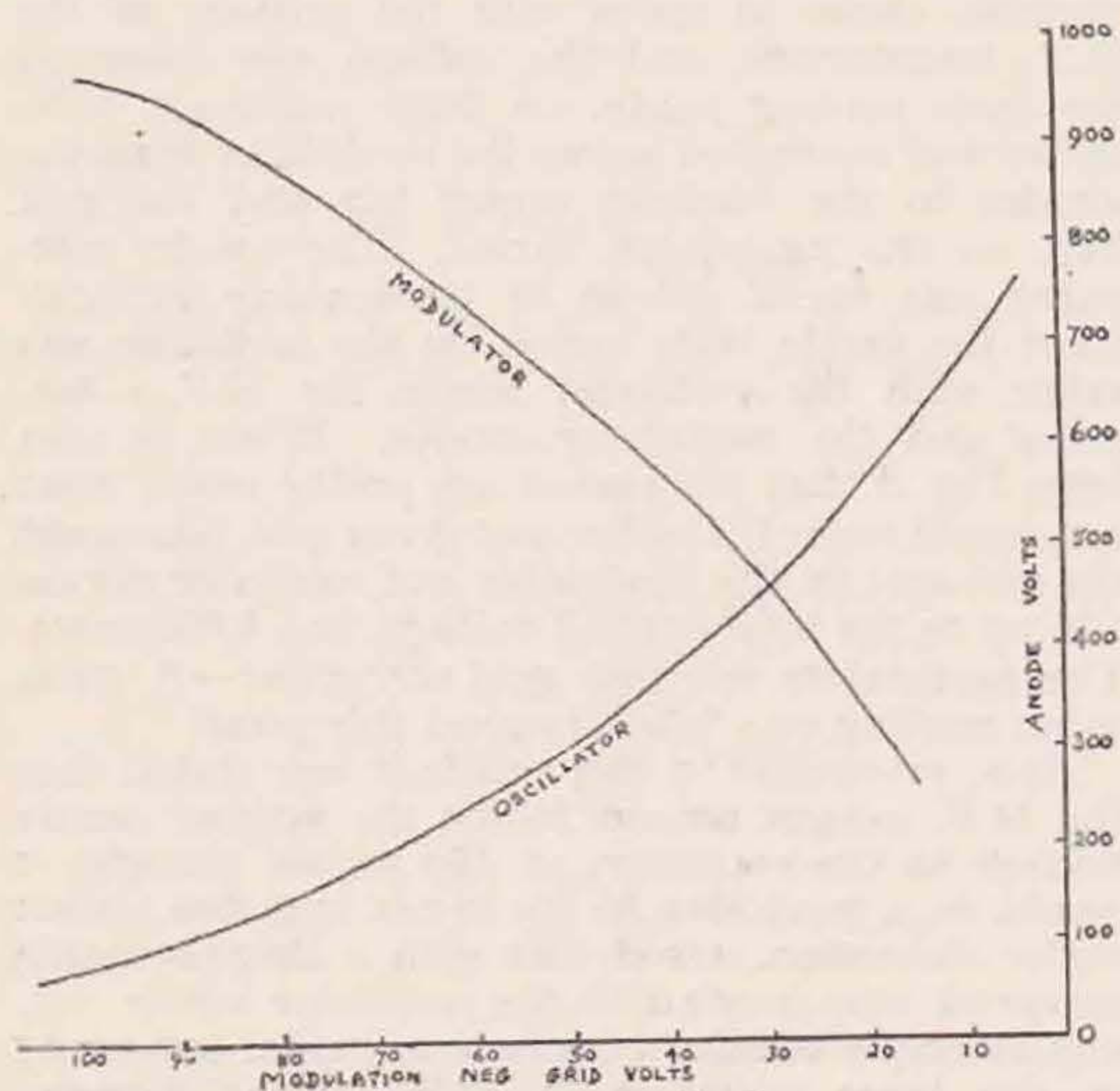


FIG. 5

voltage curve of the oscillator. Note also that the curve straightens out again at the foot in a horizontal direction, and it is obvious that this is due

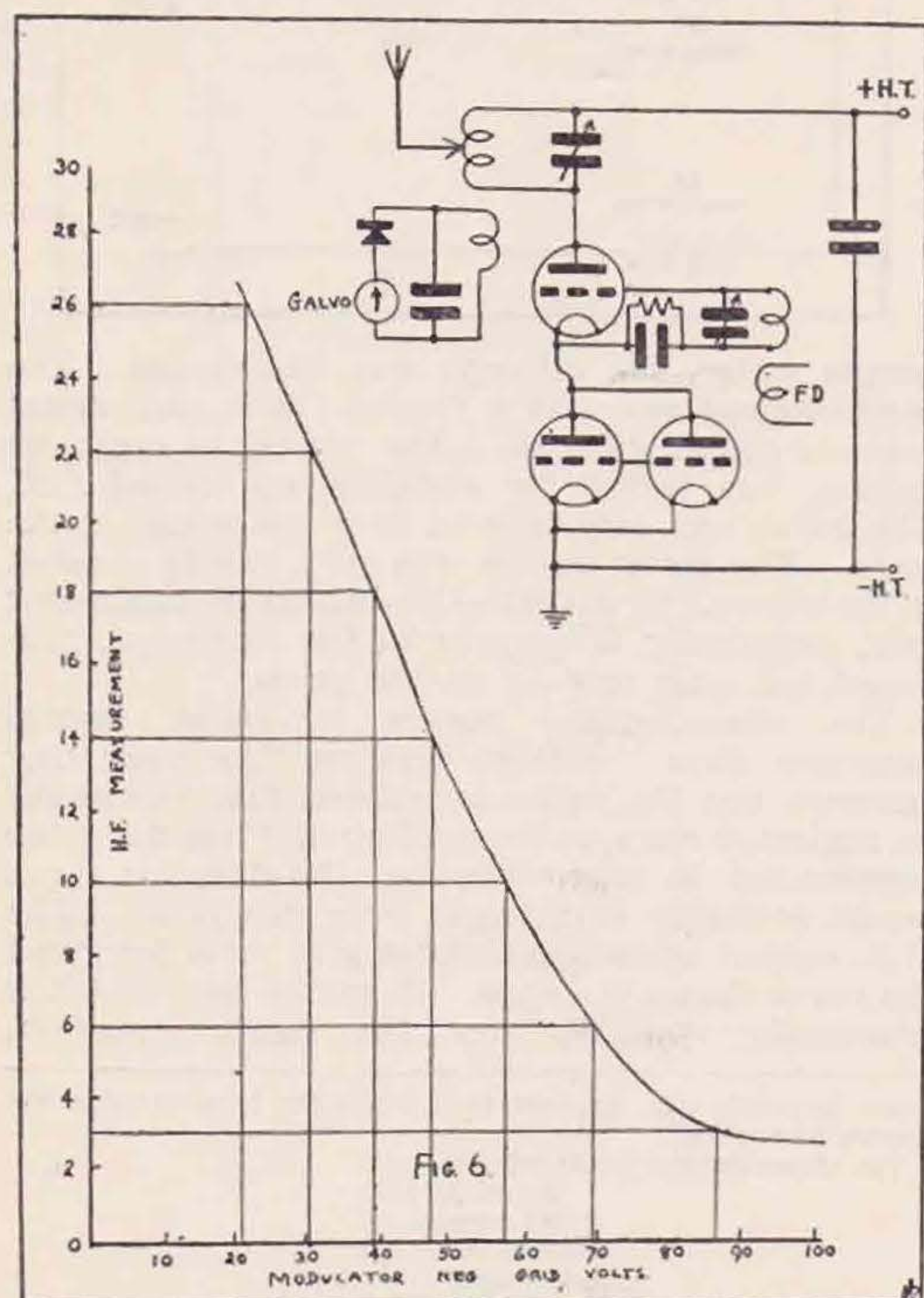


FIG. 6

to the H.F. from the frequency doubler valve being passed through the capacity of the oscillator valve and appearing on the anode circuit. This is the "spacer" note heard from "locked fre-

quency" self-excited oscillators used by amateurs on crystal control.

Now, if the circuit was neutralised, this "bypassed" H.F. would be neutralised and the H.F. output curve should be more straight. Would it then follow the volts input curve? The circuit was then adapted to a true driven H.F. amplifier by centre-tapping the oscillator anode coil and neutralising by a condenser between the grid and the end plate coil distant from the plate end. Grid bias was applied to the oscillator grid by a battery, and the grid leak removed. Neutralising was completely effected by careful adjustment of the neutralising condenser and by checking on the aforementioned detector and galvo circuit by obtaining a zero reading on the galvo. The drive from the F.D. appeared sufficient for the highest H.T. input to the oscillator, so after preliminary tests the H.F. output was again plotted, and this time, instead of following the anode volts curve, the output

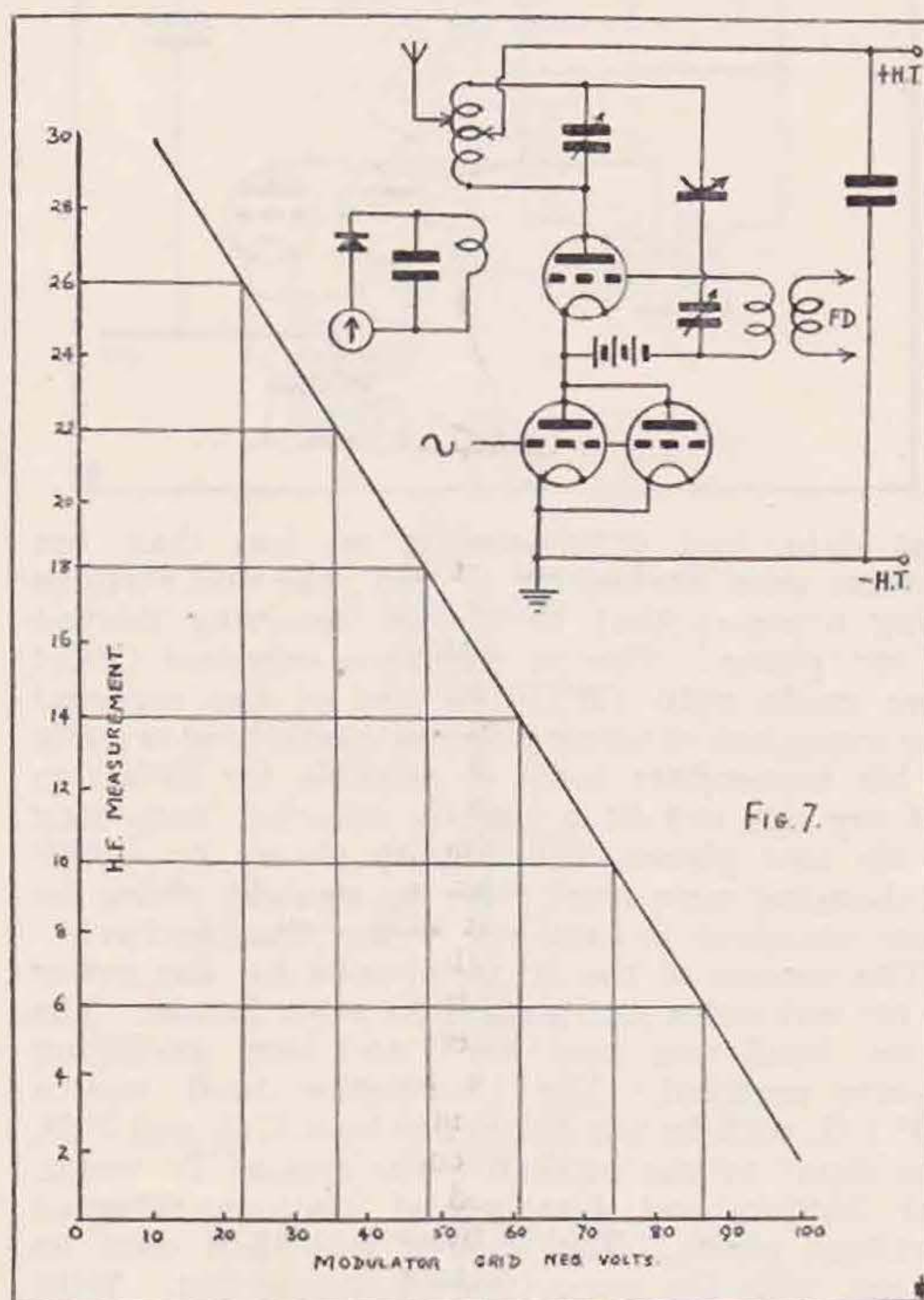


FIG. 7

showed a straight line. This looks real good—that a "curved" input produces a "straight" output. The writer cannot explain this phenomenon. It looks like another A.O.G.! Even if the use of the crystal detector gave fears for the possible distortion of the curve at low input, it certainly does not seem to apply, since if there is any bottom-bending of the crystal's characteristics, then it would be additive to any bottom-bending of the H.F. curve and produce greater curvature than might be present, but since none is shown it seems that the fears were groundless. The straightness of this characteristic curve of the H.F. output seems to the writer to be most extraordinary, and if other amateurs would take similar curves  
(Continued foot of column 2, next page.)



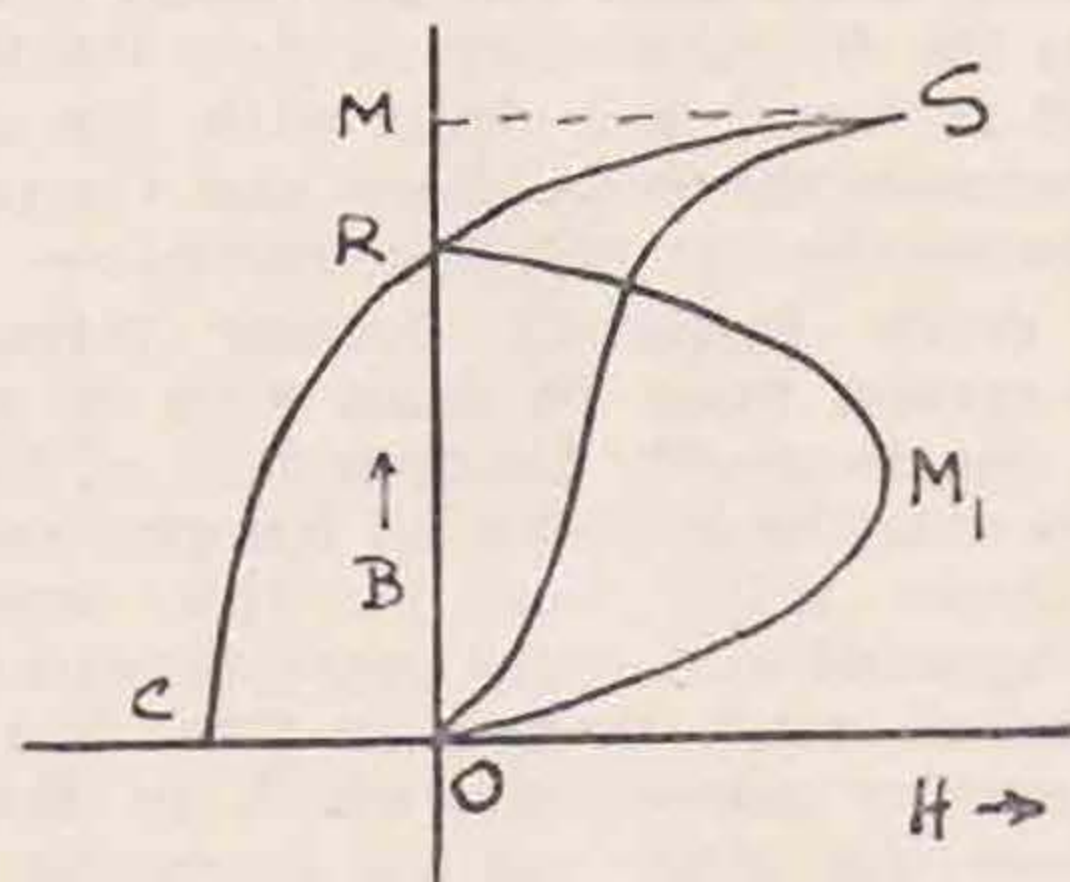
# PERMANENT MAGNETS.

By C. S. POLLARD (2BWF).

(Reproduced by courtesy of Messrs. Vickers-Armstrong from "Vickers News.")

An interesting article on permanent magnets appeared in a recent issue of *Vickers News*, contributed by the English Steel Corporation, Ltd., Sheffield. It dealt with the relation between a magnetising force and the resultant magnetism in a material within the field of the force, and by the courtesy of *Vickers News* the main points which are of interest to the ham are given below.

In the diagram, values of the magnetising force, designated  $H$ , are plotted along the horizontal axis, and values of the resultant magnetism (magnetic induction) along the vertical axis  $B$ . When a magnetic material is subjected to a magnetic force gradually increasing from zero, the graphical result is shown by the curve  $OS$ .



It will be seen that at the point  $S$  the curve ceases to rise in value, of  $B$ , but becomes a horizontal line; this indicates that the material is magnetically saturated.  $OM$  therefore shows how strongly the material may be magnetised. If the magnetic force is then gradually reduced, the curve does not return by its previous path  $OS$ , but the diminishing values of  $B$  lag behind the diminutions in the values of  $H$  until at point  $R$  the magnetic force is at zero, but the magnetic material still retains a value of magnetic induction represented by  $OR$ . This value is known as the "remanence" of a material—usually referred to as  $B_{rem}$ . On applying a magnetic force in the opposite direction, the magnetic induction continues to fall along the curve  $RC$  until at  $C$  the material is demagnetised. But it has taken a value of  $H$ , represented by  $OC$ , to bring this about, and therefore  $OC$  measures the tenacity with which the magnetism was retained by the material against the demagnetising force. It is known as the "coercive force" of the material, abbreviated  $H_c$ .

The curve of the greatest practical importance is that plotted along the axis  $H$  of the products of  $B$  and  $H$  represented by different points along the curve  $RC$ . The curve  $RM_1O$  is thus obtained. The zero values at  $R$  and  $O$  are caused by the fact that the values of  $H$  and  $B$  are respectively zero at those points. The value of the product of  $BH$  at the maximum point  $M_1$  is known as  $BH_{max}$  and measures the maximum energy which a magnet can supply in an external circuit.

Simple carbon steels are scarcely used at all, for magnets nowadays have been replaced by alloy steels. A table given in *Vickers News* shows that

chromium magnet steel, containing 6 per cent. of chromium has a value of  $B_{rem}$  of 8,000/9,000, a value of  $H_c$  of 55/65, and a value of  $BH_{max}$  of 220,000/230,000, which may be compared with a magnet made from steel containing 35 per cent. cobalt—a more expensive combination—which has a value of  $B_{rem}$  of 9,000/10,000, an  $H_c$  value of 240/260, and a  $BH_{max}$  value of 900,000/1,000,000.

Thus it will be seen why cobalt magnet steel is used so extensively in high-class loudspeakers and electric pick-ups.

(Continued from previous page).

and compare notes, criticise the writer's methods of measurement, or explain away any fallacies in the description of the set-up, then the writer would be more than pleased, since one learns a lot by discussion and argument!

It will be seen that if the modulator grid is biased to  $-55$  volts, a grid swing of 90 volts applied by a microphone transformer secondary will swing the grid from  $-10$  to  $-100$  volts, and under these circumstances, 100 per cent. modulation is obtained, the H.F. output is linear, and the voice signals should be distortionless in spite of the fact that the modulator curve is far from straight! The power to the oscillator is of the order of 10 watts, but remember that full and distortionless modulation is the secret of DX phone.

When operating at G5IS on the 14 and 7mc., the writer uses a slightly higher total voltage and the input lies between 14 and 22 watts. The hand microphone used produces sufficient volts across its associated transformer secondary to swing the grid fairly fully when six volts are across it. However, it is preferable to use a microphone amplifier, and it consists of an LS5 choke coupled to the modulator and 2 volts only across the mike. One then only has to speak in a normal conversational tone, and raising the voice will run the modulator into grid current. Just below this point one obtains excellent quality and 100 per cent. modulation. Measurement of the modulated H.F. output was made with a peak voltmeter, and theory is borne out in practice.

To the writer, the principal point of interest of this system is the straightness of the output H.F. curve, and, secondly, the fact that the measurements made were with D.C. instruments of a type to be found at most good amateur stations. If any readers will investigate the system—well, OM's, let's hear from you! Perhaps some of our more erudite readers would explain in the BULLETIN why the output curve is a straight line, since the writer has not been able to fathom it.

## B.E.R.U. Notes.

November, 1932.—Owing to an error in "making-up," the last issue, the South African notes which appeared on page 167, from Mr. Heathcote, were inadvertently headed "Canada." The error occurred through the reception of two sets of South African notes during the month.



# HODGE-PODGE.

BY INCONNU.

The following letter brightened up my life the other day :—

"Dear friend Inconnu,

I received to-day's your card QSL that I thank you very much. When I had my cards I invite to YOU mine. I wish to know the diagram of your receiver and transmitter so that I thank you if you have the amability in inviting them to me. Excuse the bad write but I don't know very well the English language. I am here at your entirely disposition for all you wish. In expect of your answer I beg

To remain

Yours faithfully,

So-AND-So."

Please don't mention it, it's been no trouble at all.

\* \* \*

My transmitter uses 1,000 volts on the last stage, and I jibbed at paying for the proper fixed condensers. I tested some B.C. type condensers to determine what they would stand in the way of H.T., and the results may be of interest in these hard times. I have access to 15 k.w. of anything up to 130,000 volts. An unsuspecting dealer loaned me half-a-dozen Dubilier type 610 mica condensers, and none of them broke down on 2,000 volts (R.M.S.) at 50 cycles. . . . So I bought them and they have shown no signs of trouble after a year on 1,000 volts DC.

\* \* \*

One can think of infinite possibilities for some of the young lads, to coin a phrase, who plaster their walls with "High Tension—Danger" notices (I suppose if one did get 220 volts when in a bath it might be serious), and mangle the King's English at every opportunity. Their opportunity comes with the formation of the R.N.W.A.R. Shall we see lifebuoys surrounded by QSL cards? Is the quarter-wave to be saluted? And will they indicate the "WX" by "slight/heavy/BA/sea running"? And could you blame the sea?

In case occasion arises to work service stations, would it not be a good idea for some of these super-original people to compile a decoding book for the use of service operators? Think of these cards on the walls of GYB! We must see that they do us credit. And who will be the first to give the "Foto fr Foto" signal to Whitehall? . . . that is a record which, if G2ZC's earthquake theory is correct, will produce good conditions right over the next sun-spot cycle.

When some experience of amateur work has been obtained it is possible that the service operators will be divided into units for training purposes, and . . . oh, I'm dizzy.

\* \* \*

Lucky is the lad with as many stand-off insulators as he wants. If you have not, you should turn your eyes to little things called "mining cleats," which can be obtained for a fraction of the price and are very handy for supporting H.T. leads and many other wires, but do not replace the use of the good old stand-off for supporting coils.

Another dodge for saving a few pence :—

Many of us use A.C. for filament heating and the transformer is located under the bench. This necessitates rather long leads to the valve. Have you ever tried using twin lead covered wire and employing the capacity between wires and lead sheath as the by-pass condensers? Just earth the sheath and centre-tap and the capacities are equal.

\* \* \*

The fashion in B.C.L. sets to-day is the tone-corrected thingummy, and it is recommended for selectivity and quality. One has not seen the question of transients mentioned much in connection with these sets. In the report of a recent lecture to the Royal Society of Arts the following statement is found and deals with the complete system between the microphone and the reproduction of the finished gramophone record :—

"... every frequency passing through the complete system must be dealt with in an equal manner; the frequency characteristic of the whole apparatus must be level for all frequencies, and to obtain proper satisfaction for this requirement every component and every energy transformation in the system must conform to this ideal. Some systems employ components which in themselves depart from this ideal, but use correction devices to bring the whole system back to an overall straight-line characteristic; such an arrangement must be avoided if possible as these correction devices when used produce additional transient effects which colour the speech or music in an unnatural manner." Seconds out of the ring, and warn the riot squad!

\* \* \*

Is activity on the various frequency bands endemic or epidemic? Think of 28 mc. and one immediately thinks of HAF. Think of 14 mc., and one remembers that each of one's last DX calls was answered by YL. Think of 7 mc. and one simply cannot neglect the EARs. Think of 3.5 mc. and writhe with F fonitis.

The OH stations delighted to work DX on 14 mc. when British stations could hear none of it, but now it is the OK stations which work queer DX and send us searching fruitlessly over the dial. But no matter how bad the conditions one seems always to be able to raise a YL to a Test DX call.

\* \* \*

3,325.9 metres! Just take the iron out of a transformer.

## R.S.G.B. Reception Tests.

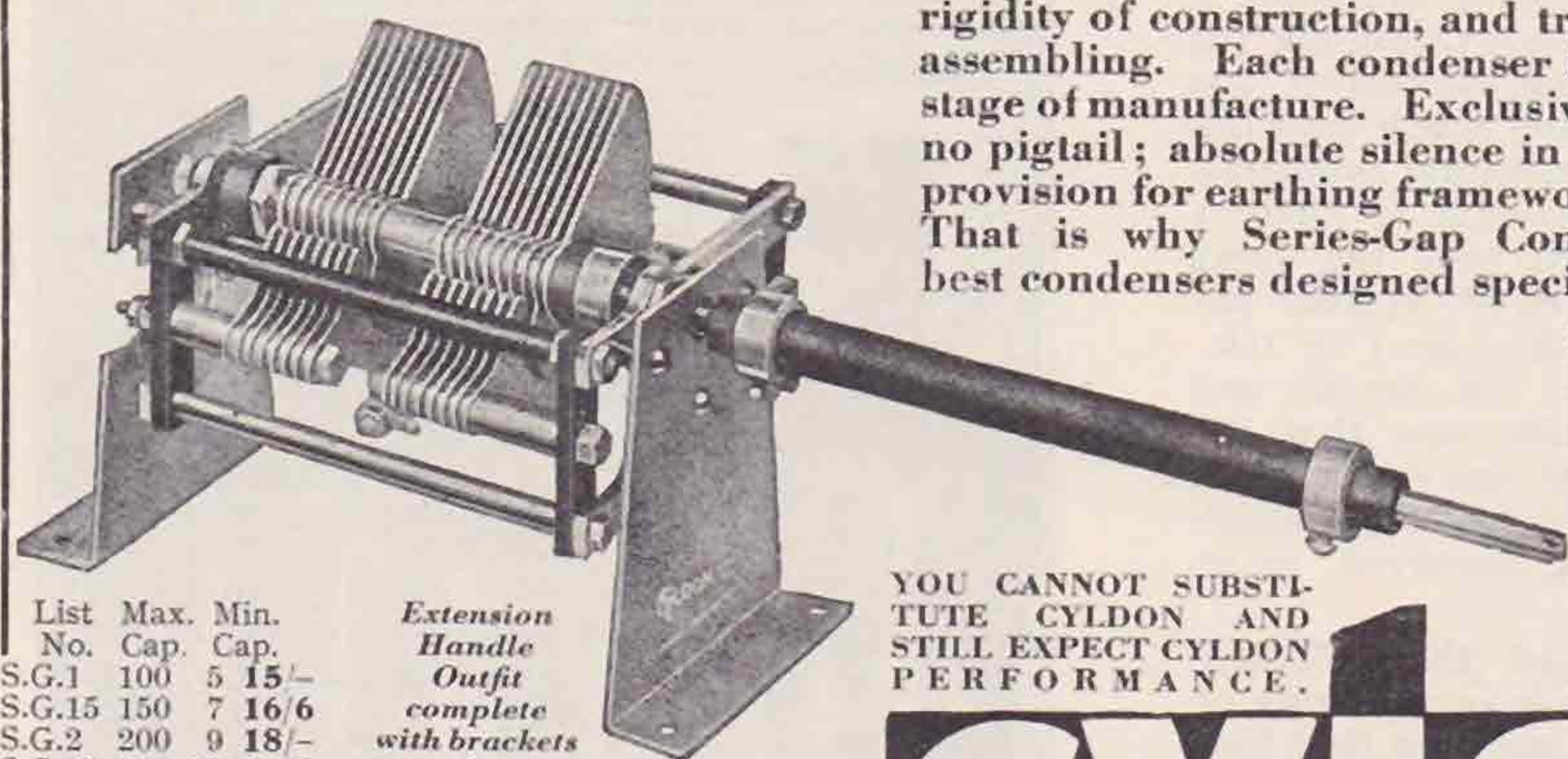
Due to a printer's error, Rule 6 of the General Rules published on page 162 of the November BULLETIN, was incorrectly worded. The rule should read: "A report of the received signal (QRK, QSA and Tone) must be recorded before points can be claimed."



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(Continued from the October Bulletin).

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### EBONITE PILLAR INSULATORS.

These insulators are very compact, and are ideal for supporting small H.F. components above baseboard or chassis level, in both receivers and transmitters. They are manufactured in our own works from Admiralty High Tension Specification Ebonite. Tapped 6 B.A. each end.

No. 1	...	1 1/2" high,	1 1/2" diameter,	1/- per doz., post free.
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These chokes are space-wound on a 6-rib ebonite former, the overall diameter being 1 in. They are suitable for S.W. Receiver use, and for use in all 3.5, 7.0, and 14.0 M.C. Grid Circuits, and in similar anode circuits where the anode current does not exceed 120 mills.

Type C ... Price 2/9 each, post free.

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# MADRID CONFERENCE NOVEMBER REPORT.

By A. E. WATTS (G6UN), Acting Vice-President.

The report in the November issue presented a résumé of the work done up to approximately the end of October. Progress during November has been very slow and wearisome, and much time has been occupied in discussing broadcasting problems. At one time it hardly seemed possible to effect a compromise, so many and varied were the views of the different countries. Mr. K. B. Warner has given me the latest news every few days by telephone, and I am very grateful to him for this and for the trouble he took to make sure that the minutes of meetings were sent to me every week. These now make a pile about four feet high, which gives some idea of the work involved in an international conference.

I will now give details of the decisions reached during November which have a bearing on amateur radio, but let me again mention that they cannot be regarded as final until ratified by plenary sessions. This has been clearly demonstrated during this month, the alteration to Article 6 mentioned below being made almost at the last minute in plenary session.

*Article 1.*—Definitions: Nothing further to report.

*Article 5.*—Paragraph 7: After protracted negotiations, Sub-commission 1 of the Technical Commission (chairman, Colonel Angwin) has agreed that the 1.7 mc. band shall, so far as amateurs are concerned, remain as now. The British Delegation has supported us well, and though several European countries wanted to take this band entirely for small boats, we have won the day in this Sub-commission. The R.S.G.B. may justly take some of the credit for this as we have urged all along the importance of this band to us at our meetings with the G.P.O. and I do not think it an exaggeration to say that but for the British Delegation the 1.7 mc. band would have been lost to amateurs in Europe. We must not lose sight of the fact, however, that Sub-Commission 1 is the second hurdle: there are three or four more. The allocations for this band read as follows:—

General allocation (not including Europe).—1,715-2,000 kc.—mobile, fixed, amateurs.

Allocation for Europe.—1,715-1,925 kc.—mobile, fixed, amateurs; 1,925-2,000 kc.—mobile maritime, amateurs.

From this will be seen the importance attributed to small ships in that 1,925-2,000 kc. has been reserved to them and to amateurs, to the exclusion of other mobile and fixed services.

*Article 5.*—Paragraph 18 has been altered to read: Each administration may assign to amateur stations bands of frequencies conforming to the table of allocations (paragraph 7, above). This wording is better than that in the Washington Convention, and the general practice is, of course, as now stated.

*Article 6.*—This article was adopted by the Regulations Commission in the form reported last



AMATEUR REPRESENTATIVES AT MADRID.

*Reading from left to right: Mr. Merce, EAR219; Mr. Uriarte, EAR12; Mr. K. B. Warner, W1EH; Mr. Canete, EAR3; Mr. Paul Segal, W3EAA; Mr. Roa, EAR80; Mr. Bellon, EAR110; and Mr. Corcuera EAR125. Captain Roldan, EAR10; Secretary of Red Espanola and Mr. Arthur Watts, G6UN (who took the photograph), are missing from the Group.*

month, but on its being presented to the Plenary Session the Delegations of Italy, Germany, France, Belgium, Netherlands, E.S.S.R. pressed for additions to be made to paragraph 2 so that it now reads:—

Paragraph 2.—When such exchange is permitted the communications must, unless the countries concerned have otherwise agreed among themselves, be conducted in plain language and must be limited to messages relating to the experiments and to remarks of a personal character for which, by reason of their unimportance, recourse to the public telegraph service would not enter into consideration. *Owners of amateur stations are absolutely forbidden to transmit messages emanating from third parties.\** The portion in italics is the addition and Article 6 has now passed its first Plenary Session reading.

Paragraph 1 should be read in conjunction with paragraph 2 and is as follows:—Paragraph 1: The exchange of communications between amateur stations and private experimental stations in different countries is forbidden if the administration of one of the countries concerned has notified its objection to such exchange.

*Article 17.*—The frequency of 1,650 kc. has been fixed as a calling wave for radiotelephony for small ships. This is not fixed as an obligatory wave, but may eventually become so. While at Madrid I pointed out to the British Delegation the advis-

\* *Article 6* has passed its second reading in Plenary Session with, I understand, the word "internationally" inserted between "transmit" and "messages" in the second sentence.



ability of this wave being outside the band used by amateurs and suggested 1,666 kc. It should be noted that there are in existence in Europe alone



*The Senado in which the Conference was held.*

about 600 small ships using frequencies around 1,500-2,000 kc. and about 36 coast stations, and these numbers will probably be increased considerably in the near future. Of the figures given,

Great Britain has about 180 small ships and 11 coast stations.

*Article 33.*—The request that the I.A.R.U. should be officially invited to take part in future C.C.I.R. meetings was agreed by the Committee dealing with C.C.I.R. matters and has also passed its first Plenary Session reading.

The Conference is now drawing to a close and there are not many matters affecting amateurs still outstanding. Mr. Segal has returned home, Mr. Warner expects to be leaving shortly, and I hope to be able to report in the next issue that the Conference has finished its work.

The following further information has come to hand just as we are about to go to press.

All the commissions have finished their work with the exception of the Editing Commission.

*Article 1 (definitions)* has been left until the end as it could not be completed until all the others were settled.

*Article 5.—Frequency Allocations* have been adopted by the Technical Commission and have been through their first Plenary Session reading. I understand, however, that reservations by many countries concerning broadcasting in Europe are very complicated and a further conference may be held in June, 1933, in Switzerland to deal specially with this. Apparently many delegations wanted to make reservations regarding broadcasting that no comments were made on the other bands at the first Plenary Session reading!!

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# CONTACT BUREAU NOTES.

By H. C. PAGE (G6PA).

No doubt some of you will have noticed the absence of all QRP notes for some months past. I have been waiting for time to allow the different QRP group managers to take notice of my frequent requests for reports. However, they have seen fit to ignore those requests, and as no one else seems to be at all interested, I have decided to abolish all QRP groups as from this issue of the BULLETIN. Of course there may be some members of QRP groups who would still like to take part in the section's activities, and I would suggest to them that they get in touch with one of the other group managers. There are nearly always vacancies for new men in the fading, 28 mc. or 56 mc. groups. In particular the aerial group stands in need of new blood, and I have no doubt G2OP would be delighted to hear from bona fide applicants.

The above must not be taken to mean that no further QRP activities will be published in the Notes. I am always glad to receive reports of real interest, and shall continue to publish them as usual.

This being the last issue of the BULLETIN before Christmas and the New Year, may I take this opportunity to wish you all the best of luck, and hope that the New Year may bring forth much of interest for you all so far as radio is concerned?

## 28 M.C.

G6VP, Group Manager.

Poor conditions still exist on 28 mc. and these have resulted in less work and interest being taken. Nevertheless, those that should know predict a change, and W2JN is listening now for European signals each Saturday and Sunday between 14.00 and 16.00 G.M.T.

ST2D is also active and sends a long list of both local fundamentals and commercial harmonics heard. He refers to G2OA's question *re* the assumption that a push-pull system did not produce harmonics and states that in his opinion it most certainly does, especially if the input is a bit rough, and cites YIILM and GFV's 14 mc. harmonics.

Here follow group reports:—

1A.—Group Centre G5MP states that hardly a signal has been heard. He is at present looking for a suitable QRA for the transmitter during his stay in London. G5FV is using 50-100 watts and has been conducting ground wave tests pending the completion of his projected balloon suspended aerial. It is hoped to get 6/2λ on this, and all in phase.

1B.—Group Centre G5SY says that his group is still conducting its listening tests on Sunday mornings, but beyond background noises nothing new has been discovered [*sic*!]. G5QA has joined the group and it is hoped that with the co-operation of G5SY some tests will be possible. G5SY comments on the fact that 28 mc. has not followed 14 mc. inasmuch as there was a quite good period on the latter during the month.

1C.—G6VP has had very little time for work on 28 mc. and has not transmitted at all on this frequency. He has, however, managed to tame a hum on this receiver that was troublesome on

the band. G6WN complains of poor conditions, but that there were some bright patches:—

Date.	G.M.T.	Heard.
November 29, 1932 ...	15.00	HAT
November 30, 1932 ...	10.03	G5VB (worked)
	11.07	SU6HL
November 6, 1932 ...	09.29	G5VB (worked)
	10.00	Rome
November 13, 1932 ...	09.55	SU(? 6HL)

SU6HL could not be raised, but later on another frequency stated that he had heard nothing but commercial harmonics. G's heard include 2BM, 5BY, 6HP, 2GF, 5YH, 2XA, 5VB, 5KU, 6VP, 2BY, 5OJ, 2YC, and 5XH, but only G6HP and G5VB were fundamentals.

1F.—Group Centre BRS25 also complains of conditions. He has heard G6WN, G6HP and G5VB. At 12.40, on October 23, 1932, he heard orchestral music (with French announcements) on about 30.5 mc.; this station was also heard on about 15.25 mc. and was presumably Radio Colonial Paris on 15,234 kc.

G6HP has done little transmission, but managed to work G5VB. He has received a couple of German reports and also a couple of British ones. Attempts are being made to get more output from his FD's, but finds it none too easy to "lock" 250 watts on 28 mc.

OZ7T is busy with exams., so his activities are limited to week-ends. Details of his good work in August are as follows:—

August 21, 1932.—16.08 G.M.T., heard F8OL calling CQ TEN; 16.13 G.M.T., heard G2FN working D4BPA; 16.39 G.M.T., QSO F8EF; 16.57 G.M.T., QSO G2FN; 17.21 G.M.T., heard G5VL working F8NP (?); 18.36 G.M.T., QSO HAF4D; D4BPA and UN7GL also heard this day.

August 22, 1932.—09.57 G.M.T., QSO F8EF. His TX is CO 3FD's on 3.5 mc.; H.T. on last FD is 2,000 volts at 45 m/amps.

Ex-2BZZ (now G6JT) reports that he is now fully licensed, but that he has heard almost nil. He states that everyone seems to have got 5-meter fever.

2BHK reports little done, but following G fundamentals were heard: G6WN, G6HP, and G5VB. Receiver has been rebuilt "round a biscuit tin." Detector on lid and L.F. inside in order to reduce mush believed to have been picked up by the H.F. choke and transformer. Parallel feed is used to couple the L.F. transformer to the detector. He mentions that during a spell of good conditions in the summer he noticed fading on local 28 mc. sigs., although this was not apparent with harmonics heard on the band. For instance, G6WN was noticed to fade from R4 to R2 and G6VP, when QSO HAF4D on August 17 could not be heard at all (G6VP was audible at R4 during this QSO.—BRS25). (Well, I was working HAF4D with my 14 mc. harmonic. Hi!—G6VP.) 2BHK observed the same thing when G6VP was QSO HAF8B on July 19 (also with my harmonic.—VP), although he normally receives G6VP about R4 (also harmonic. Hi! Hi!—VP.).



## Fading, Blindspotting and Skip.

Group Manager, G2ZC.

This month I have nothing to add to the short summaries of the reports from the GCs, as the circulation of our own News Sheet treats with all inter-group work and general domestic news, and this sheet was framed with the idea of restricting only group news to the BULLETIN. From some quarters I get requests for longer and more detailed reports, and from others for shorter, and so in future I intend to cut down the matter for the BULLETIN to a minimum (just outlining the general activities of each group), and to those who desire fuller information, we would welcome them amongst us, as members of our groups, where they would be able to examine our activities in full.

*Group 2A.*—Having nothing of value to report this month, the G.C. says that he will not take up space in the BULLETIN, but wishes to record the valuable assistance and information rendered to the group by Lieut. D. Grove-White, R.N. (G5GW), in the matter of meteorological data. The group now compiles full meteorological maps and data.

*Group 2B.*—A very long budget this month, on a theory of G2IM's on fading and the causes thereof, is circulating for the second time, and the group is going to open a general discussion on it, but it is too early to publish anything as yet concerning it. Regarding potential changes of the earth, we have now on record that a potential of 800 volts has been recorded, and as previously stated, if we get such considerable potentials as this, it is quite within the realms of possibility that such can and do affect wireless signals considerably. It is thought that an earthquake may affect earth potentials, and if so, then we have an explanation as to why they should affect wireless reception. We have come to the conclusion that many of the peculiarities of reception conditions cannot be laid down to any one thing, but that sunspots, earth currents, ionospheres, magnetic storms, earthquakes, and possibly aurora together, have a combined influence.

*Group 2C.*—Bad reception conditions were noted. The 1.7 mc. band showed a preference for low barometric pressure, the 7 mc. showed practically a straight line on the graph as regards signal strength, and 14 mc. showed a rise with high pressure and fell off again when pressure dropped. 14 mc. appeared to follow the phases of the moon, strength rising as the moon waxed; at full moon a decided drop in strength was noted up till the last quarter, when strength again rose slightly. 7 mc. did not show any preference either way. 1.7 followed the first quarter, then dropped suddenly, rising again with the last quarter of the moon.

Sunspots were nil. Earthquakes were recorded on different dates (sent to G6YL.—G2ZC), but no difference was noted in results.

*Group 2D.*—While having a large budget to discuss, there is little to report other than routine observation work. The observation station 2XAD is now running a new schedule (18.00-20.00 hours daily), and is being received very erratically. The effect of the moon on wireless signals, as published in the October Bulletin, is being discussed by the group.

*Group 2E.*—This group is studying various phenomena, with the aid of an oscillograph, and readers of the BULLETIN would note the types of

effects we may get if they study the photographs reproduced therein. An attempt has been made to get reception by scattering inside the skip distance area at night, on 14 mc., but so far with negative results, and tests have been suspended till next May when ionisation will be higher. Round the world echo is being studied, as this is to be found on from 13 to 16 mc. about 07.00 G.M.T. just now.

## Ultra High Frequency Work.

Group Manager, G6XN.

Most members of this group have been active during the last month. G2KB and BRS77 have done some interesting work on electron oscillators. G2KB uses an A.T.40 valve with +250 volts unsmoothed R.A.C. on the grid. This transmitter was built primarily for demonstration purposes and works on about 45 cms., in conjunction with a 0-v-2 non-oscillating receiver. He has carried out tests on the effect of filament, grid, and anode voltages on frequency and output. For any given value of anode voltage there is an optimum value of filament temperature for maximum output, and this value increases with the anode volts.

56 mc. tests between G2KB and BRS77 have shown that there is no advantage to be gained by using longer receiving aerials than 8 ft. (The G.M. would suggest, however, that in most cases a long aerial can be erected at a greater average height, and this is definitely an advantage.) At 1½ miles a vertical aerial was definitely better than a horizontal one. By careful adjustment of super-regeneration they found that very good C.W. reception could be obtained without a separate oscillator, the strength of the carrier being increased nearly as much as the modulation.

In the course of experiments with a crystal receiver near his 5-metre transmitting aerial, G2KB found a number of blind spots, especially between the aerial and a metal mast. These are attributed to standing waves due to reflection from metal objects.

A 1½-metre oscillator using an S.P.55R. valve has been constructed. Also a 2-metre beam aerial. Tests with these are not yet completed.

BRS107 and 2BHX also report. The latter has been experimenting with a series and a parallel tuned ultra-audio receiver (super-regenerative) of the split-coil variety. The series arrangement was found best for oscillation.

G2OL and G6XN were active during the recent local 56 mc. field day. The former heard G6NF, G6QB, G6YK, G5CV, G2OW, using only a straight one-valver. G6XN heard the above with the addition of G2NH, G2MR, G2BY (harmonic), using two valves (straight). All signals were QSA4-5. G6NF was worked by G2OL under difficulties, as G6NF's receiver was SR and G2OL's transmitter was not suitably modulated! The tests would indicate that straight receivers can hold their own against "supers," and it is hoped that those with the latter will arrange to give C.W. stations a chance.

G2IG and G6XO have been concentrating on the production of a portable outfit for 56 mc. duplex telephony. The gear has been built to very exacting specifications and can be carried in comfort by one man for at least three hours, operating continuously. A full description is promised for next month.



## 2 M.C. Work.

Group Manager, G5UM.

Group 10A shows 100 per cent. keenness with reports from all six members. The recent 2 mc. tests have naturally occupied most attention in current reports, and members express surprise at the phenomenal skip effects noticed—especially on the second week-end. G5RX worked G2ZC at 10 a.m. on November 6 and F8RJ at 10.25 on the 15th, while both G6FO and G5UM, in the South, worked G6FN in Edinburgh at midday, each using just over 9 watts. G6ZH heard practically nothing within 100 miles, while G2WS says: "The weakest stations were those about 50 miles away; the loudest were the Scottish stations."

Apart from these unprecedented skip phenomena, conditions were not remarkably good during the contest, static being most pronounced during the second week-end.

The coincidence of the tests and a turn of inclement weather has militated against many aerial experiments of late. G2WS, however, has been testing counterpoise lengths following a suggestion by the G.C. that too large a counterpoise would tend to lead R.F. to ground level instead of to antenna level, where it would do more work. An extra 25 feet attached to the existing 40-foot counterpoise lowered the QRK of G5WS at a

distance. The aerial itself is 80 feet long. G5RX continues some very interesting work, comparing the effects of using an earth on 80 and 160 metres, while G6FO intends to try a "G2BI" on 2 mc. He has been using the unusual arrangement of a 120-foot wire tapped 40 feet from one end and used in conjunction with two 50-foot counterpoise wires. Big things are expected of G2YI following a move to a new QRA with two acres of ground.

G6ZH has been tackling one of the most important of all 2 mc. problems—how to work through broadcasting yet create no QRM. With a P650 and an orthodox key-filter no interference was caused. Input was 3 watts and gave almost identical results with the 9 watts used outside B.B.C. hours. Loose-coupled aerial and counterpoise gave a better tone than direct coupling with an earth.

Group 10C.—Group Centre G6OO is still in touch with his men, and we hope to report further developments next month.

Group 10C has just been formed under the leadership of G2UV, Wembley, one of the oldest established of British amateurs. He has the benefit of the experience of G2CI (South Devon), who started radio in 1914, and of the added weight of G5WU (Penarth), G6NV (Brixton), and two Golders Green amateurs, 2AQW and 2ARV.

## REVIEW OF FOREIGN MAGAZINES.

Some interesting information on operating in the neighbourhood of the Heaviside layer is given by QSO in reporting a speech made by M. Cosyns (B9), the well-known Belgian ham who accompanied Professor Piccard on his recent ascension.

Contact was maintained between the balloon and ground stations equipped by the U.S.K.A. HB9A and HB9AA handled the traffic, HB9AA operating in a fast car which had been granted special exemption from all speed limits and traffic

insulation supplied the L.T. The H.T. battery was made up of single dry cells assembled end to end in bakelite tubes, each containing 20 cells; this construction obviated the use of soldered joints. A hundred such tubes were used, giving a total voltage of 3,000; the weight of the battery in its box was about 36 kilos.

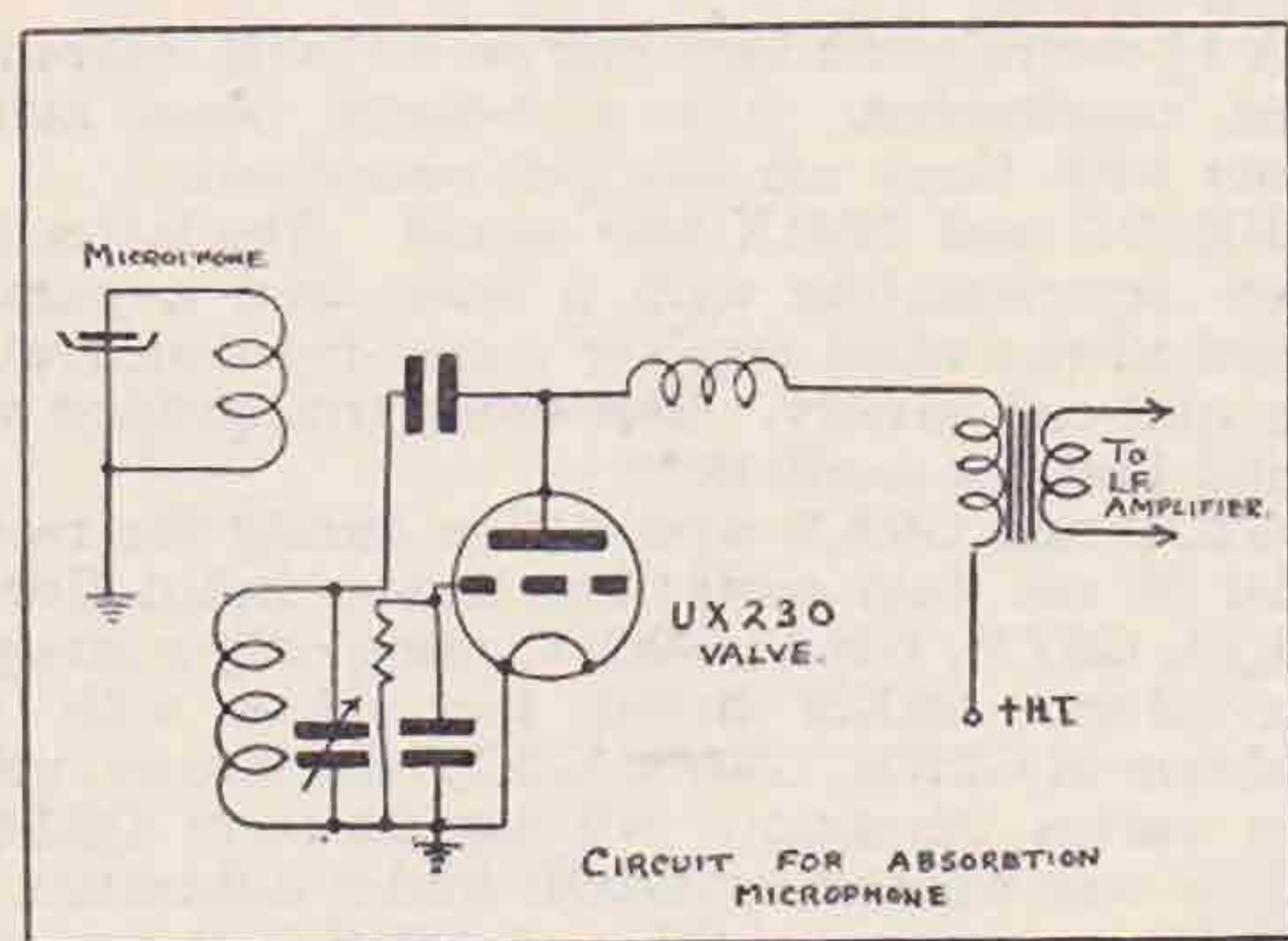
Operating presented immense difficulties—the key, being in contact with the aluminium wall of the gondola, acquired a temperature of 55° C. below zero, and the operator had to lie on the floor to handle it.

To come back to earth—UOIJF has been making some observations with a view to placing the R scale on a more quantitative basis, and in CQ for November presents some results, based on his own observations and those of various other workers. He finds that different observers agree satisfactorily in estimating changes of signal strength by the R code, and that the R scale can be taken as a logarithmic function of signal strength, a change of one point on the scale corresponding to a change of 5.6 decibels—i.e., to change the strength of a signal by one R point, the signal strength must be increased 3.6-fold.

The U.S.K.A. is at the moment carrying out tests with a view to determining the best waveband for inter-Swiss traffic (a somewhat difficult problem in view of the mountainous nature of the country). Preliminary results published in *Old Man* indicate that at this time of year 80 metres is satisfactory for day and evening work, but indicate that 170 metres may prove to be the best band.

The condenser microphone appears to be becoming very popular in America; this microphone is capable of giving extremely faithful reproduction, but owing to its very small output, its advantages are liable to be masked by amplifier noise or dis-

(Continued on next page, col. 2.)



regulations. The car also carried two meteorologists, who followed the progress of the balloon with a recording theodolite, and on one occasion found that it had reached an infinite height—until the theodolite was found to be focused on Venus!

A push-pull Hartley, operating on 40 metres, was used in the balloon, and was fed from batteries specially designed to withstand the exceptional temperature and other operating conditions. Accumulators contained in a special box designed to prevent acid spilling and to provide thermal



# ECLIPSE OF THE SUN, AUGUST 31, 1932.

## Summary of Empire and Foreign Reports

(COMPILED BY G2ZC).

Two reports have already appeared, dealing with the results of the Eclipse of the Sun upon wireless signals, from the British point of view, and now it will be of interest to study a short summary of reports received from Empire and foreign stations.

In the first place I should like to place on record the valuable assistance given by our Publicity Manager (G6UN), without whose help we might not have obtained many of the latter.

The most determined *negative* report comes from Hong Kong, as those who took part (VS6AH, VS6AG, VS6AE, and BCL's) observed over a period prior to, and after the day of the eclipse, 14, 3, and 7 m.c. being observed on. No change of any sort was noted from normal. From Australia we have several reports. VK2ZY, in a long and interesting report, dealing with lunar conditions, etc., says: "The eclipse had little or no effect on signals inside the 2,000 mile sonzes, whereas signals from the Orient were absolutely normal." (This report is being sent round the Fading Groups of C.B. for further discussion, as it contains interesting reasonings as regards other phenomena, such as lunar effects, declination, etc.)

VK2YC (BERS24) has a very long detailed report, dealing with various frequencies. He noted a high background, which can be attributed to the eclipse coinciding with a lunar period in Australia, and so has nothing definite to offer, though he adds that the fade-out usually occupies 24 hours, but in this case it took three days.

The Wireless Institute of Australia (Short Wave Experimental Group) send a combined report. In it is noted that there was a marked absence of weak commercial background mush between 14 and 7 m.c., and that this indicates that the upward movement of the ionised layer, when the sun's direct rays are interrupted, is substantially correct. Observations were made over several days on stations inside the totality area and also outside it, but as similar conditions were noted four days after the eclipse, as on the actual day, this leaves them no conclusive result.

VE2BB sends (via G6UN) a very carefully made-out report on 14 m.c., and in his case he found that conditions were particularly lively, though for some days previous, had been practically dead. W6 and EAR were very strong, but W8 and W9 weak. The most curious part of his report is, that during the entry "darkest period," he logs "N.D.," yet over five-minute intervals from 1.30 to 5.25 Canadian Eastern Saving Time, the report is full of stations logged. This might indicate that at Quebec, at any rate, the eclipse might have had a slight effect, though the period is so short (eight minutes) that it can hardly be so.

VU2DR (via G6UN) reports that many operators in Bombay noted a change in conditions during the eclipse, that static appeared to be worse, and that foreign commercials faded at high frequency. Stations operating below 11 m.c. faded out after 18.00 I.S.T., but were afterwards received up to normal strength up till 20.00-21.00 particularly Java, Moscow, and Paris.

From G6CL I have a report from WICMX. (It will be remembered that these two stations contacted on 14 m.c. during the eclipse). I fear it is too long to quote fully from, but the following points may be of interest. As totality approached, the background seemed to hush.

Immediately before, during, and after totality conditions assumed those of night, or late twilight, and static became sharper. Signals became very loud and faded badly (even from Europe), and clearness of reception was outstanding. As the eclipse receded conditions dropped off, and the background noise increased, signal strengths dropping off as well as the bad fading. The approach of the eclipse seemed to have much more effect on conditions than when it receded, and would seem to indicate a lag in the variations of the Heaviside Layer. (As a foot-note, WICMX gives a list of British stations heard at QSA5, R6 to R9, during the Lunar Eclipse over Britain.)

G2JA, at Colon, Panama Canal, sends a very complete and detailed report, giving a log of stations heard on 14 m.c., together with report as to weather, and general conditions on all bands. He noted heavy atmospherics on frequencies below 2 m.c., but apart from this, noted nothing unusual. Between 21.00 and 22.00 G.M.T., atmospherics entirely disappeared, save below 30 kcs. His actual log of stations heard gives the type (if any) of fading, etc., and while "steady" appears over the majority, "slow" comes next in order, while "rapid" only appears eight times, and none of those are near the time of totality.

Unfortunately it is impossible to do justice to this, and other reports, but as this is a summary, and as the results are all well within the majority reports already issued, showing a negative effect, these, from different parts of the world, help to show, that, so far as the light eclipse was concerned, we have little indication of it having had any effect on wireless signals.

### Foreign Books (Continued from page 190).

tortion if the head amplifier is not carefully constructed. In this connection, interest attaches to an arrangement described in *Radio News*, and called the "Absorption Microphone."

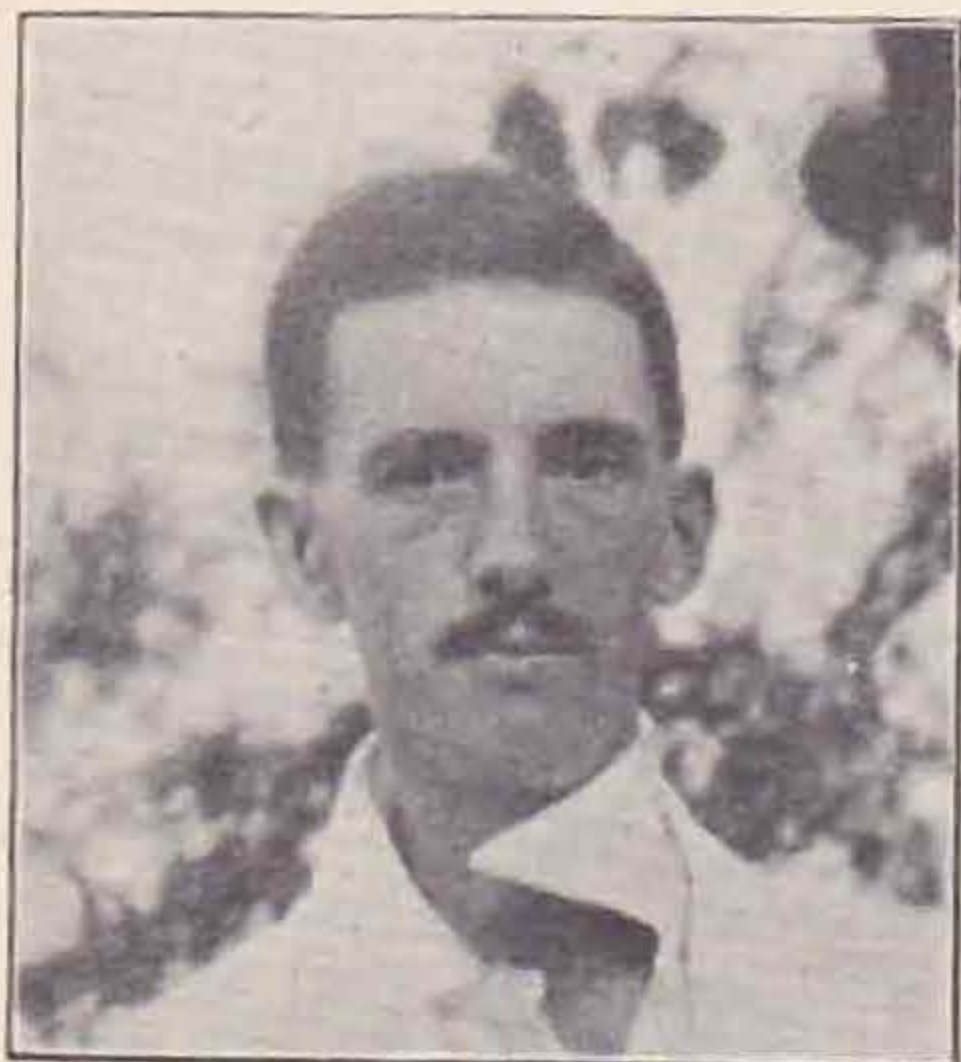
Instead of using the normal acoustic amplifier as a head amplifier, an inductance of very rigid construction is connected in parallel with the microphone so as to form a resonant circuit, and this is coupled to the inductance of an oscillator working on a frequency very nearly equal to the resonant frequency of the microphone and coil circuit (see figure). Speaking into the microphone alters its capacity, and hence the absorption of power from the oscillator. This sets up audio-frequency current changes in the oscillator circuit which are passed on to the microphone amplifier via the audio-frequency transformer. It is claimed that the arrangement will give fully as much audio-frequency output without distortion as a normal two-stage amplifier, and that it practically eliminates amplifier noise.



## STATION DESCRIPTION No. 27.

**VS7GT**

By B.E.R.S. 106.



[We have much pleasure in publishing a description of Mr. Todd's station, which was placed second in the 1932 B.E.R.U. contest.—Ed.]

**V**S7GT first saw the light of day in April, 1931, at Vavuniya, a most inaccessible and lonely

single station 35 miles North of Anuradhapura, and the same distance from its nearest white neighbour. Operations at first were confined to very low power using a T.P.T.G. transmitter built with receiving parts, and a power supply obtained by the laborious process of soldering together some 250 Eveready flashlight unit cells. Very good DX was obtained with this outfit, the best being Hawaii on 2.5 watts, representing nearly 2,500 miles per watt. With the advent of an M.L. generator, VS7GT then increased power to approximately 20 watts, a Delco generator and six Exide car batteries supplying ample power, although during the 1932 B.E.R.U. contest long and anxious periods of QRT were experienced owing to the necessity of re-charging batteries for the next big effort!! The acquisition of a number of crystals, higher voltage condensers, etc., synchronising with a transfer to the Sanatorium of Ceylon, Nuwara Eliya (6,250 ft.), led to the design and construction of a more ambitious outfit, and the present equipment resulted. In spite of prevailing poor conditions and ever present static, good work has been accomplished during the past 15 months, a "bag" of nearly 400 different stations in four continents and 47 countries testifying to the station's efficiency. VS7GT always welcomes "ragchews," and is a staunch opponent of the "G.E. O.M. QRU C.U.L." brand of QSO.

The following is a brief description of the station equipment.

The layout of the transmitter is very compact, and, as can be seen from the illustration, consists of two sections, side by side. The right-hand section comprises the C.O. and F.D. For the C.O. a T.B. 04/10 valve is used and for the F.D. a UX210 valve; H.T. on the C.O. varying from 250 to 300 volts, on the F.D. 400 volts. Grid-leak bias, 20,000 ohms, is used on the C.O. and battery bias on the F.D.

The left-hand section houses the oscillating P.A. (T.P.T.G.), using a 4211D valve with 1,000 volts H.T., together with the aerial coupling. Keying is in the grid-leak of the P.A., an additional 120 volts of grid bias being supplied when the key is up, this producing a clean sharp note, with good grid blocking.

The Goyder lock system of control is used, the F.D. plate coil being inductively coupled to the grid-coil of the P.A. The present transmitter is exceedingly stable, and can be left for long periods without adjustment.

The power supply is situated in an adjoining room, and consists of an M.L. generator belt-driven by a  $\frac{1}{4}$  h.p. A.C. induction motor. (The generator was formerly used as a dynamotor, 32 volts input). Filament supply is obtained from two 6-volt Exide batteries charged by a 12/16-volt dynamo, also belt driven. It is hoped shortly to transfer to all A.C. for filament and possibly anode supply.

The 2-valve receiver, seen on the right of the Monitor on the operating table, consists of a P.M.12 S.G. detector coupled by means of a Phillips transformer to a Mazda P.220. This combination is the result of much experiment extending over a

**VS7GT**

very prolonged period, and produces signals of a very good strength with the minimum of background.

The aerial at the moment is a double-wave "Zepp," 132 ft. long, slung on two masts 55 and 70 ft. high, the higher being at the free end, with neutralised feeders 60 ft. long. Parallel tuning is used on 7 mc. and 14 mc.

A good deal of experiment has been done with aerials, and the best suited for the present location has yet to be found. Formerly, and at the old QRA, a 66-ft. "Zepp" with 60-ft. feeders was proved to be the best for all wave operations.

VS7GT is now B.E.R.U. representative for Ceylon and South India, and is also an Empire Link Station.

We hope that VS7GT's success in the last B.E.R.U. contest will encourage all overseas "hams" and result in a much larger entry for the next contest.

To obtain second place, working under very trying circumstances, requires much enthusiasm and a keen interest, as conditions in Ceylon are very trying at times.

Any amateur travelling in the vicinity of VS7GT should pay him a visit, as I know from experience that a very hearty welcome awaits him.

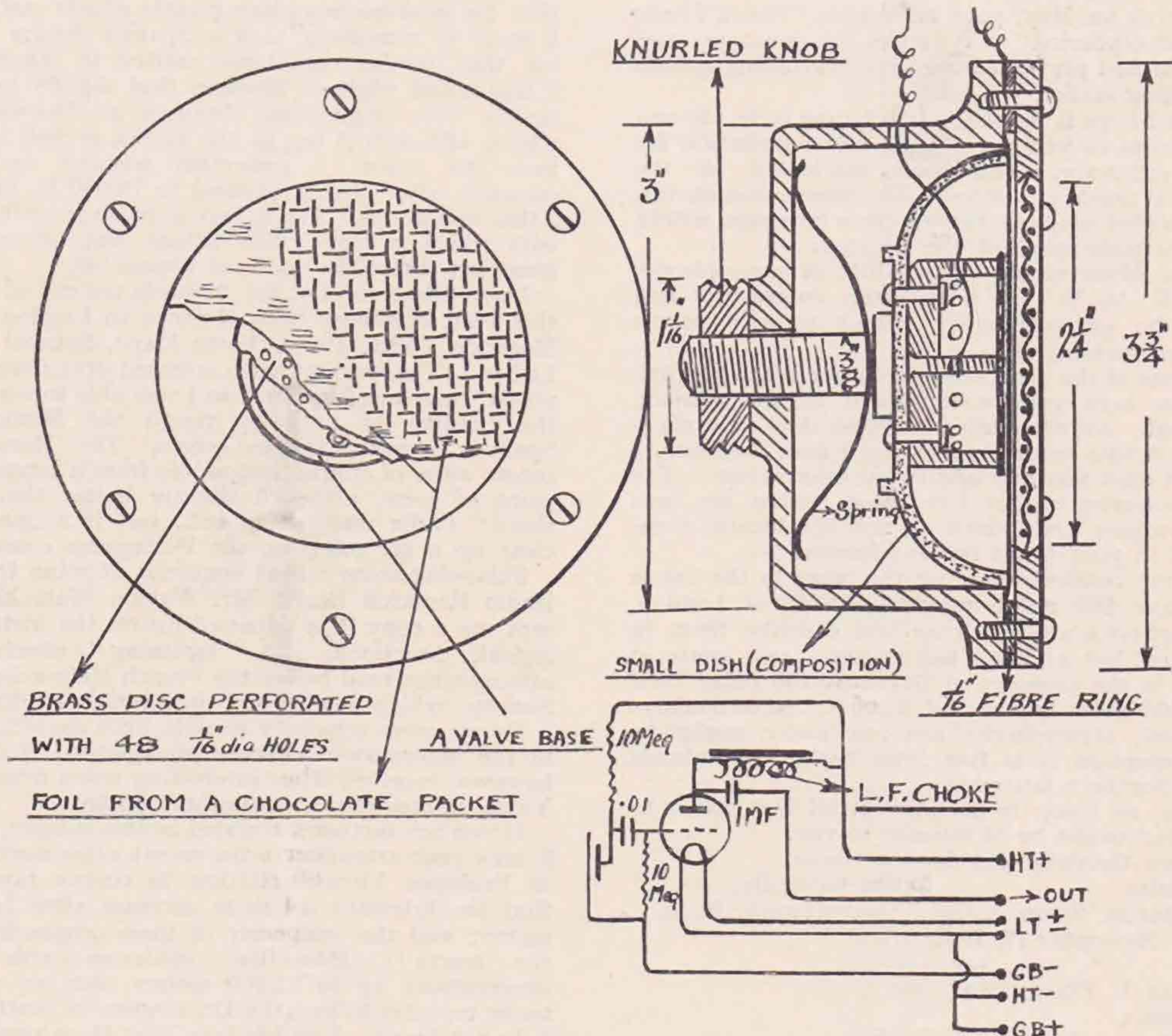


## A CONDENSER MICROPHONE.

By J. A. WHITELEY, G6QA.

The microphone here described is the result of reading an article in the *Radio News*. An Amplion unit was used for the outer case, the one recommended in the article not being available. The internal parts were all removed and the construction of the back plate and diaphragm stretching device commenced. A small bakelite dish (Woolworth's, 2d.), known as a pin tray, contains the valve base supporting the perforated brass plate. The edge of the dish presses against the diaphragm and

foregoing it will be understood that the brass plate is now the thickness of a piece of paper lower than the edge of the bakelite dish. The brass plate should be slightly dished to allow for the vibration of the diaphragm. Slight irregularities in the brass plate were touched up with emery cloth. After much experimental work it has been found that the foil from Cadbury's milk bars is the next best thing to the duralumin foil specially prepared. Care was taken to insulate the screw head, which bolts the



stretches it, this pressure being regulated by the back screw and spring. The method adopted to ensure the correct gap between plate and diaphragm was as follows: A brass plate  $1\frac{3}{8}$  ins. diameter by  $\frac{1}{32}$  in. thickness was prepared and drilled with 48  $\frac{1}{16}$  in. holes. This was placed in the bottom of the tray together with one thickness of paper (from a page of the "BULL."). On top of these the valve base was placed and the whole bolted together. By rubbing on a flat sheet of glass-paper the edges of the dish and valve base were made level.

After this the parts were rearranged in their correct order, the paper being omitted. From the

plate to the dish, from the spring. Otherwise there would have been a short.

The "mike," as described, when used with the circuit shown in the sketch and with 120 volts H.T., gives an output equal to a gramophone pick-up, the speaker being about 12 ins. away. The "mike" and amplifier are built into a tinfoil lined box, 6 ins.  $\times$  6 ins.  $\times$  5 ins. The valve used is a PM1HF, but any valve in the same class will do.

A low impedance valve would help to retain the high notes, but the gain from the valve would be less. The five-way cable can be anything up to 5 yds. long.



## CORRESPONDENCE.

*The Editor does not hold himself responsible for opinions expressed by correspondents. All correspondence must be accompanied by the writer's name and address, though not necessarily for publication.*

### A Short Thesis on Atmospheric

[We publish below some correspondence which will interest those who read Mr. Gibson's admirable article upon the above subject in our May issue.—ED.]

MAURICE GIBSON, ESQ.,  
c/o T. & R. BULLETIN.

DEAR SIR,—I have only now seen, in the BULLETIN for May, your admirable "Short Thesis on Atmospheric." A series of journeys and business had prevented me from overtaking arrears of reading earlier.

Now I hope it is not too late for me to be allowed to express to you my thanks and admiration for your summary. You have condensed all the essential points of the available information on this complicated subject into clear plain language, within the comprehension of the amateur.

Your observations of the drift of atmospheric from E. to W. are particularly interesting and must be extraordinarily useful to the people engaged in research.

As one of the observers abroad for Watson Watt, I have been greatly interested in the subject, although, unfortunately, business does not allow me to devote much time to it. I fear, therefore, I cannot offer you any additional information. The only experience that has fallen within my own observations and which is not specifically mentioned in your thesis is the following:—

At my residence here on the coast in the South of Spain, 900 miles, roughly, S.S.W. of London, atmospheric are much as you describe them in Morocco, but at my "hill station" rest house at Baza, in the province of Granada, 100 miles West and 100 miles inland and 3,000 ft. (about) above sea-level, atmospheric are practically negligible, and reception is as free from background almost as in Northern latitudes.

This, as I say, is the only detail that occurs to me, that might be of interest to you.

Again thanking you for the thesis,

Aguilas, Yours faithfully,  
Murcia, Spain. GEORGE BOAG.  
November 12, 1932.

GEORGE L. BOAG, ESQ.,  
Aguilas,  
Murcia, Spain.

DEAR SIR,—Many thanks for your letter of the 12th instant. The factors you mention as affecting the intensity of the atmospheric (*i.e.*, distance from the coast and altitude) are very interesting. I realise after subsequent observations that it is a point of great importance and should not have been omitted from my article. I think the explanation of the difference you observe lies in the physiography of your particular part of the world. The coastal area of the south of Spain is backed by a formidable range of mountains running I suppose, to about 5,000 ft. A receiving station situated near the coast will have, atmospherically, two sources of moving-air currents to contend with:

(1) those caused by the transference of hot and cold air down the mountain slopes, and (2) those caused by the land and sea winds at the land-sea boundary. I do not think that it is stretching the theory of atmospheric disturbance too far to suppose that there will be friction between these moving masses of air. This is, as I pointed out in Part 1 (3) of my article, probably one of the causes of atmospheric.

In the case of the hill station situated at 3,000 ft. in the mountains, the operator is largely out of any purely local disturbance such as is caused by winds mentioned above. The apparent change of the ship-coast direction at sea during the night especially at sunrise and sunset, seems to indicate that the land-sea boundary greatly affects matters. I seem to remember that a Spanish doctor told me that similar conditions existed in Alicante. I also noted while in Morocco that slightly better results were sometimes obtained at Marrakesh, which, although it lies in the plains, is well away from the coast. I remember wishing on one occasion, after having climbed to 10,000 ft. in the Atlas mountains, that I had a receiver with me with which to make observations, but, of course, transport difficulties made it impossible.

I was fifteen days at sea, towards the end of May this year, returning from Morocco to London, *via* Mogador, Cadiz, Faro, Porto Mayo, Setubal and Lisbon. The operator had a screened-grid, detector, power, receiver of his own, so I was able to observe the changes in intensity round the Moroccan, Spanish and Portuguese coasts. The Moroccan coasts were, of course, impossible from a broadcast point of view, although slightly better than on shore; Cadiz was pretty bad, but it seemed to clear up a bit going up the Portuguese coast.

Following some recent enquiries of mine to the Radio Research Board, Mr. Watson Watt kindly sent me a copy of a paper of his on the meteorological, directional and "lightning" effects on atmospheric read before the French Meteorological Society, which made very interesting reading.

People seem reluctant to note little peculiarities in the observation of these phenomena. I have, however, received some interesting notes from Mr. Yates on conditions in Southern India.

If you are further interested in this subject, may I draw your attention to the recent announcements of Professor Piccard relating to cosmic rays, in that the intensity seems to decrease after 14,000 metres, and the possibility of them originating in the (earth?). How this conforms with the observations up to 22,000 metres with an automatic recorder balloon by Dr. Regner, of Stuttgart, I do not know. I still believe that these rays will prove to be an important factor in the cause of atmospheric. Millikans hard type of ray is calculated to be caused originally by a generating potential of 920 million volts! I shall take the liberty of suggesting the publication of this correspondence in the BULLETIN, in case it is of interest to any of the other members. I shall be glad to receive notes on anything of interest that you may observe in the future.

Yours faithfully,  
Beaufort, MAURICE GIBSON.  
Hatch End, Middlesex.  
November 21, 1932.

(Continued on next page, col. 2.)



## HIC ET UBIQUE.

### Appointment of Mr. J. Clarricoats (G6CL) as Secretary to R.S.G.B.

With reference to the notice in our November issue, we are pleased to announce that Council, at their last meeting, appointed Mr. J. Clarricoats (G6CL) permanent secretary of the Society. He took over his duties on December 5 and is now permanently located at H.Q.

### Scout Transmitting Stations.

Coincidental with our announcement that the 10th Finchley Troop had been granted affiliation with the Society, came a request from Mr. H. S. Martin (Director of the Boy Scouts International Bureau) that we should provide him with a list of transmitting stations owned by Scouts.

We are pleased to make his request public, and would ask that all members of the Society who are connected with the Scout Movement advise Headquarters immediately. The following data is required: Call sign (or B.R.S.) licensed wavelengths and power.

We have recently been in communication with the Editor of "The Scouter" with a view to effecting a liaison between radio amateurs and scout groups. It is hoped as a result that the Boy Scouts Assistance Scheme, which was discussed three years ago, will shortly mature.

Headquarters will be glad to arrange for lectures to be given to interested Scout troops living within the London area, whilst an attempt will be made to render a similar service to Provincial troops.

Members interested in this work are invited to write to the Secretary, 53, Victoria Street, S.W.1.

### 56MC. Tests.

The tests organised for the four London Districts took place on Sunday, November 20, when the following stations were heard to be active on the above band:—G2JI, G2OL, G2DZ, G5SA, G5AW, G5IS, G5CV, G5KH, G6QK, G6LL, G6NF, G6CW, G6XN.

A number of interesting contacts were made, but it is deplored that more stations did not report their results for the benefit of others taking part. G2JI was out as portable operating in the vicinity of Oxted, Surrey. It would appear that organised skeds are necessary to enable receivers to be tried out using different circuits, aerials, valves, etc. All logs in connection with the above tests are being circulated to members participating. Further tests have been arranged for Sunday, December 18, and schedule arranged as given below. Further organised tests will be arranged if sufficient support is forthcoming and sufficient logs are sent to G6UT. It will be noticed that free periods have been given to enable QSO's to take place and for stations not named in the schedule.

G.M.T.	Station.	G.M.T.	Station.
09.00-10.00	Free period	13.40-13.50	G5SA
10.00-10.10	G5SA	13.50-14.00	G6NF
10.10-10.20	G6NF	14.00-14.10	G6QK
10.20-10.30	G6QK	14.10-14.20	G6CW

G.M.T.	Station.	G.M.T.	Station.
10.30-10.50	Free period	14.20-14.40	Free period
10.50-11.00	G6CW	14.40-14.50	G5AW
11.00-11.10	G5AW	14.50-15.00	G2JI
11.10-11.20	G2JI	15.00-15.10	G6LL
11.20-11.30	G6LL	15.10-15.20	G2OW
11.30-11.50	Free period	15.20-15.30	G5IS
11.50-12.00	G2OW	15.30-15.40	G2DZ
12.00-12.10	G5IS	15.40-16.00	Free period
12.10-12.20	G2DZ	16.00-16.10	G5CV
12.20-12.30	G5CV	16.10-16.20	G6XN
12.30-12.40	G6XN	16.20-16.30	G2OL
12.40-12.50	G2OL	16.30-16.40	G5KH
12.50-13.00	G5KH	16.40-16.50	G6YK
13.00-13.20	Free period	16.50-17.00	G2NH
13.20-13.30	G6YK	17.00-18.00	Free period
13.30-13.40	G2NH		

### Correction.

In the new members list in our November issue we unfortunately misspelt the name of one of our new members. That appearing as Mr. Fleefteldt should read Mr. F. K. Kleefeldt, who operates under the call sign D4AFJ, as well as the DE1089 number. He will be very glad to have reports when his station is worked or heard.

BRS868 (Mr. Eric Knowles) has now become 2BVD and would be glad if his friends will record the change.

### VK2XU.

We are asked by Mr. Pollock (VK2XU), whose call is well known to most members working on 14 mc.s, to mention that after a six months' roving commission, he has now settled down at 9, Acacia Street, Belmore, N.S.W. He believes that several members may not have received QSL cards from him acknowledging contacts; this omission will be remedied on a reminder. Mr. Pollock will be on 14 mc.s during December, using an input of 150 watts, and hopes to make many Empire contacts during the coming months.

### Correspondence (continued from previous page).

#### 56 M.C. Discussion.

To the Editor, T. & R. BULLETIN.

DEAR SIR,—I should like to correct the erroneous record of my contribution to recent 56 mc. discussion, regarding receivers for this band. My experience on this band leads me to think that the super-regenerative receiver is far superior to the plain oscillating detector. Whenever I have tried the plain detector signal strength has always been inadequate for perfect reception.

My statement was that I did not find it necessary to use series-tuning, and that an L.F. stage was a disadvantage, increasing mush-to-signal ratio considerably.—Yours faithfully,

ALFRED D. GAY  
(G6NF).

49, Thornlaw Road,  
London, S.E.27.



## B.E.R.U. Contests, 1933.

For the benefit of members who may be in any doubt as to the meaning of the column headings used in the B.E.R.U. Contest entry forms, which was issued last month, we are setting out below an explanatory list.

*When the Form is used for Transmission Purposes.*

*Date.*—Self-explanatory.

*G.M.T. From.*—Greenwich Mean Time the contact commenced.

*To.*—Greenwich Mean Time the contact finished.

*Band Used.*—1.7, 3.5, 7.0, 14.0, 28.0, 56 mcs.

*Stations Called.*—Call Sign of Distant Station worked.

*Calling.*—Call Sign of entrant's station.

*Reports: Called Station.*—Entrant's report on the distant station's signals.

*Calling Station.*—Distant station's report on entrant's signals.

*Q.S.A.*—Audibility code.

*Q.R.K.*—Readability code.

*T.*—Tone code.

*Great Circle Distance.*—The distance between the entrant's and the distant station measured the shortest way round the world.

*Points Claimed per Q.S.O.*—One point can be claimed for contacts with stations situated between 1,000 and 1,999 miles from the entrant's station; two points can be claimed for contacts with stations between 2,000 and 2,999 miles distant, etc., etc.

*When the Form is used for Reception Purposes.*

*Date.*—Self-explanatory.

*G.M.T. From.*—Greenwich Mean Time when signals were heard.

*To.*—No entry required.

*Band Used.*—1.7, 3.5, 7.0, 14.0, 28.0 mcs.

*Stations Called.*—Call sign of station being called by the distant station.

*Calling.*—Call sign of the distant station.

*Reports: Called Station.*—No entry required.

*Calling Station.*—Entrant's report upon the signals of the distant station.

*Q.S.A.*—Audibility code.

*Q.R.K.*—Readability code.

*T.*—Tone code.

*Great Circle Distance.*—See remarks under "Transmission."

*Points Claimed per Q.S.O.*—One point can be claimed if the distant station is between 1,000 and 1,999 miles from the entrant's station, two points can be claimed if the distant station is between 2,000 and 2,999 miles away, etc., etc.

### Entries.

It is suggested that the official entry form be filled in after the contest from rough notes. Where possible, the form should be typed, and the points claimed inserted in the appropriate column.

Overseas members should, where convenient, forward their entries direct to their B.E.R.U. representative, who will send them by registered post to London.

Headquarters will be pleased to receive photo-

graphs and short descriptions of the apparatus used at overseas stations during the contest; these will enable a more comprehensive report to be prepared than has been possible hitherto.

Suggestions for future contests should be made on a separate sheet attached to the entry form.

## Important Change to General Rules.

It has been found that a mistake has crept into Rule 10, and Council has decided to delete Rule 10, as published, and substitute the following:—

*Rule 10.*—A competitor may enter both contests, but can only win one of the trophies; he will, however, be eligible for an award in both contests.

By so doing, it is hoped that many stations who would perhaps have only entered the Senior Contest will also make a bid for the Junior Contest Awards. Much of the success of the junior event turns upon the good sportsmanship of the high-power stations, who are particularly requested to assist the low-power stations by reducing their own power to a maximum of 25 watts during the Junior Contest, and entering as competitors.

## R.N.W.A.R. Notes.

Considerable progress in connection with the Reserve was made during November. The Admiralty transmitter was put into operation on the London District frequency of 3,740 kcs., whilst at least three other members of the Reserve have stations operating on this frequency, including Messrs. Exeter (G6YK), Kirlew (G6KW) and Stopher (G5GF), all of whom have been appointed Acting Unit Petty Officers. Seven London units have been formed to date, and several others will be in operation shortly.

Arrangements have been made with crystal manufacturers to supply at reduced prices, crystals accurate to within  $\pm 2$  kcs., which is the degree of accuracy agreed upon by both the London District members and the R.N.W.A.R. Committee.

It has been decided to sub-divide the British Isles into seven Districts, and to allot fixed frequencies to each such district.

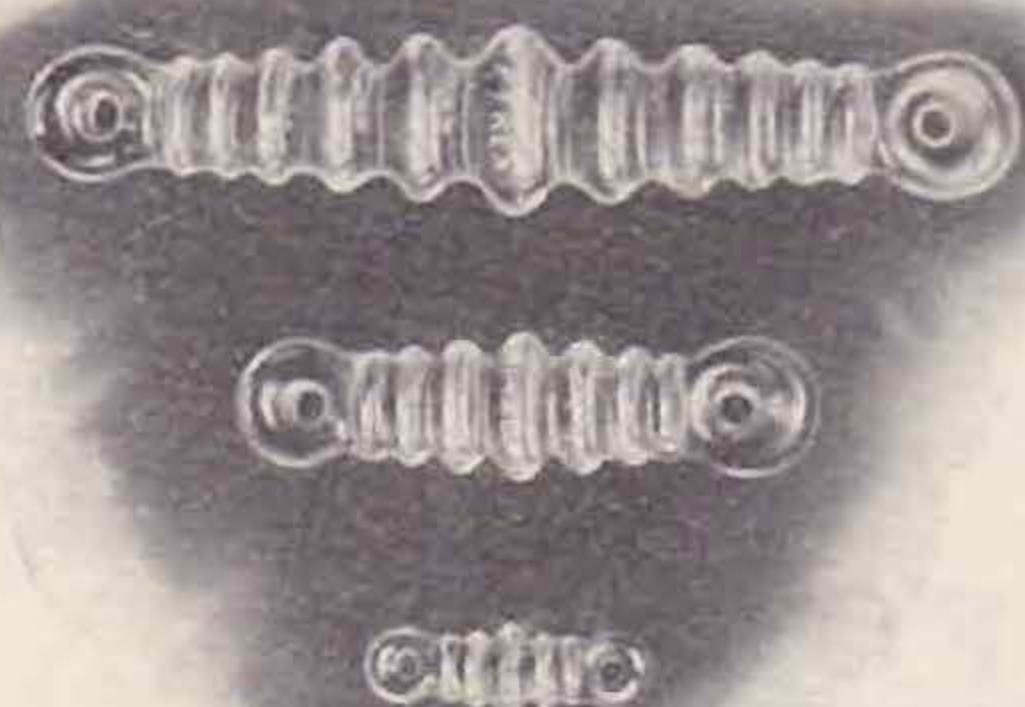
The full list of districts and mean frequencies is as follows:—

	Kcs.
London ... ..	3,740
North Midlands ... ..	3,750
Scotland ... ..	3,760
West ... ..	3,770
North ... ..	3,780
South Midlands ... ..	3,790
Northern Ireland ... ..	3,800

Transmissions from the new Admiralty station (MD9) take place between 11.00 and 12.00 G.M.T., on Sundays, and between 22.30 and 23.00 G.M.T., on Tuesdays and Thursdays. Reports on these transmissions, especially from overseas members, will be welcomed by the Admiralty officials, or can be sent direct to Headquarters.

The above transmissions will take the form of procedure exercises in plain language or code. District transmissions will be made by U.P.O.'s at times to be arranged. The input power for these transmissions will not exceed 10 watts.





## PYREX THE WORLD'S PERFECT INSULATOR

Small for QRP 9d. each. Large for QRO up to 1 KW, 6/3 each.

### TRANSMITTING INDUCTANCES.

Polished Copper Tube, lacquered for PA stage, 3 in. diameter 3/16" Tube. Price 3½d. per Turn.

1" Tube. Price 4½d.

### SILVER PLATED INDUCTANCES TO ORDER.

Low Loss inductances for CO and FD Stages

10 Turn Coil 4s. 0d. each. 6 Turn Coil 3s. 6d. each. STAND OFF INSULATORS WITH WING NUTS, 1/3 each. 14 s w.g. Enam. Copper Wire for Antennas, 68 ft., now reduced to 2/6, or ½d. per ft. any length. Limited number of L.S. 5 Valves, 7/6 each. TURNER 0-100 and 0-200 m/a meters, 25/- each. New REISS MIKES with transformer, 75/-.

### ALL TRANSMITTING REQUIREMENTS.

Send your enquiries to:—

**LOOMES RADIO (G6RL, G6US),**  
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Telephone: Western 0344.

## R.S.G.B. NOTEPAPER.

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K.C.—Metre Charts - -/8

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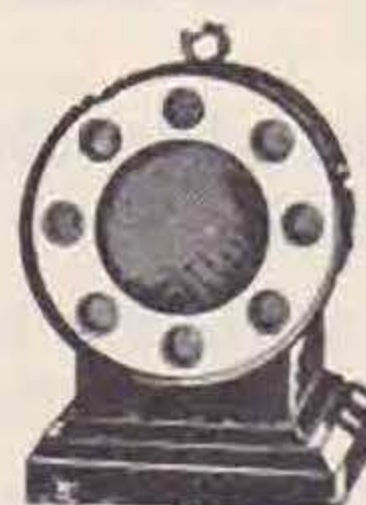


### MAINS TRANSFORMERS.

Igranix 100/230 volts, 100 m.a., 10/-. 4, Igranix 220 volts/300-0-300 volts 60 m.a., 18/-. 37 Igranix E.H.I. Mains Rectifier Transformers, 120 volts 20 m.a. output, 8/6. H.M.V. Transformers, any A.C. Mains input, 350-0-350 volts 120 m.a., 4 volts 2 amps., and 4 volts 3 amps., 15/-. Model M.D. 809, 220 v./500 v. 120 m.a., 4 volts 1 amp., 4 volts 2 amps., 2½-0½-2½ v. 3 amps., 20/-. Igranix Transformer, 200/250 v. input 6-8-11 v. 1 amp. output, 10/-. Transformer Bobbins, wound 220 v./11 v. 1.5 amps., 7/6. 220 v. to 7½ v., 1½ amps., 6/6 unshrouded. Double output Transformers, 200/250 volts/180 volts and 30 volts, 30 m.a., 12/6. Parmeko Transformers, 200 v./100 v., 100 m.a., 20/-. Igranix Transformers, 100/220 volts, input 500 volts 60 m.a. 7.5 volts 1½ amps., 5.5 v. 2½ amps., 20/-. Igranix E.B.H. 100 v. or 240 v. input 250-0-250 v. 50 m.a. output, 20/-. 220 v./25 v. 5 amps., 20/-. 220 v./2-0-2 v. 5 amps., 15/-. B.T.H. Power Transformers, 200/250 v., 3 secondaries 600 v. 250 m.a. 7.5 v. 1½ amp., 6 v. 2 amps. 40/-. Fellows Transformers, 200 v./100 v. 20 m.a., 8/-.

L.F. Transformers, output 1/1 W.E., 3/6. Output 1/1.5 W.E., 3/6. Sifam L.F. Power Amplifier Transformers, 3/1, new, 4/6.

**COILS.** Cossor 3-pin Short Wave, 1/- each. Aerial Reaction long, short and multiple tuning Coils, 2½ ins. by 3 ins., 1/6. Ribbed Former, only 9d. H.M.V. Tuning Long and Short Wave Aerial Bandpass, 8 in. Coils, 1/-. 2-pin Coils, B.B.C. or Short Wave, 6d. Aerial Fine Tuning Coils on Ebonite Former, 12 tapings with Rotary Switch Arm and Studs, 1/-. Tapped Inductances, 11 ins. by 4½ ins., 4 taps, 3/6. Tapped Inductances, 9½ ins. by 7 ins., with 7-stud Rotary Switch, 5/-. 1,000 Ebonite 6-ribbed small, 1½ in. diam., 1 in. long, 2d. Star Reaction Tuners, Broadcast band, new, 9d. each. Igranix Unitone Couplers, usually 2/6, Major and Minor, 9d. each. H.M.V. Fellows 5-pin Aerial Coils, 200/500. Listed 5/6. Sale 3/9 each. Large stock of various makes of 6-pin Coils at half price. 6-pin Bases, 8d. Igranix Gimbal Coils, 1/-. Holders 2/-. Igranix Twin Unitone Couplers, 1/-. Vario-Couplers, 4/-. 2-pin Coils, 6d. Coil-holders, 2-way, 1/6. 3-way, 2/6. 12 in. Spark Coils, £8. Medical Coil Sets, 6/6, 10/6, 15/- and 21/-.



**MICROPHONES** of maximum efficiency and minimum price. No. 11, Solo sensitive pendant in heavy brass case, 6/6 only. No. 7, Special Panel, with back nut, 12/6. No. 8, Marconi type W/T Hand Mike, 15/-. No. 12, Ring Stand, 18/6. No. 10, P. Pedestal, 12/3. No. 4, Sensitive Solo, 17/-. Announcers' No. 1, No. 3 or No. 5, 65/-. Scotland Yard uses two of these. Deaf Aid Sets the cheapest possible, 18/6 per set.

**MICROPHONES** for Engineers and Miners are Seismomicrophones with massive cast brass turned body in teak case. Will stand the roughest treatment. Used by W.D. for counter mining, only 10/6.

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# The Incorporated Radio Society of Great Britain.

Headquarters Society:—BRITISH EMPIRE RADIO UNION,

53, VICTORIA STREET, LONDON, S.W.1. ('Phone, Victoria 4412.

## APPLICATION FORM.

The Hon. Secretary,

Sir,—I beg to make application to be enrolled as a member, and shall be obliged if you will submit my name to your Council. I agree, if elected, to act and abide by the Rules of the Society as expressed in its Articles of Association and By-laws.

Signature.....

Name in full (please use Block Letters) .....

Address (to which all communications may be sent) .....

Nationality..... Age (if under 21).....

Call Sign.....

NOTE.—Members not having Call Signs are allotted B.R.S. (British Receiving Station) or B.E.R.S. (British Empire Receiving Station) Numbers, which are used for identification purposes only.

Proposed by..... Seconded by.....

NOTES.—Applicants who do not know any member may accompany their forms by references in writing by persons to whom they are known. Such persons should be householders, and should state profession and length of acquaintance with applicant.

The Council reserve the right to refuse any application without reason.

### UNDERTAKING TO BE SIGNED BY APPLICANT.

I, the undersigned, agree that in the event of my election to membership of the INCORPORATED RADIO SOCIETY OF GREAT BRITAIN, I will abide by and observe the Rules, Regulations and Articles of Association of the Society, and that in the event of my resignation from the Society given under my hand in writing, I shall, after the payment of all arrears which may be due by me at that period, be free from this obligation. I further agree to observe strictly the terms of any licence issued to me by the responsible authorities to operate transmission or receiving apparatus.

Witness my hand this.....day of..... (signed).....

### SUBSCRIPTION RATES.

Corporate Members and Associate Members (Town) ...	£1	1	0	per annum.
Corporate Members resident outside 25 mile radius				
Charing Cross ... ..	0	15	0	„ „
Corporate Members resident outside British Isles ...	0	12	6	„ „
Non-Corporate Members—Associates ... ..	0	10	0	„ „

Associates are not eligible to vote or receive individual notices of the Society.

Certificates of Membership and copy of the Articles of Association are issued to all members upon election.

### NO ENTRANCE FEE.

A copy of the Articles of Association may be inspected at the Headquarters of the Society, 53, Victoria Street, London, S.W.1, by applicants upon request.

FOR OFFICE USE ONLY.

Approved by Council.....

B.(E.)R.S. Number issued.....First Subscription Paid.....



Steps are being taken to give instruction to Provincial members of the Reserve, whilst early in the New Year arrangements will be made for an Admiralty officer, and probably the Secretary of the R.S.G.B., to visit Bristol and Birmingham, in order to discuss Reserve matters and appoint officers to take charge of the units to be formed in those areas.

The last meeting of the London District, held on November 23, was attended by some 35 members. Commander Saunders, Secretary to the Reserve Committee, gave an outline of the recent progress made, and mentioned that over 100 final acceptances had been received, including applications from approximately 30 owners of transmitting stations.

Full details of the Reserve can be obtained from Commander L. Saunders, R.N., Signals Department, Admiralty, London, S.W.

## Trade Notices.

### The Eddystone All-Wave Four.

Messrs. Stratton & Co. have this year introduced a new and improved model of the "Eddystone" All-Wave Four. This receiver is designed primarily for work in the colonies, and a good deal of thought has been given to making it insect and dust-proof. The cabinet is a *monobloc* casting of a special aluminium alloy which is non-corrosive, and the lid is a machined fit. The whole job is made up to a standard, and not down to a price, and embodies all features known to be essential for condition in such places as the tropics, where many ills befall such articles as variable condensers. We have tried out one of these receivers, and found it extremely easy to handle on all wavelengths from 13 to 500 metres. The amateur bands are not, of course, spread as the average ham would like, but the set is extremely easy to manipulate for B.C.L. work.

The valves for this set have been chosen after careful consideration, and those supplied with the battery model are: H.F., Cossor V.S.G./220; Det., Mazda H.L. 210; 1st L.F., Mazda H.L. 210; 2nd L.F., Mullard P.M. 22. Automatic grid-bias is provided throughout, and the volume control, which is combined with the switch, varies the grid bias on the H.F. valve.

Four sets of coils are provided, the ranges of which are 13-26, 22-45, 40-85 and 250-500 metres.

The main tuning knob is at the side of the machine, but the illuminated drum-dial is in the centre of the front panel. To the left of this is the trimming condenser knob, which is set at zero until a station is tuned, and then adjusted to give maximum volume. Another method of adjustment is to vary the trimmer until a minimum coupling of the reaction condenser is required for oscillation.

The receiver was tested on a 60 ft. aerial twenty miles from Brookman's Park, and on broadcast waves no difficulty was experienced through lack of selectivity. All the usual short-wave stations were found at good strength, and were tuned in on a loudspeaker without recourse to headphones. The H.T. supply was taken from both battery and eliminator with equally good results. Provision is made for a gramophone pick-up.

Messrs. Ferranti, Ltd., have long been known for the extensive amount of information contained in their publicity. Particularly is this so in a pamphlet recently published by the firm upon the construction of power units (List No. Wa.522). It is obvious that a firm with such an extensive experience in the manufacture of transformers for all purposes should be able to give some valuable information in this respect. The pamphlet deals with T units of all useful sizes, giving lists of the various components required for each, and their values. Voltage dropping resistances are thoroughly discussed, together with the values of smoothing condensers. The best method of arrangement is also shown. We can thoroughly advise those interested to obtain a copy, which can be obtained from Messrs. Ferranti, Ltd., Hollingwood, Lancs., upon sending 3d. in stamps.

\* \* \*

We have received for examination two transmitting inductances made by Loomes Radio, 32-34, Earl's Court Road, London, W.8 (Telephone: Western 0344).

Inductances for amateur use must of necessity be rigidly constructed, accurately assembled, well finished, and obtainable at a moderate price. Messrs. Loomes appear to have achieved these features at their first serious attempt to cater for amateur requirements.

The first type examined suitable for power amplifier circuits was wound to a diameter of 3 ins. with 3-16 in. copper tubing, the turns being spaced  $\frac{1}{4}$  in. apart. Substantial flattened ends make for easy assembly under stand-off insulator terminals.

The second coil, for use in doubler and C.O. stages, was of the supported type, the construction being unique, inasmuch as the winding is threaded through holes drilled in two ebonite supporting tubes. The wire is No. 16 S.W.G., B.E. copper, whilst the turns are spaced  $\frac{1}{4}$  in. and are wound to a diameter of 3 ins. The ends are terminated on nickel plated brass wander plugs.

Both coils were delivered in well-protected cardboard containers, lined with wood-wool, and are sold at the following prices:

Copper tube types, 3-16 in. diameter,  $3\frac{1}{2}$ d. per turn;  $\frac{1}{4}$  in. diameter,  $4\frac{1}{2}$ d. per turn (maximum 15 turns). Silver-plating, if required, extra.

Supported types, 10 turns, 4s., 6 turns 3s. 6d.

We have also had an opportunity of examining a line of Pyrex insulators marketed by the same firm, and sold at 9d. each. These are ribbed pattern,  $3\frac{1}{2}$  ins. long, and are unquestionably invaluable to an amateur requiring first-class insulation.

\* \* \*

Hardly a month passes but we receive from Messrs. Lectro-Linx a sample of some new little gadget they have produced. This time it is a neat panel socket with insulated body for mounting in a metal panel into which a Clix plug can be inserted. It is fitted with a thread and nut at the rear for connection. It is just the thing for bringing out a detachable connection through a front panel and only costs  $2\frac{1}{2}$ d., with a Clix master plug at  $1\frac{1}{2}$ d. extra. We found a use for it the first evening.



## QSL Section.

May we take this opportunity of offering members the seasonal greetings of the QSL section personnel and our assurance that we look forward with pleasure to still further prosperity for the Society in the New Year. The staff at H.Q. are ready to handle double the number of cards during 1933, and we are confident that next year, as in 1932, new records of membership and activity in the Society will be realised.

It may be of interest if a few facts concerning the amount of work that has passed through the section during the year are given, and whilst the following numbers cannot be regarded as accurate to within a hundred or so, they do, nevertheless, give a good idea of the colossal figures with which the section has to contend.

In the first place 182,000 cards (considerably over half a ton) have been distributed to home and overseas stations during the past year.

Another interesting fact is this: a great many active amateurs have actually saved more than their annual subscription during the year, a fact which ought to silence those grouseurs who have been heard to declare that they get nothing from the Society but the BULLETIN.

It is one of the established customs of the Section to ask those who make use of its facilities to begin the New Year with a firm resolution to keep a supply of envelopes at H.Q., and for the fourth successive year we therefore ask you to resolve to do this and to have a look at the rules printed in last month's issue when in doubt as to procedure.

In conclusion, the thanks of all users of the section are due to the staff at H.Q. for the great amount of hard work that they have put in. Miss Spence and Miss Gadsden have both done their best for the Society during a much heavier year and are deserving of the Society's best thanks.

J. D. C.

## Calls Heard.

BRS497, 24, Woodside Park Road, North Finchley, N.12.—Calls heard during November:

7 mcs.: su6hl, su6sw, [veleb, vk2br, vk2fd, vk3br, vk3je, vk3vl, vk3zx, vk4wt, vk7ch, vo8op, vs6an, vu2ah (?), vu2cs (QRA ?), zl1ar, zl2ci, zl2kx (QRA ?), zl3aj, zl3aq, zl3as, zl3ax, zl3cc, zl3cx, zl3dn, zl3dx, zl4aw, zl4ba, zl4xc, zu6w.

14 mcs.: vk2jz, vk2xg, vk2zw, vk4rw, vk4rv.

Empire Calls heard by ZS4U: from June 28, 1932, to October 10, 1932:

7 mcs.: ac8na, ac6zz, g2nh, g2zq, g2ao, g2ig, g5jv, g6us, g5tz, g6wy, su8ma, rllw, v8ab, vk3ou, vk5by, vk5md, vk4ja, vk6dh, vk6sa, vk6gf, vk6hf, vk6cr, vk6wr, vs7gt, vs6ab, vs6ae, vs6ah, vs6ag, vu2jp, vu2lz, vu2cs, vulaa, vu2lx, yibr, xulu (Hong-Kong), vq4crh.

14 mcs., June 28 to October 10, 1932: vq4crh, vq4crl, zeljn, zeljb, zslc, ztlq, zu5b, vq2bc, sulec, vk6hf, sulaa, yi6hr, g2nh.

October 12, 1932, 12.45 G.M.T.: ve3wa.

Empire Calls heard by VU2SP, September:—

7 mc.: vk2fy, 2hg, 2hw, 2hx, nlj, 2yr, vk3al, 3dt, 3ek, bes, 3je, 3kr, 3lq, 3mx, 3rw, 3tm, vk4gk,

vk5aw, 5bm, 5hg, 5xk, vk6cb, 6dh, 6dj, 6fl, 6gf, 6hf, 6kr, 6lv, 6mn, 6mu, 6rl, 6rx, zl2bz, 3aj, zslb, 2a, 2d, 2f, 5u, 6aa, zt2b, 2h, 2l, 5w, 5y, 6r, zu5e, 5j, 5b, 5r, v8af, vulaa, zeljb, vs6ab, vq4crf, yi6wg, vs7gt, g6vp.

7 mc.: vu2jt, 2kh, 2lj, 2lz, 2rc, vk2cy, 2hy, 2jc, 2oz, 2zw, vk3al, 3bb, 3es, 3hl, vk4gk, vk5bp, 5fm, 5ml, 5ux, vk6cr, 6fl, 6or, vk7ch, zl3az, 4ck, zs2d, 2f, zt2b, 6j, zu5b, 5j, 5n, vq2ty, 2bc, v8af, yi2ds, g2zq, zeljf, vs6ag.

14 mc.: vk2hw, vk3no.

By W. H. Cragg, YI6WG, 14 m.c., Sept. 9—Oct. 17:—G2bh, 2bm, 2dz, 2dw, 2ii, 2nh, 2oa, 2ru, 2rv, 2ux, 2vz, 2wx, 2xa, 2zq, 5bj, 5by, 5bz, 5fv, 5bz, 5ib, 5ku, 5ms, 5nf, 5ni, GI5nj (fone), G5np, 5ph, 5pl, 5qa, 5sy, 5uc, 5vl, 5vq, 5wq, 5yg, 5yh, 6cl, 6db, 6jg, 6ki, 6li, 6ms, 6nd, 6ni, 6pk, 6qb, 6sc, 6uf, 6us, 6vp, 6wn, 6yl, sulec, vq4crl, ve1bv, ve2ca, ve3wa, ve5gv, 7m.c., Sept. 9—Oct. 17.—G2ak, g2zq, g5gs, g5np, g5vb, g5uc, g5vn, g5wq, g5yh, g6az, g6ct, g6gq, g6sc, g6uf, g6yc, sulaa, su6sw, vp8fj, yi2ds. 3.5 m.c., Sept. 20—Oct. 17.—D4abs, d4elp, d4gog, d4ivq, d4qre, d4rbd, eu2po, la2w, paOasd (cw and fone), paOqq, paOwq, w1bdw, w1bu, w1mk, w2ag, w2din, w2sc, w3la, w4nb, w8sle.

## New Members.

### HOME CORPORATES.

- B. B. JACKSON (G2BJ), Bryn Alan, Colwyn Bay, N. Wales.  
 F. H. WEBBER (G5YR), Somerville, Tiverton, Devon.  
 C. S. ANDERSON (G6BC), 22, Ashleigh Grove, Fulwell, Sunderland.  
 J. MCCAMMONT (G6CM), 22, Brandon Place, Bothwellhaugh, Scotland.  
 R. J. BRADLEY (2BFJ), 5, Roker Terrace, Yarm Road, Stockton-on-Tees.  
 J. S. HOBSON (BRS1009), 53, Burnham Street, Sherwood, Nottingham.  
 W. VINICOMBE (BRS1010), 330, Galapark Road, Galashiels.  
 C. J. GREENAWAY (BRS1011), 24, Percy Road, Leigh-on-Sea, Essex.  
 A. F. ROGERS (BRS1012), Harwood, Tenterden, Kent.  
 A. E. TILLYARD (BRS1013), 28, Portnall Road, Paddington, W.9.  
 J. K. CONSTABLE (BRS1014), 16, Highland Road, Coventry.  
 L. B. POULTER (BRS1015), 6, Rhodes Street, Halifax, Yorks.  
 R. A. CAIL (BRS1016), "Claremont," Normanby, Eston, Yorks.  
 R. E. COTTON (BRS1017), "Cedar Bank," Poplar Road, Oxton, Birkenhead.  
 T. H. HALL (BRS1018), 59, Tresham Street, Kettering, Northants.  
 T. A. CROWE (BRS1019), 71, Graham Road, Dalston, E.8.  
 W. M. HUNT (BRS1020), 29, Ardgay Street, Shettleston, Glasgow, E.2.  
 H. FREEMAN (BRS1021), 5, Leighton Grove, Nunthorpe, Grimsby.  
 W. H. GLEN-DOBIE (BRS1022), "Braehead," Oxton, Birkenhead.  
 R. F. PARFITT (BRS1023), 9, Tavistock Square, W.C.1.  
 M. A. SADIQ (BRS1024), L.N.E.R. Plant Works, Doncaster.  
 J. W. PADDON (BRS1025), Bussock Hill, Newbury, Berks.  
 D. MACADIE (BRS1026), 50, Kilmorie Drive, Bankhead, Rutherglen, Scotland.  
 H. J. HOWE (BRS1027), 31, Chestnut Road, West Norwood, S.E.27.  
 S. H. WHITLEY (BRS1028), 69, Wilberforce Road, Leicester.  
 V. S. BERWICK (BRS1029), 19, Hillbrow Road, Ashford, Kent.  
 B. ROWELL (A), 14, Market Hill, St. Ives, Hunts.  
 P. WOOLLETT (A), 7, The Highway, Sutton, Surrey.  
 S. WILKINSON (A), The Bungalow, Bentham, Lancaster.  
 A. A. ATKINS (A), 2, Ladbroke Drive, Potters Bar, Middlesex.

### DOMINION AND FOREIGN.

- R. H. CUTLER B.A., (VQ3CTR), Education Department, Mpwapwa, Tanganyika Territory.  
 W. A. GREY (ZT2MP), P.O. Box 45, Uitenhage, South Africa.  
 G. R. KENT (ZT6R), P.O. Box 6339, Johannesburg.  
 G. LE MESURIER (BERS152), P.O. Box 63m, Jinja, Uganda.  
 J. W. J. TYRRELL (BERS153), Kohat District Signals, Kohat, N.W.F.P.  
 L. J. QUINLIVAN (BERS154), Bulloch Bros. & Co., Ltd., Bassein, Burma.  
 LT.-COL. V. BEADON, M.C. (BERS155), c/o Thos. Cook & Sons, Berkeley Street, London.



## QRA Section.

M. W. PILPEL (G6PP).

### NEW QRA's.

- G2CI.—M. BROOKS-KING, Park House, Paignton, Devon.  
 G2IX.—PORTABLE STATION of G2II.  
 G2OW.—E. L. OWEN, 43, Mount Park Road, Ealing, London, W.5.  
 G2US.—C. C. MORTIMER, 91, Church Hill Road, Cheam, Surrey.  
 G2VV.—J. N. ROE, "Minydon," Ridgway Road, Farnham, Surrey. (Correction.)  
 G2WD.—G. McLEAN WILFORD, 33, Bibury Road, Hall Green, Birmingham.  
 G2YL.—MISS N. CORRY, "Redholm," Walton-on-the-Hill, Tadworth, Surrey.  
 G5BI.—V. J. BARTLETT, 11, The Circle, Tredegar, Mon.  
 G5HK.—H. S. BECKETT, 55, Mona Road, Crookes, Sheffield.  
 G5SH.—S. F. HARRIS, 93, Salcott Road, Battersea, London, S.W.11.  
 G5TC.—J. NORRIS, 23, Wellington Road, Whalley Range, Manchester.  
 G5YF.—R. J. PANKHURST, 9, Shakespeare Road, Kettering, Northants.  
 G5ZF.—J. S. SOMERS, c/o 16, Wykebeck Mount, Selby Road, Leeds.  
 G6CJ.—F. CHARMAN, "The Cottage," Parkway, Long Lane, Hillingdon, Middlesex.  
 G6FU.—J. H. CANT, 7, Elthruda Road, London, S.E.13.  
 G6IF.—M. E. TAPSON, 115, Hadleigh Road, Leigh-on-Sea, Essex.  
 G6NV.—J. J. A. ALLNUTT, 193, Brixton Road, London, S.W.9.  
 G6OC.—J. L. WRAIGHT, 59, Bramley Road, London, W.5.  
 G6OS.—J. W. GILL, 37, Parkfield Drive, Hull, Yorks.  
 G6OW.—R. TENNANT, 65, Hillhead Street, Glasgow, W.2.  
 G6OY.—R. G. DREWERY, 274, Park Avenue, Hull, Yorks.  
 G6QI.—R. WALKER, 18, Woodville Road, New Barnet, Herts.  
 G6QQ.—R. D. L. DUTTON, 13b, Lime Walk, Headington, Oxford.  
 G6TF.—W. DAVIDSON, 12a, Erskine Street, Alloa, Clackmannanshire, Scotland.  
 G16TK.—F. A. ROBB, 3, Worcester Terrace, Chamberlain Street, Belfast.  
 G6TM.—F. WISEMAN, 41, Hollins Street, Buxton, Derbyshire.  
 G6XP.—L. C. SNOWDEN, "Sandilands," Ashley Drive, Walton, Surrey.  
 G6YH.—J. K. Haynes, 6, Walfield Avenue, London, N.20.  
 2AMW.—A. E. MARKWICK, 13, Dunstable Road, Richmond, Surrey.  
 2ANV.—R. A. SPROULE, "Ardavon," Garvagh, Co. Londonderry, N. Ireland.  
 2APK.—J. D. LESLIE, 238, Cliftonville Road, Belfast.  
 2AVM.—R. V. LORD, 240, Borough Road, Middlesbrough, Yorks.  
 EI3F.—C. F. HARPER, Tranquilla House, Harold's Cross, Dublin.

The following are cancelled: G5LP, G6PL, 2ANN, 2ARM, 2BBN, 2BVQ, 2BXX, 2AXW.

## Calibration Section.

A. D. GAY (G6NF).

After a lapse of two months, the arrangements for the new frequency-meter have been completed. The new instrument, which is described elsewhere in this issue, is a delightful thing to handle. At this time of year, with an average room temperature of 10° C., it takes some thirty minutes, after switching on, to settle down and reach a constant value. This, it will be appreciated, is due to the expansion of the valve electrodes. Readings of frequency can be made to within 350 cycles, with an accuracy of 0.01 per cent. if necessary. Actually, readings on transmitting stations are never given nearer than 0.03 per cent. or the nearest 1 kc. on the 3.5 mc. band. This is because many stations will be found to creep to this extent as their crystals warm up.

On Sunday, November 13, 1932, DX conditions were good on both 7 and 14 mc. bands and many British stations were to be heard. Instead of joining in the hunt for DX, the writer measured the frequencies of several stations and the list given below may be of interest to some of them. The figures in many cases agree with those given about twelve months ago, in others there is a discrepancy of a few kc.s, which may possibly be due to some change in holders, etc.

Members are reminded that crystals and frequency meters may be sent to 49, Thornlaw Road, London, S.E.27, at owner's risk, for calibration. The Society's charge for this work is 1s. 6d. and 5s. respectively, excluding carriage.

G2BM 14,244	G5CV { 7,168	G6GS 14,122
G2DZ 14,304	14,252	G6KP 14,160
G2FH 14,237	G5IS { 7,152	G6RL 14,318
G2YC 14,128	14,067	G6SR 7,091
G2YD 7,087	G5PL 7,142	G6VP 14,349
G5AW 14,253	G5SG 14,286	G6WK 7,116
	G5YU 7,166	G6WN 7,138

## European Notes.

### Portugal.

By R. R. SAWELL (CTIBK).

The Technical Committee of the R.E.P. are preparing regulations for the first telegraphic and telephonic contest sponsored by that society, and the rules of the contest will be published very shortly.

Although confirmation is still awaited, it is understood that the first three prizes of the recent contest arranged by R.E. were won by Portuguese amateurs.

With the improved conditions QRM is increasing correspondingly, and there has been a certain amount of contention between the CT's concerning the interference from 'phone stations. Incidentally I would mention that the Portuguese amateurs are allowed by the Ministry of Marine to use the band 45-48 metres for 'phone work, and are being urged not to use 'phone in the lower 7 mc. band and consequently cause QRM for the telegraphy stations that work there! With the use of the 45-48-metre band the C.T.s are finding that they are able to make considerably more DX contacts, and the foreign 'phone stations are asked to look for the Portuguese in that band.

[Mr. Sawell's remarks *re* the use of the 45-48 metre band for telephony experiments are noted with some surprise.—Ed.]



# Empire



# News.

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

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

*British West Indies, Bahamas, Bermuda, and British Guiana.*—H. B. Trasler, No. 2 Mess, Pointe à Pierre, Trinidad, B.W.I.

*Canada.*—C. J. Dawes (VE2BB), Main Street, St. Anne de Bellevue, Quebec.

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

*Channel Islands.*—H. J. Ahier (G5OU), Lansdowne House, 45a, Colomberie, St. Helier, Jersey, C.I.

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

*Hong Kong.*—P. J. O'Brien (VS6AE), 12, Kent Road, Kowloon Tong, Hong Kong.

*Iraq.*—H. W. Hamblin (YI6HT), Wireless Section, R.A.F., Shaibah, Basra, Iraq.

*South Rhodesia.*—S. Emptage (ZE1JG), Salcombe, Plumtree, Southern Rhodesia.

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

*Kenya, Uganda and Tanganyika.*—H. W. Cox (VQ4CRF), Box 572, Nairobi, Kenya.

*Malaya.*—T. G. Laver (VS3AC), Government Electrical Power Station, Johore Bharu, Johore, Malaya.

*Newfoundland.*—Rev. W. P. Stoyles (VO8MC), Mount Cashel Home, St. John's East.

*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), 1st Battalion Nigeria Regt., Kaduna, Nigeria.

*N. India and Burma.*—R. N. Fox (VU2DR), C/o VU2FX, Sgt. C. D. Connerton, Aircraft Park, Lahore Cantonments, Punjab, India.

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

## Australia.

*September-October.*—From VK2HC.—At last the DX season is returning, and with it an improvement in 28 mc. conditions. VK4XN reports harmonics of J commercials, and a CQ from J1EZ, but this was possibly a 20 metre harmonic.

The W's, J's, etc., are still coming through on 14 mc. between 05.00 and 08.00, and Europeans should soon be strong enough to contact.

The usual Pacific stations and W's on 7 mc. from 08.00-14.00 G.M.T., and from 19.00-20.30 G.M.T., the European signals are improving rapidly. With the approach of summer, QRN on 3.5 mc. is getting rather bad, but the band is still well populated.

The VK hams recently enjoyed a "5-point relay contest," and some fine scores were made.

Permission to use the 200-250 metre band has been withdrawn on account of the increased number of broadcasting stations, and the likelihood of QRM.

## Ceylon and South India.

*October.*—VS7GT has been inactive during the past month due to rebuilding an A.C. power supply and new super receiver, but hopes the long delay will end in a few days.

In an interesting report VU2JP states that conditions in September on 7 mc. showed improvement, but were still subject to considerable variation. VU2JP suggests that 7 mc. phone be prohibited and that phone be restricted to 3.5 mc. 14 mc. is still very unreliable, and QSO's are few and far between.

## Egypt.

*November.*—From SU1EC (via G2ZQ).—DX conditions for 7 and 14 mc. FB. 14mc FB for VKs between 12.00 15.00 G.M.T., but dead all round after 15.30 G.M.T. 7mc perfect for Western DX at 05.00. YI6KR now at Ismalia and hopes to be working soon with an SU call. SU6HL and SU1AA both active. SU1EC has been quiet owing to rebuilding and now finds after trying every type of antenna that the 66 ft. Zepp is best for both 7 and 14 mc. SU1CH hopes to be on the air next month with 200 watt transmitter. The B.B.C. broadcast heard with bad fading at between R7 and R2. Egyptian hams regret that the beam misses Egypt.

## Iraq.

(In publishing the following notes from Mr. K. Rancombe (YI6KR), we wish to take the opportunity of thanking him for the great help he has given us during the past few years as B.E.R.U. representative for Iraq. Mr. Rancombe is now in Egypt and hopes to be on the air shortly as SU6KR.)

During October conditions on 28 mc. were definitely bad, no signals from Europe being heard. On 3.5 mc. only Russians were copied with ease, but the 7 mc. band showed an improvement, W, KA, J and VK being received fairly regularly. The 14 mc. band, although variable, was especially good around the sunset hours G5YK and F8RJ were the outstanding stations heard, both being R9; VE5GV was logged, as were stations in PK4 and VS.



### South Africa.

By ZT6X

(via ZU6W AND G5ML.

Great credit is due to the E.L.S. G5ML and ZU6W for the efficient way they exchanged messages in connection with the "Fairey Monoplane" flight. We were disappointed to hear in the end that it had been postponed; however, when it does start the members of the S.A.R.R.L. have arranged to keep a 24-hour schedule from the time the plane leaves England.

Eddie Somerset (G2DT) after flitting all around Africa has decided to reside at Durban for a time; he will be a great acquisition to Division 5.

DX on all bands, rather strange to say, has fallen off considerably during the month. Conditions being at all favourable we are hoping to establish contacts with G stations during the coming 28 mc. tests.

### Northern India and Burma.

By VU2AH

(via XYI6BZ and G2ZQ.

October.—The improved conditions of the last week of September were not maintained, and October has in general proved a very disappointing month. Conditions have been very patchy on 14 mc. especially. On this band ZL has been heard at times. QRN has been very bad on 14 mc. DX has been coming through on 7mc., but signals have been generally very weak. Conditions now seem to be improving, though they are still far worse than the corresponding period of last year.

### Another Pirate.

We understand from Mr. Riddiough (G5SZ) that his call has been used recently by an unlicensed station. QSL cards for this person may be obtained from HQ's.!

### Malaya.

By VS3AC.

This is my first report since taking over Representative for Malaya. I must first refer to the passing of VS2AF. Salt, a most efficient member of the "gang," who recently set off to fly to the United Kingdom on a holiday, but never reached Rangoon; it is presumed that his 'plane fell into the Gulf of Mataban, off the Burmah coast. He will be a big loss to amateur radio in general, and did some fine work for the R.S.G.B.

There are only a few amateur transmitters in this part of the world, and only four of them are active, VS1AB, and VS1AD, are nearly always to be heard on telephony, their tests are much appreciated by listeners, as reception is only possible, in the Tropics on S.W. This leaves V2SAD and VS3AC as the only "Brass pounders," but it is expected that more recruits will be joining in the future. Unfortunately the writer, VS3AC, has been off the air for a few months due to change of QRA, but is now working again on 7 and 14 m.c. bands, and hopes all British E.L.S. will keep a watch; if possible establish a link. Conditions on all bands seem to be fairly good, and some real good DX is anticipated during the coming months. Unfortunately transmitting stations are few in Malaya, due, no doubt, to the highest fees paid in the world: £3 5s. for 30 watts, but we hope to get this reduced. Particulars of fees charged in other parts of the Empire and Europe, will be appreciated.

(Continued from page 208).

At the moment, "A" District is something of a disappointment. Possessing 21 transmitting stations, only 6, or roughly 29 per cent. are known to be active. This contrasts poorly with "B," "C," and "D," which have 62 per cent., 75 per cent., and 80 per cent. active respectively. When one recollects that "A" was formerly the most lively district of all, comment of some sort appears to be called for. For instance, the October Meeting at G5YG was attended by nine: 4 transmitters, 3 "AA" men, and 2 B.R.S. In view of the fact that the September Meeting was attended by 27, the drop in interest seems a little hard to explain, does it not?

Some dissatisfaction has recently been expressed at the more or less impersonal nature of these notes, and while there is a certain amount of justification for the complaint, it must be appreciated that a purely personal report can no longer appear in the BULLETIN. As there does appear to be some desire for local news, however, it is proposed to meet it by a monthly letter budget. This budget will consist of the four District Officers' monthly reports *en toto*, together with whatever Scottish Headquarters may add. Each District Officer will receive a number of copies on the last day of each month, and these should be circulated in a fixed order among the members of his district. No member on the list should be permitted to

retain the budget for more than one day. Contributions also of small articles for the budget will be gratefully received at Scottish Headquarters.

Generally speaking, there has been little of note in the various Districts to comment upon this month, apart from the fact that the recently re-awakened interest in "C" District is being well maintained, and the district promises very soon to be one of the most active. G5WT resumes after some years of silence and we are glad to see him back in the fold again.

The following new crystals have been purchased during the month:—G6CM, 7,265 kc.; G2IA, 7,044 kc.; G5WT, 3,536 kc.; G5XQ, 7,162 kc.; G2TM, 7,047 kc.; G6GQ, 1,4343 kc.

The following alteration also falls to be made:—G6FN's crystal, entered in the register as 1,853 kc., should read 1,851.5 kc.

Lastly, let us wish you all a Happy Christmas and a Prosperous New Year.

### STRAY.

We are advised that W3CPX, of Pennsylvania, will be on the air from 20.30 to 21.00 G.M.T. every Sunday during the coming month. This station is owned by two Britishers, who are members of R.S.G.B., and the purpose of their transmission is to transmit a message to our own B.R.S. members. They will be pleased to receive reports from any members intercepting their transmissions.

Their full address is 715, 9th Avenue, Prospect Park, Pa., U.S.A.



# NOTES and NEWS



# BRITISH ISLES

## DISTRICT REPRESENTATIVES.

### DISTRICT 1 (North-Western).

(Cumberland, Westmorland, Cheshire, Lancashire.)

MR. S. HIGSON (G2RV), "Hebblecroft," Egremont Promenade, Wallasey, 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.)

MR. H. B. OLD (G2VQ), 3, St. Jude's Avenue, Mapperley, Nottingham.

### 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. H. A. BARTLETT (G5QA), "Donbar," Birchy Barton Road, Exeter, Devon.

### DISTRICT 7 (Southern).

(Berkshire, Hampshire, Surrey.)

MR. E. A. DEDMAN, 63a, Kingston Road, New Malden, Surrey.

### DISTRICT 8 (Eastern).

(Cambridge, Huntingdon, Norfolk, Suffolk.)

MR. S. TOWNSEND (G2CJ), 115, Earham Road, Norwich.

### DISTRICT 9 (Home Counties).

(Bedfordshire, Hertfordshire, Essex, Buckinghamshire.)

MR. F. L. STOLLERY (G5QV), "Kingsmead," Lancaster Gardens East, Clacton-on-Sea, Essex.

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

(Monmouth, Glamorgan, Breconshire, Carmarthen, Cardigan, Pembroke.)

MR. A. J. E. FORSYTH (G6FO), "St. Aubyns," Gold Tops, Newport Mon.

### DISTRICT 11 (North Wales).

(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)

[To be appointed.]

### 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. C. MORTON, (GI5MO), 27, Bristol Avenue, 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 1 (North-Western).

A very fine report comes to hand from Lancashire and shows that a number of stations are active. Manchester, particularly, seems to be a regular hive of activity, most stations using all regular bands and experimenting on 28 mc. and 56 mc. G2OI reports several skeds on 56 mc., but limited to two miles, yet. A very interesting talk on the subject of valve manufacture was given by G5YD at the November meeting in Manchester, and he illustrated his remarks with samples taken from the machines during the process of manufacture. The next talk will be given by Mr. Burbridge, the Assistant Electrical Engineer to the Eccles Council, on regulations governing the installation of power and light supply.

The individual reports are very numerous and I regret that space forbids their inclusion.

The Cheshire report is rather small this month, partly due to the C.R. being out of the county for the time being, and partly due to lack of reports, or does it mean no activity? G5CN and G2OA (who manages to get home at week-ends) have had several QSO's on 56 mc. over a distance of about two miles with a hill some three hundred

feet high in between their stations. The waves seem to get round or over this hill somehow. G5CN is good loudspeaker strength at G2OA, and an increase of ten feet in the height of G5CN's transmitter antenna and a change from Zepp. to centre-fed Hertz makes a very great improvement.

The members in the Liverpool area have decided to hold a weekly talk on the 1.7 mc. band on Sunday evenings from 6.30 to 7.30. This is in the hope that it will help to keep the active members more in touch with each other.

G2OA tells me that he had a visit from an old friend a few days ago, in the shape of OH3NQ, and that they had to converse quite a lot in the "Q" code!

I hope Lancashire will continue to send in good reports and that Cheshire will buck up their ideas and send in something for the Notes. I still hear nothing from the two northern counties!

### DISTRICT 2 (North-Eastern).

*Sheffield Area.*—At the meeting held at the Angel Hotel, Sheffield, on November 15, 11 members and 3 non-members turned up. After a good rag-chew it was decided to hold the next meeting at



G5HK's on December 20. Will all who intend visiting there please let G5HK or G5NP know at once. BRS889 is now 2AJW, and he reports that he has built a transmitter for 5 watts TPTG. (Congrats. on getting AA licence.) G2BH and G6PY have had very FB results with Westinghouse metal rectifiers type H.T.11, these being connected in series to rectify at the rate of 500 volts each at 120 ma. G2BH has fixed two up to give 1,000 volts at 120 ma. and by means of a simple switch he can change over to 500 volts at 240 ma. G6PY has four of these arranged in parallel push-pull, capable of giving 1,000 volts at 240 ma. When a load of 200 ma. is used, the rectifiers remain quite cool after a continuous run of 30 minutes. The following stations are active: G5NP, 6UF, 5LT, 6LF, 2XH, 6YC.

*Leeds Area.*—At the meeting held on October 22 at G5CX's, about a dozen turned up and it was a success. Congrats. to G6AZ of Horsforth on getting his full ticket. G2WS has had an FB QSO with VK on 14 mc., with an input of 10 watts. (Congrats. OM.) G5SZ reports that he has now got a new transmitter going on QRO with an input of 200 watts, and that the first call he made with it he got QSA4 R4 T9 from VK5PK. Europe report R8-9. He had QSO with French ship FNHW near the Spanish coast. The ship's operator was using only 1 watt. G5SZ will be very pleased to check frequency with any station who asks for same. Station description and photos for the "BULL." will be ready in due course. The next station visit in the Leeds area will be held at G5SZ. Members will be notified later. The following stations are active: On 1.7 mc. band: G5SZ, 6BX, 6MY, 5YV, 6AZ, 5ZI, 5IZ, 6KU, 6XK, 5TQ, 6NP, 2WS. G6KF.—The Bradford City Police are testing on the 1.7 mc. band with an input of 100 watts, and this causes serious QRM in the Leeds area as the spread of these transmissions is about 100 metres.

*Newcastle-on-Tyne Area.*—A meeting of the Tyne-side gang took place at G5QY's last month. The following were present: G6FG, 6QT, 6BC, 5DI, 5LH, 5QY, 2TJ, 2XT, 6AY, 2CO, 2ARQ, 2AWA, BRS720 and two non-members. It was decided to hold meetings monthly and compile a list of discussions on technical subjects (Durham members to be included). The following stations are active: G6YL, 2TJ, 2XT, 5QY, 6AY. G6BC has QSO with EAR116 on 28 mc.

### DISTRICT 3 (West Midlands).

Something happened to our notes last month. I sent them as usual and, as they did not appear in the November "BULL." have written H.Q., but have not solved the mystery yet. (These were apparently lost in the post.—Ed.)

Interest on 56 mc. seems to have increased and several stations are now building special gear and should shortly be on the air; this is due, I think, to a most interesting talk given to our local society by G6DL and G5BJ on 56 mc.

There is great activity on both the 7 and 14 mc. bands, although the latter band has been extremely disappointing during the last few weeks, a few contacts have been made in the early evening, but after 18.00 G.M.T. the band is about as lively as a dead cat.

Congratulations to G5BJ, who is now W.A.C. and W.B.E. on 7 mc. FB, OM.

Our local meetings are being very well attended and we shall be pleased to see any visitors from other districts should they happen to be in Birmingham on the second or fourth Tuesday in any month.

Now then OM's, how about sending your C.R. of D.R. a report now and then? We are really interested in what you are doing and it will give us a chance of compiling some interesting notes for this column; after all, G6DL may know what G6XJ is doing (or any other stations). Don't keep it to yourselves; as they say in the U.S.A. "TELL THE WORLD."

How about a visit to "Broadcasting House"? I have heard this suggested at MARS, but nothing appears to have been done. If you are likely to come along if the visit can be arranged, please drop me a card and I will go ahead with the arrangements.

Some very interesting information has just come to hand from G2KB. He, in conjunction with BRS77, are carrying out some very interesting experiments on ultra-short waves. They find by putting 250 volts on the grid of an A.T.40 valve and letting it radiate about 12 watts in the form of heat, they get signals on a wavelength of about 40 cms., and they are collecting a lot of interesting data on the effects of filament anode and grid voltages on the strength of oscillations and frequency. Up to now they have been working with a non-radiating circuit and the signals are only heard a few yards, but they are making a RX for this band and fixing up reflectors when they hope to get more dope and find a very large field of experiment.

Shropshire.—G2YR is unfortunately without mains at Bucknell, but hopes to be on the air soon with the aid of an anode converter. BBS46 has nothing to report.

### DISTRICT 5 (Western).

The usual monthly meeting was held at Bristol on November 3 and was well attended. A club-room for B.A.T.S. has not yet been found, as not only are there the usual difficulties in obtaining such accommodation in a large city, but there are the added difficulties of electrical interference, such as flashing signs, lifts, car QRM, etc., if the accommodation is centrally situated. The Gloucester City Club has started its new session very successfully, and about 50 attended a most interesting lecture by the Edwisan Co. at the Technical Schools. The birthday number of the Wilts letter budget was very well supported, and many interesting points were brought to light, especially regarding 56 mc. working. Oxfordshire has come to life again this month, where G5LO has been doing very well in the 1.7 mc. tests, using 3 watts to a receiving valve. My congrats to G5OG and G6QQ. The former on getting his W.B.E. and the latter on obtaining his two-letter call. If anyone (and in particular G2CJ) wishes to exchange a voltmeter for a worn-out raincoat, will he please apply to G5OG. Lastly, will everybody please accept my very best wishes for Christmas and the New Year, which I hope will bring good luck and much DX.



**DISTRICT 6 (South-Western).**

The first thing that must be mentioned is the huge success of the letter budget, which is now on its third round. The size thereof is nothing more than astounding, and every contributor has done his best to make the budget an unqualified success. All stations in this district are devoting one period of Sunday, December 11, from 18.30 to 19.00 G.M.T. listening on the 14 mc. band, and simply logging all they hear. All results will be tabulated, and it will be interesting to hear whether all stations hear the same strength of signals. It is superfluous to add that all the receivers will be the same. The aerial question has come in for a good deal of comment also, and the Windom seems to be a great favourite in this end of the country. G6RP, of Tiverton, is still listening keenly on 28 mc., but only hearing harmonics to date, and incidentally has now erected a Windom also. G6XB, of Redruth, is leaving this district, and although we are all very sorry to lose you, OM, we hope that you will one day return and help to swell the band of R.S.G.B. men in the Duchy. There is a new member at Exmouth—BRS935, R. Ward—and I can assure him his QRA will be very popular in the summer! Another point raised in the budget is the efficiency or otherwise of centre-tapping coils in CC outfits, and only two stations are not in favour of this method. There has been a good (if somewhat sudden) influx of ZL, VK and J stations in the mornings from about 07.30 to 10.30, and G5QA caught the "get up early and catch 'em" fever from G5SY. G5QS has been rebuilding, and putting up a new aerial, and 5WY has, unfortunately, been laid up. Hope you will be on the job again very soon, OM. Active stations are: G5VL, 6XB, 5WY, 5QS, 6RP, 5QA, 5YB, 2FN, 2ZP, 5SY, BRS836. G5QA is entering the 28 mc. group under G5SY, and probably also G6RP.

**DISTRICT 7 (South-Eastern).**

The district reports considerable activity, although a number are still rebuilding. The G2BI aerial, recently described in the Contact Bureau Notes, has attracted a number of adherents, although the results in most cases suggest that it has very marked directional properties. Little has been heard from Farnham lately. What's wrong, OM's? The C.R.'s report that a number of stations have dropped their monthly reports, although they are known to be quite active. This is just the reason that causes the old question of dropping district notes to arise, and the remedy should be obvious to you all, and I cannot be expected to remind you of it in these notes every month. If you don't contribute to the letter budget, please let your C.R. have a card by the 15th of every month. Even if you only write "YL's Signed G2???" it is something for the C.R. to work on when preparing his monthly report to the D.R.

The monthly meeting for January will be held on January 1, 1933, at G2DC, "Burleigh," Manor Road, Farnborough Park, Hants, and we hope to break our attendance records this meeting, as G2DC promises us a real New Year's celebration. See you down there. 14.30 G.M.T.

The following report active this month, either direct, or *via* the letter budget: G2DC, G2DZ,

G2GG, G2BI, G2PF, G2MR, G2NH, G2YD, G5MA, G5RS, G5JZ, G5OU, G6NK, G6VP, G6BU, G6GZ, G6GS, G6NA, G2BQX, BRS911.

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

The meeting arranged at Newport for Thursday, November 10, was very poorly attended, four members only being present: G2PA, G5BI, G5WU and G6FO.

2ANN is now G5BI, and will have commenced operations at Tredegar by the time this appears. BRS827, of Newport, has now become 2BVB, and is working with a TPTG lay-out, while I am pleased to welcome as new members in the District Mr. H. W. Young (BRS996), of Milford Haven, and Dr. H. B. Howell (BRS1007), of Tenby.

Though comparatively few of our members know Mr. W. C. Hinley, of Tredegar, G5WH, personally, I am sure that they will all wish to express their sympathy on the tragic fate which has befallen him. He has completely lost his sight as the result of an operation.

The recent 1.75 mc. tests were well supported in the District, G2PA, G5WU and G6FO taking part on the transmitting side, while 2ANN, 2BRA, BRS727 and BRS996 turned in very fine RX logs.

With regard to other activities, G5FI is adding a P.A. stage to his 7 mc. set, while G5WU has been successful in overcoming his difficulties with the 460V D.C. supply mains, which he is so fortunate to possess. 2BRA has been assisting with the Band-Occupancy Checks, thereby performing valuable work which is a credit to the District. I have recently increased my H.T. supply to 500V., and G6FO will be on the air shortly with a new three-stage transmitter for 7 and 14 mc. working, with an input to the P.A. of between 30 and 40 watts.

2AWN, of Swansea, has hopes of forming a Short-Wave Club in that area, and details are awaited with interest, as anything of that nature will do a great deal to widen the appreciation of amateur radio.

**DISTRICT 14 (London, East).**

At our last meeting, held at the QRA of G6LL, Clapton, the District Film taken by G6LL at the various Field Days, Conventionettes, etc., was shown, and enthusiastically received by all those present. G6LL is to be congratulated on his efforts in piecing together the various shots and for adding the captions; much amusement was given as the various "star" turns were thrown on the screen. Another week-end in "the field" took place on Saturday-Sunday, November 26-27, at Hullgreen Farm, Little Laver, near Harlow, Essex. Our next Meeting is to be held at Chingford on Tuesday, January 3. We were very pleased to note that G2ZN has decided to become active again.

On November 26 and 27, District 14 held another very successful "field day." Benefiting by previous experience, we arranged accommodation well in advance by accepting G2YI's kind offer of the use of Hullgreen Farm at Little Laver in a delightful part of Essex. Four p.m. saw us gathered together there, converting the Brewhouse into a radio station and making the trees around look like lattice masts.



The District's portable transmitter, using c.c. on 80 and 160 was coaxed into life again by its designer, G6FY, whilst G6CW struggled to make his push-pull 20 and 40 metre gear (which he had been up all night to build) behave like a transmitter.

G6CW, although a visitor to our district, turned up completely "self-contained," from a gear point of view, but it was not until Sunday that the signals realised that they were meant to leave their comfortable home! He used a Windom aerial, erected at 22.30 in complete darkness.

The receiving side was in the hands of G5GZ, who was responsible for the "District's own Four," complete with instruction booklet, a set known lovingly as the "Frying Pan." Fortunately, however, the others had the foresight to bring another receiver (thanks to G6FS and G6SG), so that, in a short time we began to let the world know that portable G6UT was again alive.

One or two of the more lazy ones snatched an hour or two of sleep in the farm-house, but the majority stuck to their sets or the fireplace throughout the night, as is their usual custom on these occasions.

There is no doubt that these week-ends prove amazingly good fun, and we, as a District, strongly recommend others to try them. We have now had about half-a-dozen and will certainly have more.

We were pleased to welcome G2KT, G6BS and G5SA, who visited us on Sunday, the latter helping us out with fresh accumulators for our M.L. generators, which furnished us with all the H.T. we required. (Thanks, O.M.)

Novelty to the proceedings was added by G2LZ, who, during a QSO on Sunday evening, recorded us all "saying our little piece" into the mike. This he played back immediately with excellent results. A further length of "ciné" film was taken by G6LL to add to the present film he has built up, but we are not sure whether he means to synchronise it with G2LZ's record!

G6UT worked as hard as ever on our behalf to arrange the necessities of life, and we are all really grateful for such a conscientious D.R. Our thanks must now be recorded to Mr. and Mrs. Furze at the farm, for their kindness and co-operation, enabling us to have such unrestricted enjoyment.

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

The area meeting held during November was the best ever held in the district. A total of twenty-five members being present.

G5CV gave us an interesting demonstration of television, and I should say found it difficult to cater for such a vast gathering.

The new letter budget has been got under way and should prove more interesting than it has done in the past. I look to you all to support both the sub-D.R.s by sending your contributions along promptly. For further particulars refer to last month's BULLETIN.

The December area meeting will have been held by the time these notes are in print, so am not recording the date, but would like to mention that G6VP has kindly arranged to act as host at his QRA.

There is very little in the letters this month for

the budget that one can comment upon, so will only give the calls of those reporting. They are as follows:—G5PQ, G6RS, G6VP, 2BXM, and BRS642.

#### DISTRICT 16 (South-Eastern.)

The 1.7 mc. tests were well supported in Kent, and we had six entrants, all of whom, I believe, did good work. I believe Kent is one of the most active counties on 1.7 mc., and very good work is done each Sunday with the opposite number, Essex, where activity is also very strong, and some very excellent 'phones indeed can be heard. G6PA is a most useful help in checking crystals, and serious endeavour has been made with a great deal of success to so arrange things that heterodynes are no longer as common between Kent and Essex stations as they used to be.

G5JZ, CR for Sussex, has taken up television, which seems to be coming more into prominence just now, especially after the excellent demonstration given at the I.E.E. in the last lecture of the Society.

#### DISTRICT 17 (Mid.-Eastern).

*East Riding.*—G6OY is making rapid inroads into the DX world, having recently worked with Senegal.

G2QO has raised his power and is testing telephony on 7 mc.

The 10-metre group—G5FV, G6OY, BRS859, and 738 are active.

G5FV active as usual.

Active on the air are: 2KM, 2QO, 5KD, 6OY, 6OS, 6OO, 6UJ, 6WP and 2FS.

*Lincolnshire.*—We welcome to the post of C.R. G5GS, one of the oldest and best-known calls in the district. Please report to him by the 20th of each month, and he will forward a synopsis of reports to me. G5CY, G6HK, G5GS, G5LQ, G6LI are all to be heard on the air most days. G6HK on 1.75 mc. between 22.00 and 23.30.

*General Notes.*—The D.R. (G6LI) is now residing at his home address, and no further correspondence should be sent to Nottingham. He will be absent from the country, it is anticipated, from December 15 until January 18, 1933, approximately.

Good DX is showing up on 7 mc. now, but 28 mc. and 14 mc. have packed up for the season.

#### SCOTLAND

The October-November period has been chiefly notable for the number of members who have graduated to full and "A.A." licence facilities. To all may I extend my best wishes. The new radiating stations are as under:—

(G6RV), Mr. W. Stirling, Mossgrove, Bridge of Allan; (G6QP), Mr. J. Oxley, 282, Easter Road, Leith; (G6RZ), Mr. G. Spence, 107, Dumbiedykes Road, Edinburgh; (G6TF), Mr. Wm. Davidson, 12a, Erskine Street, Alloa; (G2TM), Mr. Thos. W. M. Millar, 16, Glasgow Road, Perth.

Further, three B.R.S. members have passed their Morse tests and await issue of their calls.

Four new "AA" permits have been issued to B.R.S. members as follows:—

(BRS820), A. M. Ruthven, Maitland Bank, Larkhall, Lanarkshire, now 2AQF; (BRS668), H. E. M. Lawson, 77, Kennington Avenue, Loan-



head, Midlothian, now 2APL; (BRS963), J. Inglis, c/o Davie, 51, Marchmont Road, Edinburgh 10, now 2AWJ; (BRS936), G. McDonald, Oakroyd, Woodburn Avenue, Aberdeen, now 2BDF.

Eight full licences and four "AA" tickets in a month is certainly fast moving.

I am now at liberty to publish the QRA of G6CM, who has joined the Society. The station is owned by Mr. Jas. McCammont, 23, Brandon Place, Bothwellhaugh, Lanarkshire, and is at present working on a frequency of 7,265 kc.

While the advent of all these new stations is highly satisfactory, their promotion leaves a serious gap in the "AA" list, and I would urge upon the various District Officers to do all they can to promote the "AA" status among their B.R.S. members.

While on the subject of B.R.S., I would particularly urge upon "B" District especially, the necessity of acquiring more B.R.S. members. The District is well forward on the transmitting side, but due to "promotion," the "reserve strength" has dropped to one. The other districts are not so badly off in this direction, but the District Officers will oblige by keeping their eyes open for possible recruits.

Our entry for the 1.7 mc. tests was a fairly representative one, and consisted of G6IZ (the trophy holder), G6FN, G5ZX, G6ND and G5YG. Unfortunately G5YG found it impossible to resume during the second week-end, and with G5ZX on "short time," it was left to FN, IZ and ND to uphold the Scottish prestige. This they did right nobly and finished with the following magnificent totals:—"FN," 177 pts.; "ND," 167 pts.; and "IZ," 166 pts. Whether these figures constitute a win, I cannot at the moment say, but they deserve to, and the operators have earned the thanks of the rest of the Scottish membership.

*Continued on page 203.*

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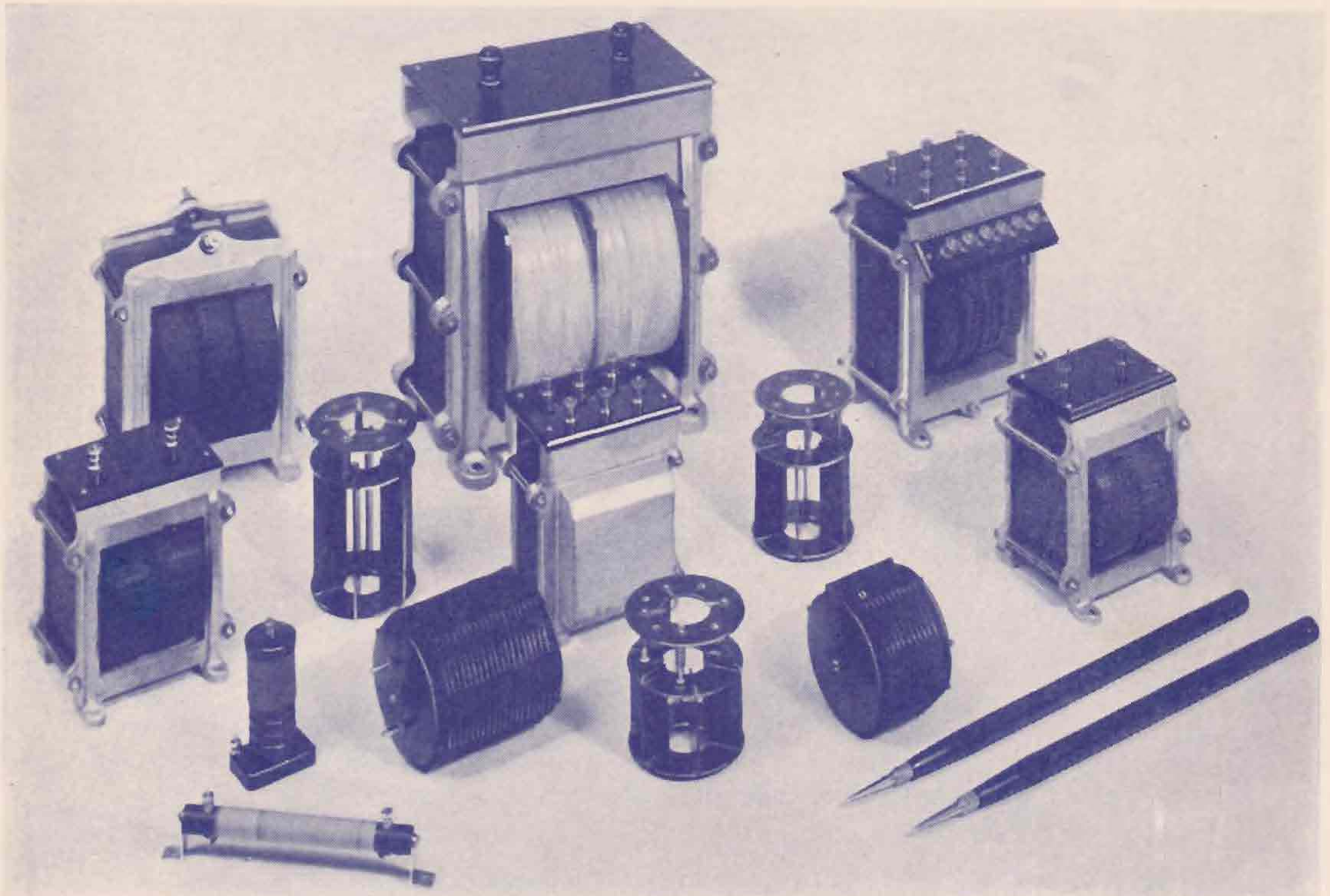
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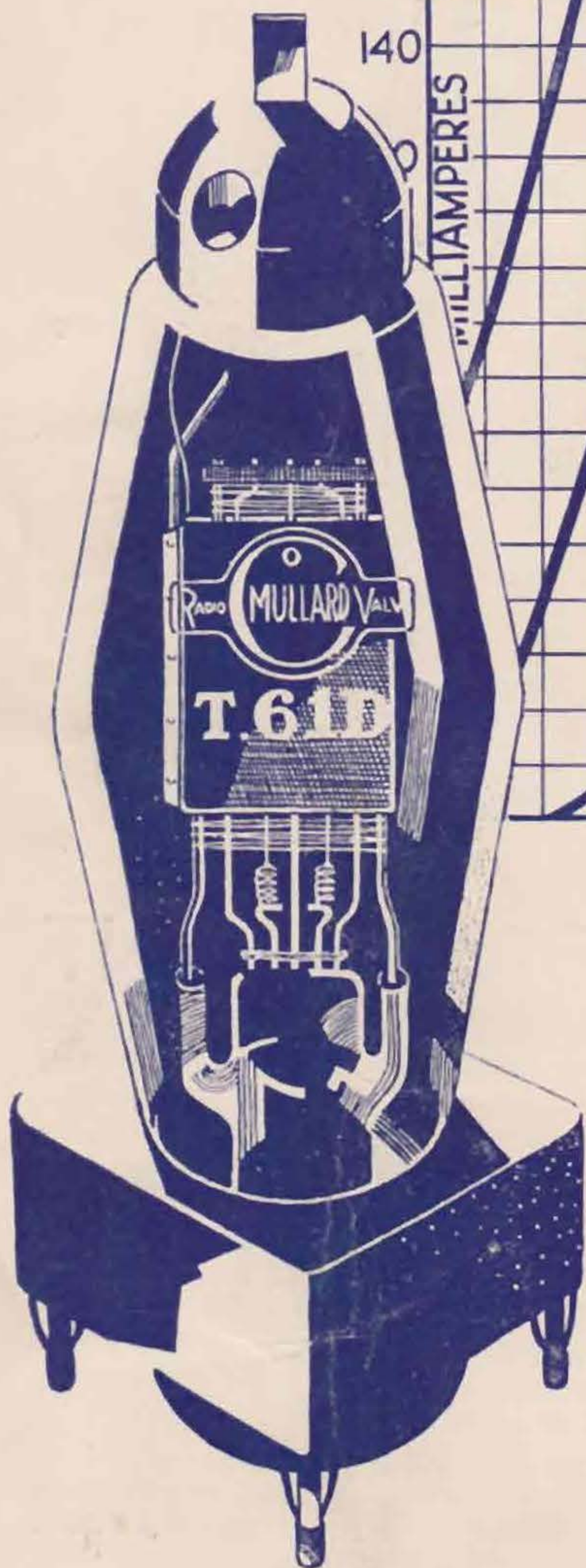
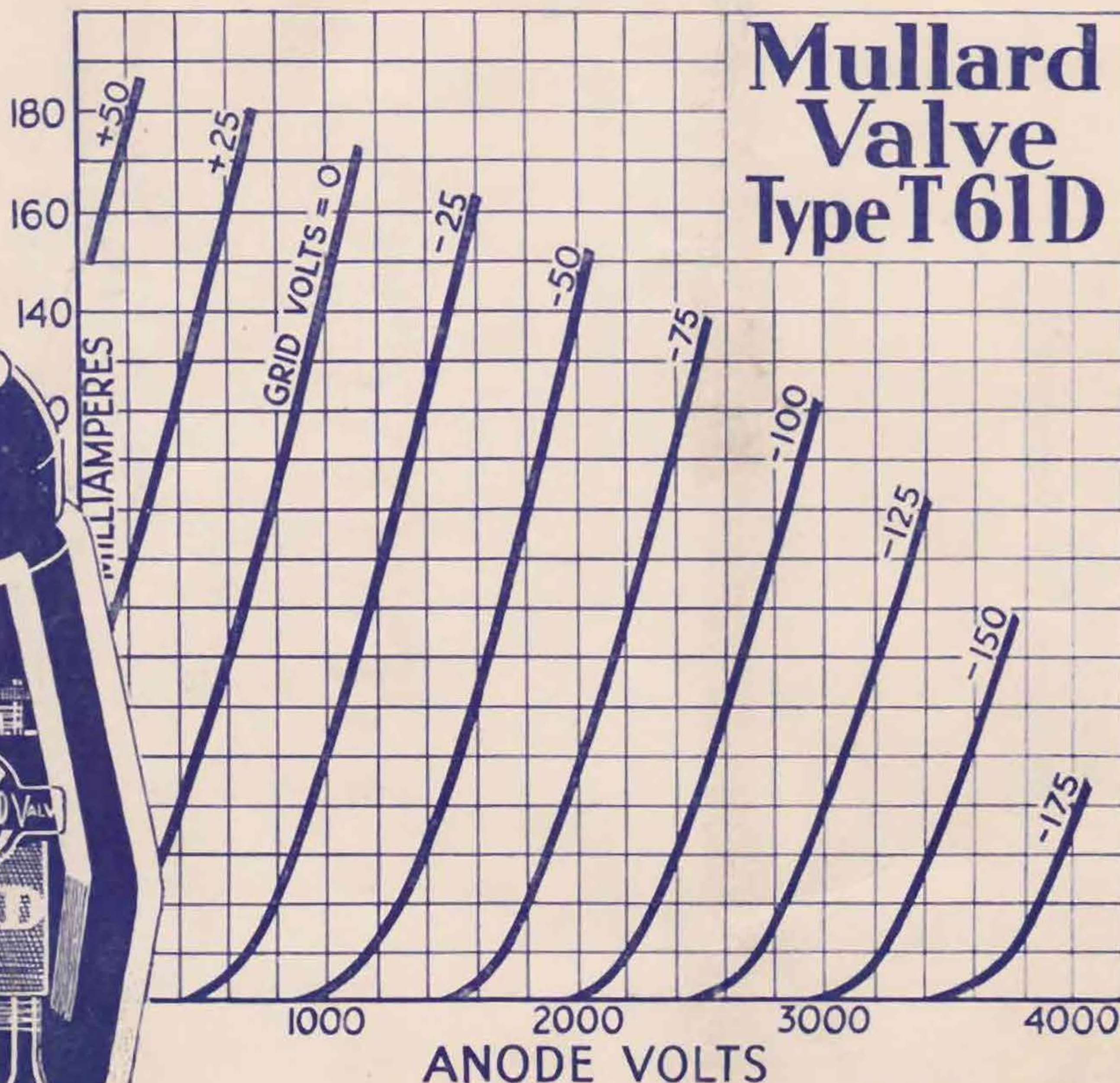
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The Mullard T.61D valve makes available for the amateur a transmitting valve **with standard transmitting base**, having a power rating 50% greater than any previously available type.

This is made possible by a special double-ended construction incorporating a **molybdenum** anode.

The large total emission and high mutual conductance of the T.61D ensure high electrical efficiency, even when the valve is operated with comparatively low anode voltages, while the wide spacing of anode and grid connections results in low inter-electrode capacity and small di-electric loss. The valve is thus particularly suitable for working on very short wave lengths.

### OPERATING CONDITIONS.

Filament Voltage - 6.0V  
 Filament Current - 4.25A  
 Max Anode Voltage - { 2,000V D.C.  
 1,500V R.M.S.

### Recommended Power Input:-

at 20 metres—not greater than 100W at 1200V  
 at 10 metres—not greater than 60W at 800V

### CHARACTERISTICS.

Anode Impedance - 4,700 ohms  
 Amplification Factor - 21  
 Mutual Conductance - 4.5 mA/V

Price £6 : 10 : 0

# Mullard

THE MASTER VALVE

## MADE IN ENGLAND

Advt. The Mullard Wireless Service Co., Ltd., Mullard House, Charing Cross Road, London, W.C.2

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