

# THE T. & R. BULLETIN

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## HULLO O.M. !

OUR Eleventh Annual Convention is almost upon us—will you be one of the many hundreds who will enter into the spirit of good comradeship which pervades the atmosphere, however thick it may be, at the various functions which have been arranged ?

Our Stand at Olympia, too, will again be the Mecca of Radio Amateurs, new gear will be displayed and every opportunity provided to show the world and his wife exactly what Amateur Radio means to 50,000 men and women in all lands.

Since last August many hundreds of new members have joined us, some as a result of the publicity given to our work on the Stand last year, many others through the medium of the Guide. It is to them in particular that we address a special welcome to join in the pleasures of the coming Convention.

Our visits to the Provinces have convinced us that "ham spirit" is to-day as firmly established as ever before. Convention provides the opportunity for us all to meet as a body to exchange greetings with old friends and to change our mental conception of mere call signs into human flesh and blood.

Year after year, at the close of Convention, members tell us that they would not have missed the "show" for pounds. We who have the task of organising these events are not good judges of its success, but we are confident that those who attend this year will return to their shacks feeling that the "ham game" is well worth all the disappointments and financial embarrassments it leaves in its trail !

The programme has already been published, most of the parties have been filled, but there is still time to reserve accommodation at the dinner, and a corner seat at the I.E.E. meetings, providing you get there early enough !

The difficulties of identification increase with each Convention ; we suggest that a liberal display of call signs will help considerably in breaking the ice.

Convention is essentially a time set apart in the year for all members to meet on common ground—a love of Amateur Radio. We hope that all who attend will do so in that spirit.



# THE 1936 OLYMPIA TRANSMITTER

## A Modern 25-100 watt Telegraphy or Telephony Transmitter

BY G. McLEAN WILFORD (G2WD) \*

### Foreword.

IN order to prove the truth of the axiom, mentioned in a recent Editorial, that "one good turn deserves another," the writer has endeavoured to place before members a description of a modern transmitter constructed throughout from British-made components and valves.

Valves have always presented a difficulty to the British designer of amateur gear, especially when resort has been required to the class of valve known as the Twin Triode. Until recently American types such as the 53 or 6A6 have been the only ones generally available, but we are happy to record that the *Marconi Valve Co.* have now produced a British equivalent which has been listed as the B30. This is an indirectly-heated type with 13-volt .3 amp heater.

An innovation included in the design is a modulation indicator, which may also be used as a monitor.

The foresight shown by *Messrs. Strattons* in producing a 4-tier metal rack has enabled the designer to bring this modern method of lay-out to the notice of readers.

### Aerial Coupling.

The Collins or universal coupler has been selected for this transmitter, but it is appreciated that certain constructors may prefer a different arrangement of aerial coupling. It will be seen from the photographs that the coupler is mounted at the top of the rack but its actual position is unimportant. Many amateurs using this system mount the coupler on the wall and run flex leads to the P.A. tank coil.

While the condensers specified for this unit may appear to have a large factor of safety, it should be remembered that in some cases the impedance matching is such that very heavy R.F. voltages are developed across the plates. To obviate any possible chance of "flash over" *Cyldon* transmitting types have been used, these are rated at 1500 v A.C.

The network inductances used are manufactured by *Q.C.C.*

Reference to Fig. 1 shows the arrangement of the components used, whilst the lower diagram illustrates the actual circuit. If inductive coupling is used between the P.A. plate tank coil and the coupler, the two .006  $\mu$ F condensers may be omitted, but if direct tapplings are used they must be included.

No information is given herein regarding the adjustment of the coupler, because this has been given in detail in past issues of the *BULLETIN* and also in the *Guide*.

### General Design.

The transmitter has been constructed in three sections, namely:—

- Oscillator and doubler unit;
  - Power amplifier unit;
  - Modulator unit;
- but before proceeding with a description of each

section, it is desirable to state that with one exception, viz., unity coupling between the first doubler plate and second doubler grid, the practice follows along precisely similar lines to that which was described in the author's series of articles entitled "Transmitter Design," which appeared in the April, May and June, 1936, issues of this Journal.

### Construction.

The *Eddystone* rack and panel assembly is delivered in sections, therefore, as a preliminary, the complete rack must be assembled. The location of all components should be decided on, and a scriber used to mark out the position of each chassis in relation to the back supports and front panel. This is necessary so that when the three units are completed the constructor will know where each chassis fits, as the two middle ones are adjustable. The rack can then be dismantled.

Components may then be mounted and each unit wired. The panel should then be laid face down and the holes drilled for the meters, condenser shafts, jacks, etc.

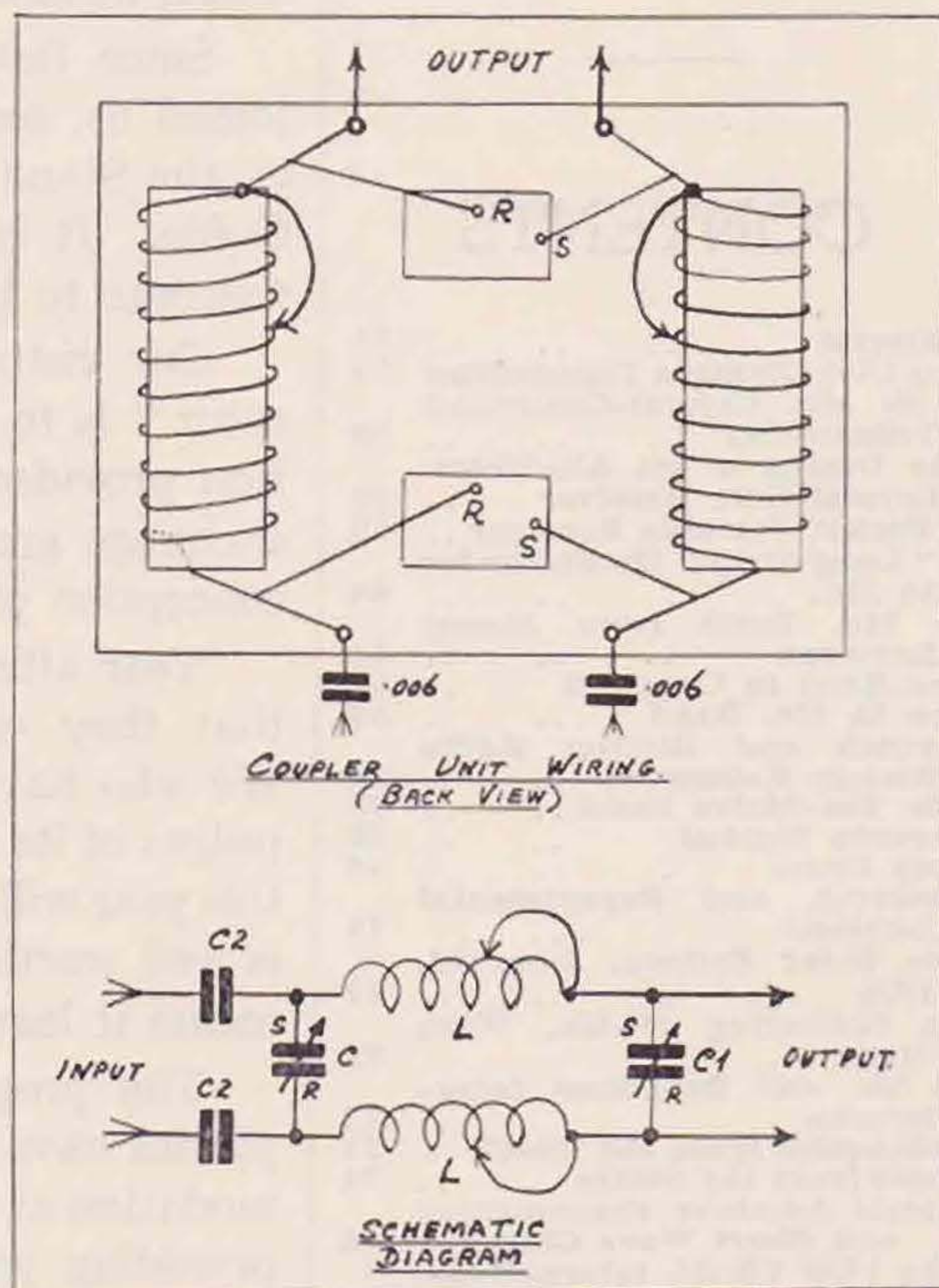


Fig. 1.  
Collins Aerial Coupling Unit. Rear view of wiring and schematic diagram.

- |     |   |
|-----|---|
| C.  | .00035 $\mu$ F, <i>Cyldon</i> .   |
| C1. | .0005 $\mu$ F, <i>Cyldon</i> .  |
| C2. | .006 $\mu$ F, T.C.C., 1000 v. working.  |
| L.  | 30 turns 14 S.W.G., T.C. wire spaced slightly over wire diameter and wound on Ribbed ebonite former 2½ in. diameter, Q.C.C. |



Meters have been extensively used in the transmitter described, but as will be seen from the wiring diagram, a jack and plug system can be used. By adopting this method of switching, only one milliammeter for plate and grid circuits is essential. The meters used by the author are made by *Howard Butler*, and can be obtained from *Premier Supply Co.*

#### *The Oscillator Doubler Unit.*

As mentioned earlier Marconi B30 valves have been selected for certain stages; these are used in the oscillator doubler unit, and have been found to be extremely efficient.

The new *Eddystone* microdensers which have been chosen for the tuned circuits are mounted on insulated mounting brackets made by the same concern.

The valve holders are *Eddystone* DL9 7-pin types. A holder of the same type but with only six pins in use is employed for the coil which carries the unity coupled plate-grid coil. This type of coupling was chosen because it dispenses with an extra condenser without losing anything in efficiency over normal link coupling.

The "Jones" exciter circuit has been selected, the merits of which have been previously discussed in this Journal. The crystal holder is one made by *A. C. Webb*, whilst *Premier* resistances and *T.C.C.* fixed condensers have been employed throughout. The 4 and 6-pin coil formers and sockets for the crystal and second doubler stage are of *B.T.S.* manufacture.

The second doubler functions as a push-push stage, i.e., grids in push-pull and plates in parallel. As much as possible of the R.F. wiring has been kept above the chassis; where wires carrying R.F. or H.T. pass through to the underside a small midget insulator is used. Glazite wire, covered with systoflex as an additional precaution, has been used.

Each coil holder has its own link coil mounted on a Type 1046 *Eddystone* terminal block, whilst the middle link is mounted on a Type 1029 pillar. The latter arrangement is necessary as the 6-pin coil between the first and second doubler is centre-tapped and the link must be placed in the centre of the coil. The link coils between all stages consist of one turn No. 18 enamelled wire.

From each terminal block a twisted pair runs to two terminals on a *Bulgin* Type S165, 5-way double-pole switch fitted with an S150 driving unit, the two common terminations going again via a twisted pair to a terminal block on the P.A. unit similar to that used in the C.O. 1st F.D. and 2nd F.D. stages. This has a single turn link for the grid link coil of the P.A. unit. This arrangement provides a very flexible method of band changing as only two coils (the P.A. plate and grid) have to be changed when altering frequency.

It will be remembered that the Jones exciter gives crystal fundamental output from the first triode and an harmonic output from the second. Using this unit alone an input of 10 watts on 3 wavebands is easily obtained, consequently we have available a useful low-power transmitter for local work.

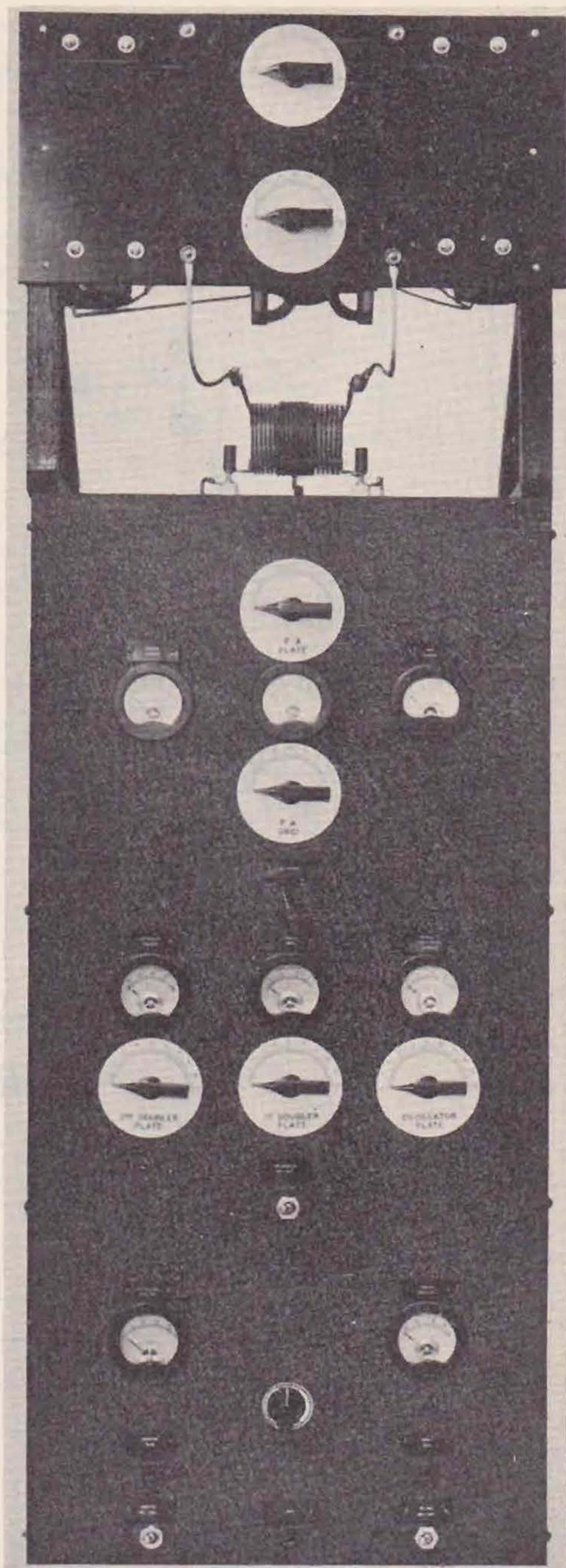
The following combinations present themselves:—

1.7 Mc. C.O.—3.5 Mc. F.D.—7 Mc. F.D.

3.5 Mc. C.O.—7 Mc. F.D.—14 Mc. F.D.

7 Mc. C.O.—14 Mc. F.D.—28 Mc. F.D.

*Mention the "Bulletin" when ordering Components*



*Front view of the Transmitter with Aerial Coupling Unit in position. This unit is mounted on a frame and bolted to the top of the steel rack*

A single-pole switch is fitted in the cathode lead of the second doubler so that when this stage is not in use the whole output of the second doubler



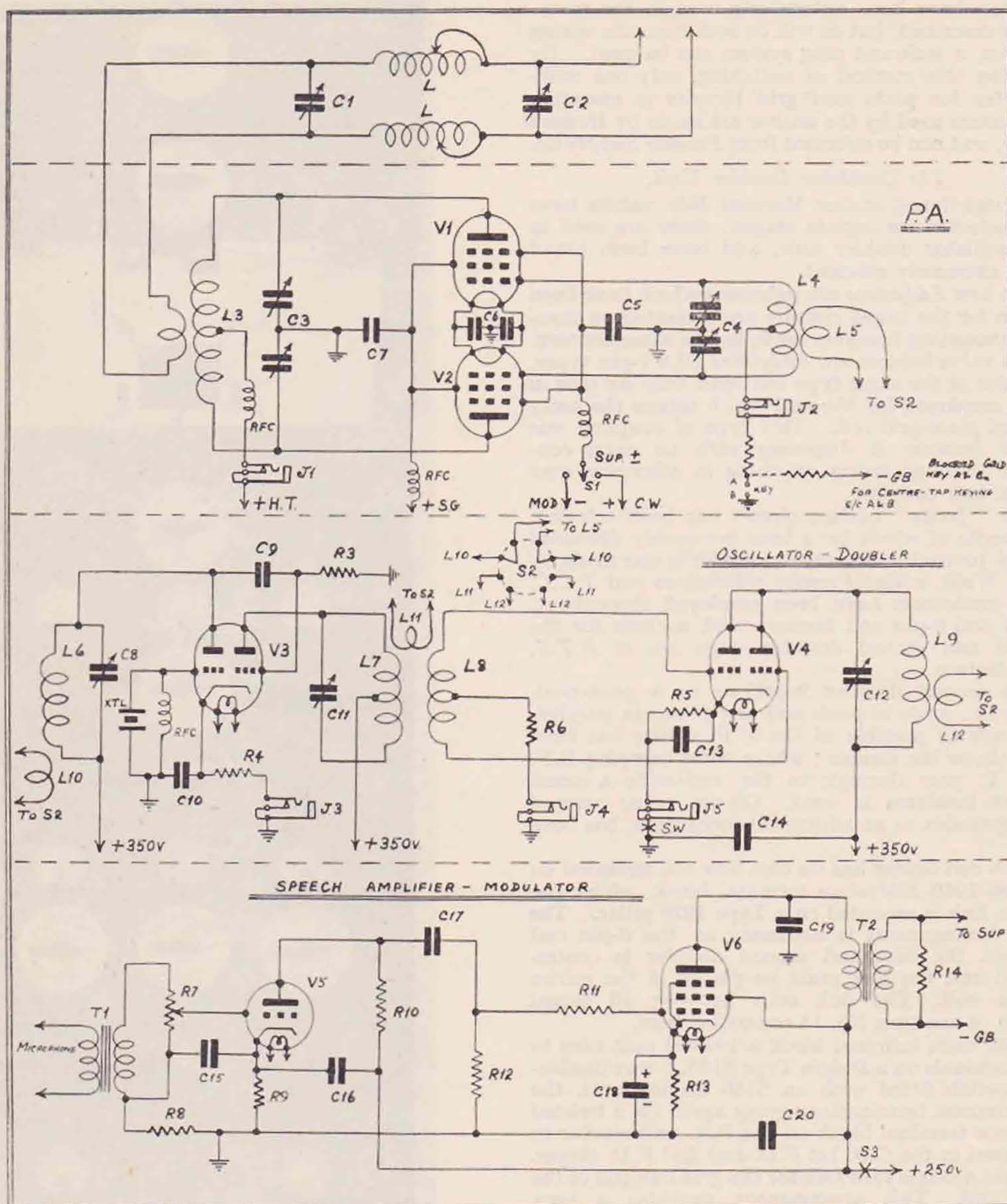


Fig. 2.  
Circuit diagram of 1936 Olympia Transmitter.

- C1. 350  $\mu$ F, Cyldon.  
 C2. 500  $\mu$ F, Cyldon.  
 C3. 100-100  $\mu$ F, Cyldon.  
 C4. 140-140  $\mu$ F, type E, Polar.  
 C5. .002  $\mu$ F, 1000 v. working, T.C.C.  
 C6, 10, 14. .01  $\mu$ F, mica, T.C.C.  
 C7. .001  $\mu$ F, 1000 v. working, T.C.C.  
 C8, 11. 100  $\mu$ F, Eddystone.  
 C9. 100  $\mu$ F, Mica, T.C.C.  
 C12. 50  $\mu$ F, Eddystone.  
 C13. .01  $\mu$ F, Tubular T.C.C.  
 C15. .1  $\mu$ F, Tubular T.C.C.  
 C16. 4  $\mu$ F, 300 v. working, T.C.C.  
 C17. .1  $\mu$ F, mica, T.C.C.  
 C18. 15  $\mu$ F, Elect. 100 v. working, T.C.C.  
 C19. 300  $\mu$ F, mica, T.C.C.  
 C20. 4  $\mu$ F, 300 v. working, T.C.C.

- RFC. Sectional chokes, Eddystone.  
 S1. S.P.D.T., Claude Lyons.  
 S2. S165, Bulgin.  
 S3. S.P.S.T., Claude Lyons.  
 SW. S.P.S.T., Claude Lyons.  
 V1, V2. RFP15 or 60, 362.  
 V3, V4. B30, Marconi.  
 V5. ACHL4, 362.  
 V6. ACME4C, 362.  
 T1. Mike Transformer, type RD1143, Ferranti.  
 T2. Modulator Transformer, type OPM1, Ferranti.  
 L. Coupler Inductances, Q.C.C.  
 L3 to L12. See coil table.  
 J1 to J5. Single closed circuit, midget, Igranic.  
 R2. 25,000 ohms, variable, 25 watts, Varley.  
 R3. 50,000 ohms, 2 watts, Premier.



R4, 5	400 ohms, 10 watts, Premier.
R6.	10,000 ohms, 20 watts, Premier.
R7.	.5 meg. potentiometer, Reliance.
R8.	100,000 ohms, 1 watt, Premier.
R9.	5,000 ohms, 1 watt, Premier.
R10.	50,000 ohms, 1 watt, Premier.
R11.	250,000 ohms, 1 watt, Premier.
R12.	500,000 ohms, 1 watt, Premier.
R13.	400 ohms, 4 watts, Premier.
R14.	10,000 ohms, 1 watt, Premier.

## Other Components.

## Valveholders.

V1, 2, 5.	5 pin, type 954, Eddystone.
V3, 4, 6.	7 pin, type 985, Eddystone.
Coil holders for oscillator and 2nd doubler, 4 pin B.T.S.	
Coil formers for oscillator doubler unit, B.T.S.	
Crystal holder, G6WQ.	
Plate tank Coils for P.A., G6RV.	
Meters, Premier.	

can be obtained for driving the P.A. by cutting off the H.T. supply from the push-push Doubler valve. When using either crystal fundamental or 2nd harmonic, H.T. is left on both halves of the 1st valve, as there does not appear to be any ill effect on the fundamental output by so doing. An added refinement would be to fit another single pole switch to cut off the H.T. from the 2nd half of the 1st valve.

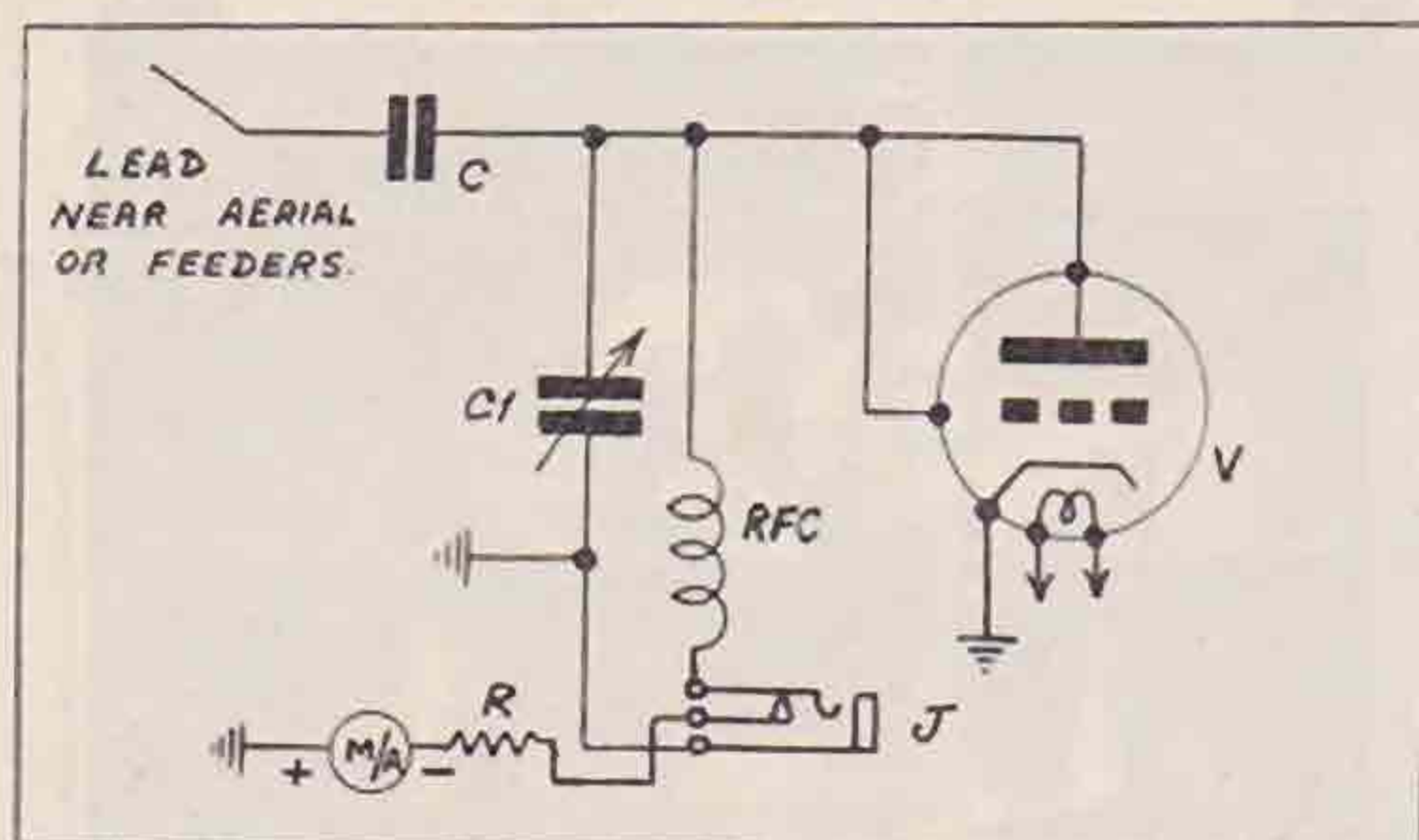


Fig. 3.

## Modulation Monitor.

M.	0 to 1 Milliammeter, Premier.
R.	10,000 ohms, 1 watts, Premier.
C.	.00005 $\mu$ F, T.C.C.
C1.	100 $\mu$ F, Eddystone.
RFC.	Choke, Eddystone.
V.	ACHL4 diode connected 362.

## P.A. Unit.

This unit is "split-stator condenser" tuned in both grid and plate circuits, the grid condenser being a *Polar* type E and the plate condenser a *Cyldon* type SSTR1, 100  $\mu$ F per section.

The P.A. circuit is perfectly conventional for either two 362 RFP15 or RFP60 valves, and is in fact the circuit shown in Part III of Transmitter Design for two R.F. pentodes in push-pull.

The R.F. plate circuit is isolated from the grid circuit by an aluminium plate on which is mounted the P.A. plate tank condenser and an *Eddystone* type 1022 R.F. choke. The P.A. plate coil is mounted right on the top and its H.T. feed is brought up through the steel chassis through a midget insulator. All filament and H.T. leads terminate at 6 way *Peak* terminal blocks. The main H.T. lead, which may, in some cases, be at 1,000 volts pressure, is brought to a midget insulator which can be seen on the right side of the P.A. chassis. The other midget insulator is for the suppressor grid lead to the modulator unit. On the front of the P.A. section is fitted a S.P.D.T. change-over switch for making the suppressor grids either positive or negative according to whether the transmitter is being used on C.W. or telephony. If two bias batteries are used, the only operation necessary when changing from C.W. to 'phone or vice versa,

is to switch on the modulator supply and move the S.P.D.T. switch to its correct position. The method of tuning for suppressor grid modulation is fully described in Part III of Transmitter Design.

## Modulator Unit.

The speech amplifier and modulator unit is conventional in every way except that an extra valve-holder is provided in the modulator stage, the use of which will be described later.

Modulation transformers are *Ferranti* type RD1143 for the microphone and type OPM1 for the modulator. The 500,000 ohm gain control is a *Reliance* product. The arrangement of this unit as shown gives ample output to fully modulate either 2 RFP15's at full load, or 2 RFP60's if run at reduced voltage, say 600 volts. If the full rated voltages, i.e., 1,000 plate and 500 on the screen, are applied to RFP60's an extra valve should be used in the spare socket which is in parallel with the one illustrated. This will give approximately  $1\frac{1}{2}$  times greater output to fully modulate a pair of these valves. Along the back of the modulating unit chassis are three 6-way *Peak* terminal blocks to which the cabled wiring from the two upper units and the modulator's own power supplies are attached. From the appropriate terminal all power, grid bias, and filament supplies are attached.

It will be noticed that several nickel-plated terminals are shown in the rear view photograph. These are separate earth terminals for each portion of the transmitter and are wired to a common earth. This method will completely obviate any chance of circulating currents between stages.

## Keying.

The centre jack at the bottom of the modulation panel is for the key plug. As keying is effected in the P.A. stage centre tap, leads are taken to the jack from the filament transformer centre point and earth. The usual type of "click filter" is used. When operating with telephony the plug may be withdrawn or the key contacts shorted,

thus keeping power on the P.A. continuously.

Blocked grid keying has also been found satisfactory. Referring to Fig. 2 the resistance between GB—and the point A is 50,000 ohms 1 watt, whilst the resistance from J2 is 25,000 ohms variable (R2).

The bias may be supplied

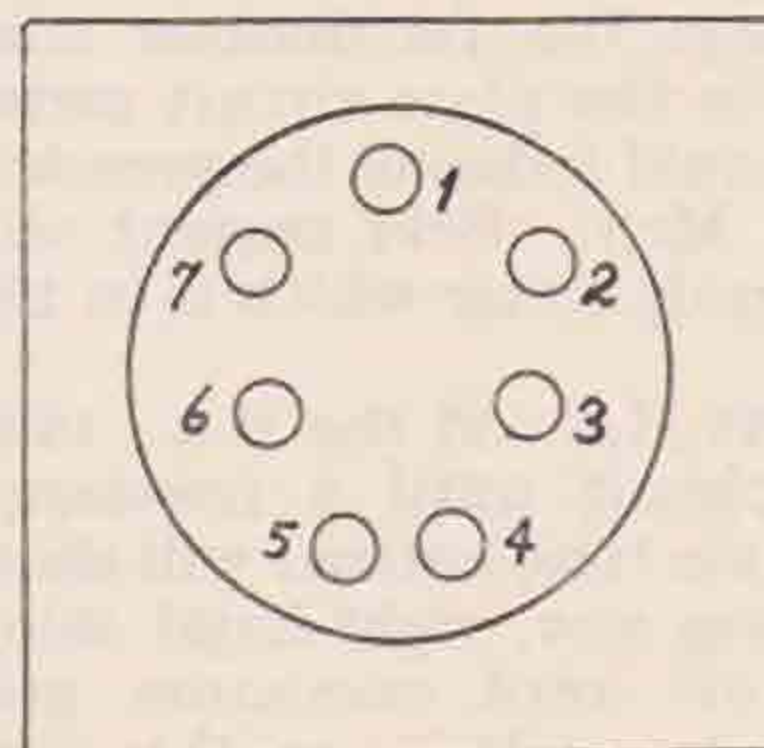


Fig. 4.

B30 valve pins looking at bottom of socket.	
1.	Grid A
2.	Grid B
3.	Anode B,
4.	Heater Cathode.
5.	
6.	Cathode.
7.	Anode A



by a power pack or battery and with 650 volts H.T. 120 volts negative will quite effectively block the grids of 2 RFP 60's. The actual value is a matter for individual experiment, but values between 100 and 200 volts will be necessary for H.T. voltages of 500 to 1,000 volts.

The transmitter may also be keyed in the cathodes of V3 or V4 in jacks J3 and J5.

#### *Modulation Meter and Monitor.*

A modulation meter has been incorporated to enable the operator to check his telephony transmissions. The circuit is given in Fig. 3.

The valve used for this device is located in the left-hand side of the modulation unit, and with this is associated a 0-1 milliammeter which can be seen as the left-hand meter on the modulation panel.

By inserting headphones into the appropriate jack, C.W. transmissions can also be monitored.

The circuit comprises a triode valve with plate and grid strapped to give a diode effect, and thereby linear rectification. The meter will indicate any carrier shift or over-modulation that occurs, and will give a very good indication of relative P.A. stage output. As an example with 650 volts H.T. on the P.A., the meter read .58 mA. on 14 Mc. C.W. and .36 on 14 Mc. phone. Of course, these figures will vary for different positions of the pick-up aerial.

The monitor is adjusted by means of the 100  $\mu$ F condenser until a deflection is obtained in the meter; this should remain at its fixed value, whilst modulating. A movement of the needle indicates over-modulation.

The small aerial for this device runs up the back leg of the framework and is shown in the photographs mounted on two midget insulators. The condenser is controlled from the side purposely because once set it need never be varied. For C.W. a jack and headphones will give audible indication of "key clicks," etc.

#### *Operation.*

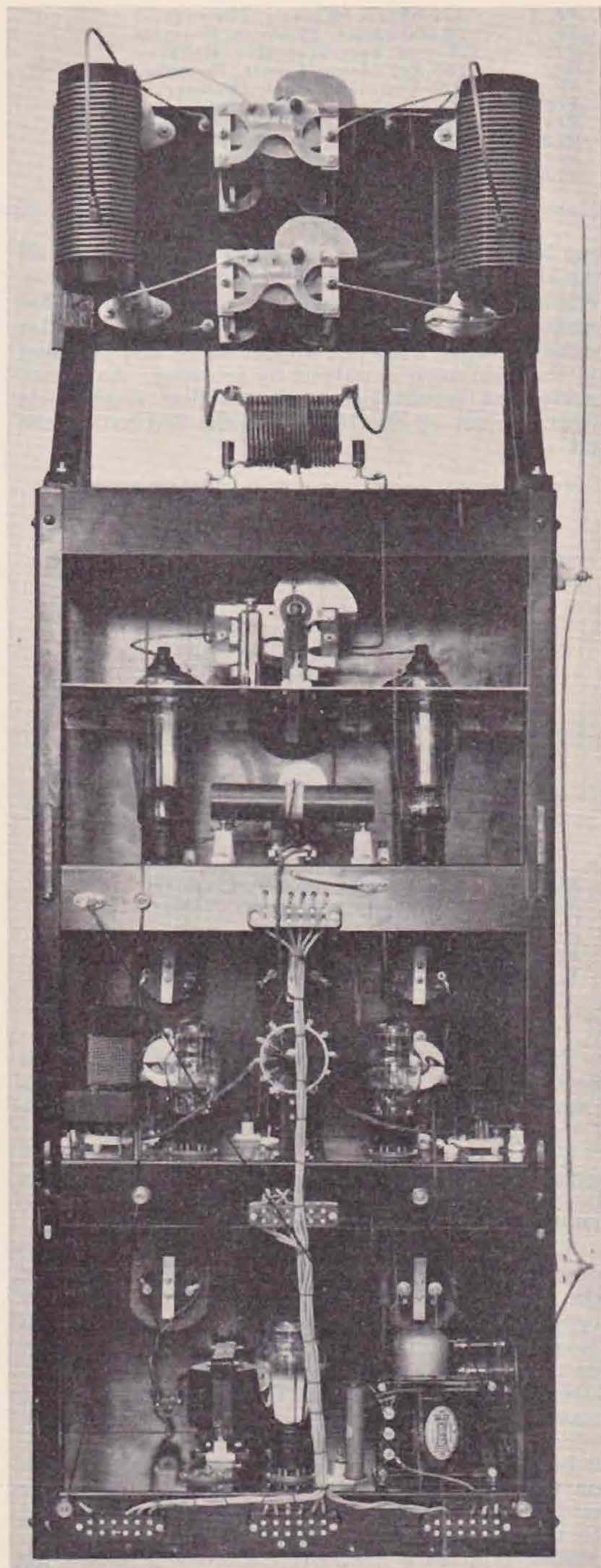
The actual tuning procedure of the transmitter is comparatively simple.

Assume operation on 28 Mc. is required, a 7 Mc. crystal is selected and appropriate coils are plugged into the tuning circuits. The C.O. coil will be for 7 Mc., the 1st doubler for 14 Mc., the 2nd doubler for 28 Mc., and the P.A. grid and plate coils for 28 Mc.

Switch on H.T. to the O.D. unit and tune the oscillator condenser until a dip in the appropriate plate milliammeter occurs. Check for R.F. with a lamp and loop, then tune the 1st doubler condenser until a dip occurs in the plate circuit meter for the stage. This dip should indicate the presence of the 2nd harmonic (14 Mc.). Grid current will then show in the centre (grid) meter which is in the 2nd doubler grid circuit.

With the key closed, but H.T. off the P.A., tune the 2nd doubler plate circuit until a resonance dip is obtained; at the same time current will show in the P.A. grid meter (top row, right-hand side). Tune the P.A. grid circuit until maximum grid current is obtained, switch on H.T. to the P.A. and tune the plate circuit to resonance. The set is now ready for radiating tests.

For the same sequence but for 14 Mc. output, open the 2nd doubler cathode switch, change the P.A. grid and plate coils, set the selector switch



*Rear view of the Transmitter. Note the small pick-up aerial for use with the Modulation Monitor. The transmitter is shown ready for 7 Mc. operation*



for 14 Mc. pick-up (this switch is shown behind the cable wiring in the centre of the exciter unit) and proceed to tune the P.A. grid and plate circuits for maximum output as detailed above. For other frequency sequences the same methods apply. For telephony operation exactly the same procedure is carried out, but in this case the suppressor grids are biased negative. For C.W. the bias is either zero or positive.

#### Results.

The complete transmitter was tested on 3.5,

7 and 14 Mc., with phone and c.w., using four different types of aerial, ranging from an end-fed to a matched impedance doublet. Results were entirely satisfactory; the speech quality and modulation were in all cases reported extremely good, and as a matter of interest, modulation was tried using the push-pull unit described in the July, 1935, issue of the BULLETIN. This unit also gave very good results, and can be recommended should any reader have a push-pull complex!

The author will be pleased to hear from members who construct this transmitter.

#### COIL TABLES.

##### P.A. PLATE COILS L3. All Coils Centre Tapped.

Frequency. Mc.	Turns.	Wire Gauge.	Diameter.	Length.
3.5	34	18 swg. enam.	2 $\frac{1}{8}$ "	3"
7	20	16 " "	2 $\frac{1}{8}$ "	3"
14	10	14 " "	2 $\frac{1}{8}$ "	3"
28	6	14 " "	1 $\frac{7}{8}$ "	3"

##### P.A. GRID COILS L4. All Coils Centre Tapped.

Frequency. Mc.	Turns.	Wire Gauge.	Diameter.	Winding.
3.5	65	25 swg. D.S.C..	1 $\frac{1}{8}$ "	Close wound.
7	23	25 " "	1 $\frac{1}{8}$ "	"
14	10	20 " "	1 $\frac{1}{8}$ "	"
28	5	18 swg. enam.	1 $\frac{1}{8}$ "	Spaced to cover 1 $\frac{1}{2}$ ".

##### OSCILLATOR COILS L6.

Frequency Mc.	Turns.	Wire Gauge.	Former.
1.7	65	22 swg. D.S.C.	Close wound on 1 $\frac{1}{2}$ " diam. B.T.S. former
3.5	32	20 " "	Ditto
7	10	20 " "	Spaced wire diam. on 1 $\frac{1}{2}$ " diam. B.T.S. former.

##### FIRST DOUBLER PLATE COIL L7 AND SECOND DOUBLER GRID COIL L8. All coils are Centre Tapped and Inter-wound.

L7 } L8 }	3.5. Mc.	40 turns 40 "	22 swg. DSC 26 " "	2 $\frac{1}{4}$ " long. Inter-wound with L7.
L7 } L8 }	7 Mc.	20 " 20 "	20 swg. enam. 26 " "	1 $\frac{3}{4}$ " long. Inter-wound with L7.
L7 } L8 }	14 Mc.	10 " 10 "	18 " " 26 " "	1 $\frac{1}{2}$ " long. Inter-wound with L7.

##### SECOND DOUBLER PLATE COIL L9.

14 Mc. 9 turns 18 swg. enam. 1 $\frac{1}{4}$ " long.  
28 Mc. 4 turns 18 swg. enam.  $\frac{7}{8}$ " long.

##### LINK COILS L5, L10, L11, L12.

1 turn each. 18 swg. enam. 1 $\frac{3}{4}$ " diam.



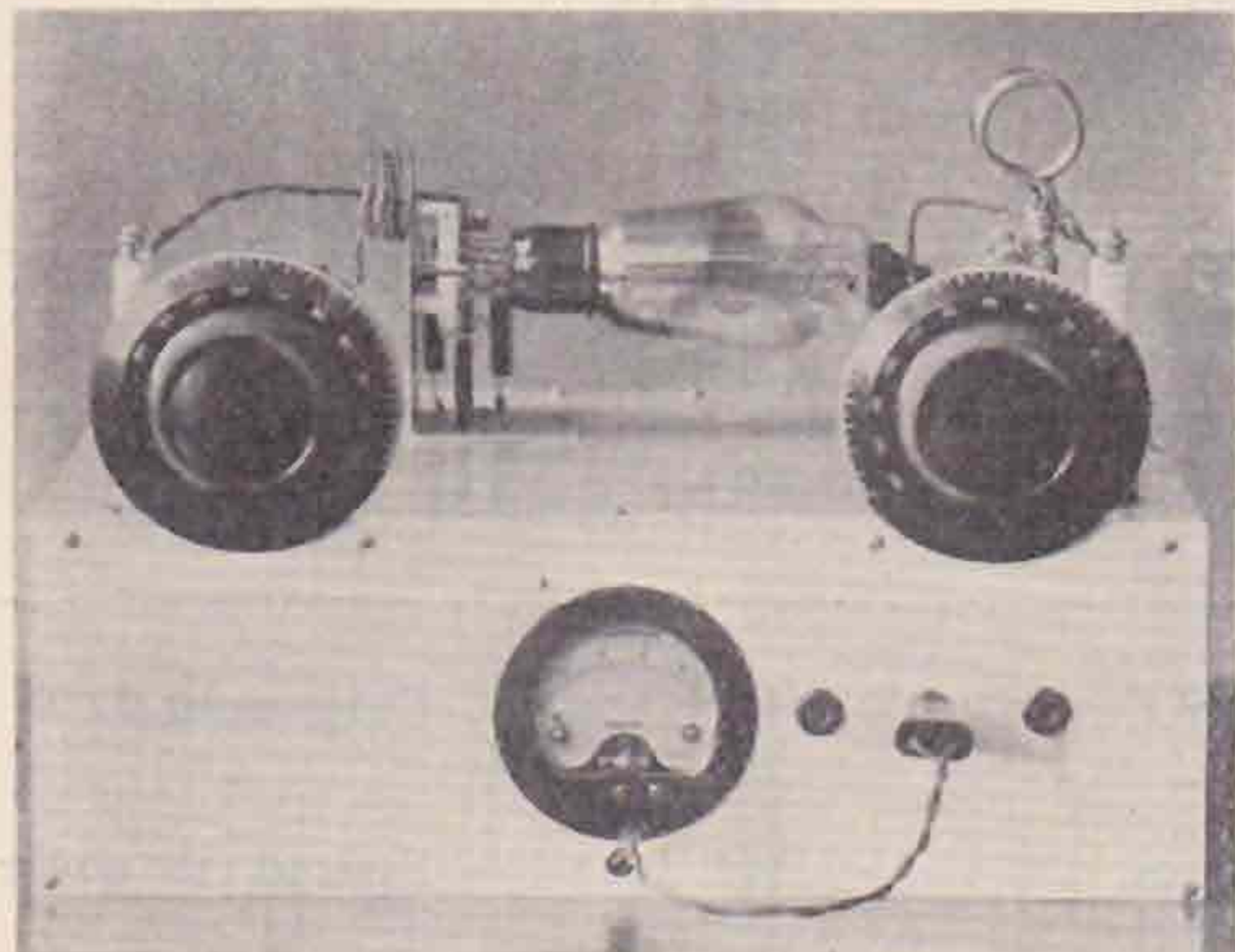
# A 56 Mc. CRYSTAL-CONTROLLED TRANSMITTER

## PART II

### Introduction

IN the April, 1936, issue of the BULLETIN there appeared constructional details of the first unit of a transmitter utilising crystal control on 56 Mc. This article deals with the final unit required to work with the exciter previously described.

Crystal control on 56 Mc. has already been used before by certain members, but in the majority of cases the necessary R.F. output has been obtained by the use of a final stage working as a power frequency doubler. The power output from such an arrangement is necessarily limited, and to overcome this disadvantage the power amplifier to be described makes use of an R.F. pentode. By the employment of such a valve working as a straight power amplifier considerably higher outputs can be obtained.



Front view of the Power Amplifier Unit.

### The Power Amplifier.

There is nothing particularly original about the circuit employed for this unit. It has already been pointed out that with due care circuits which are suitable for lower frequencies are also suitable for 56 Mc. in many cases, and the same applies to this amplifier. In fact, by the substitution of suitable coils and R.F. chokes, the unit will work equally well on 14 or 28 Mc.

The valve employed is an R.F.P.15. This valve is a screened pentode, which makes it unnecessary to provide for neutralisation. At the same time it has been observed that the valve is liable to oscillate on its own accord if certain precautions are not taken. It is advisable to arrange the layout of the associated apparatus in such a manner that the grid and plate circuits are well spaced from one another. However, if the plate circuit is always loaded, no signs of self-oscillation will be apparent. This will be the normal condition under which the valve will be operating.

### Construction

It has already been emphasised in the previous article that great care must be taken in the choice and layout of components for use in 56 Mc. transmitters if the best results are to be obtained. This

applies to the power amplifier quite as fully as to the exciter unit.

The chassis is exactly similar to that of the exciter unit and need not be described here. All dimensions are similar and, with the exception that there are only eight terminals on the back, the drilling details are exactly the same for both units with regard to back and front. The baseboard must be drilled to take the components as shown in the photograph. The Eddystone 5-pin Frequentite Valveholder must be mounted in such a position that the valve is held horizontally. To do this a piece of aluminium  $\frac{1}{16}$ -in. thick should be cut to size  $2\frac{1}{2}$  ins. by 6 ins., and bent along a line drawn  $2\frac{1}{2}$  ins. from one end, so that a right angle is formed. On the  $2\frac{1}{2}$ -in. section three holes should be drilled to form a triangle. These holes are for mounting the piece on the baseboard. The valveholder may then be mounted by means of three more holes drilled in the aluminium  $3\frac{1}{2}$ -in. length of the right angle. The valveholder should be so arranged that when the valve is in position the filament of the valve will be in the vertical plane. If the grid terminal of the holder is placed to the front of the chassis this will be the case.

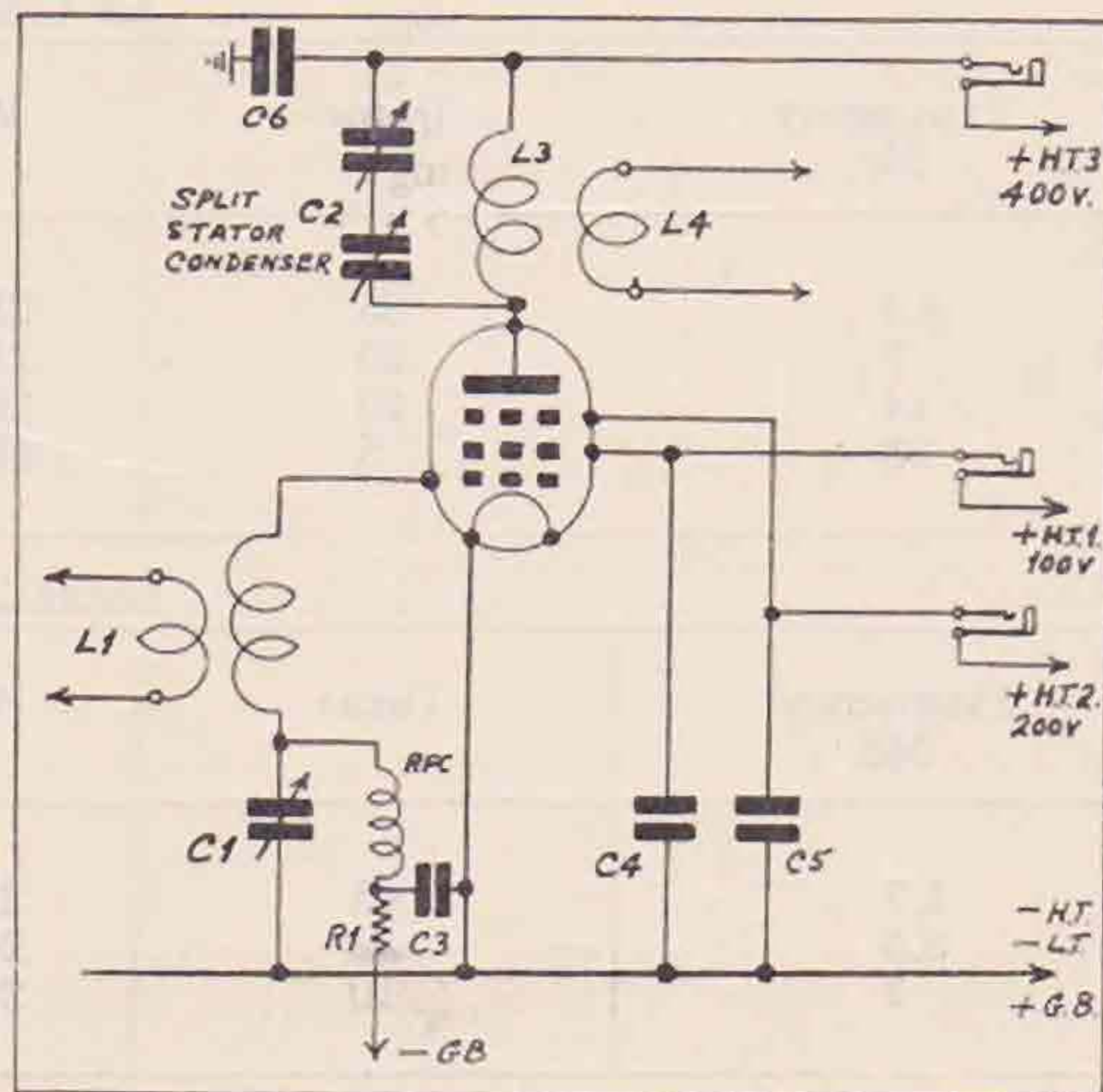


Fig. 1.

Circuit of 56 Mc. Crystal Controlled Transmitter.

- C1 50  $\mu$ F Midget, Jackson Bros.
- C2 35  $\mu$ F split stator, type B.B.S.G., Cydon.
- C, 3, 4, 5 .001  $\mu$ F, type 670, Dubilier.
- C6 .001  $\mu$ F, " 610 "
- R1 5,000 ohms, 1 watt resistance and holder, Dubilier.
- RFC, Ultra short wave choke, type 1011, Eddystone.
- L1, 2, 3, 4 See text.

### Other Components.

- 1, 5 pin valveholder, type EVOX 950, Eddystone.
- 1, Universal Plug, B.T.S.
- 3, Midget closed circuit jacks, B.T.S.
- 4, 2 in. Insulating Pillars, type 1028, Eddystone.
- 1 0-100 milliammeter, type 29F, Ferranti.
- 8 Terminals, type LN 1001, Belling Lee.
- LT-, LT+, HT-, HT+1, HT+2, HT+3, GB-, GB+.
- 2 Condenser Brackets, type UB, B.T.S.
- 2 4 in. Extension Rods, type No. 1008, Eddystone.
- 2 Bakelite Knob Dials, type 1032, "



The *J.B.* 50  $\mu\mu\text{F}$  Midget condenser which tunes the grid circuit may now be mounted on its *B.T.S.* Condenser bracket and then fitted to the baseboard in the appropriate position. The *Cyldon* 35  $\mu\mu\text{F}$  split stator condenser should be treated in the same way. The various *Dubilier* Type 610 and 670 fixed condensers can be mounted as required. The two Type 670 condensers which act as bypasses for the Screen and Suppressor grids are mounted on the wiring as close to the valvholder terminals as possible.

The *Eddystone* No. 1011 Ultra S.W. Choke is mounted on its own wires between the *J.B.* 50  $\mu\mu\text{F}$  grid tuning condenser and the *Dubilier* resistance holder, in which is placed a 5,000-ohm one-watt resistor employed as grid leak.

Two *Eddystone* No. 1028 2½-in. Insulating Pillars are mounted at the edge of the chassis to correspond with the two output pillars on the Exciter Unit. To these pillars are soldered the ends of the single-turn coil L.1, which forms the link coupling between the 56 Mc. frequency doubler and the grid circuit of the power amplifier. The other pair of pillars are mounted on the other end of the chassis to form the output terminals of the amplifier. To them is soldered the ends of the single-turn coil L.4, which acts as the coupling coil.

The grid coil consists of four turns 1 in. in diameter spaced the diameter of the wire, which is No. 14 S.W.G. bare copper wire chemically cleaned. The link coupling coil L.1 consists of a length of 20 gauge "Push Back" wire, which is bent into the form of a "U" the free ends of which go to the input pillars. The other end of the "U" is twisted to form a single turn. Twisting is continued until the length of the wire is used up. This link coupling coil is forced between the turn of the grid coil nearest to the tuning condenser and the second turn of the coil.

The plate coil consists of three turns of No. 10 S.W.G. copper wire chemically cleaned. The diameter of the plate coil is 1 in. and the spacing between turns is the thickness of the wire. The plate and grid coils are soldered to tags and are mounted on their respective tuning condensers. In the case of the grid coil, one end only goes to the fixed plates of the grid tuning condenser, the other end being taken directly to the grid of the valve. Series tuning of the grid circuit is employed, as this

enables the inductance of the grid coil to be doubled.

The *Ferranti* 29F 0-100 milliammeter may now be mounted in position and the *B.T.S.* universal plug connected to it by means of a short length of twin flex, which may be brought through a small bushed hole exactly below the meter. The *B.T.S.* Midget Jacks can now be placed in position.

The back of the chassis is used for mounting the eight *Belling & Lee* terminals in the following order, with the first on the right looking at the back:—L.T.+, L.T.—, G.B.+, G.B.—, H.T.—, H.T.+1, H.T.+2, H.T.+3. This arrangement ensures the shortest leads possible.

Wiring of the unit is carried out with No. 18 gauge tinned copper wire covered with sistoflex. All connections are soldered to tags mounted on the terminals. The small terminals on the *Dubilier* type 670 bypass condensers may be removed and the lugs used as soldering tags, care being taken that as little heat as possible is applied to them.

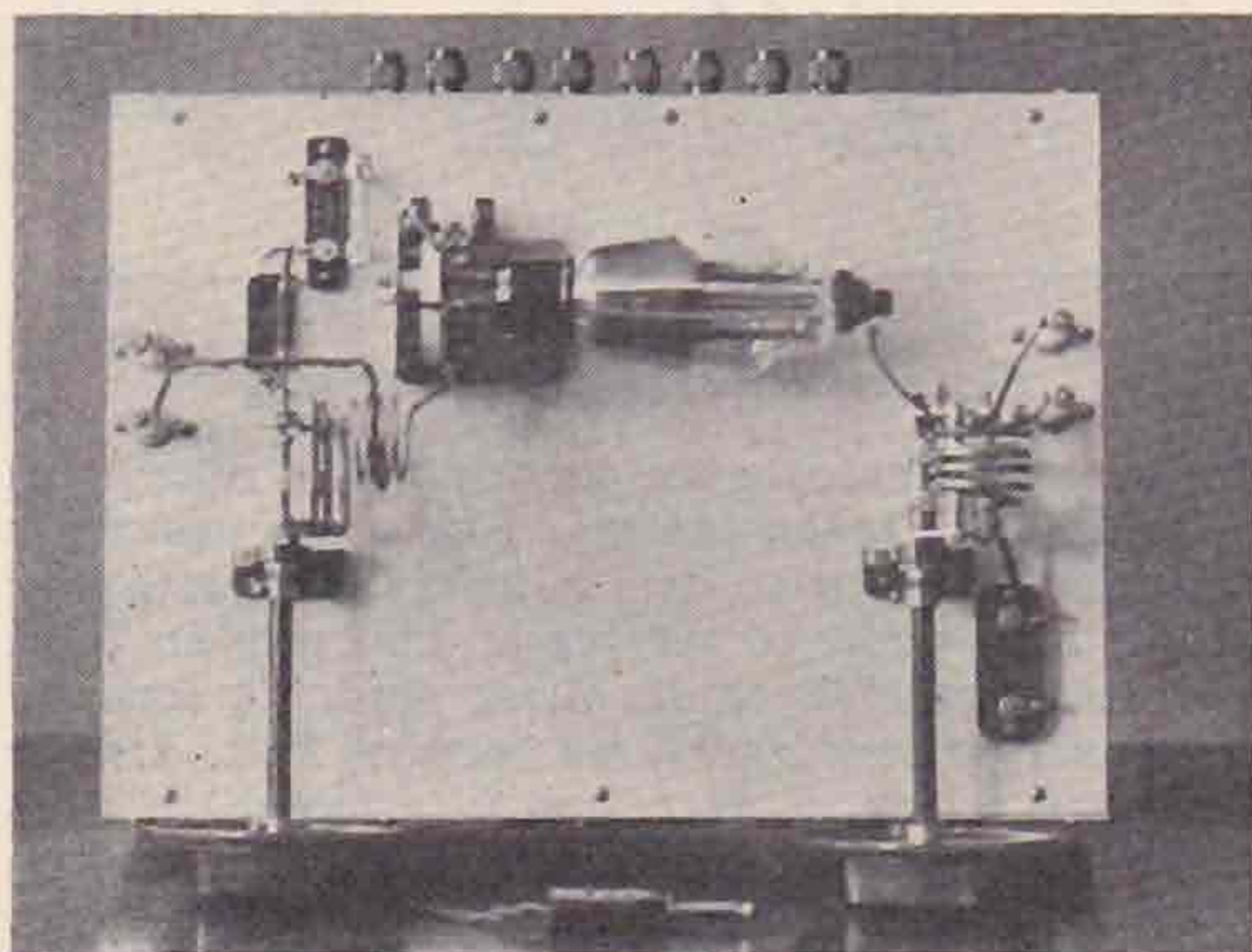
#### Operation

The first operation to be undertaken is to couple an aerial to the power amplifier. It has already been explained that unless this is done the amplifier may break into self-oscillation. The question of aerial design is beyond the scope of this article, but for test purposes an aerial consisting of a wire 8 ft. long should be mounted about 3 ft. away from the transmitter. This may be coupled to the transmitter by means of a feeder about 3 ft. long, which should be connected to one of the output terminals, the other terminal being left free. If a 0.5 ampere hot wire ammeter is placed at the other end of the feeder wire, and one side of the meter is connected to the centre of the aerial, quite an appreciable current should be registered when the amplifier is tuned up.

The exciter unit may next be switched on and coupled to the grid circuit of the P.A. If the coil and condenser are of the correct proportions there should be a sharp rise in the plate current of the 56 Mc. F.D. when the grid circuit condenser of the P.A. is varied. When this has been attained the necessary voltages may be applied to the Screen Grid, Suppressor Grid and Plate. Grid bias should be about 45 volts for a plate voltage of 400. The suppressor grid voltage is not critical and may be between 50 and 100 volts. The screen grid voltage is much more critical and must not be allowed to rise too high or damage to the valve will result. With 400 volts on the plate the S.G. voltage should not exceed 250 volts, 200 volts being a useful value. Excessive screen voltage does not result in increased output, as there is a point beyond which the R.F. output of the valve drops off.

When all the foregoing adjustments have been made the plate voltage may be applied, and the plate tuning condenser adjusted until the aerial ammeter shows maximum reading. If a plate voltage of 400 is employed the plate current should be in the neighbourhood of 50 mA., providing the coupling coil is closely coupled to the plate coil. It is not advisable to operate the valve with higher voltages, and for long life the power input should not be allowed to exceed 20 watts.

A considerable amount of experimental work has been done on this unit, but much remains to be achieved, and R. E. S. will be pleased to receive particulars of any improvements which constructors may be able to make.



Plan view of the unit showing position of wiring on top deck.



# THE DESIGN OF AN ALL-MAINS CRYSTAL-GATE RECEIVER

## A Discussion of the Main Considerations Involved.

By R. H. HAMMANS (G2IG).

### PART 1.

#### Introduction.

IN contrast to previous articles which have appeared on the subject of Superheterodyne receiver design, it is the purpose of the present article to approach the problem from a somewhat different angle. Members should, by now, have some knowledge of how this type of receiver functions and the advantages of the system. It is now intended to stress its inherent disadvantages and the manner in which, where possible, they may be overcome to produce a receiver entirely suitable for all amateur requirements.

The chief disadvantages would seem to fall under the following four headings:—

1. Second channel interference, as distinct from Image Interference.
2. Noise/Signal ratio can be disastrously high.
3. Band Spread, single-dial tuning coupled with any permanent form of frequency calibration is rarely achieved.
4. Band-switching or coil changing is either too complicated for amateur construction or too lengthy a process for real flexibility such as is necessary under contest conditions.

The great superiority of Superhet design over every other type of receiver, where selectivity is a paramount consideration, is well known, particularly if a properly designed quartz crystal I.F. filter is employed. However, the above-mentioned difficulties usually lurk in the background and few have had the opportunity to experience the performance of a receiver designed primarily to eliminate the faults of the Superhet whilst retaining its good points. It would seem proper at this juncture to say frankly that the author remains unconvinced by the champions of "Regenerative Selectivity" and has yet to hear a receiver of that type which can compare in selectivity, signal strength and above all, stability with one which incorporates a really good crystal filter. It is felt that some writers on the subject have rendered a disservice to experimental research by so consistently decrying the crystal filter. Many of the so-called Single Signal Supers in use at present are little more than somewhat unstable plain receivers of the broadcast type.

#### How Many Values?

A thoroughly useful, yet economical, combination has proved to be:—

TRF—1st DET—IF—2nd DET—LF

SIGNAL OSC      CW BEAT OSC

This clearly involves a minimum of three tuned stages at signal frequency and, consequently, bearing in mind Condition No. 3, necessitates a three-gang tuning condenser.

The tuned Radio Frequency Amplifier will, if correctly designed, take care of Condition No. 1,

and the band spreading, plus the intermediate frequency chosen (400 kc.), will preclude all possibility of an amateur signal appearing twice on the tuning on any band—see Fig. 1.

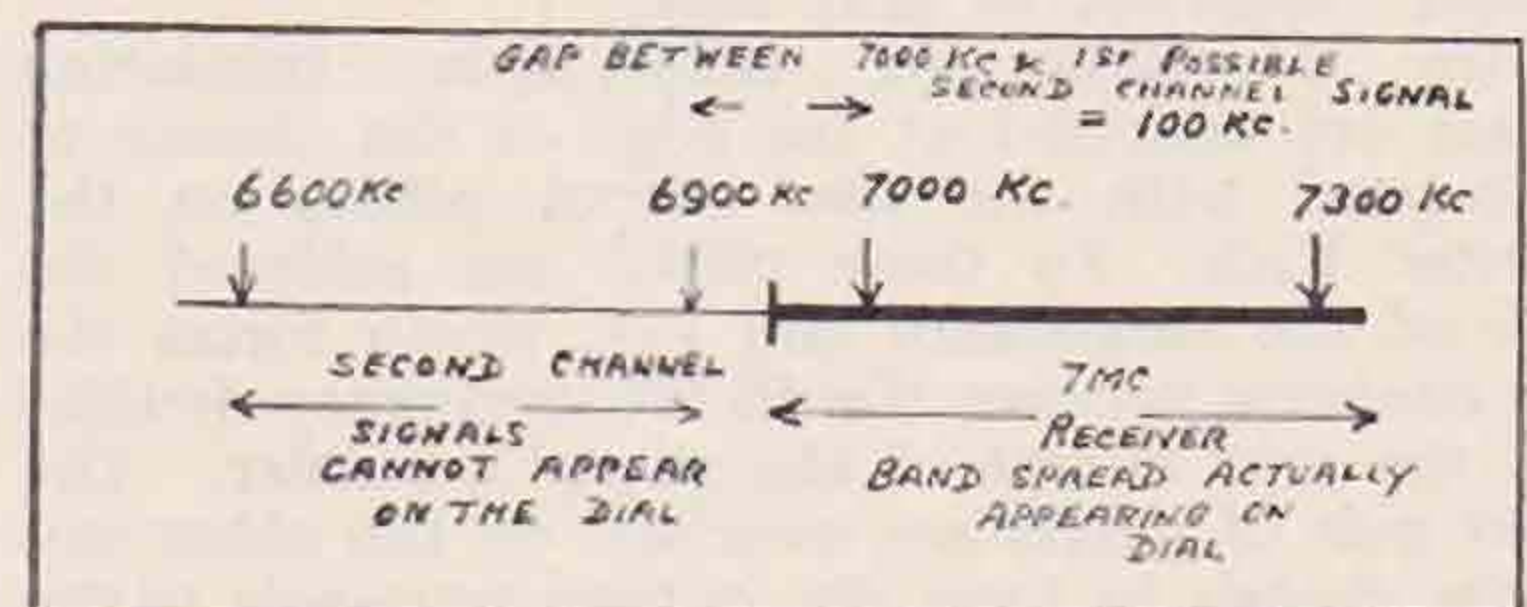


Fig. 1

Shows why it is impossible for an Amateur signal to appear twice on the tuning scale with I.F. of 400 kc.

#### Gain Control

Three independent controls have been proved essential to maintain signal/noise ratio at a high level under all conditions of signal input from the weakest to the strongest; at the same time making it possible to adjust for any desired output at the LF end without overloading the RF and IF amplifiers. The key positions for these controls are as follows:—

1. The RF amplifier, i.e., a variable-mu pentode.
2. The IF amplifier, also a variable-mu pentode.
3. An output volume control associated with the telephones.

The arrangement is shown in Fig. 2.

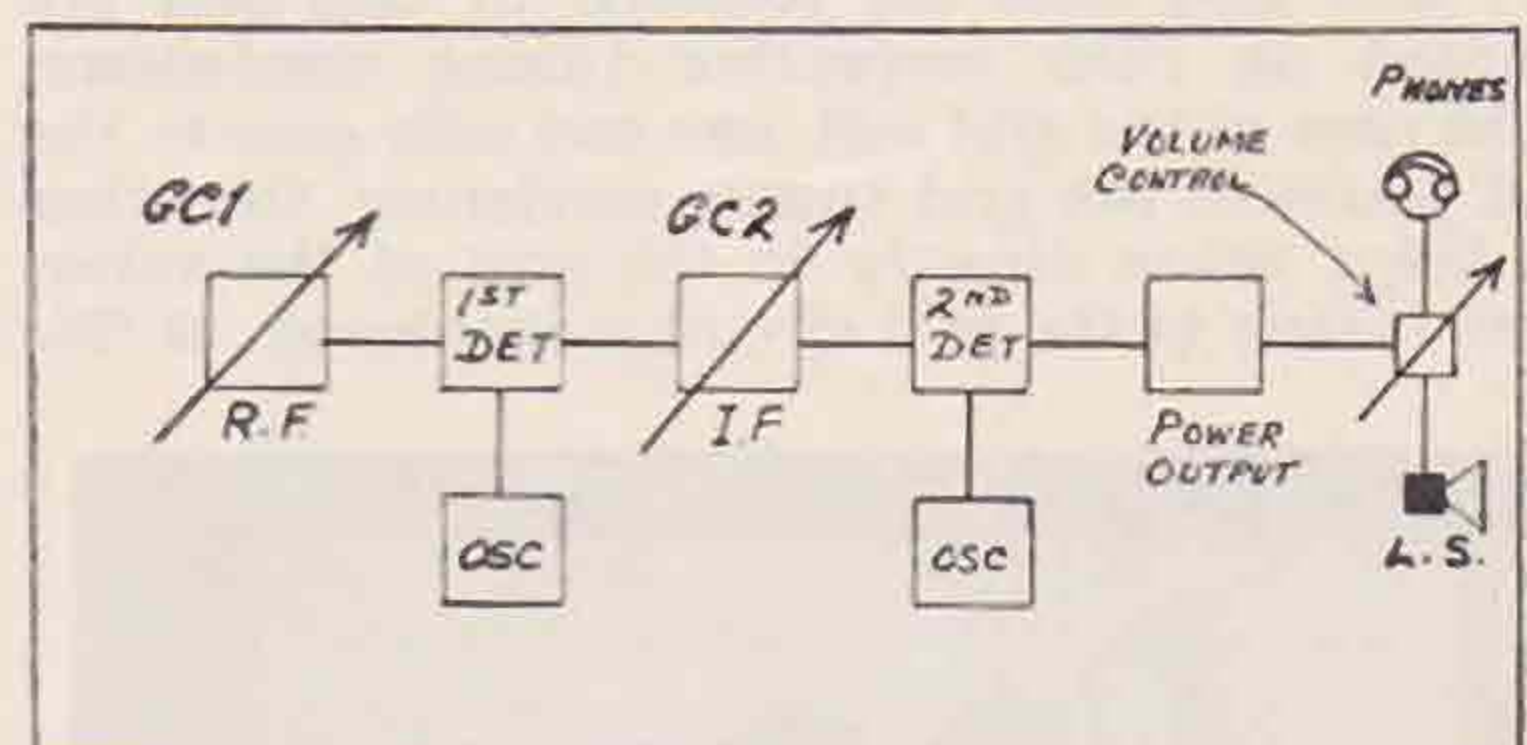


Fig. 2.

Key positions for Gain Controls.

No apology is made for treating this matter in some detail, as a real understanding of its principles enables the operator to deal satisfactorily with any signal he may want to receive and to present it at the 'phone terminals in its most readable form.

Three major considerations occur: first, a very weak signal, clear of excessive interference. It is necessary to ensure a maximum grid swing on the RF amplifier for maximum signal/noise ratio, likewise a large grid swing to the output valve for minimum hum level. It is clear, then, that GC1 must be "full-on" with the output volume control



at a minimum. The signal should be brought to a satisfactory level with GC2. Secondly, where the incoming signal is very strong, noise level is unimportant, while the possibility of overloading the first detector can be eliminated by reducing GC1. Similarly, GC2 can be used to avoid overloading the second detector.

The third case is where a weak signal is jammed by a much stronger signal. Here a compromise must be effected; GC1 being reduced just sufficiently to avoid blocking due to the unwanted signal. This method, of course, maintains the selectivity so desirable in the RF amplifier. In all cases the volume control provides a range of actual power output from weak headphone strength to full 2 watts without disturbing the operating conditions existing earlier in the receiver.

#### *Band Spread and Coil Changing.*

Condition No. 4, mentioned at the beginning of this article, calls for considerable patience and care on the part of the constructor, but time spent on adjustment by trial and error in coil winding are more than amply repaid by the consequent ease of operation, especially when the receiver is employed in a DX Contest.

Coil changing is a tedious operation in most receivers and takes far too long. As 15 coils are necessary to cover the five major bands, recourse has to be made to some form of "ganged" coil-changing device. The receiver to be described in Part II. of this article is at present only available for work on the 1.7, 3.5, 7 and 14 Mc. bands, not, be it mentioned, because of faulty design, but for the reason that at the time it was built the lack of activity on 28 Mc. band did not warrant the extra trouble involved.

The system adopted was a modified form of the now famous Exeter Coil Changer, designed and patented by G6YK, wherein the coils are arranged round discs, one disc in each screened compartment and each disc being mounted on a spindle which passes through the compartments. The evolution of changing coils is completed by pushing the spindle forward, thus disconnecting all the coils simultaneously. The spindle is then rotated until the required coils come opposite the coil holders, when a pull plugs the coils in. The coils may be wound on old valve bases of the straight-sided pattern. It was felt that this method is more efficient and less troublesome than any switching arrangement within the constructional resources of the average home workshop. By careful attention to coil adjustment, all three tuned circuits may be relied upon to remain in step over the frequency range of each amateur band; similarly, each band may be "spread" to any desired extent and, once set, will allow of calibration which will remain accurate and unaffected by change of waveband.

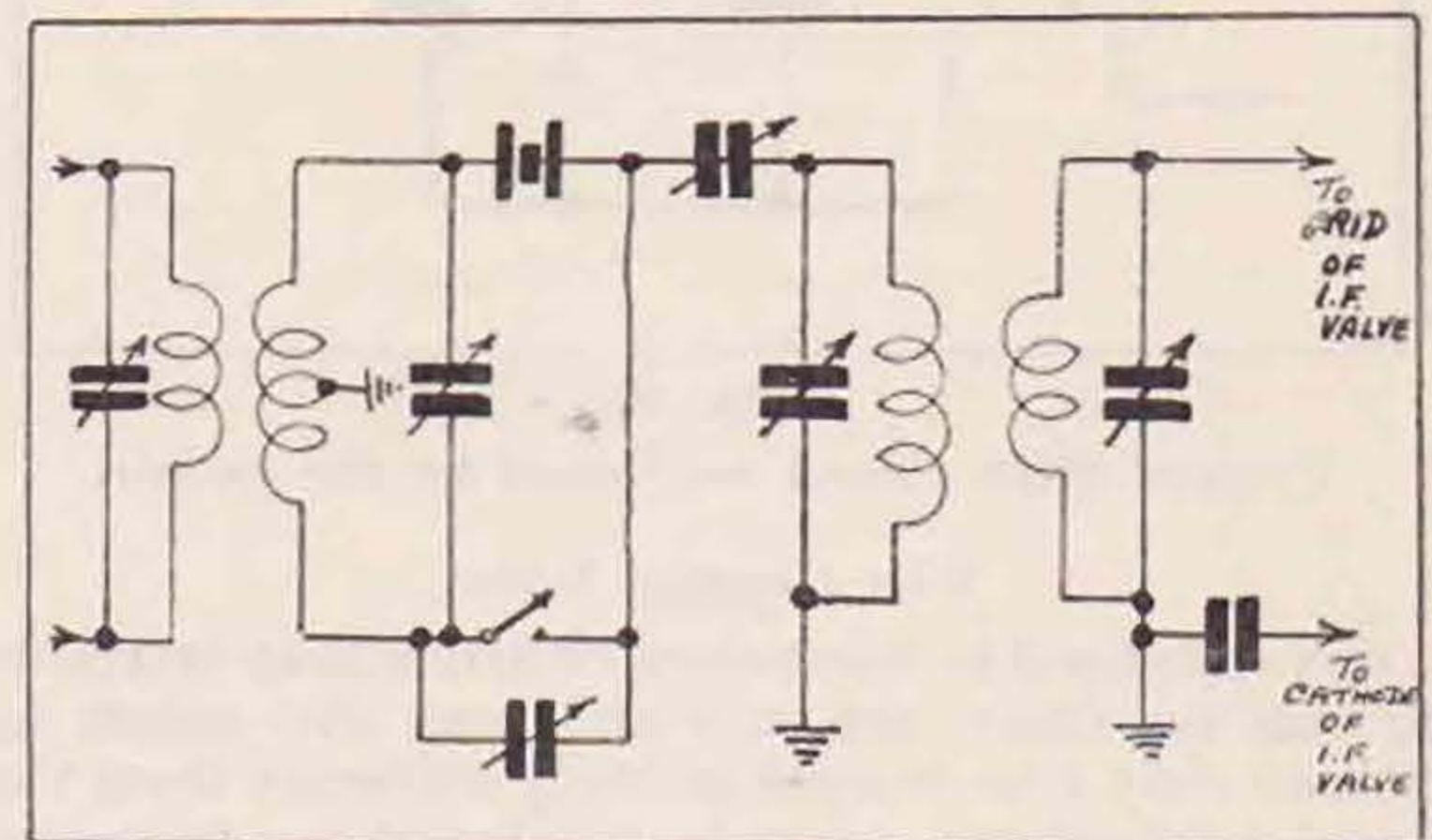
The calibration of the receiver is of a very high order of accuracy, and in practice has remained constant to within  $\pm$  or  $-$  2 kc.; which compares favourably with the average crystal certificate.

The process of band location and spread is one requiring more work than actual skill or testing apparatus and can, after a little practice, be carried out satisfactorily with no other equipment than the CO of the transmitter and a normal 0-V-0 regenerative receiver, on which the band spread is approximately known. Further notes on this subject will appear in Part II., under "Lining Up."

#### *Tuning Dials*

One of the greatest difficulties encountered when constructing a Crystal-Gate Superheterodyne is the provision of a suitable slow-motion drive. Some practical idea of the normal selectivity of such a combination as already described may be realised by consideration of the following points.

With the crystal filter in circuit, a CW signal is tuned in to resonance, *i.e.*, to its loudest point (not zero beat, since the beat oscillator is offset). Now the beat oscillator trimmer is adjusted to give a note of, say, 1,000 cycles, whereupon *all* CW signals will tune in with a sharp resonance at 1,000 cycles. Test measurements have shown that a deviation of 50 cycles from resonance will reduce the beat note strength by 20 db approximately; in other words, if the tuning dial is turned so that the beat note rises or falls in pitch by one Tone, the strength of the signal will drop to one-tenth of its maximum. Fifty cycles represents about one ten-thousandth of the average spread and will thus occupy  $180/10,000$ , or, roughly, two-hundredths of a degree of condenser rotation. Actually, of course, a much finer adjustment, say, 10 cycles, must be possible if the signal is to be tuned to its maximum volume. Probably the practical figure for accurate tuning



**Fig. 3.**

*Typical crystal matching transformer commonly used in commercial receivers.*

would be of the order of minimum steps of  $4/1,000$  degree.

This must, of course, be magnified by a slow-motion device, since the hand cannot comfortably make changes smaller than one-fifth degree. It would seem that a ratio of  $1 \times 1,000 / 5 \times 4 = 50 : 1$  is somewhere near the ideal.

#### *Selectivity.*

With the difficult operating conditions on the amateur bands, the full degree of IF selectivity necessary can only be obtained in one of the three following ways. The first is by the use of a large number of highly efficient tuned circuits and may be dismissed as being cumbersome and costly, accompanied by instability and considerable losses. Secondly, the IF amplifier may be operated at the point of regeneration and with careful design and operation this scheme may be persuaded to provide a degree of selectivity approaching that of a crystal filter. Since, however, it is necessary to adjust the IF amplifier to the threshold of oscillation, considerations of stability and ease of control eliminate this system from the design of the ideal receiver. There remains, therefore, the quartz crystal, resonant at the intermediate frequency, so con-



connected as to function as a series filter. The difficulties mentioned above do not exist where the crystal filter is concerned. Indeed, from both the constructor's and operator's points of view, the very minor complications are fully justified by the extraordinarily effective results.

#### Crystal Coupling Circuits.

The Crystal Filter should be connected "early" in the IF amplifier: its normal location is between the first detector anode and the grid of the first IF amplifier valve.

Impedance matching by two transformers is stressed by some authorities, but the loss which might arise from ignoring this point has been proved negligible so long as a really good crystal is employed. Fig. 3 shows the conventional IF crystal matching transformers, and Fig. 4 outlines the circuit used and recommended by the writer.

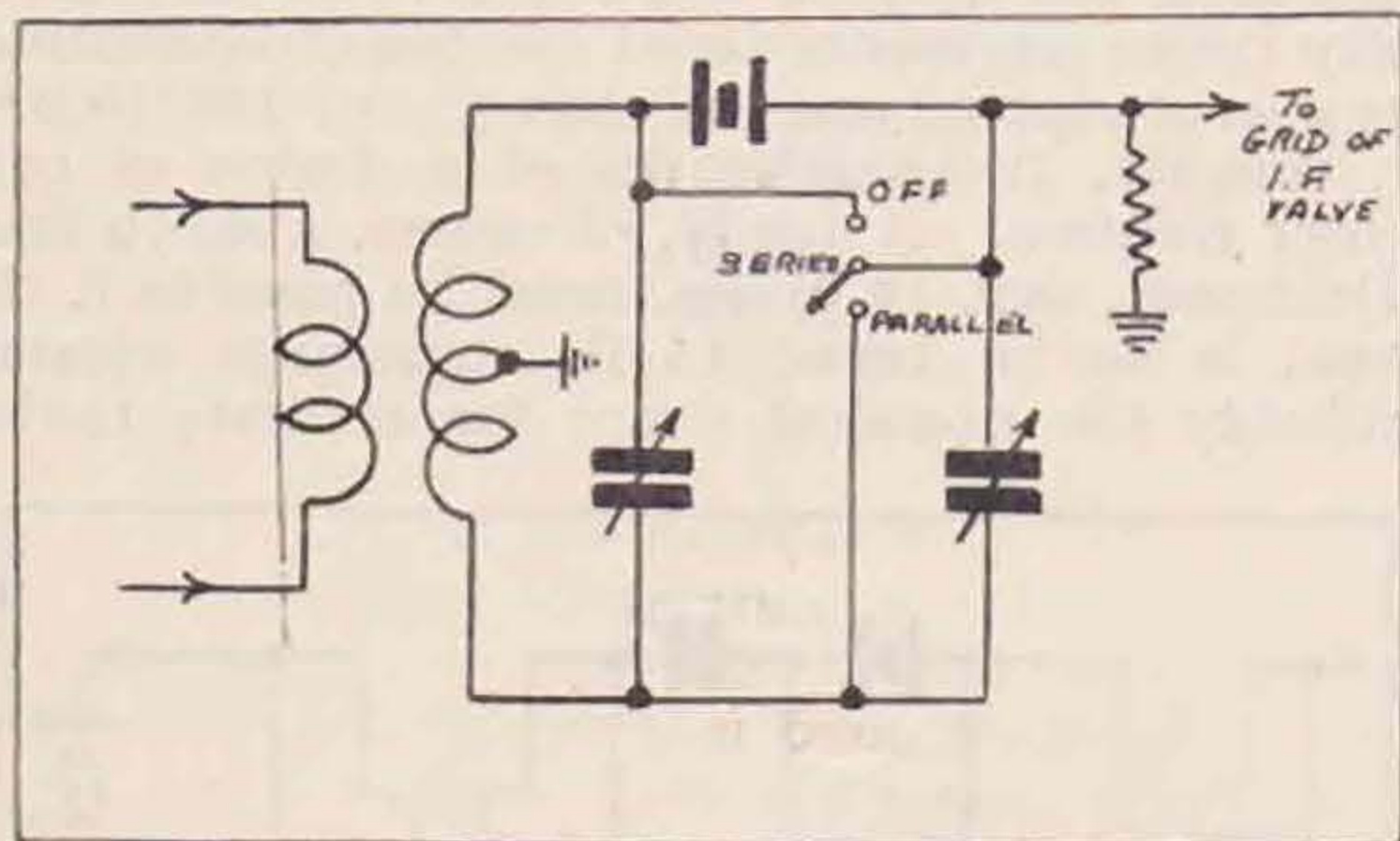


Fig. 4.

Crystal filter circuit employed by the author.

#### The Crystal Filter.

Crystals used as resonators or filters may introduce trouble on their own account, and the writer has proved that a technique entirely different from that usual with those crystals employed as frequency stabilisers is necessary when cutting the filter crystal. In fact, the properties of the two types of crystal are entirely different. The oscillator type must be capable of passing comparatively large Radio Frequency currents without damage and must have the lowest possible frequency/

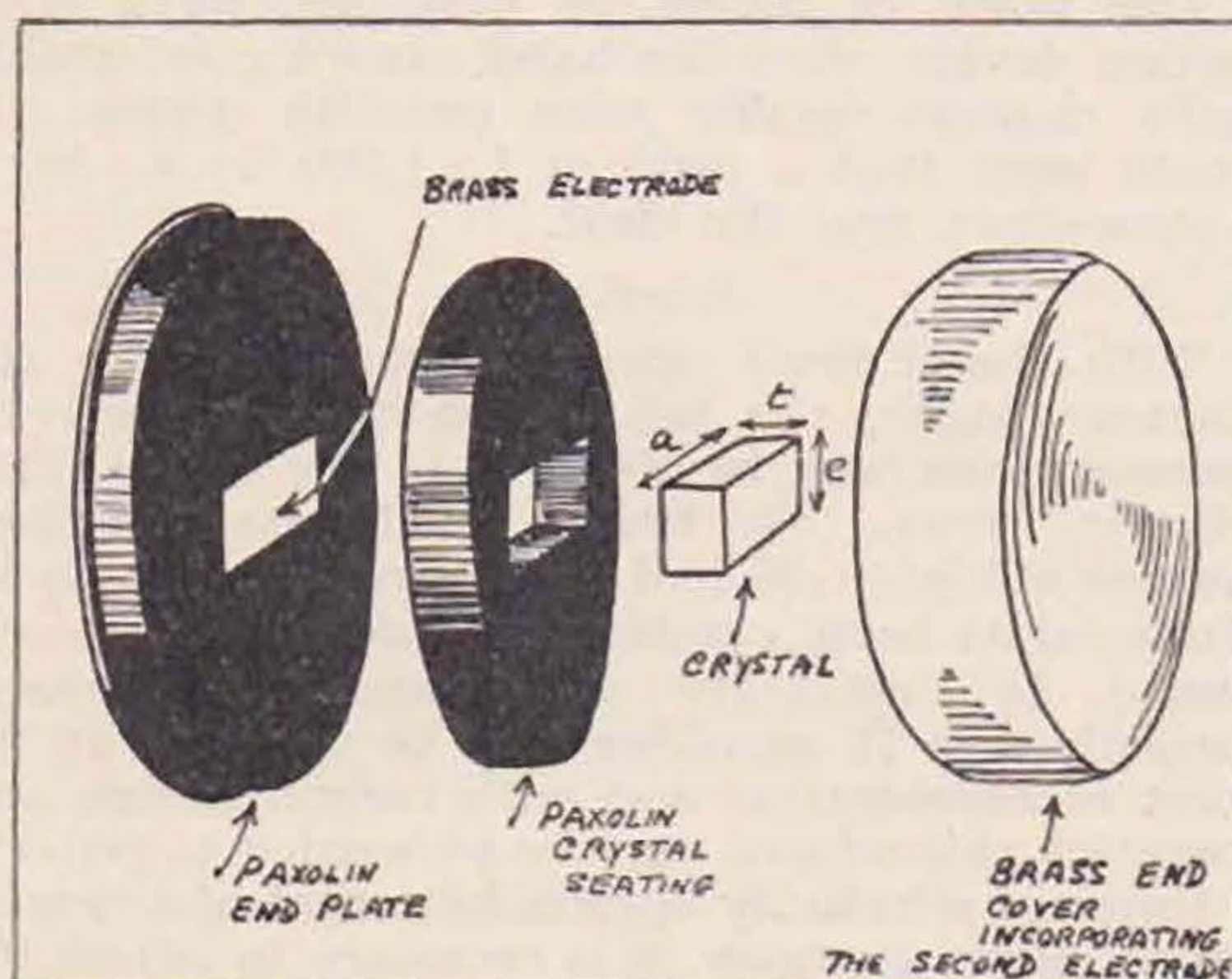


Fig. 5

Shows the method of mounting crystal and the position for best operation. The crystal seating is actually part of the end moulding but for clearness it has been illustrated as a separate ring.

temperature coefficient. A good specimen controlling a 20-watt oscillator will have a  $F/t$  coefficient  $1 \times 10^{-6}$ . On the other hand, a filter crystal is required to pass only very small RF currents, the  $F/t$  coefficient is immaterial and may be of the order  $1 \times 10^{-5}$ , but the crystal must be cut and ground so that a single symmetrical resonance peak occurs at the desired frequency.

Experiment has so far shown that a *Brookes* a-e-t-35 cut bar is eminently suitable, the physical dimensions for 400 kc. are

$$a = .10400''; e = .20275''; t = .95850''.$$

Dimension  $e$  determines the resonant frequency and although, as in all types, subsidiary resonances may occur in the neighbourhood of the main peak, these may readily be moved to coincide at the main peak, or removed entirely by the adjustment of the other two dimensions  $a$  and  $t$ .

The  $F/t$  coefficient is 1 to  $1.2 \times 10^{-5}$  per degree centigrade. Thus, a change of  $10^\circ\text{C.}$  will result in a 40-cycle change in the resonant frequency. Obviously, even the maximum possible selectivity of the remainder of the IF circuits will allow this factor to be ignored entirely. A crystal with these characteristics has been found to have a higher impedance than the more usual types. This feature simplifies the design of suitable coupling circuits as no improvement is to be gained by the use of a step-down transformer for matching.

In practice, the use of such a crystal with one IF stage, no regeneration, no matching transformers and only three tuned circuits at the intermediate frequency, can, if due attention is paid to design and adjustment, prove vastly superior to the complicated and expensive commercially built receivers. In fact, for long-distance CW reception through a combination of car ignition, atmospherics and badly regulated telephony interference or, perhaps, the "wipe out" of a powerful local transmitter, consideration of the foregoing points will result in an excellent combination which, above all, is amateur built.

It is hoped to describe in the next issue an all-British amateur-built receiver using British valves which embodies the various points outlined. This receiver will be jointly described by the present writer and Mr. A. O. Milne (G2MI), its owner, who has carried out exhaustive tests and who has also collaborated with the writer in some of the experimental work involved.

(To be continued.)



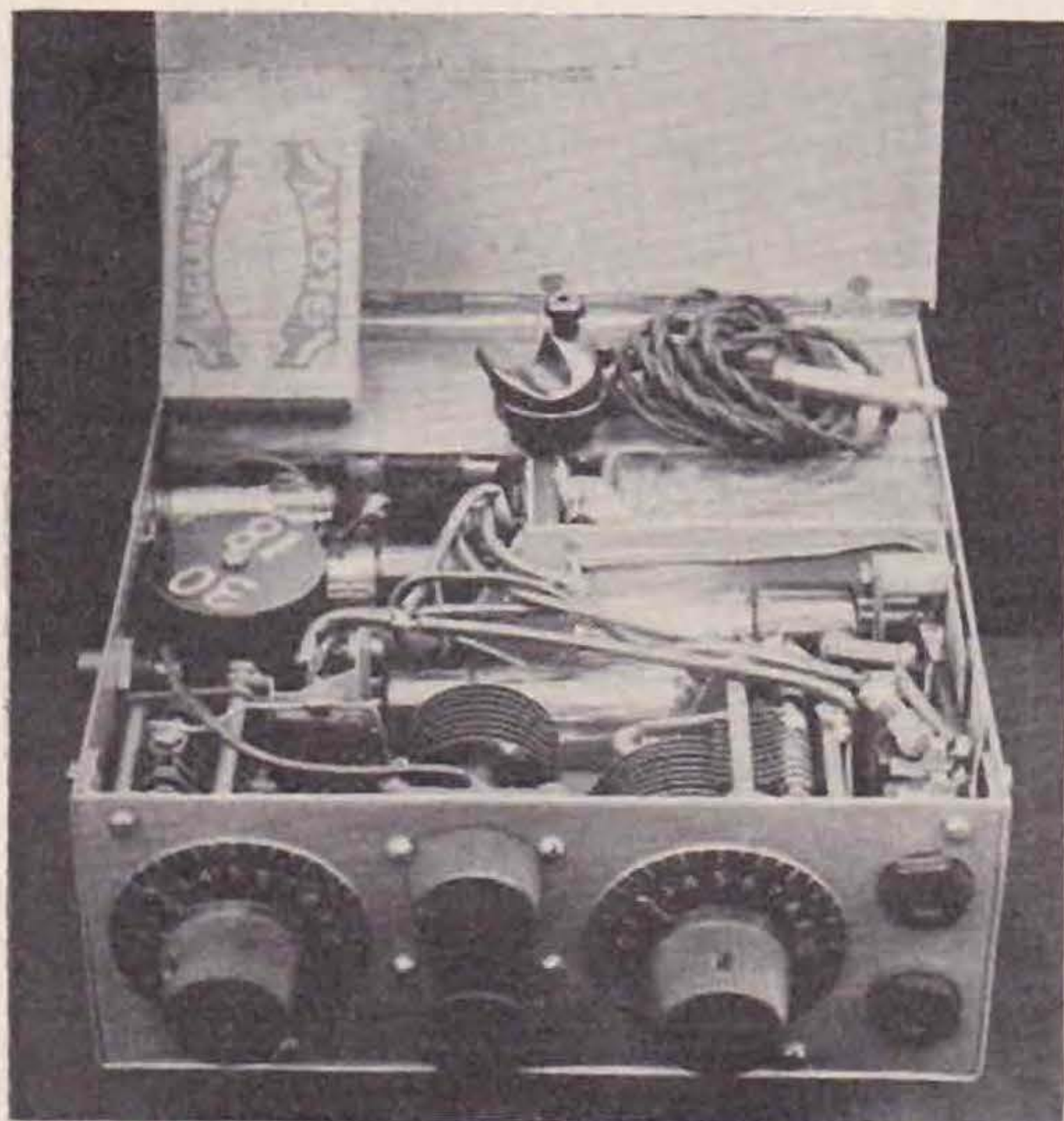
The leading Swiss Portable Station X-HB9J at Zurich.







condenser, i.e., the series aerial condenser—is first set to give smooth reaction on the waveband required. With the bottom centre condenser (band-setting) at zero, the band-spreading condenser should cover 13 and 16 metres on the smallest coil, and 19 and 20 metres on the second coil. For 25 metres the band-setting condenser is set at half capacity, and at full capacity the 31 metre band



*A view showing the inside of the portable receiver. An indication of its compactness is obtained by comparing it with the match box*

will be received. Forty metres should be received on the third coil with the band-setting condenser at zero, and 50 metres with the condenser at full capacity. The fourth coil covers 80 metres with the band-setting condenser at zero, and by using both the band-setting and band-spreading condensers together, 120 to 180 metres should be covered on the fifth coil. The reaction condenser is on the right.

The set is very economical; H.T. current is only 5 mA and L.T. current .25A. The writer's experience shows that, owing to high efficiency and low noise level, the set compares favourably with many larger receivers.

### **Strays.**

VR4JD, heard on 7 Mc., is located on Guadalcanal Island, 30 miles from Tulagi, Solomon Islands. His QRA for QSL cards is, care Burns Philp, Tulagi, Solomon Islands (Pacific Ocean).

\* \* \*

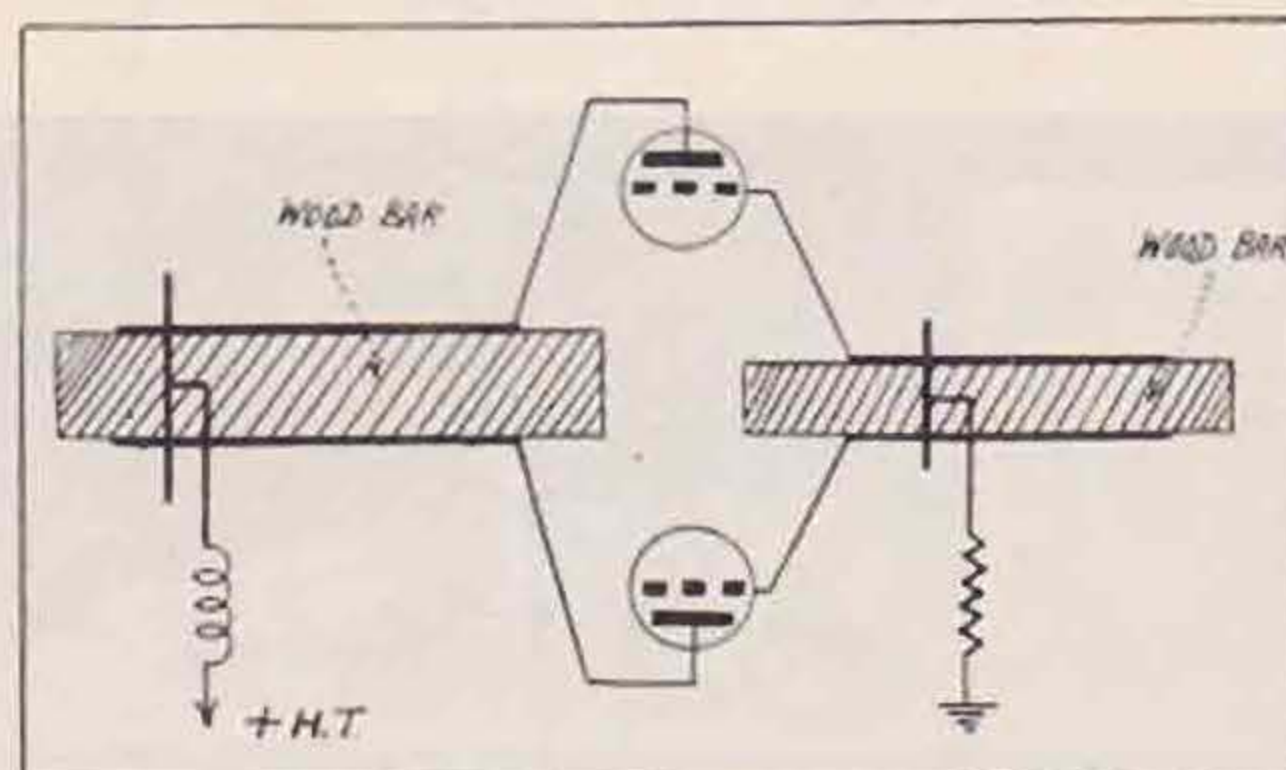
Telephony signals from SU1CH, Cairo, Egypt, are being heard regularly on 14 Mc. by BERS 195, at Tennant Creek, North Australia (from 23.00-2400 G.M.T.).

\* \* \*

Capt. G. Noblett, EI9D, informs us that the late Mr. Gleeson's call, EI5D, is being misused by an amateur presumably located in the British Isles. The station concerned is using telephony on 7 Mc. Any information concerning this matter will be appreciated by EI9D.

## **A "Long Strip" Oscillator for 56 Mc.**

Using the conventional "Long Lines" circuit shown below it was found that strips of copper foil would work quite well instead of copper rods. In the actual transmitter used by the writer the strips were fixed on to the opposite sides of a batten of wood,  $1\frac{1}{2}$  inches square cross-section. Probably a better method would be to stretch the strips from "stand-off" insulators, but the other method works quite satisfactorily.



The thickness and width of the strips are not critical, but variations in width will of course affect the spacing between the strips for most efficient operation. When the position of the shorting bar has been found the extra length can be cut off with little effect on the tuning. Sometimes a condenser connected across the extremities will increase the R.F. output.

The advantages of using strips instead of rods are:—

(1) It simplifies the connection of the "Lines" to the valve. It is difficult to solder a rod directly on to a valve holder, whereas a strip can be bent to the required angle and a better joint can be made.

(2) Strips are easier to cut up and handle than rods, and in experimental work it may be necessary to alter the lengths.

(3) Strips are very much cheaper and easier to obtain. Most amateurs will have old bits of copper foil in the junk box, whereas it is unusual to find three feet of copper rod lying about!

G5HF.

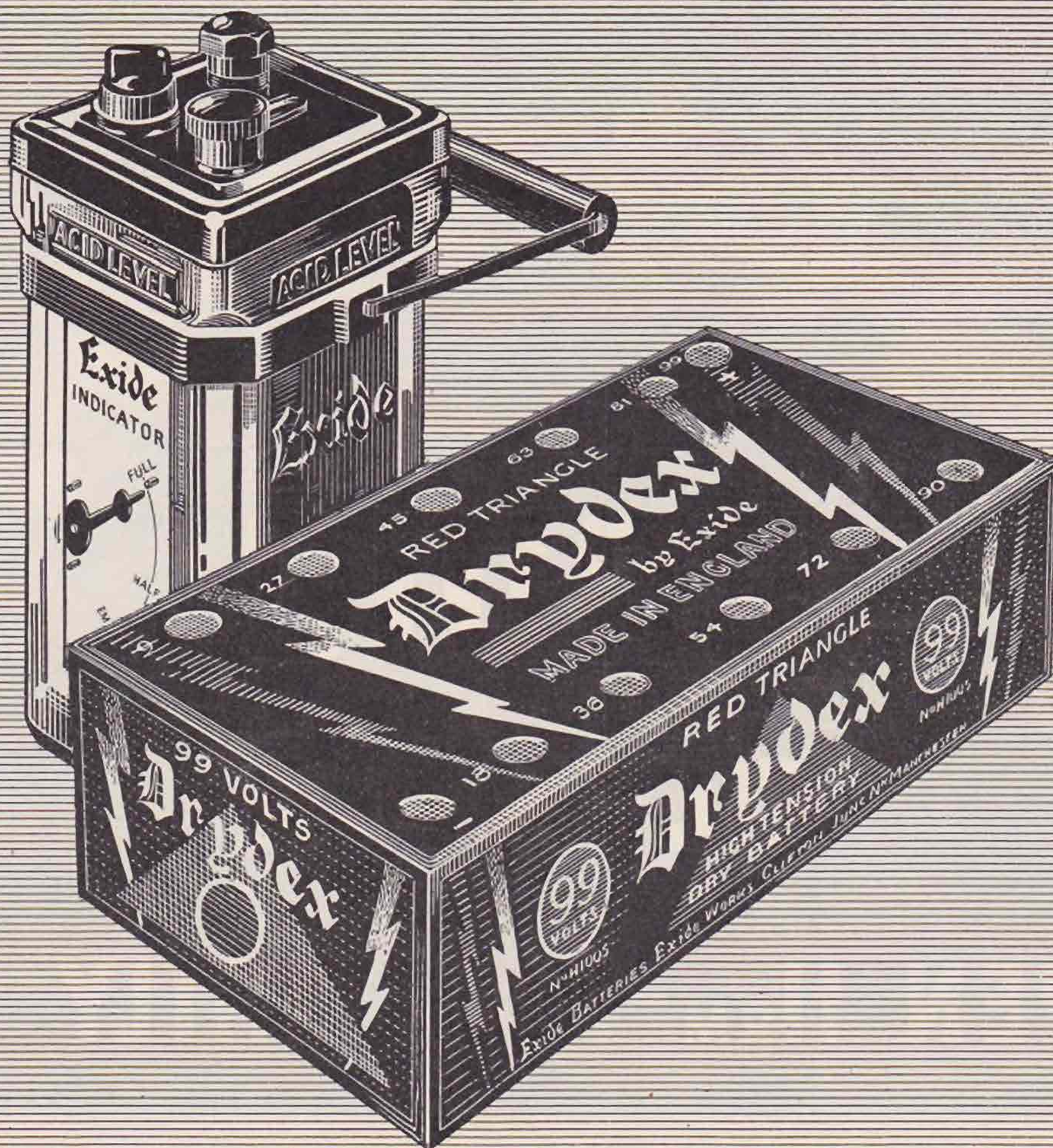
### **56 Mc. Tests from Mount Snowdon**

At the time of going to press we understand that, subject to official sanction of the G.P.O. being received, G6YQ, G5YP, G6KY and 2AKD will conduct a series of 56 Mc. fone and I.C.W. test transmissions from Mount Snowdon, between the hours of 09-00 and 18-00 B.S.T. on Sunday, August 23 next.

They hope that as many amateurs as possible throughout the country will avail themselves of the opportunity of participating in these tests. All who are interested should write to Mr. J. H. Wood, G5YP, "Deepdale," Marine Road, Prestatyn, North Wales, for further details.

Full information regarding the tests will also be published in the issues of *Wireless World*, *Popular Wireless*, and *Practical Wireless* for the week ending August 22.





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# THE ROAD TO CRANWELL

By L. C. HODGE (G6LH).

SUNDAY, July 5, will be a day long to be remembered by those fortunate ones who attended the annual Conventionette of District 17, held at Cranwell Aerodrome. Although we had anticipated that the meeting would be very interesting no one imagined it would prove the enormous success which it undoubtedly was. Our very sincere thanks are due to the Officer Commanding, who gave us permission to inspect the Radio Block and the various other departments. Incidentally he himself takes a great interest in Amateur Radio work and, if he has been able to learn how much we appreciated his great courtesy, we know he will feel amply rewarded.

Some idea of the crowd which was later to

inspection. Proceedings commenced with a general description of the aircraft which are used in the Wireless School for the training of wireless operators. This was ably given by G6AC, whose daily job it is to keep these machines up to the high level of efficiency and reliability which is the standard of the R.A.F. Several types of two-seater aircraft fitted with radio apparatus were inspected in turn. In the second hangar a pair of similar machines were dwarfed by three giant Valentia Flying Class Rooms. Steps were provided to enable every member of the party to walk inside and examine these huge machines, which are capable of carrying a complete class with their instructor, who is thus able to give them actual experience of working under his supervision with a ground station.



*District 17 Conventionette.  
Cranwell, July 5, 1936.*

*A group taken outside the Radio Block, Electrical and Wireless School, R.A.F. Station, Cranwell.  
Front row G6AC, 6CW, 6LH (D.R.), 6CL, 2LR (Cranwell T.R.), 6GH (Boston T.R.), 6AK (Grimsby T.R.).*

assemble was given when soon after 1.15 p.m. members began to arrive from far and wide. Two stalwarts, BRS2168 and 2AII, appeared on their bicycles from Retford, having camped overnight *en route*. Then followed contingents from Grimsby, Mablethorpe, nine members from London, G6ZU all the way from Stockport, G2KB from Rugby, G6CW, the D.R. of District 4, and then, just after 2 p.m., came our old pal "Clarry," paying a very welcome visit to Lincolnshire. In a short time the machines in the hangar, which was the appointed meeting-place, were soon almost lost to view as about 80 enthusiastic members eagerly began their

Members then proceeded to the cinema room in the Electrical Block, where they saw an excellent instructional talkie film describing the working of aircraft magnetos. It is interesting to record that G2KB, one of the party, had actually assisted in the production of this film. After this, a pleasant surprise was in store, for there next flashed on the screen the N.F.D. film of the District's A station, G2LR. Although the best photography was evidenced in the sub-titles, the remainder showed the difficulty of taking films in the dark light which seems to characterise N.F.D., but, all the same, the film was most interesting.



The party was then divided into two, one of which began a tour of the Electrical Block, while the other entered the Aircraft Instruments section. In the Electrical Block all the Service applications of electrical science were exhibited, and each of the various rooms was well worthy of an afternoon's inspection. Visions of the ideal N.F.D. were conjured up as we saw A.C. and D.C. generators, aircraft and ground type, some of the latter being wonderfully compact and fitted with small petrol engines. Then, swiftly, we passed through more rooms containing various types of petrol-electric charging plants, huge accumulator charging rooms for both nickel-iron and lead-acid cells, aircraft and car wiring rooms. Of particular interest were the large array of electrical measuring instruments, some being of a specially enlarged type for instructional purposes. The party was particularly interested in the dummy pilot all dressed up for high-altitude flying, with electrical heating elements tucked away inside his flying suit, even his goggles being heated to prevent them from becoming misty. The second party was meanwhile given a most interesting insight into the construction and working of the many instruments used on an aeroplane. The lecturer in this section gave a particularly lucid description and members soon began to feel at home amongst these amazing creations of man's ingenuity. One of the most fascinating exhibits was an electrically-operated camera as used in aerial survey work, which at the time of exposure automatically records the altitude, time and date! Then there was a camera built like a machine gun which is used for instructional purposes and which, instead of shooting bullets, takes a photograph of the enemy showing where the shot went. We suppose that the theme song of pilots who use this clever device is: "There lies the body marked with a cross!" The principle of the gyro was very clearly demonstrated. The two parties then crossed over, eventually assembling outside the Radio Block for the photograph which adorns this page. G2LR, who had gone to enormous pains to organise this wonderful visit, soon found that when "hams" are interested they soon forget about such details as time-tables and we were already behind schedule!

At this point a most welcome and refreshing drink was provided through the generosity of the Cranwell Amateur Radio Transmitting Society.

Four parties were then formed and were conducted round the Radio Block, wherein was to be seen every conceivable type of transmitter and receiver used in the R.A.F. We began with a demonstration by G6TV, who, with the aid of a cathode-ray oscillograph, showed us in quick succession accumulative grid and anode bend rectification, grid and anode modulation, and also the response curve of a tuned circuit. Everyone was visibly impressed at the excellently appointed lecture rooms and radio instrument laboratories. One felt that the finest possible training was being given to the pupils and many were the envious thoughts as we passed around. In the transmitting laboratory we saw clear proof of the remarkably efficient types of ground transmitters now used in the R.A.F., in which master-oscillator control is standardised. Those members who attended the Convention visit to the works of *Standard Telephones and Cables* were very interested

to see the identical  $\frac{1}{2}$  kw. M.O.-B.A.-P.A. transmitter in actual operation. Thoughts of N.F.D. returned as we inspected the compact aircraft transmitters where portability is essential. One 80 watt M.O.-P.A. outfit no more than a foot square, using DET 1's on long and short waves, claimed special attention; this set is designed for C.W., I.C.W., and telephony.

The sets on view, covering the whole range of types in use, were demonstrated working by the staff. The equipment of fighter aircraft with their Bowden-wire remote control were marvels of compactness.

In this block G2LR explained how all the pupils first received a thorough grounding in the fundamental principles of radio; they then assemble for themselves their own valve testing circuits, valve oscillators, C.W. transmitters and receivers, and these experiments lead up to the various types of R.A.F. transmitters and receivers, on each of which they then receive about eight hours' instruction.

Having spent a most enjoyable hour or so in the Radio Block the company moved over to the R.S.G.B. shack. To all of us this was the high-spot of the whole visit. Arranged on neat benches all round the shack were various types of transmitters belonging to G2LR, 2XK, 6AC, 6TV and others, and included a long lines 56 Mc. push-pull transmitter and an R.A.F. built 13 valve single signal superhet. The writer has never before seen a set which displayed such magnificent workmanship as this massive receiver, and its performance is amazing.

The whole party then re-entered their cars and the special 'bus and moved over to the Bristol Arms Hotel at Sleaford, where tea was awaiting us. When the members had to some extent recovered their manly vigour, the D.R., G6LH, formally welcomed G6CL and the various visitors from outside the District. He also gave a short account of happenings during the past 12 months. Then "Clarry" rose, and everyone, knowing his reputation by now, made themselves comfortable. No one knows how long he spoke because he kept us spell-bound, as in his accomplished way he ranged over the whole field of the Society's work. In the end, however, he succumbed to the pangs of thirst, and no questions were asked for the same reason! The D.R. moved a vote of thanks to our Secretary and made special mention of the hard work of G2LR and the C.A.R.T.S. in organising the Conventionette. G2LR, in his reply, spoke of the close bond which exists between R.A.F. radio and amateur radio men, both of whom are engaged in perfecting short wave apparatus. He traced the development of the use of short waves in the R.A.F. from the early days and acknowledged the help given by G2NM and others when they were working with Malta and Cairo in 1923.

The meeting over, informal ragchews were then begun and continued for some time until everyone had departed for home after, what we confidently believe, was the finest Conventionette ever held in this country.

G6LH.

### Stray.

Mr. Goodacre (G6GO) informs us that VU2CQ is anxious to work G stations and telephony. Best time 1800 B.S.T., band 14 Mc.



# THE 56 Mc. BAND

By L. G. BLUNDELL (G5LB).

IN view of the steadily increasing interest, particularly on the receiving side, it is hoped that the following words of warning will be taken in the right spirit.

In the first place, the reception of harmonic signals should be a good excuse for giving the receiver the "once over." This is well justified where modified quench circuits are used, bearing in mind their tendency to produce super-heterodyne effects on occasions when regeneration is carried too far, or when a very local carrier wave is being radiated.

Even specially made-up "straight" receivers are not altogether immune from such effects if care is not taken to obtain correct functioning of the regeneration circuit.

Receiver design does not come under these notes, and it is, therefore, requested that anyone in difficulty or doubt as to performance of their receiver should make use of the appropriate section of R.E.S. It must be realised that the reception of signals on 56 Mc., whether fundamentals or harmonics, is of real scientific value, and as such, should be treated with caution. While on this subject, it is particularly requested that all future reports should contain details as to tone of signal, time of fade-out and frequency, not forgetting, of course, to identify the signal if at all possible.

So much for precautionary measures, and now for results given by reports and log extracts concerning commercial harmonics heard. These are as follows:

June 26, at 2AVP, 2315/35, LQC R6 W5 T9.

June 28, at 2AVP, 1110, WLA (telephony) R6, W5, 1215/50 DFC, R5 W5 T9.

June 28, at G6PG, 2130 FYM R3 W5 T9.

June 29, at BRS2138, between 1400 and 1900, WFX, DFE, JNG, FYT, average signal strength of R3. HAS2 also heard on approx. 54.5 Mc. at R4 W5.

July 3, at G2AW, 1902/40, LCP R5/1 W5. 1921/40, LCB R2 W3, also at this time GFA6 R5.

July 3, at BRS.2138, 2220/40, PCT R5 and JBG R2.

July 4, at G2HG, 1350/1400 R5/3 CW (note similar to ICJ or IRU). 1400/1505, unidentified comm. telephony on approx. 58 Mc.

July 4, at BRS.2138, 0015 PLV R3. 1130 WQV R3.

July 6, at G2HG, 1945/2030 IRU R6/3, 1945, ICJ R7/3. 1950/2030 comm. telephony R5/4.

July 6, at G5LB, 1915/50 ICJ R7/4 QRT or QSC at 2000. 2000/15 comm. telephony R6/0 no call heard.

July 8, at G2GB, 2253 FYN R3 rapid QSC.

July 12, at G2HG, 1855/1955 IRU R5/3, 1930 ICJ R4.

July 18, at G5LB 1830/5 ICJ R3.

July 24, at G6DH 0900 LCP on approx. 44 Mc.

As will be noticed, the later part of the month produced next to nothing in the way of commercial harmonics, and it is interesting to know that the lower frequency bands were also experiencing bad conditions at this time. If, therefore, by the time these notes are in print, conditions on 28 Mc. are

again favourable and harmonics are again being heard on 56 Mc., then it appears that 28 Mc. will be valuable as an approximate check on the question as to the likelihood of really good conditions occurring on 56 Mc. with the chance of DX contacts being made.

## Schedules.

It should be noted that this month there are some alterations and additions to existing schedules, and also that there is now another CW station active.

As previously pointed out, active periods are occasionally broken into by holidays, etc. G5LB will be inactive during the first fortnight in September for this reason.

## SCHEDULED C.W. TRANSMISSIONS.

Call.	QRA.	Frequency (Mc.)	Days and Times (B.S.T.).
G2GB	Shortlands, Kent	56.784	Wed. & Sat. 1130-1230
G2HG	London, S.E.26	56.32	Sat., 1430/1700 Sun., 1000/1300 1400/1800
G5FN	Gillingham, Kent	—	Sat., 1500/1700
G5LB	Beckenham, Kent	56.72	Mon., Tues., Thurs. & Fri., 1830/1900 Sat., 1600/1700 1800/1900 Sun., 1200/1300
G5JU	Bristol	57.4	Sat., 1500/1530 Sun., 1100/1200
G6PG	Gravesend, Kent	56.36	Mon., Wed., Fri., 2130/45 Tues., Thurs., Sat., 2015/70 Sun., 0900/15 1715/30

It is understood that quite a number of stations are making preparations for CW. work, but owing to lack of co-operation in the way of local reports, are finding it rather difficult to get signals satisfactorily radiated. BRS and AA stations can render useful service to transmitting members by advising them of their willingness to report on transmissions as and when required.

## General.

There is no news of any special tests during the next few weeks. However, reports have been



received from G5FN and BRS2138, both of whom found local co-operation and interest apparently nil, in spite of their efforts. On the other hand, both found the band to contain something of interest, though from unexpected quarters.

After climbing several thousand feet of "rough stuff," BRS2138 and his helpers settled down to log a long hoped for bag of 56 Mc. calls, but all that was audible were a few commercial harmonics, Amateur signals being, it seemed, non-existent!

G5FN could not even find a commercial harmonic to listen to, in spite of a very good receiver and ditto QRA. He took a receiver out in a car to check field strengths up to a fair distance, and results indicated that signals should have been heard up to about 50 miles. Lack of QSL to date makes things even more puzzling.

On July 11 at 1500 G5FN heard an R5/6 M.C.W. signal calling "CQ 5 DX," and signing "F8ANW." No QSO resulted, and five minutes later the same station came on again with 'phone in both English and French, calling "five-metre 'phone," but giving no clue as to QRA—only that he was portable. G5FN would appreciate any information as to the possible origin of this transmission. (F8NW has been worked from G2FA.—ED.)

From W7BPJ there is some information on a portable test carried out by the Portland Sevens Radio Club on June 14. They climbed Mount Hood (11,400 ft.) in Oregon, and made the following good contacts: W7AMX (Portland), 60 miles at R9, 7OM (Vancouver, Wash.), 60 miles at R8, R7 from a station in Salem (80 miles), and R8 from W7AVV in Hillboro, Oregon (about 79 miles).

News of tests from PAOWK was received too late for inclusion in last month's notes, and owing to the difficulty of getting news of such tests known through other means than by post, it is feared that very few people get to know of them.

British five-metre stations who are also active on, say, 7 Mc., and who contact Empire and foreign stations with a view to getting news of future tests on 56 Mc., are requested to point out the importance of receiving such news several weeks before they are due to take place. The Dutch Amateur Society (V.U.K.A.) are, it is understood, holding another test in August, but nothing definite has been heard as to exact date and times, etc.

Holidays at G5LB at the end of this month make it imperative that all matter for inclusion in next month's notes must reach 5LB by August 25 latest.

### Ipswich and District Radio Society Reinstated

At a meeting held on July 23 at Oxborrows Hotel, St. Peter's Street, Ipswich, by kind permission of Capt. Horne, it was decided that the old Radio Society be reinstated. The following officials were elected: Chairman, Mr. C. Runeckles, G2YZ; Secretary, Mr. D. H. Barbrook, G8AN; Treasurer, Mr. A. G. Wood, G6TI; Committee, Messrs. Keebie, Rodwell, Grover, and Smith.

It was arranged to hold meetings at the above address on the second Tuesday in the month during summer time, and on the second and fourth Tuesday during the winter.

Those interested should get in touch with Mr. D. H. Barbrook, Radio House, St. Peter's Street, Ipswich.

## The Ten-Metre Band.

Conditions in Europe, Asia, and Africa have been worse than ever this month. ZSIH and FB8AG both find them very bad. VU2AU has heard commercial harmonics but no amateur signals for the last six weeks. D4KTP, D4YCF, PA0AZ and OE7JH also report bad conditions. G6DH, who is still active on this band every day, worked XE1AY on June 30 and heard PY1AW, and on July 5 and 10 he worked ZSIH. On 15 days he heard no amateur signals, but a few European commercial harmonics. On July 23 he heard harmonics of F3EB, SM7UC, HAF7I, D4PIU, and OK1FL between 22.45 G.M.T. and 23.35 G.M.T., although conditions were poor earlier in the day. He says that they were still coming in when he went to bed, but that nobody was active on "ten." BRS1173 found much the same state of things on July 2 and 3, when he heard D4NVR, OE1ER, HB9BD, D3CSC and D4XQF between 19.30 G.M.T. and 21.50 G.M.T. Perhaps we are all working on the band at the wrong time and should start at midnight in future! Our ray of hope this month comes from the Antipodes, where VK3RJ actually reports on July 6 that conditions are still good for VK6 and W. G2YL will be on holiday till the end of August.

### EMPIRE CALLS HEARD

*Eric W. Trebilcock (BERS195), Telegraph Station, Tennant Creek, North Australia. May, 1936.*

7 Mc.: vr4jd (846). 14 Mc. (fone): sulch (955), ve4lx (956), ve5ot (956), vu2bg (955), vu2cq (956). (C.W.): G2ul (954), 5yg (944), 6hb (955), ve3xq (955), 4ig (944), vplwb (855), 2df (756), vq8aa (855), vr4ba (755), vs2ag (957), 7gt (954), zblh (954).

Figures in brackets denote tone, readability and strength respectively.

### Reports Wanted

G8AS (Scotland) on his 7 and 14 Mc. C.W. transmissions.

G8CR (Workop) on his 7062 and 14124 kc. transmissions.

### Stray

XU3FK and VQ 2 CJB are interesting new calls on the 14 Mc. band. Both have contacted G on several occasions.

## STOP PRESS.

We have been advised by the I.E.E. that due to structural alterations, it will not be possible for Convention meetings to be held in their building on September 5th. Arrangements have therefore been made for the Saturday programme to take place in the premises of the Electrical Lamp Manufacturers Association, which is above the I.E.E. building.

The photograph will be taken on the steps of the I.E.E. as hitherto.



# RESEARCH AND EXPERIMENTAL SECTIONS

## MANAGER :

H. C. PAGE (G6PA), Plumford Farm, Ospringe, near Faversham, Kent.

## ASSISTANT MANAGER :

J. C. ELMER (G2GD); "Aethelmar," Seabrook Road, Hythe, Kent.

## SECTIONS :

### No. 1 : TRANSMITTER DESIGN

S.M. : G. McLEAN WILFORD (G2WD), 33, Bibury Road, Hall Green, Birmingham.

#### G.M. : 7 and 14 Mc.

S. BUCKINGHAM (G5QF), 9, Brunswick Park Road, New Southgate, N.11.

#### G.M. : 28 Mc.

G. McLEAN WILFORD (G2WD).

#### G.M. : 56 Mc.

J. N. WALKER (G5JU), 4, Frenchay Road, Downend, Bristol, Glos.

#### G.M. : Artificial Aerials

A. W. LISTER (G5LG), Royal Military Academy, Woolwich, S.E.

### No. 2 : RECEIVER DESIGN

S.M. : J. MAWBEY (BRS. 1300), 109, Clare Road, Tankerton, Kent.

#### G.M. : General

D. GORDON BAGG, (G6BD), Fresh Woods, Tonbridge, Kent.

#### G.M. : 56 Mc.

J. N. WALKER (G5JU)

#### G.M. : Superhets

T. B. SMITH (G5TS), 115, Novar Drive, Hyndland, Glasgow, W.2.

### No. 3 : AERIAL DESIGN

S.M. : F. CHARMAN (G6CJ), Orchard Cottage, Stoke Poges, Bucks.

#### G.M. : General

F. WILSON (G2XX), 85, Risca Road, Newport, Mon.

#### G.M. : 28 Mc.

L. O. ROGERS (G2HX), "Audwen," Estcourt Road, Gloucester.

#### G.M. : Joint Group with Propagation

G. A. H. ECKLES (G5GC), 57, Sutton Road, Beverley High Road, Hull.

### No. 4 : PROPAGATION

S.M. : J. C. ELMER (G2GD), "Aethelmar," Seabrook Road, Hythe, Kent.

#### G.M. : 28 Mc.

MISS N. CORRY (G2YL), "Redholm," Walton-on-the-Hill, Tadworth, Surrey.

#### G.M. : Conditions

J. HAIGH (G6HA), 2, Greenock Terrace, Leeds, 12.

#### G.M. : Literature

A. T. MATHEWS (G5AM), 24, Woodside Park Road, North Finchley N.12.

G.M. : Joint Group with Aerial Design  
G. A. H. ECKLES (G5GC).

### No. 5 : VALVES AND INSTRUMENTS

S.M. : D. N. CORFIELD (G5CD), 10, Holders Hill Gardens, Hendon, N.W.4.

### No. 6 : AUXILIARY APPARATUS

S.M. : A. O. MILNE (G2MI), "Twemigh" Kechill, Gardens, Hayes, Kent.

#### G.M. :

F. W. BENSON (2BWF), 53, Corona Drive, Thorne, Doncaster.

### No. 7 : MICRO-WAVES (112 Mc. and above)

S.M. : DR. C. G. LEMON (G2GL), 19, Lena Gardens, Hammersmith, W.6.

### No. 8 : CONTEMPORARY LITERATURE

S.M. : A. T. MATHEWS (G5AM), 24, Woodside Park Road, North Finchley, N.12.

## NEWS OF THE MONTH

Members will be sorry to hear that Mr. H. C. Page (G6PA), who is on the sick list, has been ordered a complete rest. We wish him a speedy recovery to health. In the meantime the task of keeping the ball rolling falls upon the writer, G2GD.

Bearing in mind the fact that these notes will appear shortly before Convention, one can do no better than make a review of R.E.S. as it stands to-day, putting forward a few thoughts which, it is hoped, will provoke discussions at Convention.

Prior to the formation of R.E.S., there existed "Contact Bureau" which, as its name implied, was a "bureau" by which members could "contact" each other for their common interest and the advancement of the science. Two years ago it was felt that the objects of "Contact Bureau" were worthy of a wider field of operation, consequently members were asked to enrol in the "Research and Experimental Section." R.E.S. grew in numbers until it became necessary to re-shuffle the groups last autumn. The opportunity was then taken of finding out the qualifications of all who wished to continue in the scheme. The outcome was the present sectional system. The rules were revised and published last March.

### Results.

Let us now see what results have been achieved. Certainly a number of interesting articles have been published in THE BULLETIN, but with few exceptions a large percentage of members appear to do nothing towards the work of the section; if we include "Individual" members the percentage is larger still.

While on this subject we would urge members to read Rule 18, which states, "Members of R.E.S. are asked to submit all contributions to the Section Manager. . ." So many articles have gone straight to the Editor without any reference to the writer being a member of R.E.S.

### Individual Members.

The rules state: "Individual members must report active at least once in every six months." Now it would be no exaggeration to say that one could count on the fingers of the hands the members who have kept this rule. We are well aware that in all experimental work results cannot be achieved to order or to time, but a postcard to the Section Manager, informing him that you are at work on such and such a problem, would show that the interest is there. As the name implies, members join as "individual" because they wish to work by themselves, and as such they cannot expect the Section Managers to write to them and enquire as to their activities. We can only assume these are nil.

### What is Wrong?

Can you tell us? Are you satisfied with your leaders? If not, please inform us so that we can make way for others. The writer feels that there are a great many men in R.S.G.B. who ought to be within the active ranks of R.E.S. Why not?



*The crux of the matter is that the true function and place of R.E.S. in the Society has never been properly defined and understood.*

#### "Key Thumpers" and "R.E.S."

If R.E.S. is to be worthy of the name it carries it must contain all those members who are not just "key thumpers." Let no one read into this any suggestion of contempt for this fraternity. What is one man's meat . . . , etc., but it seems that we shall never be right until all members who are interested in research come under the banner of R.E.S., and loyally abide by the rules and organisation comprising the Sections. It might be well to give the certificate of membership only to those who have so proved themselves.

#### The Future of R.E.S.?

The writer suggests that there are three purposes for R.E.S., and below are set out these objections which seem to be the only rational reasons for the future existence of R.E.S.

1. R.E.S. must contain *all* those members who are out for original research; qualified men with experience from whom will be drawn the leaders.

2. R.E.S. will thereby become the official repository of knowledge, to which an enquirer may turn for information on any problem which confronts him.

3. R.E.S. will provide an educational side for beginners, who are anxious to make headway.

The writer regrets that he cannot be present at Convention to raise R.E.S. matters himself, but he hopes that others will do so.

Before concluding these comments the writer desires to record his thanks to Council for honouring him with the award of the Courtenay Price Challenge Trophy. Council in making this award have, it is felt, recognised not the work of an individual, but the importance of R.E.S. as a whole.

#### Individual Members.

The following members have enrolled since June 25:—

Receiver Section: Mr. B. A. A. Charya (India).

Aerials Section: 2ABU, Mr. Charya.

Propagation Section: 2ABU, BRS2500.

Micro Wave Section: G2OJ.

#### The Solar Eclipse, June 19, 1936\*

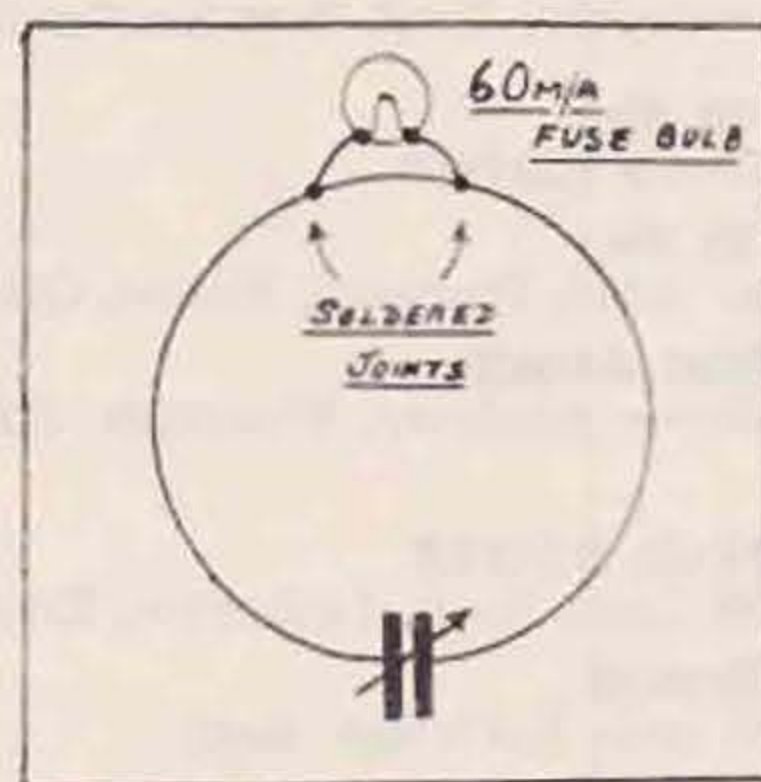
Very few reports on "conditions" at the time of the solar eclipse have come to hand, probably owing to the unceremonious hour at which the eclipse elected to take place. All thanks and credit to those who did turn out to keep watch and who have duly reported.

Practically nothing of unexpected occurrence took place. Thunderstorms were rather prevalent and "conditions" were generally erratic. On the whole they were rather poor, and little was revealed beyond a partial return to night conditions across the path of the eclipse. This was perhaps more in evidence on the higher frequencies, being those unlikely to be disturbed by thunder activity. Some observers report an increase in mush level round the time of totality, whereas others comment on the exceptionally quiet background except for lightning crashes. G2YL, listening to HSP (17,760 kc.), found a very marked dip in signal strength at the

time of totality, rising to R8 afterwards. But—to quote from her report—"At 05.54 B.S.T. I listened again, and found HSP was only R5. At 05.56 he was only R3/2. This was altogether too much for me, and I went back to bed!" But perhaps this was not so bad after all, for the sun had long been out of *his* bed at that hour.

#### An Indicating 56-Mc. Wave Meter

A remarkably simple indicating device can be fitted to an absorption wave meter for the 56 Mc. band. All that is necessary is to connect an ordinary 60 ma. fuse bulb in its holder across about 2 ins. of the coil of a single-turn wave meter. This



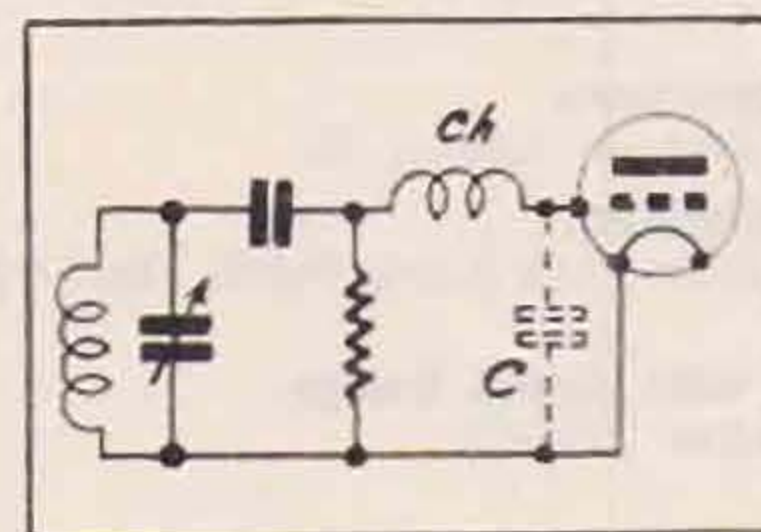
should be attached by stout No. 12 or 14 wire soldered to the coil, and made as rigid as possible. It will be found that the lamp will glow when the wave-meter is brought near to the transmitter, and the tuning of the wave meter is every bit as sharp, if not sharper, owing to the fact that the lamp's

resistance is paralleled with the 2 ins. of coil. The meter must of course be calibrated with the lamp in position. The figure illustrates the device.

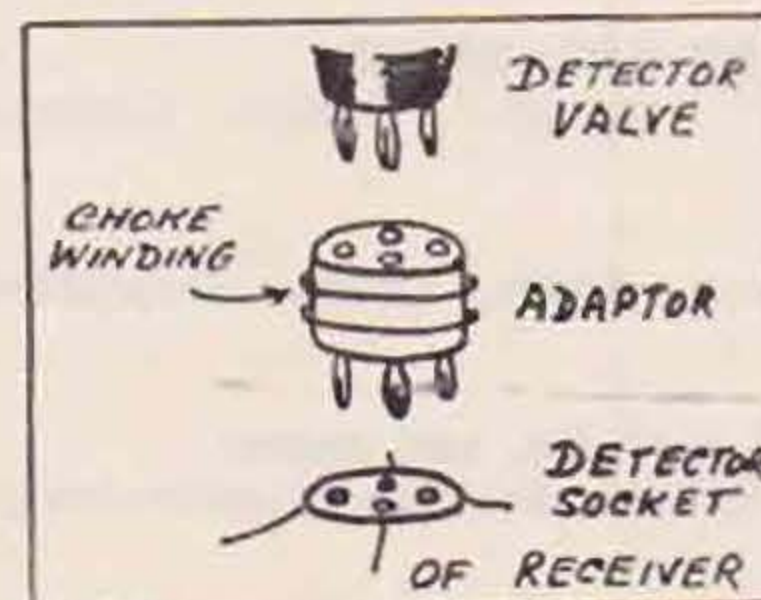
G2GD.

#### 56 Mc. and Broadcast Interference\*

The following suggestion comes from CQ-NVIR, and is the result of joint work by PAOGH and the Dutch Post Office, on the question of BCL interference from fairly high power 56 Mc. transmitters. They find that if the broadcast receiver is functioning properly, so that rectification is being carried out exclusively by the detector stage then if 56 Mc. energy can be shunted off from the detector grid, interference will be cured. This is done by inserting a 56 Mc. choke directly at the grid.



The 56 Mc. choke Ch and the valve grid-filament capacity C form a potentiometer for 56 Mc. signals. The capacity offers a very low impedance, and the choke a very high one, so that practically no voltage is developed at the grid. For normal frequencies the effect is reversed, and full signal voltage is applied to the grid.



The practical form of the arrangement is very neat, consisting of an adaptor which plugs into the detector valve socket, and receives the valve itself. The choke consists of a few turns of wire round the circumference of the adaptor, like an anode current measuring adaptor, but in the grid circuit instead of the anode.

\* Notes compiled by the Propagation Section, R.E.S.

\* Contributed by G6FY, "Individual Member," R.E.S.



# SOLILOQUIES FROM THE SHACK

BY UNCLE TOM.

(The Old 'Un is allowed to occupy his page once more. Just why this should be so, we simply can't think—but here he is.)

Good evening, children! Here's your dear old Uncle Tom back again. And to celebrate this happy occasion, what d'you think I've got for you? Why, the long-promised Dictionary of Ham Terms for Tiny Tots, compiled by myself with the help of the authors of "QSA 5 and All That."

(*Special Note*: Readers with no sense of humour are specially asked to remember that the following is meant to be funny.)

Here are the Q scale, the R scale and the T scale. Cut them out and stick them on the wall:—

## QSA SCALE.

QSA 1: My receiver is punk.

QSA 2: What the heck did you want to call me for?

QSA 3: That ought to stop you trying to rag-chew!

QSA 4: If only my Code will stand it I can copy you quite well.

QSA 5: Just another QSO.

## QRK SCALE.

R 1: I wish to insult you.

R 2: I don't want to work you.

R 3: You are too much trouble to work.

R 4: You only gave me R 5.

R 5: You may only give me R 5.

R 6: You are R 9, but I know you have 250 watts.

R 7: You are R 4, but one good report deserves another.

R 8: I am willing to work you.

R 9: You are a dr dr ob and I had my Eno's this morning.

R 9+: I want to borrow something.

## QRI SCALE.

T 1: Your note is unfit for human consumption.

T 2: Who d'you think you are? Covent Garden?

T 3: Either you've lost the key of your Goyder lock or you're sending with a file.

T 4: I am using an A.C. receiver.

T 5: I give it up—don't know what to give you.

T 6: Say, big boy, your note sure has poisonality.

T 7: Ha, ha! I know you fancy your note—that ought to sting you up.

T 8: Think I'd give you T 9 when you only gave me T 8?

T 9: You have a spacer-wave.

And now for the first thrilling instalment of Uncle Tom's Glossary of Ham Terms.

*Artificial Aerial*: An aerial that exists only in the imagination of the G.P.O.

*B.C.L.*: The lowest form of animal life.

*Bottle*: See Feeder.

*Bug*: An instrument for multiplying dots (hence "bughouse"—dotty.)

*Crystal*: A pane of glass from a doll's-house window.

*C.W.*: Continuous wave, so called because it is broken up into dots and dashes.

*Distortion*: Phenomenon to which DX stories are prone.

*Dope*: Generally inaccurate information given by a ham who doesn't know of anything else to say,

to a ham who doesn't want to hear it, inducing a feeling of sleepiness in both.

*DX*: A kind of ham religion.

*Experimenter*: A ham with horn-rimmed specs., a copy of the Handbook, and an infinite capacity for picking brains.

*Feeder*: See Bottle.

*Ham*: Someone who says "old man" in his sleep.

*Hamband*: The occupants of the saloon at the local, before, during and after a meeting.

*Ham Spirit*: The tie of affectionate comradeship that binds together all hams who use the same crystal frequency.

*Hi*: Conclusive proof that you have made a joke.

*Hi (on 'phone)*: Same as above, but you are being even funnier without knowing it.

*OB and OM*: Only punctuation ever used by hams.

*OW*: Legitimate excuse for continual activity on the air.

*R*: "Received." (Literally, two words copied.)

*Self-excitation*: Getting keyed up without control.

*Shack*: A piece of land entirely surrounded by wire.

*Theory*: Nobody's business.

*Wx*: A topic of conversation introduced after "dah-dit-dit-dit-dah" six times.

*YF*: An OW in the early stages of decay.

*YL*: Legitimate excuse for continual inactivity. And now, just a few of the "Q" signals to finish up with.

*QRL*: Hurry up and pack up. I want to work six more DX stations in the next half-hour.

*QRT, QRU*: Ditto.

*QRX*: Stand by till you're blue in the face. I want to make rude noises.

*QSV*: Send V's, please. I have an Expensive American Wireless and it takes a lot of adjusting.

*QRG?*: Am I anywhere near the band? Using E.C. here.

*QRS*: Send double, or even treble. I'm not listening.

*QSL*: You're awfully ill-mannered if you don't send your card by air-mail. But you needn't expect an answer to it.

*QSP*: I will write a garbled version of your message on a scrubby piece of paper, which I shall then lose.

*QSY*: There's a lot of QRM about. Let's get just the other side of GMR.

*QRZ?*: Like CQ, but longer.

*QRI?*: I am using raw A.C. Can you read me, by any chance?

*Test VK, ZL*: CQ U.S.A.

*Fone stations only*: I can't read code, so it's no good calling me on C.W.

"Dear OB": Hell! You again?

*Foto-for-foto*: A meaningless formula. Possibly continental equivalent to QSL.

*QRM spitch*: Sorry, didn't get that. You might send a bit slower next time.

And so, for the present, dear readers, we leave you. Brickbats thankfully received, preferably by post, but *not* across the table at Convention Dinner.



## NEWS FROM THE STATES

By YARDLEY BEERS (W3AWH).

THE last few months have been heavily laded with events of importance to the American amateur. By death we lost Hiram Percy Maxim, beloved founder and, until his death, the only President of the A.R.R.L., a man who stood as a symbol of the unity of American amateur radio, and of all that was fine in it, and who used his wide influence to better the status of amateur radio. Almost simultaneously, death also took away from us Charles H. Stewart (W3ZS), Vice-President of the League, who has devoted unselfishly much time and effort towards bettering the position of amateur radio from the legal side.

At the annual meeting in May of the directors of the League, E. C. Woodruff, Ph.D. (W8CMP), and Mr. G. W. Bailey (W1KH), were elected President and Vice-President. Dr. Woodruff, who was senior member of the Board of Directors, has served the League well during his long term of office, and is a member of the Cairo Committee of the Board. He has also wide technical experience as a professor of radio and electrical engineering. Mr. Bailey, also a member of the Cairo Committee, has made an outstanding record as the operator of W1KH, and also in the past few years as a director.

In addition, the Board recommended to the F.C.C. raising the code requirement for amateur licences to 13 words per minute, and the widening the 4 Mc. 'phone band to 5850—4000 kc., the former of which has been adopted. Plans for Cairo and the C.C.I.R. meetings were considered, and a committee to investigate the matter of moving headquarters to a more central location was appointed. Funds were authorised for the erection of a new headquarters station as a memorial to Mr. Maxim; W1MK having been destroyed by flood.

It is unfortunate that Messrs. Maxim and Stewart could not have lived at least a few days longer, when amateur radio was able to give the greatest demonstration to date of its value to the public; that is, the emergency communication work done at the time of the March floods, which caused an unprecedented amount of damage in the Eastern U.S.A. This fine work won many friends for amateur radio among government officials, the press, and the public at large, and received wide acclaim. One of the many outstanding stations in this work, W8BWH, twice had the unusual honour of having his 'phone signals retransmitted over a coast-to-coast network of the National Broadcasting Company.

Widely acclaimed is also the noise-silencing circuit recently developed by James J. Lamb, of the Headquarters staff. This circuit, which minimises noise, especially motor-car ignition noise, is a very worthwhile improvement to superheterodyne design and promises to be in widespread use. One or two commercially built receivers employing it are already on the market. The principle is that of a very fast acting A.V.C. circuit, which cuts off the I.F. stages the instant that noise comes through.

A number of new transmitting and receiving valves have been put on the market, as usual. By far the most outstanding is the metal "beam"

power valve, 6L6, which gives a much larger power output at low anode voltages than any other valve. Therefore it affords a much more economical way of obtaining fairly large L.F. outputs. Furthermore, it is very suited as a crystal oscillator, and gives outputs as high as 35 watts, which is considerably higher than any other receiving valve.

The recent speedy development of local police radio on frequencies adjacent to our 56 and 28 Mc. bands is making the suppression of illegal operation and avoidable QRM even more necessary. The use of mobile equipment by amateurs in motor-cars, whereas now legal, has been the cause of several cases of local friction with the police. There is a possible danger of our losing some of our privileges on these bands.

DX on 14 Mc. was unusually good during the spring and early summer. The legendary figures known as Asiatics, and almost as rare Eastern Europeans, have been coming through with unprecedented regularity and signal strength. At times Europe could be worked nearly twenty-four hours a day. However, the South Africans seemed to have obtained a good start on their annual hibernation. The 28 Mc. band has been poor, but 56 Mc. on several occasions in May and June danced a merry jig, otherwise named in QST as "The Great Five-Metre Panic," when the band opened and produced numerous contacts of 1,000 miles and even more.

"Edge-of-the-Band" mania has been increasing of late. It seems to be the ambition of everyone to own a crystal frequency of 14,399.999999999 kc., or its equivalent on other band edges, and numerous of our less scrupulous or less careful brethren are straying into the forbidden pastures beyond, while the centre of the band is comparatively unoccupied at times. The proverbial "last straw" was reached recently when one of our friends, who operates on 14,396 kc., took courage enough to call a certain Asiatic on a Sunday morning. In fact he was patient enough to call the Asiatic at every logical interval during a period of an hour and a half, but it was all just code practice; for the Asiatic, who was knocking off the W's at rate of about a QSO per ten minutes, persisted in working stations *higher* in frequency than our poor friend, and he probably never even tuned his receiver that far. A little QML and QMH is in order.

### Wirral Amateur Transmitting and Short Wave Club.

Thirteen members attended the meeting held at the King's Square Café on July 29. Mr. Taylor (2BDT) reported that on Saturday, June 27, a party paid a visit to the Post Office Transmitting Station at Seaforth, near Liverpool. The apparatus at Seaforth consists of two 600 metre I.C.W. transmitters, one 190 metre telephony transmitter for working trawlers, together with appropriate receivers, and alternators, generators, and batteries for power supply.



# THE 1936 VK-ZL INTERNATIONAL DX CONTEST

Promoted by South Australian Division Wireless Institute of Australia, under supervision of Federal Executive.

THERE will be three Contests:—

- (a) Open Section.
- (b) Handicap Section.
- (c) Receiving Section.

## Rules.

1. The W.I.A. Contest Committee will be the sole judges and all rulings and interpretations will be binding in the case of any dispute.
2. The nature of the Contest requires contacts between the World and VK-ZL.
3. The Contest is open to all licensed transmitting and receiving stations in any part of the world. Unlicensed, ship and expedition stations are not permitted to enter. Financial members of W.I.A. and N.Z.A.R.T. only will be eligible for awards in VK-ZL.
4. Only one licensed operator is permitted to operate any particular station. Should two or more operators operate at the same station, each will be considered a competitor and must enter under his own call sign, and submit in his log contacts established by him. This debars persons entering who have no amateur licence.
5. All Amateur Frequency Bands may be used.
6. No prior entry is required, but each contestant is to submit a log at the conclusion of the Contest showing date, time (G.M.T.), band, station worked, signal reports exchanged, and points claimed for each QSO. Signal reports must include Strength, Tone, Readability.  
*Note:* No serial numbers are to be exchanged.
7. The Contest will be held from 12.00 G.M.T., October 3, to 14.00 G.M.T., Sunday, October 4, and will be continued between the same times on each of the four (4) following week-ends, October 10 and 11; 17 and 18; 24 and 25; and October 31 and November 1, 1936.
8. Scoring for VK-ZL Contest:  
Twelve points will be scored for the first contact with a station in a country other than VK-ZL. Eleven points for the second, ten for the third, and so on until the twelfth, which will score one point.  
The first 12 contacts with a particular country will score 78 points. In all cases contacts are irrespective of the band used. This will apply to all countries except England and the United States of America; in these two countries 12 or more (as above) contacts will be permitted with stations having the following prefixes: G2, G5, G6, G8 and W1-2-3-4-5-6-7-8-9.  
The points scored by contacts in the above manner will be added together and multiplied by the number of countries worked, which will give the final score, except in the handicap section, where the grand total will be divided by the input (PA to Aerial in Watts), which will give the final score.
9. Scoring by competitors beyond VK-ZL:  
Twelve points will be scored for the first

contact with a VK-ZL prefix zone, 11 for the second, 10 for the third, and so on to the 12th contact, which will count one point. The first 12 contacts with a particular prefix zone will therefore score 78 points.

Each additional contact after the 12th will count one point. This will apply to each VK-ZL prefix zone worked. The points scored in the above manner will be added, and the total multiplied by the number of VK-ZL prefix zones worked, which will give the final score.

The Prefix zones are VK2-3-4-5-6-7-8-9 and ZL1-2-3-4.

10. Only one contact with a specific station on each of the bands will be permitted to count during the whole of the Contest except on the 28 Mc. bands, where one contact each week-end will be permitted to count.
11. All VK-ZL stations entering in the handicap section must state their desire to do so and give the power input to valve feeding the aerial. Input in the handicap section must not exceed 25 watts.
12. Entries from VK stations must reach the W.I.A. Contest Committee, Box 284-D, G.P.O. Adelaide, not later than December 1. All overseas logs must reach the same QRA not later than December 31, 1936. Entries from ZL stations must be sent to the N.Z.A.R.T., Box 489, G.P.O. Wellington, not later than November 25, 1936.

## Awards:—

Attractive Certificates will be awarded to the station returning the highest total in each country and to the highest scorer in each of the G and W prefix districts and Canadian districts.

For awards for VK-ZL highest scorers, see official organs of W.I.A. and N.Z.A.R.T.

## Receiving Contest.—

1. The general rules for the receiving contest are the same as for the transmitting contests and is open for any short-wave listener in the world except in New Zealand, where only Members of the N.Z.A.R.T. can compete in receiving.
2. Only one operator is permitted and only one receiver can be used.
3. The dates, times, scoring of points and logging of stations on one band for the duration of the Contest are the same as for the transmitting contests. *Note:* Reception of 28 Mc. stations will be permitted to count for once on a week-end, and not once only for the duration of the Contest.
4. To score points the call sign of the station being called and the readability, strength and tone of the calling station must be entered in the log, together with band, date, time. Logging of CQ or test calls will not count. *Note:* Overseas stations must be logged  
(Continued on page 98.)



# BOOK REVIEWS



**PROBLEMS IN RADIO ENGINEERING.** (Second Edition.) By E. T. A. Rapson, A.C.G.I., D.I.C., A.M.I.E.E., Assoc.I.R.E., F.P.S. 103 pages. Published by Sir Isaac Pitman & Sons, Ltd. Price 3s. 6d. net.

When reviewing the first edition of this book a little over a year ago, I suggested that a list of references for each section of the subject would greatly assist the student; I also criticised the formula used for the calculation of inductance.

The present edition carries a really useful reference list at the head of each section, and the inductance formulæ are now quite suitable for radio-frequency calculations.

The only other suggestion in the first review was that graded problems, leading up to the examination problems given, would have been helpful. These would help, mainly, the private student. Teachers of the subject will find the collection of examination questions a useful one, and students studying for examinations in radio engineering should certainly find the book invaluable.

For readers who did not see the first review, it should be explained that this little book is a collection of examination questions from papers of C. & G., I.E.E., and London University, arranged under 43 headings. Answers to the questions are supplied

at the end of the book, and in a number of cases a full solution is worked out.

The book is very confidently recommended to all students of radio engineering. T. P. A.

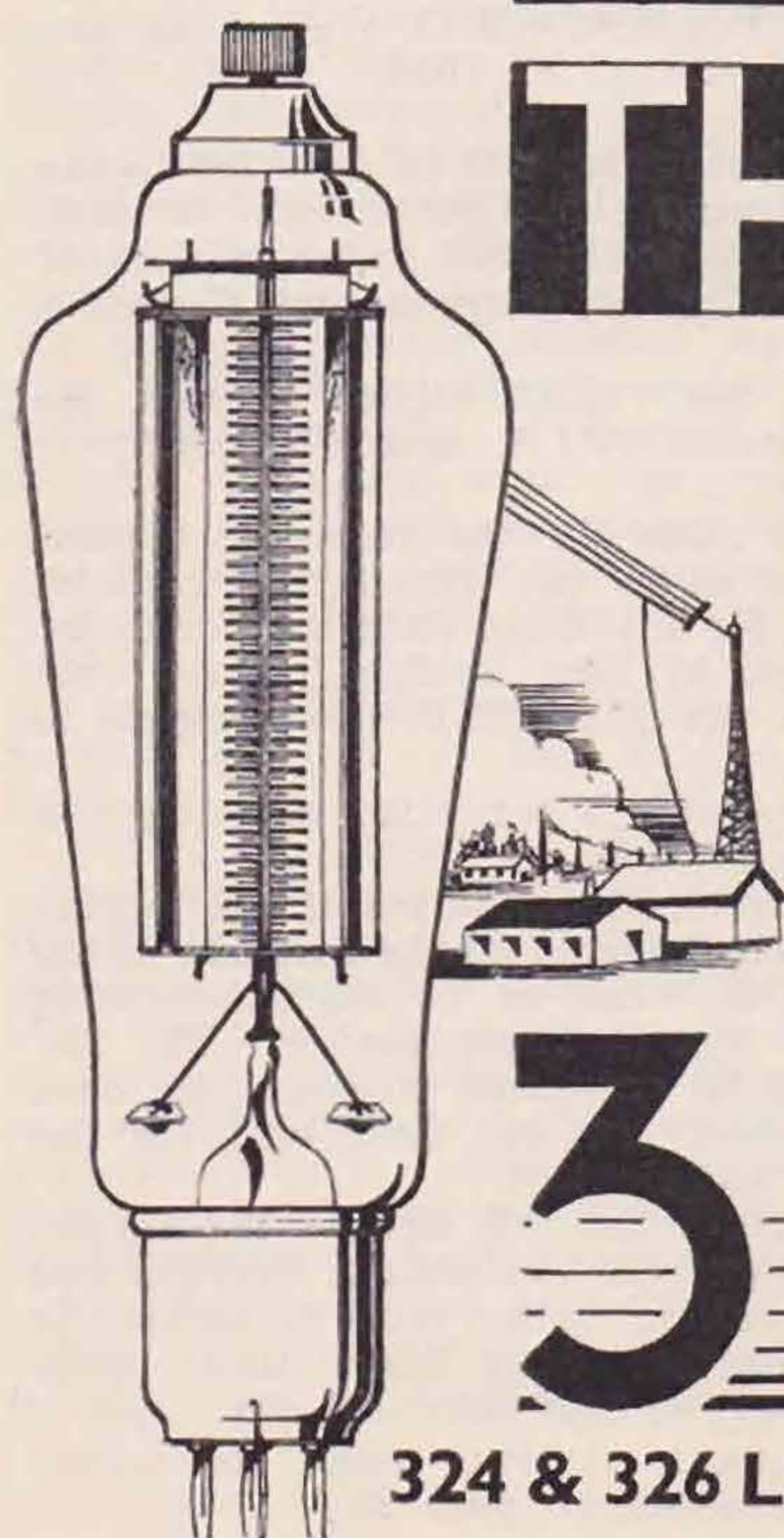
**A NEW THEORY—INVENTIONS AND EXPERIMENTS IN WIRELESS AND TELEVISION.** By D'Arcy Ford. 44 pages and 14 diagrams. Published by the Author, 15, Gandy Street, Exeter, Devon. Price 1s., or 1s. 1d. post free.

This is a small booklet in which the author expounds a revolutionary theory of detection—one may say almost a revolutionary theory of fundamental alternating current circuits.

As I understand it, and that is anything but clearly, the author considers that a detector refracts a carrier wave in somewhat the same manner as a prism refracts light waves, and that the audio-frequency amplifier carries a complex radio-frequency wave. Even the speaker is said to carry a complex radio-frequency wave, but can only respond to its envelope.

Several experiments are described, and a circuit is given for a receiver employing a high-frequency tuned circuit and second detector following a low-frequency amplifying stage. No benefits arising from this extraordinary circuit are explained, and this would seem to be the invention mentioned in the title.

There is little in this booklet with which I am in agreement except the quotations from standard texts. This theory, like any other theory, must be accepted for what it is worth. T. P. A.



# THIS IS NEWS

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# Trade Notes

The range of *Westinghouse* Metal Rectifiers and Westectors is now so complete that constructors will find a unit to meet their particular requirements—whether a metal rectifier for a mains receiver, battery eliminator, trickle charger or the operation of a moving-coil loudspeaker, or a Westector for detection and/or automatic volume control, etc.—from the existing units.

The chief attraction at Olympia this year will undoubtedly be the new "H" and "J" type rectifiers, which are particularly suitable for use in a television receiver, supplying H.T. and G.B. to the cathode ray tube, bias for the time base unit, etc. A typical power pack will be on view.

Instrument-type rectifiers, together with their various applications to A.C. test sets, output meters, peak output meters, etc., will also be displayed.

Traders and owners of Charging Stations will also find interest in the display of charging sets, including the new R.G.C.12 with a range output not already covered by the existing models.

\* \* \*

*Varley Products* are known throughout the world of amateur radio. This season many new lines are being introduced, including two and three-gang coil units for use with superhet and straight receivers.

There is a three-gang unit for superhets with an I.F. of 110 kc. and a two-gang for an I.F. of 465 kc. In addition, there is a three-gang unit for straight sets having one H.F. stage with band pass tuning before the H.F. valve and a two-gang unit for a receiver using a single aerial coil before the H.F. valve.

A feature of these units is that a three-position switch is fitted embodying an "off" position as well as the usual "medium" and "long" wave positions.

A new 465 kc. I.F. transformer makes its debut employing fixed coupling between the coils and having Litz-wound iron-cored coils and a high-grade mica dielectric condenser for trimming. The present BP84 I.F. transformer for 110 kc. is being continued.

For a complete description of these and all other Varley lines, write to Dept. TRB, Varley Works, Bloomfield Road, London, S.E.18.

\* \* \*

## *New Clix Patent Floating Ceramic Valveholders.*

A sample of their new type Frequentite Valveholder has been submitted by *Messrs. Lectrolinx, Ltd.*, of 79a, Rochester Row, S.W.1. They supersede the existing standard types, and are of unusual design. In the first place, a unique arrangement of "floating sockets" has been employed to overcome the precise centring of holes essential to valveholder design; bad contact is therefore impossible, as each socket is able to engage squarely with its appointed valve-pin.

A further interesting feature is the fitting of metal inserts in the fixing holes, which considerably minimises the possibility of fracture of the somewhat brittle ceramic material when the valveholder is riveted or screwed into place.

The new valveholders are made in 4, 5, 7 and 9-pin types which, with terminals, cost 10d., 11d., 1s. 2d. and 1s. 4d. each, or 8d., 9d., 11d. and 1s. each respectively without the terminals. These components should prove popular with amateurs, in view of their qualities of low loss and good contact.

\* \* \*

*Ferranti, Ltd.*, have informed us that the special microphone transformer made by them for use in the 1936 Olympia Transmitter has been designated RD1143. This has a ratio of 1/15, and the list price is 20s. The OPM1 transformer sells at 22s. 6d.

## Correction.

In our June issue we published a letter from Mr. W. P. B. Hackney. Due to an oversight, the call G5YP was appended to the signature. The call was previously held by Mr. Hackney, but has now been issued to Mr. J. H. Wood, of Prestatyn.

## Strays.

Mr. P. Tyndall (BRS2191), 16, South Road, West Bridgford, Notts., would like to correspond with French amateurs with a view to improving his knowledge of their language.

The call-sign VSIAF is now owned by Lieut. L. Stirling-Wilkinson, R.E. Mess, Changi, Singapore. He transmits regularly on 14,060 kc., using an input of 20 watts, and would be glad of QSO's with the British Isles.

## A SILENT KEY

We mourn the passing of yet another of the small band of men who will go down into history as pioneers of amateur radio. The last call came on June 24 to Mr. J. S. Streeter (ZS1W), of Capetown.

One of the first DX workers, his old call sign, A4Z, was known to many of our own early members, who will join us in expressing sympathy to his widow, children, relatives and many friends.

As far back as 1922, Mr. Streeter was giving practical demonstrations of radio broadcasting, his transmissions from his home in Observatory under the call A1A being greatly appreciated by many wireless enthusiasts. Mr. Streeter also rendered considerable help to the authorities when in 1924 broadcasting was officially introduced to Capetown.

His inventive genius was well recognised, the Streeter Clock used on race-courses being one example of his creative ability.

Mr. Streeter was also a pioneer motorist, and from 1910 until his death he was works manager of the firm of Benjamin & Lawton.



## BRIGHT IDEAS.—No. 6.

A convenient centre tap resistance for transmitter or rectifier filaments, serving also as high-tension fuse, can be provided by connecting in series two miniature E.S. bulbs and taking the junction for centre tap.

To obtain a true neutral these bulbs must, of course, have the same resistance, but failing a more technical method of determining this, two should be chosen of similar manufacture, voltage and current, that light to an equal degree of brilliancy. Connected in series with the filaments glowing dimly, a very slight difference is readily discernible, and for practical purposes the bulbs may be satisfactorily paired this way.

As the high-tension circuit is *via* these bulbs, they should not be run brightly; sufficient margin being allowed for the addition of the H.T. milliamps. Their total voltage rating should be twice that of the low-tension supply they are to centre tap.

When determining the H.T. fusing current of these bulbs it must be borne in mind that the pair are virtually in parallel as far as the H.T. circuit is concerned, and also that the filaments are already partially loaded by the L.T. passing through them.

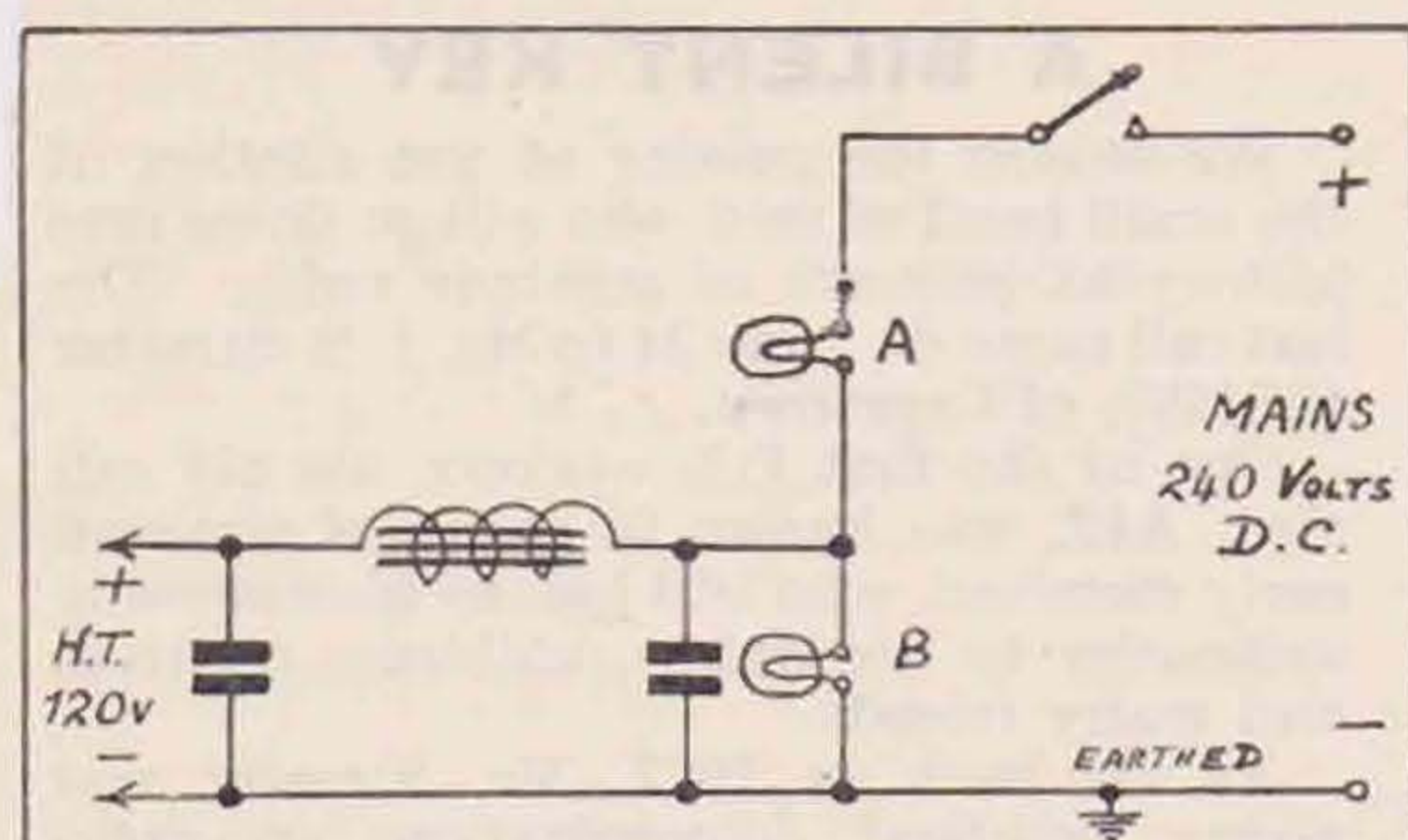
G2IZ.

\* \* \*

To those who still have to run their stations off D.C. mains the following might be of interest.

The majority of the battery-driven receivers require a high-tension voltage of 110-120, and in cases where the H.T. is derived from 220-volt D.C. mains a voltage dropping resistance is usually employed.

Instead of this, the writer has found it very satisfactory to halve the mains voltage (in his case 30 volts) by means of a potential divider system employing two 230-volt 25-watt bulbs connected shown below.



This system has several advantages over the other:—

(1) The voltage on the receiver is practically independent of the total anode current, and this voltage does not rise to a high value should the L.T. become disconnected whilst the H.T. is still on.

(2) The background noise is very much lower.

(3) Should the H.T. in the receiver become short-circuited no damage can be done. Further, this is indicated by bulb B being extinguished and bulb A being lighted to full brilliancy.

(4) The smoothing condensers are automatically discharged through bulb B as soon as the H.T. is switched off.

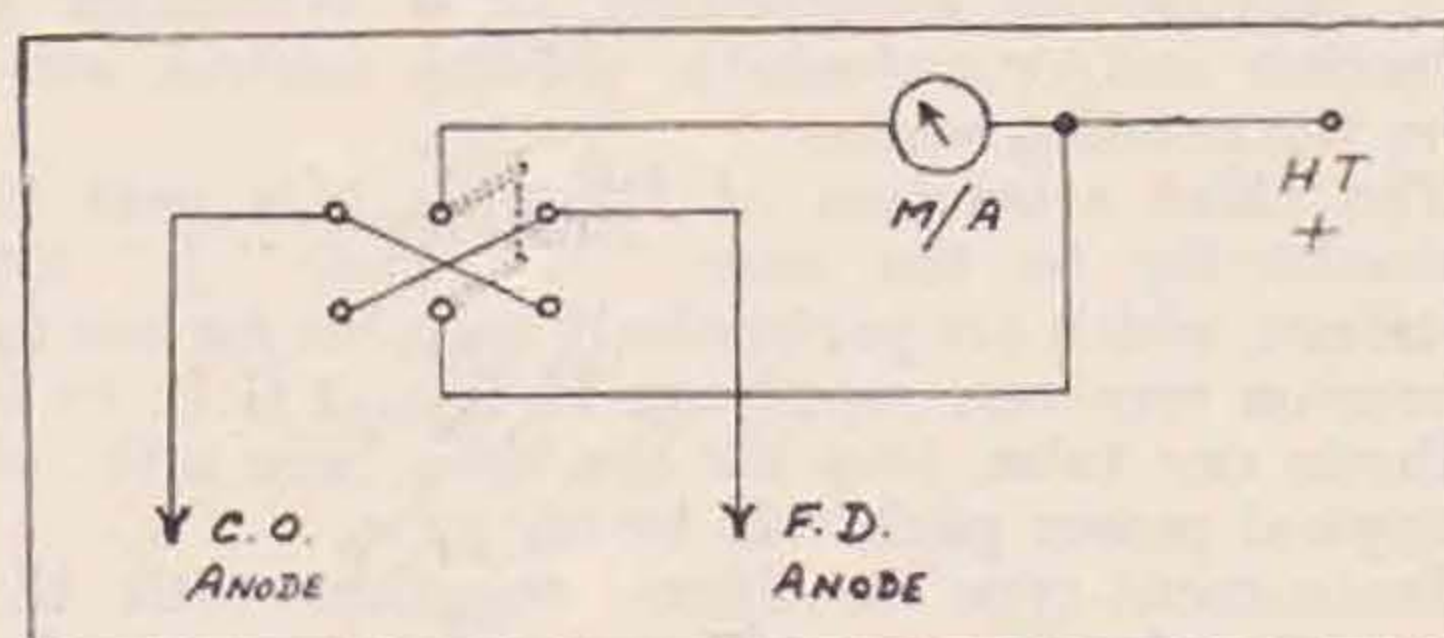
(5) Ripple voltages are halved, and so the existing smoothing system will be more effective.

By using bulbs of different wattages it is possible to obtain different output voltages.

G5LG.

\* \* \*

Many amateurs find the heavy cost of measuring instruments a big drain on their finances, and will welcome the following simple idea for making one meter do two jobs, by the turn of a switch. The diagram is self-explanatory, and it will be seen that the milliammeter may be introduced into either of



the two anode circuits and be isolated from the other. No claim is made that the idea is new or very startling, but it is economical and that counts for much in these hard times.

2ANH.

## CONVENTION



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# BETWEEN



# OURSELVES

## Stand 214—Olympia.

The Society's stand will be located in the Gallery immediately opposite one of the main stairways from the ground floor.

A stand duty rota is being prepared, and details, together with staff passes, will be despatched to those who have volunteered to assist Headquarters.

As mentioned previously the Council have authorised the publication of a Fourth Edition of *A Guide to Amateur Radio*. This edition will run to over 130 pages, and will sell at 6d. per copy (8d. post free). It is hoped that every member will assist us in making this important project a financial success.

Provincial and overseas members who wish to pay subscriptions or order publications are requested to do so on the stand or at Headquarters, and not at Convention. Meetings with such members will be arranged whenever possible, providing prior advice is received by the Secretary.

All members are invited to sign the visitors' book and to leave their personal QSL card.

Members are warned that the Society cannot accept responsibility for goods or wearing apparel left on our stand.

In accordance with the announcement made in our last issue, members may purchase or order from the stand copies of all standard text books published by *Pitmans*, *Chapman & Hall* and *McGraw Hill*. A selection of these publications is now on display at Headquarters.

## Convention Dinner.

Members only are permitted to attend this function except in special cases, when the name of the intending visitor must be communicated to the Secretary not later than September 2.

## Convention Technical Talks.

The following members have promised to give short technical talks during the afternoon meeting to be held at the I.E.E. on Saturday, September 5:

R. Pollock (G5KU), "Radio Technique in Television."

J. L. Hills (G2AW), "Recent Developments on 56 Mc."

F. Charman (G6CJ), "Sky Hooks."

D. W. Heightman (G6DH), "28, 56 Mc. and All That."

C. G. Lemon (G2GL), "Ultra Short Waves."

W. B. Sydenham (G5SY), "A Bridge Method of Measuring Resistance, Capacity and Inductance."

D. Gordon Bagg (G6BD), "Remote Control."

H. A. M. Clark (G6OT), "Harmonics."

## District Rearrangements.

For some time it has been felt that the division of certain districts around London could be improved. Council acting on advice from the D.R.'s

affected, have approved the following arrangements.

*District 8 (Home Counties)*

Will in future comprise the counties of Bedford, Cambridge, Huntingdon and Rutland, together with the town of Peterborough (Northants.).

*District 12 (North London and Hertfordshire)*

Will in future comprise the North London postal districts and the county of Hertfordshire, together with the area known as North-East Middlesex (Enfield).

*District 15 (West London)*

Will in future comprise the West London postal districts and the county of Buckinghamshire, together with that part of Middlesex not included in District 12.

\* \* \*

We understand that arrangements are being made to appoint T.R.s for all towns of importance in the new Districts.

Plans are also being made to hold a District 12 Conventionette at Barnet during October.

Members affected by the changes mentioned above are requested to communicate with their new D.R.

## Electrical Interference with Broadcasting

Many of our members will remember that a Committee was set up in 1934 to study the question of Electrical Interference with Broadcasting. This Committee was appointed by the Institution of Electrical Engineers, and the society was represented thereon by our Secretary.

The Committee has now produced a report, which has been approved by the Council of the I.E.E., copies of which can be obtained direct from the I.E.E., Savoy Place, Victoria Embankment, London, W.C.2, price 6d., each post free.

## New VE5 B.E.R.U. Representative.

On the recommendation of the New Westminster Radio Club, an Honorary B.E.R.U. Society, the Council has pleasure in confirming the appointment of Mr. Frank Taylor (VE5GI) as B.E.R.U. Representative for the Fifth Canadian District. Mr. Taylor's call is well known in England, and we are confident that his appointment will strengthen the ties between British Columbia and the rest of the British Empire.

## R.S.G.B. Slow Morse Practices.

It is proposed to arrange for further slow morse sending, and a monthly schedule will be published commencing again in the September issue of the T. & R. BULLETIN. Will those stations willing to continue and additional stations willing to assist write to Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4 (telephone: Silverthorn 2285), on or before August 24.



## W.B.E. Certificates.

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

Name.	Call Sign.	Date.
A. N. Le Cheminant	G6AC	May 20th, 1936
G. W. G. Benzie	VU2BG	" 20th "
T. L. Gill	G5GI	" 21st "
M. F. Long	G2CL	" 22nd "
G. Russell-Lee	G6GL	" 29th "
Miss M. Mackenzie	VK4YL	June 3rd, "
W. E. Marsh	SUIWM	" 4th "
A. G. Lapworth	G6DL	" 17th "
J. P. Male	G6IS	" 18th "
B. Goodman	W1JPE	" 19th "
J. F. Isaac	G5JI	" 19th "
E. W. V. Butcher	G5AN	" 23rd "
C. J. Greenaway	G2LC	" 23rd "
I. E. Hill	G6HL	" 25th "
K. J. Cook	SUIAQ	" 26th "
C. E. Jefferies	G5JF	July 14th, "
J. S. Fogg	WIDUJ	" 17th "
H. L. Baumann	W2AH	" 20th "
W. G. Wilson*	OA4J	" 20th "
G. G. Glade	W6GK	" 20th "
H. R. Greer	W6TI	" 20th "
K. A. Bishop	W1EWD	" 20th "

\* First Award.

The following W.B.E. Telephony Certificates have been awarded:

- H. W. Green (ZT6Y), April 17, 1936.
- F. H. Pettitt (SUI5G), June 3, 1936.
- A. G. Lapworth (G6DL), June 17, 1936.
- J. J. Van Ravesteyn (ZUI1T), June 19, 1936.

## N.F.D.

Due to pressure of work at headquarters, it has not been possible to prepare in time for this issue a report covering National Field Day. This will appear in the September number.

The name of the winning District will be announced at Convention.

## QRA Section.

Manager: M. WILLIAMS (G6PP).

Please send all new QRA's, changes of address, etc., to QRA Section, R.S.G.B., 53, Victoria Street, London, S.W.1. QRA's sent to this address will automatically be forwarded to the Radio Amateur Call Book for inclusion in the next available issue.

When sending QRA's, please write your name and address in BLOCK LETTERS, and thus avoid mistakes caused by illegible handwriting.

## NEW QRA'S.

- G2GS.—J. G. MAITLAND EDWARDS, 1, Kempsford Gardens, London, S.W.5.
- G2KW.—W. F. GERAGHTY, 65, Humberstone Road, Cambridge.
- G2MI.—A. O. MILNE, "Twemigh," Kechill Gardens, Hayes, Kent.
- G2SC.—J. M. SCOTT, 7, Drummond Road, Ashley Road, Bristol, 2.
- G2SJ.—K. N. FRANKLIN, 15, Barleycroft Road, Welwyn Garden City, Herts.
- G2TH.—T. F. HALL, 42, Creek Street, Battersea, London, S.W.11.
- G2UW.—A. J. S. WILSON, Officers' Mess, R.A.F., Henlow Camp, Beds.
- G2VA.—E. J. A. VAUGHAN, "Egbert," Speeks Lane, Wigmore, Kent.
- G2ZL.—J. L. C. STONE, 35, Elsie Road, East Dulwich, London, S.E.22.
- G2ZP.—LIEUT. R. H. N. JOHNSTON, R.N., Westroyd, The Park, Yeovil, Somerset.
- G5KM.—H. H. EYRE, "Westgrove," Locke Avenue, Barnsley, Yorks.
- G5MO.—R. S. PAGE, Newbry, Croutel Road, Felixstowe, Suffolk.
- G5QK.—SOUTHEND AND DISTRICT RADIO SOCIETY, "Chippenham," Eastern Avenue, Southend-on-Sea, Essex.
- G5QL.—L. HERRINGTON, 54, New Street, Ashford, Kent.

- G5RG.—A. G. BURGESS, 53a, Vincent Gardens, Dollis Hill, London, N.W.10.
  - G5UC.—C. P. EDMUNDS, 6, Cumberland Street, Woodbridge, Suffolk.
  - G15WD.—W. S. DAVISON, 44, Hopefield Avenue, Portrush, Co. Antrim, Northern Ireland.
  - G6FY.—DR. R. A. FEREDAY, 20, The Vineyard, Richmond, Surrey.
  - G6LV.—H. WRIGHT, 95, Helston Road, Penryn, Cornwall.
  - G6WD.—J. FERGUSON, 2041, Great Western Road, Glasgow, W.3, Scotland.
  - G8AB.—House number should be 36.
  - G8AN.—Name should be D. H. BARBROOK.
  - G8AP.—E. H. PAWSON, c/o Mrs. Elwood, 11, Market Place, Brigg, Lincs.
  - G8AS.—B. LYTHERBY, 14, Rose Street, Peterhead, Scotland.
  - G8AT.—W. M. BEATTIE, 35, Huntly Street, Aberdeen, Scotland.
  - G8BB.—T. BRACKENBURY, Britannia Hotel, Eastborough, Scarborough, Yorks.
  - G8BD.—G. W. HAYWARD, "Meadowlands," Alsford Road, Purbrook, Portsmouth, Hants.
  - G8BI.—R. A. BUTTERWORTH, 24, Market Place, Middleton, Manchester, Lancs.
  - G8BM.—J. WYLDE, 8, Osborne Road, Wallasey, Cheshire.
  - G8BR.—B. RAYNER, 33, Ness Road, Shoeburyness, Essex.
  - 2AHK.—P. HALLIGEY, 69 Hut, E. & W. School, West Camp, R.A.F., Cranwell, Lincs.
  - 2AIB.—H. M. CAMPBELL, Ivy Cottage, Rivenhall End, Witham, Essex.
  - 2AMO.—H. A. MASTON, Bryn Estyn, Cadwgan Road, Old Colwyn, North Wales.
  - 2AOV.—J. D. WIGHTMAN, 45, Davyhulme Road, Davyhulme, Manchester.
  - 2ASF.—J. T. FLETCHER, 21, Stafford Road, Sheffield, 2, Yorks.
  - 2AUK.—A. L. BROWNING, 4, Cell Barnes Cottages, Tyttenhanger Lane, Cell Barnes, near St. Alban's, Herts.
  - 2AUM.—L. MUNDEY, The Laurels, Fetherston Road, Stanford-le-Hope, Essex.
  - 2AUP.—H. J. HINKS, Christchurch Street, Ringwood, Hants.
  - 2AXS.—H. J. Snelgar, Nyumbani, Moberly Road, Salisbury, Wilts.
  - 2BAL.—C. R. AYRE, Lordings Farm, Billingshurst, Sussex.
  - 2BCP.—S. PLATT, 11, Springwood Avenue, Shaw Heath, Knutsford, Cheshire.
  - 2BDC.—J. M. CASEY, 1, School Road, Coalbrookdale, Salop.
  - 2BGP.—D. C. PARKER, 139, High Street, Witham, Essex.
  - 2BIK.—J. KIRKPATRICK, 90, Maxholm Road, Riccarton, Kilmarnock, Scotland.
- The following are cancelled:—G5QG, 2ADY, 2AFA, 2AFU, 2AFY, 2APG, 2AQB, 2BGD, 2BHR, 2BVF.

## NEW MEMBERS.

- A. E. MARKWICK (G2YK), 13, Dunstable Road, Richmond, Surrey.
- J. S. KILPATRICK (G5QS), 9, Leicester Terrace, Manor Drive, Halifax, Yorks.
- D. G. KENNEDY (G6KY), Waterloo House, Savile Park Road, Halifax, Yorks.
- P. R. SOLDER (2AOZ), 35, Torrington Gardens, New Southgate, N.11.
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- E. LINE (2ASL), 949, Bristol Road, Selly Oak, Birmingham.
- F. E. GAY (2BIH), 17, Quarry Hill, Grays, Essex.
- V. O. HAWKINS (2BVX), 18, Quarry Street, Guildford, Surrey.
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- J. F. A. LAVENDER (BRS2469), 231a, Station Road, Harrow, Middlesex.
- O. FOWLER (BRS2470), 20, Foxham Road, Tuftnell Park, N.19.
- G. A. WOOD (BRS2471), 23, Cyprus Avenue, London, N.3.
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- N. WHYVEL (BRS2473), 245, Geneva Road East, Darlington, Co. Durham.
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- W. G. LEE (BRS2475), 261, Beaconsfield Road, Southall, Middlesex.
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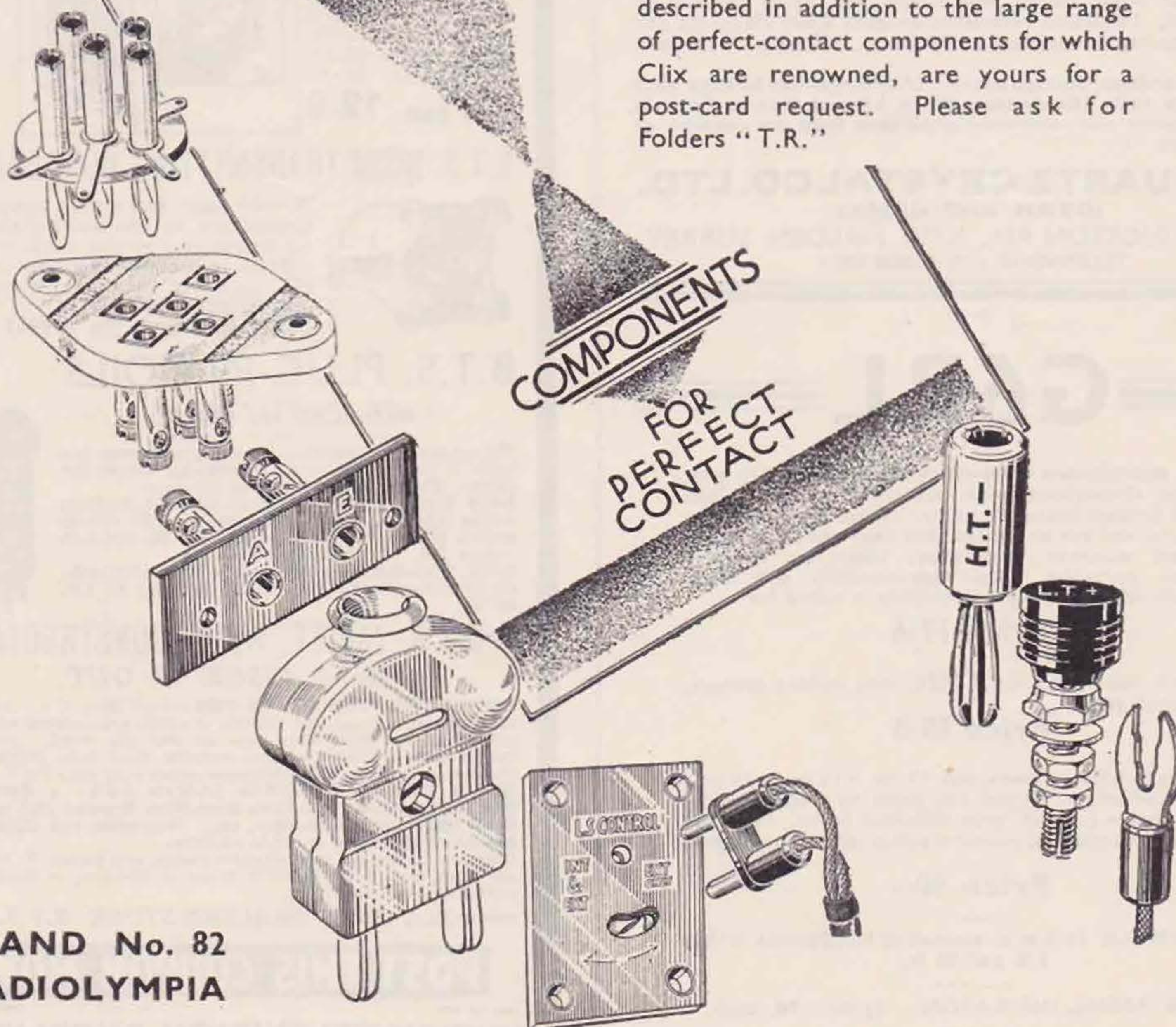
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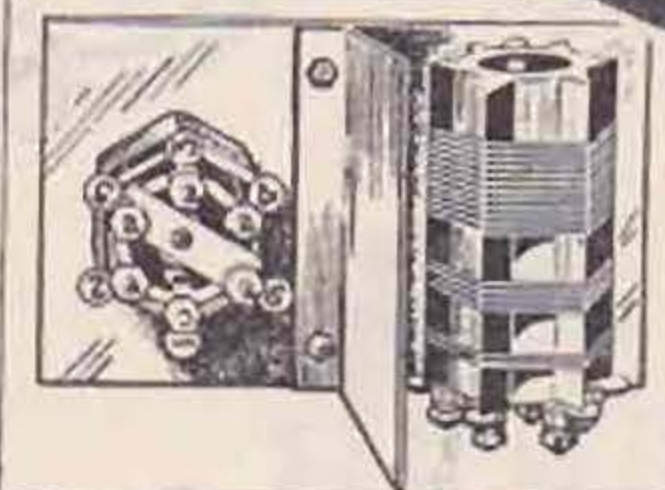
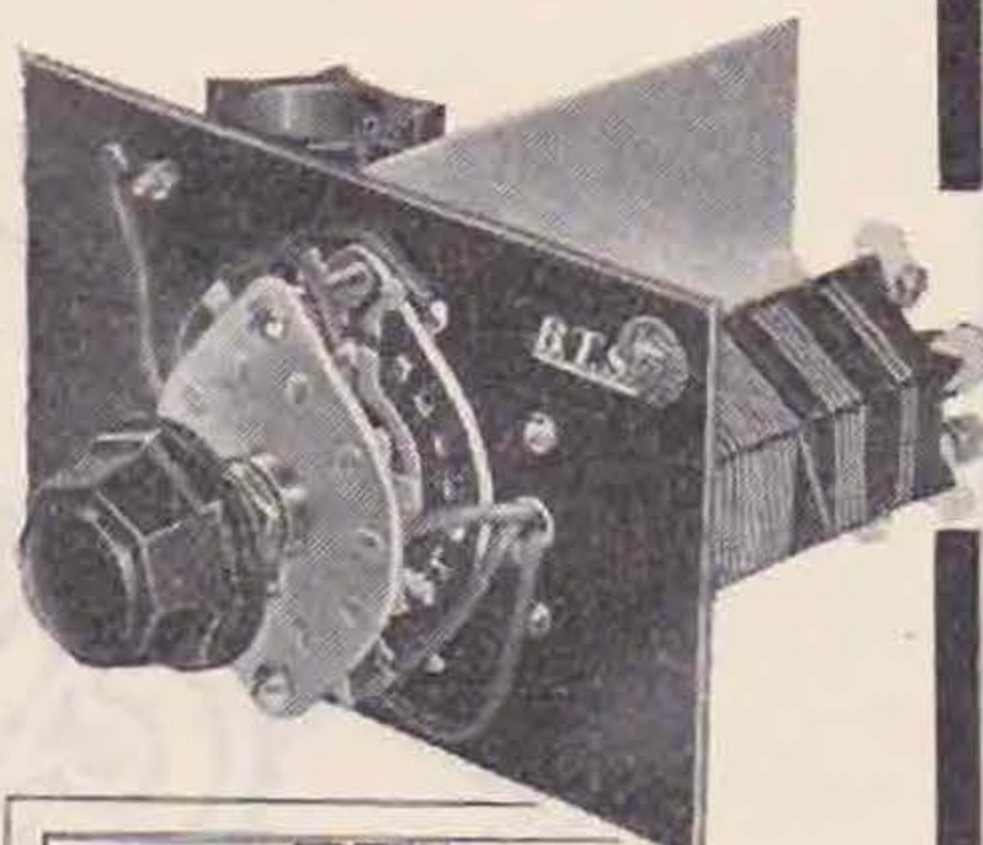
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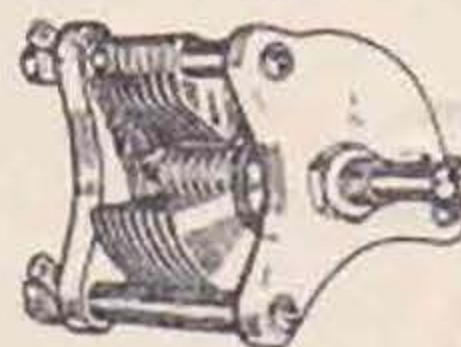


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 G. E. F. DICKS (ZE1JX), Station Master, Rhodesia Railways,  
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 W. L. WILEMAN (ZTIE), St. Laurence, Cannon Street, Plumstead  
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 F. E. BURNES (BERS362), 31, Isipingo Street, Bellevue East,  
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 A. PATERSON (BERS363), 3, Shari El Qubba, Heliopolis, Cairo,  
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 J. M. MISTRY (BERS365), Mill Manager's Bungalow, Dajkot,  
 India.  
 J. R. RODRIGUES (BERS366), C.I.P. Railway, Lonavla, India.

Mr. Mawbey (BRS1300), 109, Clare Road, Tankerton, Kent, would like to join forces with any member who will be on holiday in London during Convention Week.

(Continued from second column).

The usual "R.F. loop" against the tank coil was not nearly sensitive enough to check perfect neutralisation. A small semi-variable condenser of the "twisted flex" variety was then placed in series with the single plate variable previously tried, and it was found by varying both condensers until the grid meter showed no dip, as the tank circuit was tuned through resonance, that the P.A. would neutralise perfectly. When the amplifier was perfectly neutralised the measured output rose quite 30 per cent.

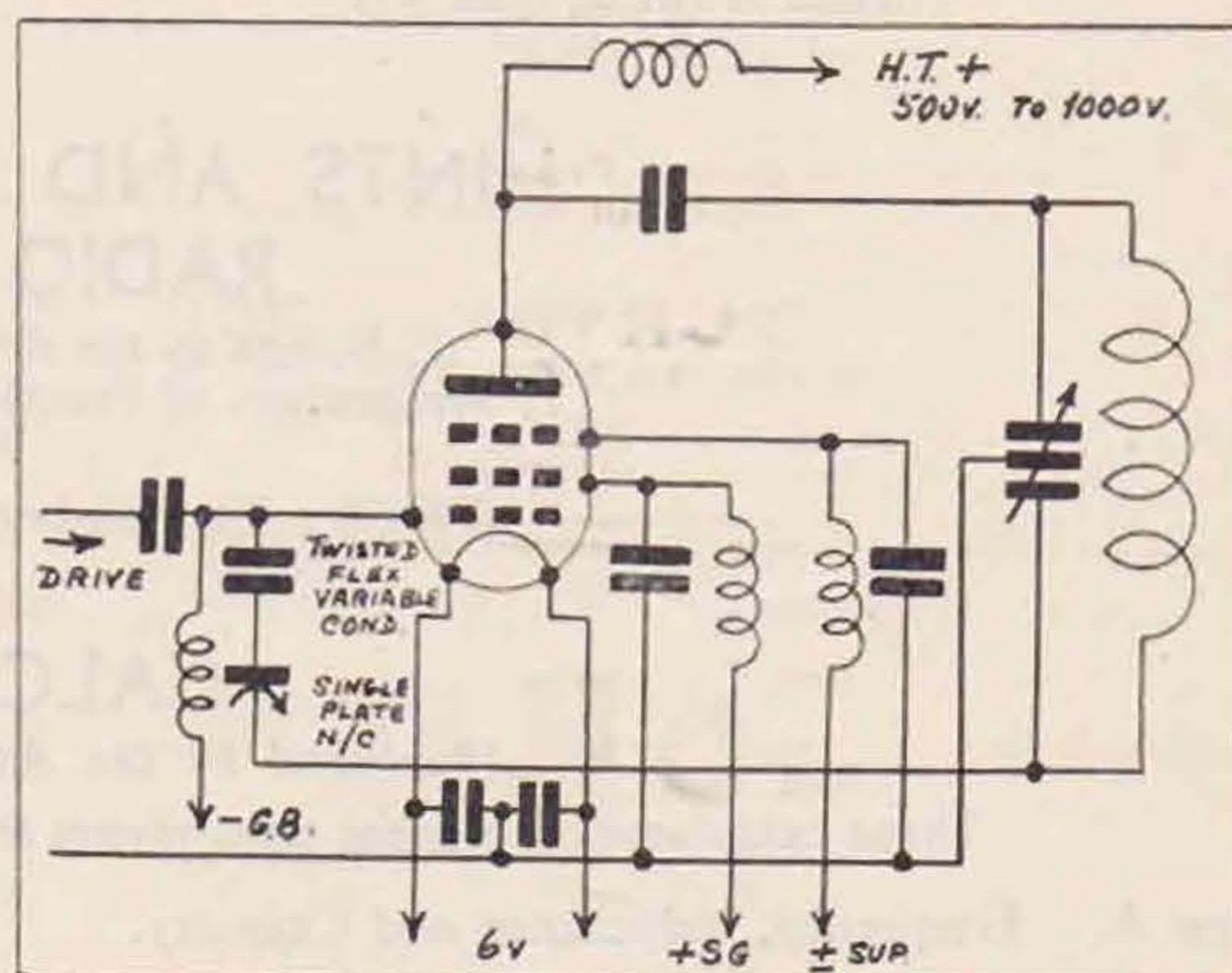
Yours faithfully,

L. O. ROGERS (G2HX).

# Go To The Editor

## SELF OSCILLATION WITH AN "RFP60."

DEAR SIR,—Having purchased one of the new "362" RFP60 transmitting pentodes, it was decided to use it as a driven P.A. on 14 Mc. The amplifier was built with the anode tank circuit shielded from the grid to avoid interaction. Upon switching on the power supply and tuning the amplifier to resonance, the R.F. output was much lower than expected, while the valve showed a tendency to self-oscillate, in fact, at times it would so continue with the drive removed. The trouble was thought to be due to circuit interaction, due to lack of screening.



At this juncture further experiments had to be put aside, due to the construction of the N.F.D. transmitter. Later, it was decided to use the RFP-60 as a P.A. in the N.F.D. transmitter on 1.7 Mc. The valve was duly installed, but on tuning to resonance it was noticed that the same oscillation trouble was apparent when the P.A. was tuned to the fundamental frequency. When the tank circuit was tuned to double the frequency it behaved perfectly.

The amplifier was then screened as perfectly as possible and the valve enclosed in a can, but the trouble still persisted. It was then decided to attempt neutralisation, but it was realised at the outset that a very small neutralising capacity would be required. The circuit of the P.A. was the shunt feed variety as shown in the diagram. A single plate variable neutralising condenser with a maximum capacity of 15  $\mu\text{F}$ . was first used, but even with this set at minimum, the capacity was far too great to effect complete neutralisation, although an improvement was noticed. These neutralising adjustments were carried out by watching a milliammeter measuring the rectified grid current of the P.A.

(Continued in previous column).





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### DISTRICT 4 (East Midlands).

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Notts.

### DISTRICT 5 (Western).

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Mr. R. A. BARTLETT (G6RB), 31, King's Drive, Bishopston, Bristol,  
Glos.

### DISTRICT 6 (South-Western).

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Mr. W. B. SYDENHAM (G5SY), "Sherrington," Cleveland Road,  
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### DISTRICT 7 (Southern).

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### DISTRICT 9 (East Anglia).

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Mr. H. W. SADLER (G2XS), "The Warren Farm," South Wootton,  
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### DISTRICT 10 (South Wales and Monmouth).

Capt. G. C. PRICE (G2OP), The Mount, Pembroke Dock.

### DISTRICT 11 (North Wales).

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Montgomery, Radnorshire.)  
Mr. D. S. MITCHELL (G6AA), "The Flagstaff," Colwyn Bay,  
Denbighshire.

### DISTRICT 12 (London North and Hertford).

(North London Postal Districts and Hertford, together with the  
area known as North Middlesex.)  
Mr. S. BUCKINGHAM (G5QF), 9, Brunswick Park Road, New  
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### DISTRICT 13 (London South).

Mr. J. B. KERSHAW (G2WV), 13, Montpelier Row, Blackheath  
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### DISTRICT 14 (Eastern).

(East London and Essex.)  
Mr. T. A. ST. JOHNSTON (G6UT), 28, Douglas Road, Chingford, E.4.

### DISTRICT 15 (London West).

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

### DISTRICT 16 (South-Eastern).

(Kent and Sussex.)  
Mr. A. O. MILNE (G2MI), "Twemigh," Kechill Gardens, Hayes  
Kent.

### DISTRICT 17 (Mid-East).

(Lincolnshire and Rutland.)  
Rev. L. C. HODGE (G6LH), The Bungalow, Skirbeck Road, Boston,  
Lincs.

### DISTRICT 18 (East Yorkshire).

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

### SCOTLAND.

Mr. JAMES HUNTER (G6ZV), Records Office, 51, Camphill Avenue,  
Langside, Glasgow.

### NORTHERN IRELAND.

Mr. W. GRAHAM (G15GV), 5 Ratcliffe Street, Donegal Pass, Belfast.

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

### DISTRICT 1 (North-Western)

**R**EPORTS for July have fallen off to some extent,  
and no doubt this is due to the usual summer  
decline in activity. The Manchester section,  
however, seems to be carrying on in full force, par-  
ticularly on 56 Mc., and other sections might well  
follow this good example. Given a spell of better  
weather than has lately prevailed in this District,  
greater activity on 56 Mc. is expected.

**Liverpool.**—No report has been received, but  
meetings are temporarily suspended until September.

**Chester.**—BRS2198 continues to plough a lone  
furrow and reports complete lack of signals on  
56 Mc., in spite of considerable periods of listening  
at the times scheduled in the BULLETIN.

**Manchester.**—An attendance of 17 was recorded  
at the last Manchester meeting, which was an open  
discussion. Another junk sale was held, and the  
possibility of having a Stand at the next  
Manchester Exhibition was considered.

The following stations report active on various

bands:—G-6KS, 2LK, 2HW, 2BPG, BRS2051  
5YD, 5JC, 5PX, 6TL, BRS2327, 2ATZ. 2WQ reports  
working 50 W5's, W6's and W7's in 7 days, while  
2DH handled birthday greeting messages to the  
King from VU2JB and FB8AG, also had QSO  
with the Harvard University Siberian Expedition,  
using the call U1BWF. G2OI received the 56 Mc.  
test signals from 2IN while operating on Ashurst  
Beacon, but did not hear 2DC on Grit Fell. 2IN's  
fone was received in Manchester at R6 and the  
ICW at R7; an attempt to QSO failed; 2OI  
and 5YD also went up Rivington Pyke on Sunday  
afternoon, July 5, to listen for the special 56 Mc.  
tests from EI9G., but unfortunately did not hear  
anything from him.

Will all those interested in 56 Mc. work both  
reception and transmission, please get in touch  
with G2OI. A series of tests on 56 Mc. are being  
carried out from both G2OI and 5YD, using phone  
ICW and CW, every Saturday night, starting  
zero hour until about 0020, G2OI will operate on



57,000 kc. and 5YD on 59,000 kc. Reports and schedules wanted. How about it, Liverpool and Southport?

Please note that no tests will be radiated on the night of the London Convention.

*Whitehaven and District.*—The July meeting was held in Keswick, by the kindness of G6SD, and was attended by 6JZ, 6SB, 2SB, 6WR, 2HT, and 2AON, all reporting active. In the chair was 6UU, to whom members are specially obliged, as he came from Edinburgh to preside at the meeting. Members had the pleasure of welcoming 6IS, and BRS2138, both holiday-making in Keswick.

The Chairman produced a condenser microphone, complete with two-valve amplifier, housed in a metal 4½-in. cube. Some of the members have heard this in use on the air, and can testify as to its fidelity. BRS2138 submitted a 56 Mc. regenerative receiver for examination, and tests are to be carried out on the local fells.

G6WR has now obtained both WAC and WBE, while 6JZ possesses WAC and now qualifies for WBE. 6IS also possesses WAC and WBE.

Meetings are held on the first Thursday in every month at G6SD, Keswick.

*Rochdale.*—Stations reporting active are:—G6AX, 6QA, BRS1152 and 1680. BRS1152 reports that atmospherics cut off sharply at 19 metres at 2300 B.S.T. on June 19, 20 and 21. 6AX is having gratifying results with his home-constructed quartz cutting machine. The gear is simple, but entails a great deal of patience.

*Nelson.*—The following members have reported active:—G5ZN, G5XC, G2RB. 2ATY, who is now awaiting his Morse test and will most probably have received his full licence by the time this appears in the "BULL," 2BWW, BRS's 1933, 1975, 2067 (who is now 2BAB) and 2221.

Activity has been very slight during the last month, due to holidays, and the only items of note are of a personal nature. Congratulations to G5ZN on the arrival of a baby daughter, and best wishes to 2BZW, who has left this area to take up a post with the G.E.C. at Coventry.

#### DISTRICT 2 (North-Eastern)

*Stockton-on-Tees.*—Work on 56 Mc. is occupying the time of most stations, and G2FO is trying directional aerials with 2BHF, who is using a new super regenerative circuit. 2BQO is active on 5 metres, and is building an all-band super-het adapter; BRS2297 is trying to get a 5-metre receiver to function correctly. 2BPI is building speech amplifiers, G5XT and 6CV are on 7 Mc., and 2BPT is using link coupling successfully.

*Dewsbury.*—The Short Wave Club activities are suspended until a suitable room is found. The following report active, or have been heard: G6PL, 6SP, 6AO, 5HB, 5ZB, 6MY, 5MW, 5YV. G5HB was visited by an Egyptian member and a two hours fone contact was made with SUISG. G5YV and 5HB are on 28 Mc. 2ABT is in Woodend Hospital, Aberdeen, and is being visited by G5YN, 5IP, 6LG and 6BM. The T.R. would like to know if BRS1151 is active.

*Sheffield.*—Reports are few, but there seems to be plenty of activity, and a 56 Mc. Field Day is to be organised. All members having 5-metre gear are asked to co-operate. Best wishes to 2ASF, ex BRS1944, and a new member, BRS2451. BRS1800 hopes to have an A.A. call soon. G2AS is now on

the air again with low power, 6LF is testing Windom with good results, and 2GN is on 1.75 Mc. with an improved aerial system. The following are active: G5TO, 6PJ, 2BGN, 2BOU, 2AS, 2MF, and BRS1800, 1851, 2282, 2293, 2ASF.

*Tynemouth.*—The last monthly meeting was at G2LD, and an inquest was held on the N.F.D. score. Future meetings on the first Sunday of the month at the same QRA. G2OT reports satisfactory U.S.A. contacts, using a double Windom aerial, and tests have been arranged between the local stations and EI9G on 56 Mc. G2OS is rebuilding ready for a change of QRA, and 6GC is carrying out tests from South Shields with twisted feeder aerials. 2PN is using a double Windom, and is WAC at R8, and only wants two continents for a WAC at R9. He has a 50-ft. dipole for 56 Mc. and gets R9 at 10 miles. 5NS is active on 7 Mc. and is testing 14 Mc. aerials.

#### FORTHCOMING EVENTS

- AUG. 20.—District 4 (Leicester Section), 8 p.m., at G2XD, 3, Montrose Road, Leicester.
- AUG. 20.—District 13, 8 p.m., at Brotherhood Hall, West Norwood.
- AUG. 25.—District 14 (East London Section), 8 p.m., at G6AH, 3, Bradford Road, Seven Kings.
- SEPT. 2.—S.L.D.R.T.S., 8 p.m., at Brotherhood Hall, West Norwood.
- SEPT. 8.—District 12, 7.30 p.m., at "Parade Café," Landers Corner, New Southgate.
- SEPT. 13.—District 4 (East Midlands), 3.30 p.m., at Trent Bridge Hotel, Trent Bridge, Nottingham.
- SEPT. 22.—District 1 (Manchester Section), 7.30 p.m., at Brookes Café, 1, Hilton Street, Manchester. Debate on 56 Mc.
- SEPT. 25.—London Meeting at I.E.E., 6.15 p.m. Tea 5.30 p.m.
- OCT. 4.—District 7, 2.30 p.m., Tumble Down Dick Hotel, Farnborough, Hants.

G6MK has passed medical exams and is rebuilding with an RFP60 output. An S.S. superhet has been built by 2AJS, and is very satisfactory, and 2ADU is trying 56 Mc. receivers. 2BGG is trying quiescent carrier tests, and is on 28 and 56 Mc.

*Huddersfield.*—The area membership is increasing, but reports are few. Congrats. to 2ACD on passing morse test. 2ALU and BRS1686 report active. The monthly meetings are being continued and new members are asked to get in touch with the T.R., G5VD.

*Bradford.*—The district seems to be fairly active, but reports are very seldom received, and bricks, in the shape of these notes, as usual, must be made without straw. A new station will soon be on 1.7 Mc., as Mr. T. Isaac, of Bierley, has passed the morse test, and awaits his call. Lack of material



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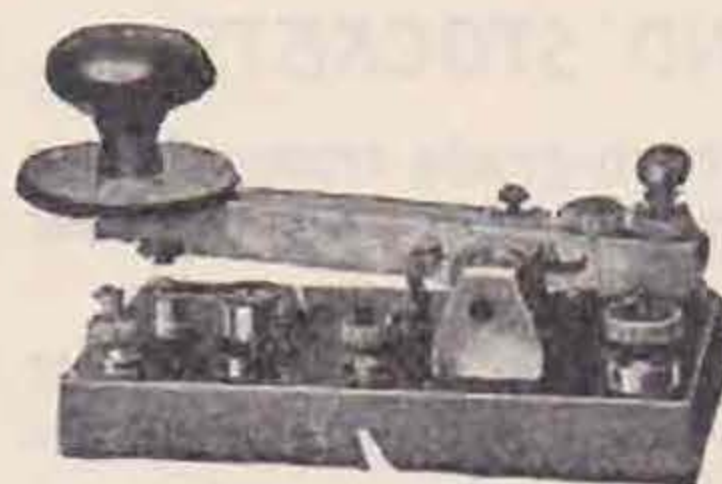
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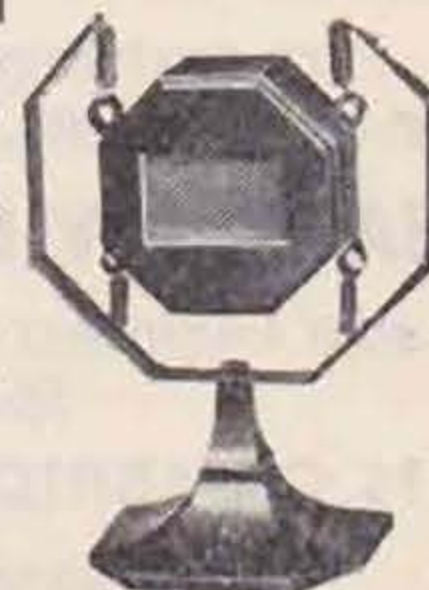
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for reports seems to be a general complaint, but the T.R. asks again that a card be sent occasionally, giving data as to the station's activity, about the 20th of the month.

*Leeds.*—No reports have been received from this area since the T.R. system commenced, and stations are known to be operating. Members are asked to appoint a T.R. to get the district represented.

#### DISTRICT 3 (West Midlands)

*Coventry.*—The notes for this town are confined to 56 Mc. this month. G5ML is working with a Unity Coupled Transmitter and is doing some good work. He has a report from Malvern, some 60 miles from Kenilworth. G6YU is also using Unity Coupling whereas 5PP and 5NO are using the Split Colpitts circuit. Regular schedules are being maintained by the two last mentioned at 2200 BST. During the month the Coventry R.S. organised an evening 56 Mc. Field "Day" but the event turned out a literal "wash-out" and they are waiting for the Clerk of the Weather to lose his watering can before making another venture.

*Shrewsbury.*—BRS 2308 and 2457 are active and attend at G6KR each week for morse. BRS 2083 and 2AXX (of Birmingham) were also at 6KR on a station visit on July 17. The former is hoping for his AA call whilst 2AXX, having done well in BERU reception, hopes to repeat his success with a full call; his morse test being awaited. BRS 1724 of Church Stretton is leaving the County. 2BDC, whom we congratulate, reports his advancement from BRS 2003, direct.

*Oswestry.*—G6US explains his non-reporting has been due to the fact that the three members in his Town have been rebuilding. G6WB has taken advantage in this manner whilst waiting for the installation of AC mains. 2AWP has forsaken morse for the moment as he is busy preparing to take the "L" out of his car sign. G6US has gone all QRP during his re-build. He is now using a pair of RCA 801's in the final amplifier, a pair of 210's in the Class B modulator and cascade modulation. The results are amazing for valves of this rating, all American Districts being worked in about three hours of operating, the average report being R7. 6US hopes to be at Convention again this year.

#### DISTRICT 4 (East Midlands)

*Nottingham.*—The next meeting will be held on September 13, 1936, at the Trent Bridge Hotel, Trent Bridge, Nottingham, at 3.30 p.m.

*Leicester.*—A good attendance was recorded at the last meeting, which was held at 2BLR. It is hoped that this support will continue. The next meeting will be held at G2XD, 3, Montrose Road, Leicester, on Thursday, August 20, at 8 p.m.

This month we welcome two new members to the Society. Mrs. Ridgway (BRS2497) and 2BVW.

We congratulate 2BIT on passing the code test and then being married within a week; the District send their best wishes to him and his YF. 2BYX has also passed the code test and is awaiting call. 2XD is W.A.C. and only licensed for about eight months. He and 6VD are both rebuilding to RFP 60's in final. 6GO reports active on six bands, using a 3-stage transmitter on 1.7, 3.5, 7, 14, 28 and 56 Mc.

*Leicester Amateur Radio Society* (affiliated to R.S.G.B.).—At the annual general meeting held on July 21, a presentation was made to the President (2BIT) on the occasion of his marriage. It is hoped to hold 5 metre field days during August and September, when three transmitters will be on the air in the District. Further dates and times will be given later. Co-operation will be welcomed.

#### DISTRICT 5 (Western).

The D.R. wishes to apologise for the non-appearance of notes for June, the intervention of holidays being the cause. It is not too late, however, to thank all those who helped with both "A" and "B" Stations at N.F.D. for their assistance. No great success was achieved, but we managed to keep going, despite the "summer" weather.

*Bristol.*—An attendance of 28 was recorded at the last Bristol meeting held on July 16. It was announced that a stand is again being run at the Bristol Radio Exhibition in September, and preliminary arrangements were made. It is hoped that everyone who is able will lend a hand for at least one evening in the week. The local clubroom will be opened shortly after the exhibition, and should prove a great help to everyone and a means of getting a greater insight into the great game of amateur radio for many budding hams. After a large amount of discussion it was decided to call the club the Bristol Amateur Radio Club. Activity in the area is well up to normal for the time of year, the following being active: G5KT, 5JU, 5UZ, 5UH, 6DJ, 6VF, 6VK, 6RB, 2ACQ, 2BMK and 2104.

A successful Field Day was recently held in Doddington Park, Glos. G6LM and 2ACQ were successful in finding the hidden transmitter run by G5KT, 5UH and 2BHV.

*Oxford.*—A very successful 5 metre Field Day, run jointly by the Oxford and Swindon short-wave clubs, was held on June 21. Successful two-way working was accomplished by the portable station using the call G2GH, with the fixed station of G5LO. Among those taking part were G6QQ, 6HL, 5FW, 2GH, 2AKB, 2BHP, 1469, 2311.



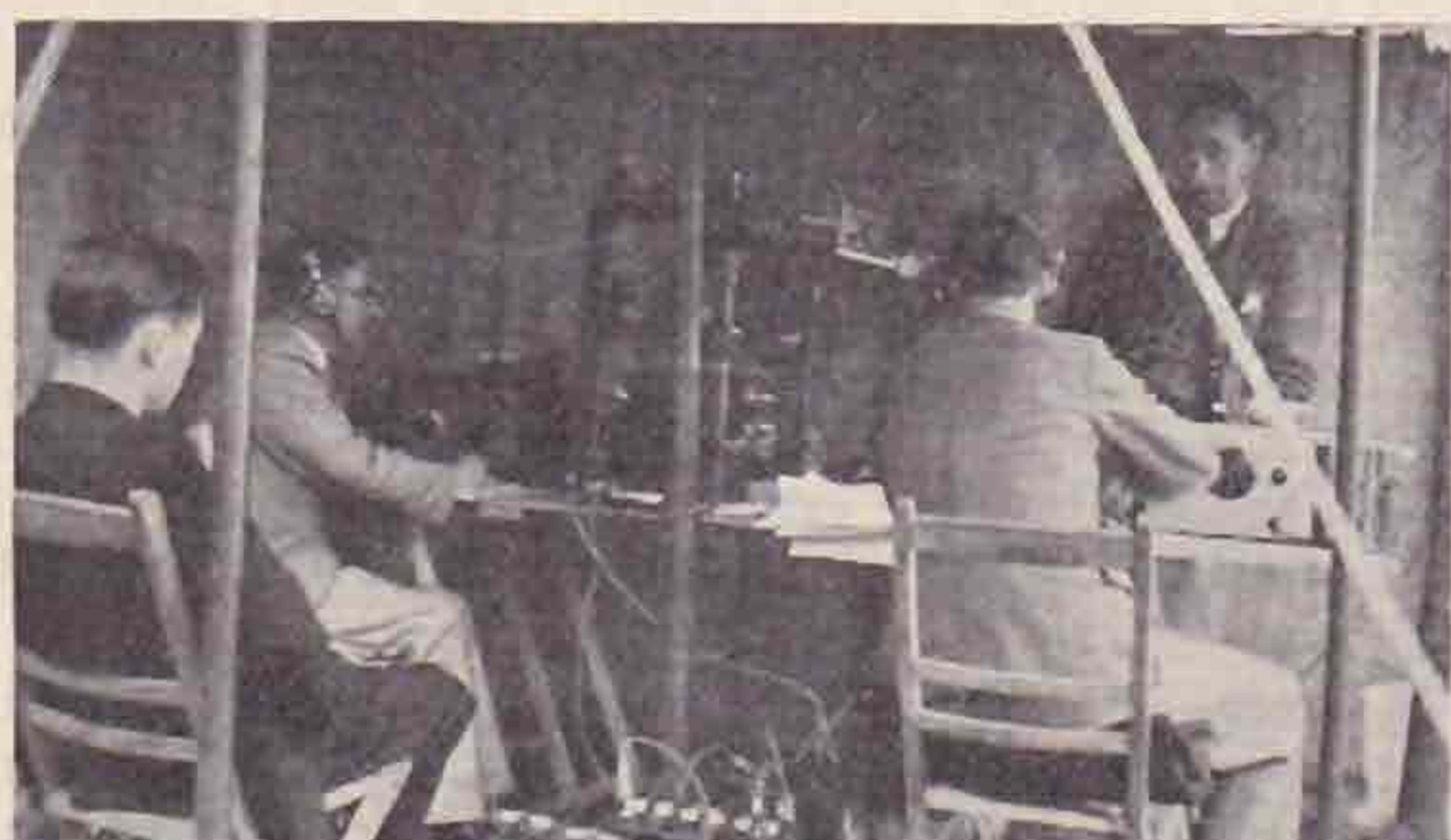
G6FOP—Holsworthy.  
G6GM, 6FO, 5WY, 2ADU, from left to right.



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

Undoubtedly chief interest during the past month has been in the preparations for the forthcoming 56 Mc. tests to be held in the District on August 9. A large number of members seem to be taking an interest in this event, and by the time these notes appear in print, it is hoped that it will be over without having been interfered with by the weather. Should it be found impossible to hold the Field Day on account of very bad weather, another day will be tried, probably some time in early September. Will members who are interested, therefore, please take this as a notice regarding the matter.

District No. 6 seems to come fairly frequently into the limelight nowadays, and once again we have something of interest to report. Our 56 Mc. Field Day, suggested by a few enthusiasts, seems to have grown to quite a big affair, but this is now added to greatly by the fact that G2CI is presenting us with a "56 Mc." Silver Challenge Cup. A very fine effort indeed, and so say all members of No. 6 District!



**G5SYP—Exmouth.**  
**G5SY and 5QI at receivers. G6RF at back.**

This cup will be competed for annually by members of the District, and the date of the contest, unless altered by common consent, will be, as this year, some time during August. Although this news has come perhaps a trifle late to affect things this year, one can see increased interest and activity on the band in future years, and G2CI must be very warmly thanked for his truly brilliant brain-wave and his generosity in offering us this cup.

The District's other trophy, the "Wright" Shield, is being awarded this year to BRS1581 for his good effort in finishing fifth in the B.E.R.U. Receiving Contest.

Though most centres have given up their meetings for the summer, the Somerset and Cornwall groups continue theirs quite successfully.

**Taunton.**—The July meeting took the form of a visit to Weston-super-Mare to view the stations of G6LQ and 2BJQ. Members present were 2JM, 6LQ, 5AK, 2BJC, 2BJQ, BRS2249, 2445. A very interesting time was spent. Tea was provided by Mrs. 6LQ. They hope to put three 56 Mc. stations on the air at Poldon, Quantock, and Blackdown Hills respectively.

**Penryn.**—A meeting was held at the Lanner Inn. Members present were G5VL, G6LV (new call), G8AW (new call), 2AHU, 2AMK, 2BXT, G6BC, BRS2048, and 2252. Most members are interested

in 56 Mc. work, and have built, or are building gear, 5VL especially is at work on a comparatively high power driven TX with which he hopes to get over to Ireland!

Soon after these notes appear, the D.R. hopes to be in London attending Convention, renewing acquaintance with, and exchanging views with many old friends! Any members from the South-West who are in town don't forget to hunt up the D.R.

**DISTRICT 7 (Southern).**

The attendance at the District Conventionette at Winchester was very disappointing indeed, as only thirty members and friends sat down to lunch. This lack of co-operation is very disappointing, and the D.R. is seriously thinking of cancelling this function altogether next year unless better support is forthcoming. In spite of the smallness of numbers, a most interesting discussion was held after lunch, and several points dealing with the activities of the Society were debated. The September meeting will be held at the Tumble Down Dick Hotel, Farnborough, Hants, on Sunday, October 4. Please make every endeavour to attend if possible, as the D.R. intends dealing with the whole subject of the status of future monthly meetings.

**Guildford.**—G5CM has been trying fone with choke modulation to the screen of a 59, and reports good results. 5WP is a newcomer to the ranks of the 7 Mc. phone operators. 5RS is also using suppressor grid modulation to an RK20, on 7 and 14 Mc., but finds that conditions do not suit his times of operating on the latter band. 6LK has been to Denmark on holiday. 6GS is away from home on his annual Yorkshire tour. He has his super working on 14 and 28 Mc. with encouraging results.

**Portsmouth.**—The South Hants, R.T.S. held a field day on July 19, at Clanfield, when a two-way contact on 56 Mc. took place between G2XC and G6NZP on top of a moving 'bus. Later activities were on 7 and 56 Mc.

2XC finds 28 Mc. conditions poor for DX at the moment. 6WS also listening on 28 Mc. Congratulations to 8BD, formerly 2BHR. BRS1964 and 2362 are building 56 Mc. receivers. 2ZR and BRS2105 are "hotting up" their receivers. Welcome to BRS2482. 5OT is back at sea. 5XY, 6SS, 2AIV, 2BCM, BRS1319, all report active.

**Reading.**—Only nine members were present at the last Reading meeting, due to holidays. "Do's and Dont's of Field Day" occupied part of the time, and a general discussion on 56 Mc. work the remainder. Most members report active; G5AO has been experiencing a curious echo effect on 7 Mc., accompanied by a breaking of the received signal. BRS2259 has been granted A.A. licence. Will Berkshire members who do not attend the local meetings please send reports of activity to T.R. for Reading, G5AO?

G5UI has settled in Camberley, and finds that a half-wave Zepp aerial with half-wave feeders suits his location. He has been using Collins' coupler, but finds that this makes little difference when feeders are correctly cut.

**DISTRICT 8 (Home Counties).**

At a meeting held in Cambridge on July 10, at which thirteen members were present, a very interesting and instructive talk was given by Mr. Moxon



(G6XN) on a special type of superhet which he has constructed; other local matters were also discussed, and the evening concluded with a general chat. G5JO presided over the meeting in the absence of the D.R., who was away on holiday at the time.

Reports from the District continue to decrease, and this is very disturbing after the excellent support given during the first few months of the new D.R.'s office. Please remember that the success of the District is in your own hands.

G6HD continues work on his new outfit and also reports reception of signals on 56 Mc., believed to be the Hendon Group operating on July 12. 2AZD has moved into a new shack. BRS2121 reports the arrival of the "stork," but in spite of this he has managed to get his "AA" through under the call 2AUK. 2AZF has no gear at the moment. 5DR has completed the R.S.G.B. single signal super, and the reports of reception on this amazing outfit are truly astounding; he has also worked some good DX. 2XV has been getting excellent results on 14 Mc. fone, having had 100 per cent. QSO with VK at R5 both ways; also several other interesting contacts using the half wave vertical Windom antenna which has been in use for some months. Other well-known stations in the district are known to be active, but have not reported.

*Peterborough.*—6PD is now home from Notts and doing good work on 14 Mc. 2NJ has commenced activities at Heacham. 5NX and 2UQ are both working fone on 7 Mc.



G6QZP, Norwich  
G2UT operating the District 9 B station.

#### DISTRICT 9 (East Anglia).

*Ipswich.*—A society has been formed with the view of grouping up local members. 8AN on 7 Mc. fone has been experiencing some trouble with lattice masts! 6TI has had aerial difficulties.

*King's Lynn.*—2ABX is building 5-metre gear and applying for a full licence; BRS2011 has applied for A.A.; 2JS is rebuilding.

*Lowestoft.*—5QO has had several visits from amateurs on holiday. Five-metre activity is to be started after the holidays.

*Norwich.*—2MN is making a "Bug" key. 2UT has been in OZ visiting Danish amateurs. 5IX has received an R7 report from W2 on his 10-watt 14 Mc. fone. Finding 28 Mc. rather flat, 6QZ has been working DX on 14 Mc. We regret to learn that 6UA is giving up amateur radio.

*Swaffham.*—5UD is on 5-metre construction.

Please note: The D.R.'s new QRA, which is now The Warren Farm, South Wootton, King's Lynn.

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

The Cardiff and District Short Wave Club is still going strong, and now hold fortnightly meetings during the summer.

On Sunday, July 26, a visit was paid to the West Regional Transmitter at Washford Cross, 22 members being present from Cardiff and Penarth, and a very enjoyable day was spent. A trip to the Portishead Station is to be arranged shortly. Going further afield towards Port Talbot, 2QL is active on 7 Mc. fone; while 5VX, having tired of the 7 Mc. "spitch," and not being able to manage any 14 Mc. dx, has been making valiant efforts to radiate signals on 1.7 Mc., but so far his R.F. is still in his shack!

In Penarth, 5XN is still tickling the ether on fone. The Blackwood Club is also quite active, and 2BIJ has passed his code test, and should have his call by the time this is in print. 6BK complains about lack of local activity on the top band at week-ends. 2BAQ is rebuilding his speech amplifier and modulator, and swotting Morse. 2NG is on holiday in HB. 2XM starts a new career with B.T.H. in September. Good luck. In Swansea, local activity is well maintained in spite of summer conditions, all stations being active. One feature worthy of note that reflects the healthy state of Amateur Radio in the district is the exchange of station visits that has been taking place. It must be borne in mind that this is a very widely scattered district, covering from Newport to Pembroke Dock. Arrangements are now being made for the Swansea group to visit the Devon group, and *vice versa*. 6JW is now QRO with 50 watts, and is commencing a series of tests with an RFP60. 2WO and 2SN are active on 56 Mc., and 2SN now awaits confirmation of W.A.C. Congrats., O.M.

We have pleasure in welcoming another new member in 5ZL. Good hunting, O.M.

The D.S. would like members who are thinking of visiting Convention to get in touch with him, with a view to making up a party.

#### DISTRICT 12 (London North and Hertford)

The D.R. extends a welcome to the new section added to the district (Hertfordshire). It is proposed to hold a tea and business meeting on October 4, at Barnet, providing sufficient support is forthcoming. A circular giving details and the address will be sent to every member, and the D.R. will appreciate a full reply so that the arrangements can be completed.

The District wish to thank the members of District 17 for the very enjoyable day spent at Cranwell.

A 56 Mc. field day will be held on Sunday, September 23, when it is hoped to have two stations on the air, one at Finchley and the other at Potters Bar. The next meeting of the District will be held on the second Tuesday in September at the Parade Café, Landers Corner, New Southgate. This is near New Southgate Station, L.N.E.R., trams, buses and Arnos Grove Underground. It is thought that the new meeting-place will be more accessible than the former.

The D.R. hopes to see many district members at Radiolympia and Convention.



### DISTRICT 13 (London South)

The outstanding event of the month was the South London Conventionette, held at Tunbridge Wells, on Sunday, July 12. Sincere thanks are due to Mr. Allen (G2UJ) and the Tunbridge Wells group for their valuable assistance and co-operation. The total attendance was 41, which is remarkable, considering that the event was not so well supported by South London members as had been anticipated. The "assemble" was at the Wellington Hotel, at 12.30 p.m., followed by luncheon at 1.15 p.m. Afterwards the party paid a very interesting visit to the generator works of Messrs. Mortley Sprague, which are world-famous. Tea was served at 4.30 p.m., and this was followed by the Secretary's talk. Here we would add a hearty vote of thanks to G6CL for his kindness in visiting us. It was a great pleasure to have him with us.

The District meeting held on July 23 was well attended, in view of the holiday season, and a discussion took place on the question of the proposed District trophy. The majority seemed in favour of awarding this to the South London member scoring the highest number of points in an existing contest, such as the B.E.R.U. During the further discussions several points were noted for consideration before next N.F.D. It is hoped in the near future to complete the appointment of District Contact Members on the lines of the Town Representative Scheme, and details of this idea will be given at the next District meeting.

G2ND reports that a commercial station using the call LCP is working within the 7 Mc. band. G5PY is occupied building a new receiver; whilst 2BFH is building a transmitter. Other stations active are G2GZ, 2LW, 2RC, 2TH, 2VB, 2WV, 5HF, 5WG, 6AN, 2AZP, BRS1357, 2015.

It is hoped that as many members as possible will attend Convention this year, and we also hope to meet many old friends at Olympia. Don't forget that the next District meeting will be held on Thursday, August 20.



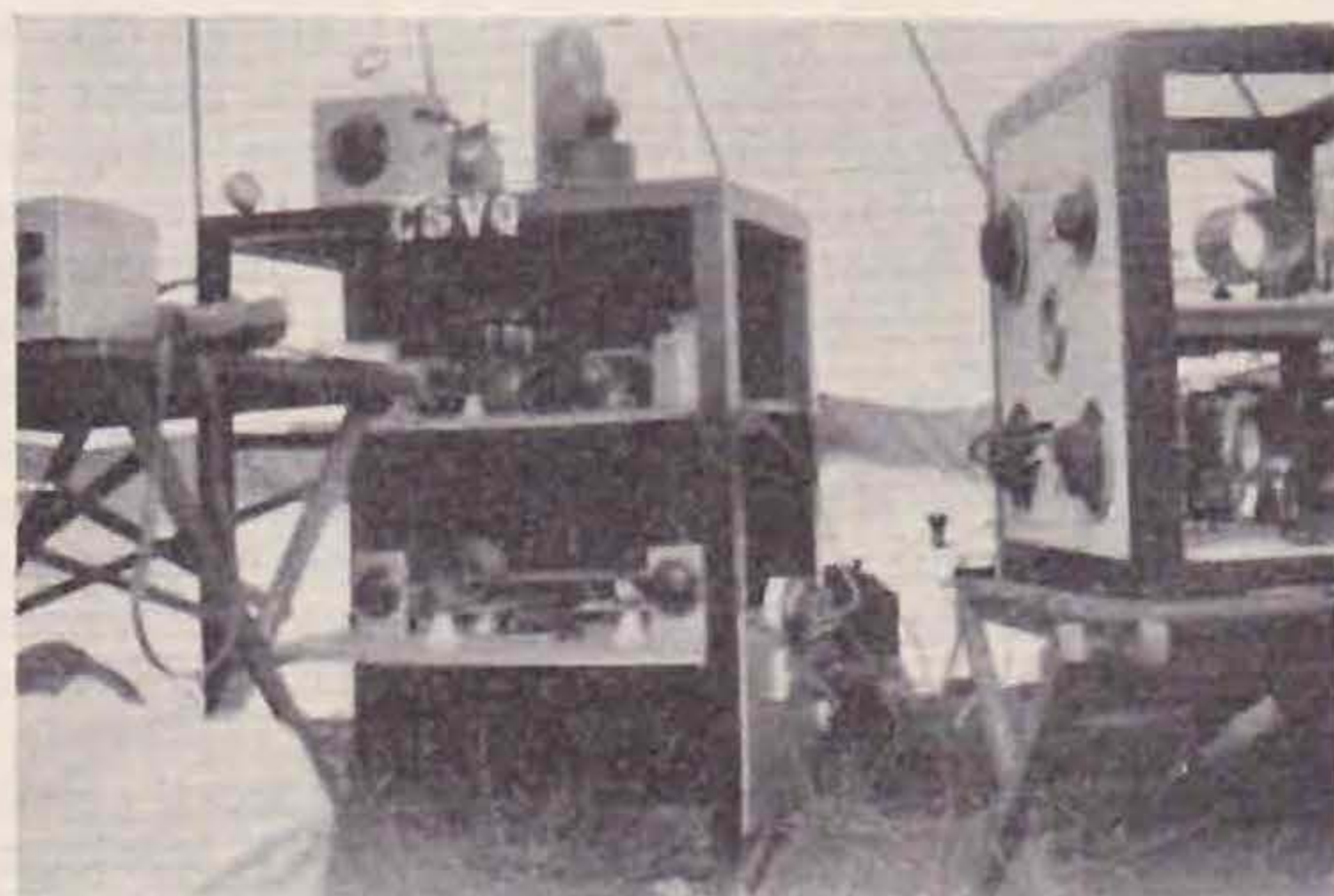
G6UTP. Abbess Roothing

### DISTRICT 14 (Eastern).

*East Essex.*—The July meeting with an attendance of 15, was held at BRS1447, Laindon. There will be no August meeting, owing to proximity of Convention. N.F.D. was well supported at Station G6CTP, located at Hockley. G6CT was responsible

for the erection of the mast and general organisation; G2LC, 5VQ and 2BNR for the transmitters; 6IF and 2BNR for receivers; 2WK for the tents; and our special thanks are due to them and also to many others too numerous to mention for their support and cheerful assistance.

*East London.*—There was a small attendance at the July meeting held at G6UT, Chingford. Meeting places are wanted for September and October. It is hoped to arrange for a Sunday afternoon meeting to be held at Brentwood; details later on. G5DY will be giving slow morse practice on the 1.7 Mc. band, starting in September, for the benefit of local members and others.



G6CTP—Hockley.  
A view of the gear used by the Eastern District during N.F.D.

### DISTRICT 15 (London West, Middlesex and Buckinghamshire)

From the beginning of this month Buckinghamshire is included within this area, and the D.R. would like to present his compliments to the members of that county.

There are only a few members resident there and with the exception of one, all appear to be in the south and three of those already take an active part in District 15 affairs.

If the membership increases, it is hoped that T.R.'s will be nominated for the principal towns in the South, Mid and North Bucks areas.

The D.R. would like to see as many as possible from the district attending convention this year and particularly invites newer members and those with whom he is not acquainted to introduce themselves either at the exhibition stand or at convention.

Congratulations to G6CJ on his splendid work in the B.E.R.U. contests. He certainly puts this area on the map every time there is a DX contest.

The date and venue of the September meeting will appear in the next issue of the BULLETIN.

Reports have come to hand this month from the T.R. for Twickenham stating that most members are on vacation, G6WN, 2AUB, BRS2178 and 2239 are the only others. Mr. Campbell, now 2AIB.

### DISTRICT 16 (South Eastern).

We offer our sincere congratulations to G5LB on his being awarded the Wortley-Talbot trophy. The award is well deserved, and Mr. Blundell's name will long be remembered as that of the man who produced the first practical information on crystal control on 56 Mc.



With two awards in the District, it looks as if some of us anyway are doing our bit.

Don't forget the District "get together" at the Valiant Sailor, Folkestone, on September 20. Clarry will be there!

*Heathfield.*—We have more congratulations to offer. This time to 1173, our star BRS. Mr. Lee, during the past year, won the 1.7 Mc. receiving contest, and came second in both the B.E.R.U. and G Section of the VK/ZL contest. Well done!

*Eastbourne* report that all are active. G2BD and 6CL have been visitors.

*Brighton and Hove* report activity, and that a party will visit Olympia and Convention.

*Whitstable and Tankerton.*—This little group are all very active, and were pleased to receive a visit from D4CSA. They visited Hythe with him and called on 2GD.

*Tunbridge Wells* have nothing special to report except that there was a good attendance at the District 13 Conventionette held in that town. Many thanks are due to 2UJ for the way he arranged things.

*Bromley and District.*—2GB reports: "In spite of violent road-hogging by our District Scribe during the Tunbridge Wells Conventionette, and attempts at sabotage on 2AW's car by others, Bromley and District members are still alive and active."

*Medway Towns* report full activity. 5FN has a straight receiver on 56 Mc. By the time these notes appear they will have held their "Do," and it is hoped that they will have had a good attendance.

*Folkestone* is very busy tidying up for September 20. The Scribe, having sorted out his ignition leads got home safely from Tunbridge Wells, and is lending a hand. Hearty congratulations to 2BZZ, who is now G8BG, and a welcome to Mr. Parish, our new member, who is now 2AYB.

During July, G6CL visited the Valiant Sailor in company with G2AX, after spending an entertaining afternoon with G6PA, 2IC and 2GD at the latter's shack. We understand that if H.Q.'s ever decide on a site for an official station, the "V.S." will be chosen!

See you all at Convention and at Folkestone later in the month.

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

Our Conventionette is over, leaving behind very happy recollections of a most interesting and friendly time. A full account will be found elsewhere in this issue, so no mention need be made here. May the D.R., however, express his warm appreciation to everyone who helped to make the affair such a great success.

The photograph which was taken outside the Radio Block has come out well. Orders for these should be sent to G6GH, 11, Wide Bargate, Boston; half-plate size 6d., full plate 1s. 3d. post free. Cash with order, please!

The District now possesses two of the new G8 calls, 8AP is the call of 2AFU, of Brigg, and 8BQ is the call allotted to 2BJY, of Boston. Best of luck to them both.

These new frequencies should be added to the Crystal Register:—G8AP 7030, 7166, 7186, 7270 kc.; G6AK 7047 kc.; G6LH 7050, 7150 kc.

G2LR and G6GH are now WAC. G2LR has worked PY and G6GH PY and LU. Congratulations!

As there seems nothing more to report some may be interested in these figures which the D.R. has worked out giving the results of QSL's received by him. The figures are for about 850 QSO's up to December 31, 1935. Omitting certain countries which were only worked once or twice this is the percentage of cards received by G6LH:—W, 85 per cent.; OH, 83 per cent.; OE, 71 per cent.; G, 68 per cent.; OK, I, 67 per cent.; EA, 64 per cent.; GI, 55 per cent.; D, HB, 50 per cent.; OZ, 46 per cent.; F, 39 per cent.; ON, 37 per cent.; SP, 36 per cent.; YU, 33 per cent.; LA, 25 per cent.; PA, 24 per cent.; SM, 23 per cent.; HAF, 20 per cent.; U, LX, YL, ZA, nil. In each case at least six months has elapsed since the QSO. Since working out the above figures a few cards have been received, but these figures are still approximately correct.

#### DISTRICT 18 (East Yorkshire)

*Hull.*—The response to the request for reports has been much better this month, though members do not give their crystal frequencies. It was thought that such a register might have been of assistance to new members in choosing their frequencies.

It is learned with regret that G2KM is leaving Hull to reside at Bilton, E. Yorks. The T.R., on behalf of the local membership, wishes him the best of luck in his new sphere.

Activities are as follows: G6OS getting class B modulation under way, a pair of 211-E's give 250 watts of audio on peaks. 2QO very pleased with his "Comet Pro," now that two stages of pre-selection have been fitted. No images are now audible on 14 Mc. 6FQ, trying different valves in the transmitter, has worked W6 and LU, but is unfortunate enough to have electrical QRM, which curtails active periods. 5MN has improved efficiency on 14 Mc. by using larger tank LC ratio; he is adding an H.F. pentode to his receiver. Tests with a 6A6 (double triode) do not as yet show any striking advantages. 6KN working on phone, and has had many interesting contacts, would like some listeners' reports; hopes to be on 14 Mc. soon. 6UV building portable 56-Mc. gear, and will be testing with 5HA shortly, and would like to hear from any others interested. 2AGK using MOPA, and a '10, with 9 watts input, has had some difficulty with grid modulation. (The T.R. would be pleased to help him.)

BRS1948 has built a new receiver, and obtained very encouraging results. 5BP is working VS1AA regularly on schedule, and getting good reports. It was stated in error recently that BP had worked Asia on ten, but he needs this continent to complete WAC on that band.

2BRY is getting his transmitter ready, and hopes for a full licence shortly.

The T.R. regrets he will be unable to attend meetings until September at the earliest, as business and holidays supervene.

*Scarborough.*—Congratulations to Mr. Blackenbury, who has received the first G8 call in Scarborough (G8BB).

G6TG conducting experiments with various altitudes of half-wave, end-fed Hertz, for reflection, radiation, absorption, etc., and trying out different



ayouts of SSS before final construction. 5MV experienced serious frequency shift through dust on crystal. 5GI has acquired RFP60, which he intends to use as final P.A., but is keeping pet push-pull LS5's handy.

Congratulations to Mr. Wray, who is now 2BGO.

The T.R. especially wishes to thank all members and numerous friends who helped to make this year's N.F.D. a tremendous social success. Although not in the running for the lead, everybody voted it the best event in the District yet. The gear in use was C.O., F.D., T.P.T.G. on 14 Mc., and readjusted to C.O., B.A., T.P.T.G., on 7 Mc.—link coupling to final stage. The final used a TZ5D with 500-volt generator loaned by 5HZ. 6TG was commended on his phone inter-communication "net" between outpost receiver and the transmitter.

No reports were received from Bridlington.

## DISTRICT 16 CONVENTIONETTE

SUNDAY, SEPTEMBER 20, 1936

at

### "THE VALIANT SAILOR," FOLKESTONE

Assembly	...	...	12 Midday
Lunch	...	...	1 p.m.
Presentation of the Courtenay- Price Trophy to Mr. J. C. Elmer (G2GD)	...	...	2 p.m.
G2FA and other stations	...	...	2.30 p.m.
Tea	...	...	4 p.m.

Inclusive charge 4/- per head. Reservations prior to 17th September to Mr. G. A. Chapman (G2IC), 109, Cheriton Road, Folkestone.

## Scotland.

In view of the frequent laments in these pages from various quarters in respect to the lack of genuine experimenters among the members, "A" District would learn with relief from the non-technical press recently that they had in their midst one who was referred to as "one of the foremost amateur radio scientists in Britain." Evidently we have been harbouring an angel unawares. Nuff sed!

We trust that all the Scottish members have now read the article on the re-organisation of the Scottish Districts, which appeared in the July issue of the BULLETIN. As the new District Officers have only been in office for a few days at the time of writing, no news has yet been received from them.

*A. District.*—Holidays have been occupying the attention of most members. Mr. Reston (2AGM) is now G8CH.

*B. District.*—Mr. Lythaby, 2AFA, has been granted the call G8AS, and Mr. Beattie 2BVF, G8AT. G8AT is already doing very well in the DX line. G6BM and G5YN are very active and getting out well. Congratulations to G5JK on the arrival of a Junior Op.

*C. District.*—News is also scarce in this district. G5WT is having some trouble with his new transmitter.

*D. District.*—G6SR is testing a new antenna, and has rebuilt his 14 Mc. transmitter, and hopes at last to nail the elusive South American. Some good QRP work has been done on 7 Mc. with an input of 2.5 watts. W.A.C. has been made by G5YX. Other stations active are G6QP, G5HL, and G6YI, who has been making alterations to his antenna system, and using a radiation meter to advantage.

*F. District.*—Mr. Russell, BRS2210, has been issued the artificial aerial licence 2AXK.

*G. District.*—Mr. Cameron, 2BFD, has passed his morse test and awaits his call.

We hope to have more news next month after the new districts have got properly under way.

## Denmark

By OZ7Z.

The great event of the past month was our annual convention in Kalundborg, where 75 Danish amateurs gathered and spent two interesting days. The 50 kw. broadcasting station was visited and explained in detail by our President, OZ2Q, who is an engineer with the National Broadcasting Company.

Conditions on 28 Mc. are still very bad; OZ2M reports very few stations worked, but ZS1H is still heard consistently.

Our annual camp will be erected in Fuen, near the QRA of OZ4LM, and the camp station will work under the call OZ7EDR. OZ5EDR is the call of the Copenhagen club transmitter, which will be on the air when these notes appear.

Sixteen new licences were issued last month, which is the greatest increase during a single month in this country.

# 132

## PAGES

### for

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## Ready

## August 26, 1936.

"A GUIDE TO AMATEUR RADIO."



## Empire



## News.

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

*Australia*: I. V. Miller (VK3EG), P.O. Box 41, Tallangatta, Victoria; Sub Representatives: J. B. Corbin (VK2YC), 39, Mitchell Street, McMahon's Point, Sydney, N.S.W.; R. Ohrbom (VK3OC), 22, Gordon Street, Coburg, N.13, Victoria; A. H. Mackenzie (VK4GK), Fire Station, Wynnum, Brisbane; G. Ragless (VK5GR), South Road P.O., St. Mary's, S.A.; J. C. Batchler (VK7JB), 21, Quarry Street, North Hobart, Tasmania.

*Bahamas, Bermuda and the Eastern Part of the West Indies*: P. H. B. Trasler (VP4TA), Point à Pierre, Trinidad, B.W.I.

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

*Canada*: Earle H. Turner (VE2CA), 267, Notre Dame Street, St. Lambert, P.Q.; W. P. Andrew (VE3WA), 1337, Dougall Avenue, Windsor, Ont.; F. Taylor (VE5GI), 4374, Locarno Crescent, Vancouver, B.C.;

*Egypt, Sudan and Transjordan*: F. H. Pettitt (SU1SG), Catholic Club, Mustapha Barracks, Alexandria.

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

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

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

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

*Malta*: L. Grech (ZB1C), 18, Constitution Street, Zejtun, Malta.

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

*New Zealand*: C. W. Parton (ZL3CP), 69, Hackthorne Road, Cashmere Hills, Christchurch.

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

*North India*: J. G. McIntosh (VU2LJ), Baghjan T.E., Doom Dooma P.O., Assam.

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

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

## Australia.

By VK3EG.

The results of the B.E.R.U. Contests were received in Australia with much pleasure. Evidently VK was fairly favourably situated this year!

Activity here is at a peak on 14 Mc. G signals come through from 20.00-22.00 G.M.T. at the same time as the South Americans. VK3EG has received an R7/8 report from G6GO on his 'phone transmissions. G5VL and 6GO have both been heard by 3EG at R8 when using 'phone. G2ZQ has been a consistent R8 C.W. signal. African stations have been inaudible except on 28 Mc.

Several VK3 stations, including 3BD, 3MR and 3YP, are working on 56 Mc. VK2PN is also running an efficient 56 Mc. rig. VK2LZ has heard TDC on this frequency.

The W.I.A. VK2 Division recently held a very successful exhibition in Sydney, and the standard of amateur equipment exhibited was very high. The public were allowed to see the club transmitter VK2WI in operation. Official broadcasts on 3.5 and 7 Mc. take place from this station for the benefit of country members.

VK2XQ has gone to join BERS195 in Northern Territory, and hopes to be active soon as a VK8.

VK2HC is on the air again, and will be looking for G contacts.

VE5HC and VS6AQ have been heard at good strength when using telephony. Telephony is of little use for DX work just now, but a considerable amount of local "spitch" has been heard, which makes us wish that we could borrow Uncle Tom's special "unwinder."

VK3YP and 3BD are still working DX on 28 Mc., but conditions generally have fallen off. Up North, VK4EI is holding the fort for European contacts on this band, whilst VK4GK works VE5BI regularly on schedule.

VK3EG desires to apologise for the absence of notes recently; this has to some extent been due to the inability to maintain the E.L.S. network. An improvement in conditions is anticipated.

## Channel Islands.

G2UR is active with 'phone on 7,174 kc. between 10 a.m. and 1 p.m. on Sundays, and also on Wednesday evenings.

2AOU is building a QRP CO. PA. for batteries. BRS2130 has successfully applied for A.A. and is awaiting call.

News is lacking from Guernsey. Members there, please note!

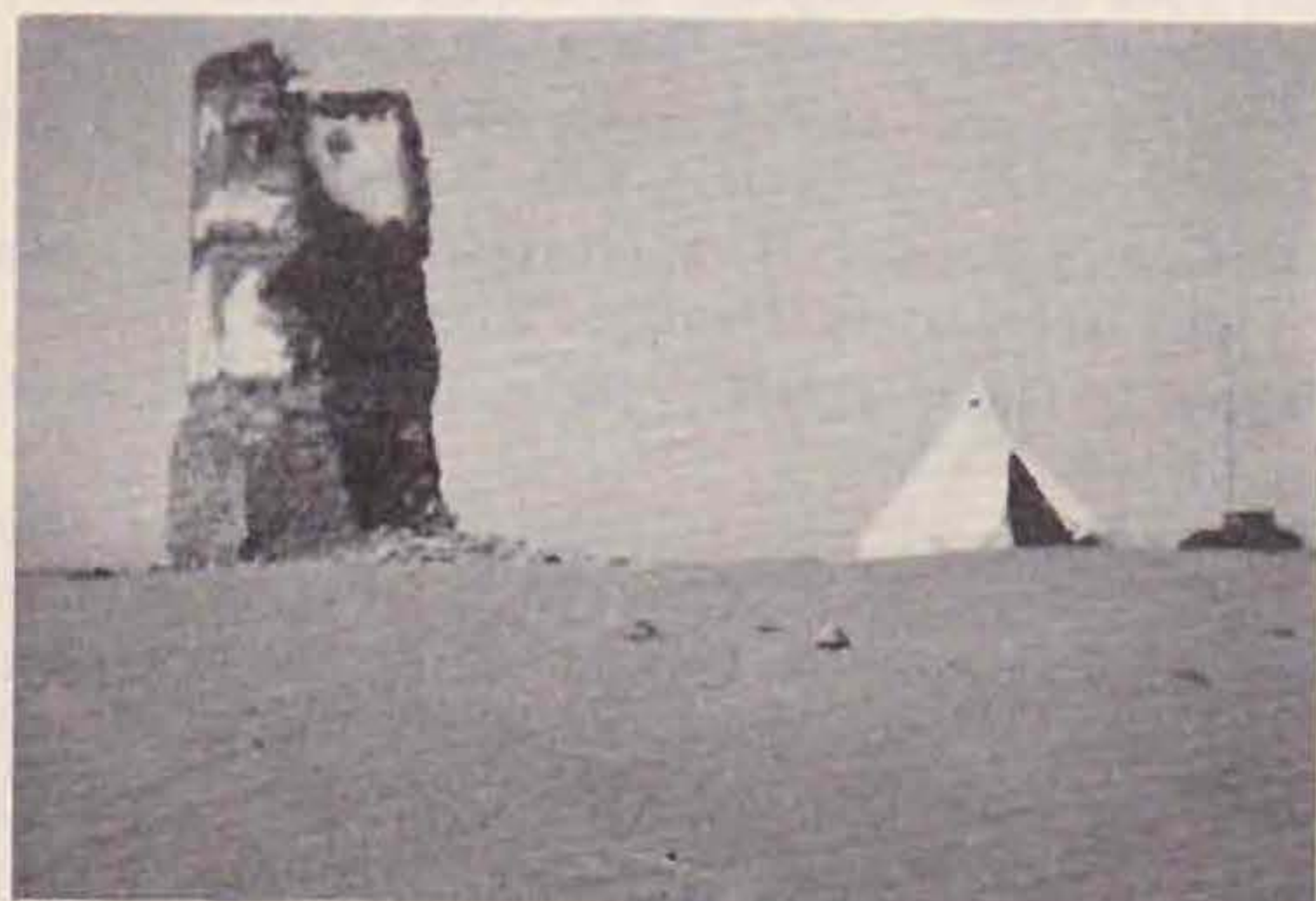


## Egypt, Sudan and Transjordan

By SU1SG via G2OL.

Owing to the departure of several members, the usual monthly meetings have been suspended, and the few remaining members have confined themselves to activity on the 14 Mc. band.

SUITM has carried out a few tests on 56 Mc., using an *Eddystone* two-valve transceiver, and was successful in establishing communication over a distance of one mile. SU1KG has been building a 25-watt modulator for his 50-watt C.C. rig, and hopes to be testing it by the time these notes are in print.

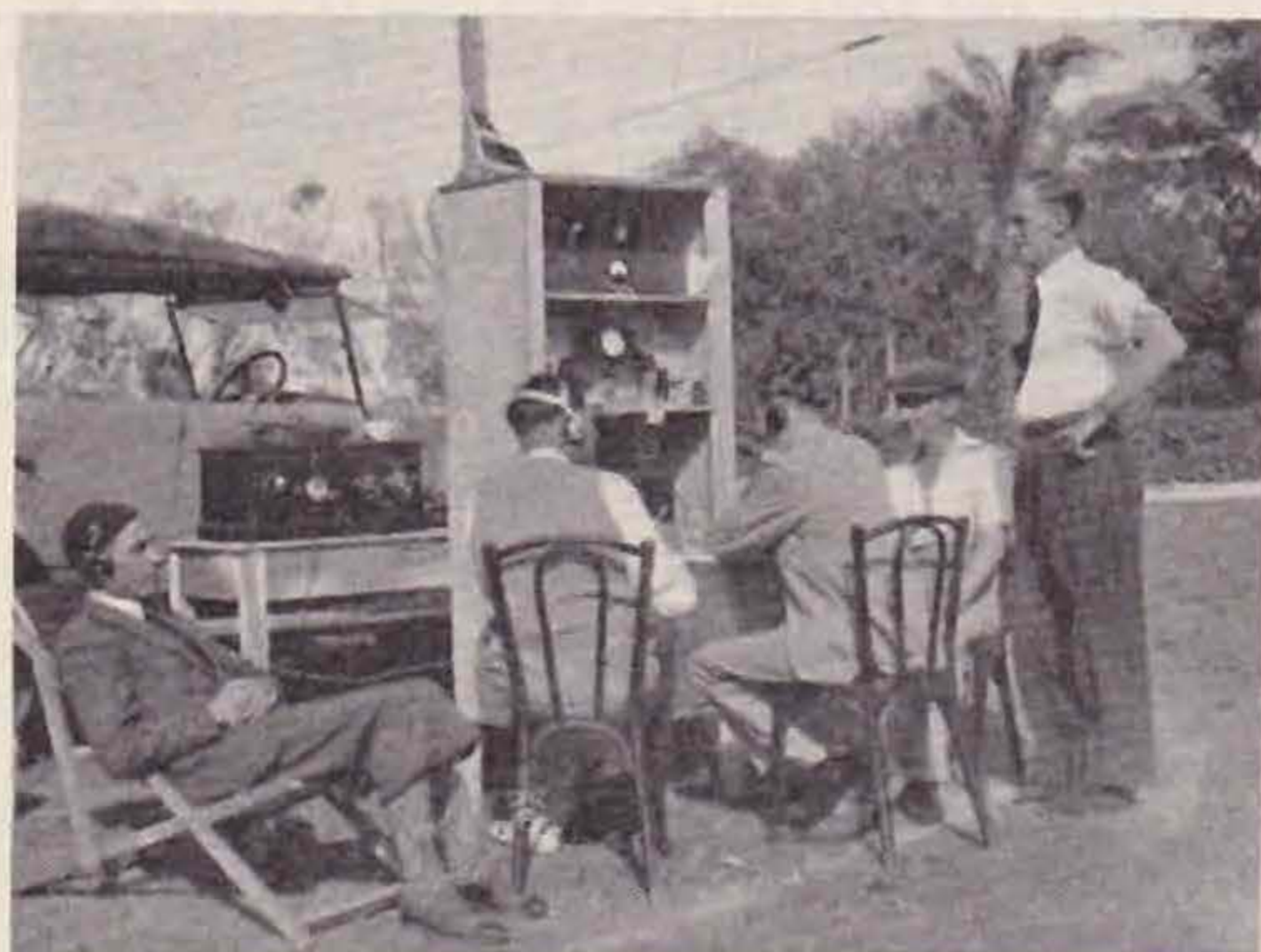


*The site of the Cairo N.F.D. Station operated from Napoleon's Watch Tower by SU2TW under the call SU1C.*

No general information has been received from Cairo, but our new member, SU1AP, has made some good contacts with South America. QSO's with this continent are very few and far between in Alexandria.

We all join in extending hearty congrats to SU5NK on his success in the Senior B.E.R.U. contest.

The authorities have apparently commenced the reissue of licences as two members in Alexandria received theirs during the last month. The conditions of the new licences are exactly the same as those contained in the first issue.



*The Egyptian Portable SU1A operated at Alexandria.*

## Irish Free State.

By EI9D.

GI5QX secured first place in the IRTS-ARRL contest. Using 50 watts his score was 30,624 points. Second and third places were secured by EI5F and EI8D respectively. The contest was well supported and we congratulate these competitors.

EI5F was again WAC on 14 Mc. during the month. EI9D, 6F, 2G, 2J, 6J and 8J are active on 'phone on 7 and 14 Mc. Other stations active are 7F, 5J, 7J and 9J. Owing to the holiday season there is little to report.

## Kenya, Uganda and Tanganyika

By VQ4CRH.

Conditions during June were extraordinary good on the 14 Mc. band, but very little other than local working was done on 7 Mc.

VQ3FAR has been collecting a good bag of QSO's, amongst them being VE5, K6, XU8, FZ2, PK, and an interesting contact with LMA, of the Fanaraaken Meteorological Institute in Norway. When this latter contact was made LMA was apparently on top of the high mountain Fanaraaken. FAR reports having scrapped his phased  $1\frac{1}{2}$  wavelength aerial for a two-wave on 14 Mc., which appears to give better all-round results.

VQ4CRH is now CC, but the PA stage is not working to his satisfaction at the moment. A Zepp. aerial is in course of construction which he intends coupling to the transmitter *via* a Collins.

VQ4CRE has recently moved his QRA, and finds himself in the mains interference belt.

VQ4KTA has been putting over some excellent 'phone recently on 7 Mc., but no reports to hand regarding results on 14 Mc.

VQ4KSL is going strong with DX; his QRA is c/o Bunyore Mission P.O., Kisumu.

BERS229 is working up the code, and will shortly be taking out a VQ call sign.

## Malaya and Borneo

By VS1AA via G5BP.

14 Mc. DX still continues to be good, although QRN has been particularly bad in Penang. Phone stations are getting a positive nuisance in the 14 Mc. band, one particular pest being VU2HQ of Calcutta. VU's and KA's are the chief offenders, but the latter do generally keep in the American phone band, and leave the band edges clear.

Regular schedules are being run between G5BP, 5LI, 6CL and VS1AA. These are most interesting.

VS1AA has tackled the B.C.L. interference so thoroughly that his S.W. broadcast superhet in the same room can be run on 15,140 kc. while 100 watts are keyed on 14,030 kc. without QRM. Valve keying in a low power stage is the solution.

VS2AE is to be congratulated on the arrival of a daughter. VS1AF and 1AA have qualified for W.A.C. Stations active are 1AA, 1AB, 1AF, 1AJ, 2AE, 2AG.

We extend a hearty welcome to Mr. O. M. Bradley, BERS135, who has returned to Penang.

Application has been made to the Director General of P. and T. for increased aerial length to 150 feet, and also for the extension of operating time from two to four hours. Negotiations are still proceeding with regard to the use of the 3.5 Mc. band.



VS2AG reports poor conditions on 7 Mc. He is experimenting with parallel and series feed to the aerial. 1AJ reports rebuilding TX, using D.E.T.1 final. 1AA now added G6NJ temporarily to schedules.

### Malta

By ZB1C via ZB1E and G6UD.

Conditions on 14 Mc. are good during the periods 1500 G.M.T. to 1700 G.M.T. for Eastern and Southerly signals, and for Westerly DX, after midnight. We welcome BERS358, a new member, BERS331 left for the East, and BERS25 is leaving for G.

The next formal meeting will be at ZB1E on September 6, at 6.20 p.m.

### Rhodesia

By ZE1JB.

There appears to be no activity at all this month and no reports have come to hand.

ZE1JB is building and hopes to be on with his own full power outfit by the end of July; probably only CW for a while, but telephony will be installed again later.

ZE1JC has returned from leave, having wandered all over the Eastern Hemisphere, and thoroughly enjoying himself.

ZE1JJ has built a 56-ft. lattice mast on which he will support a rotary beam for 14 and 28 Mc. work. He reports 28 Mc. practically dead at present.

ZE1JO has acquired some RK25 tubes, and is busy fitting these in his final stage.

Considerable activity is expected in August for the D.J.D.C. contest, but it is a bad time of the year for Europe on 14 Mc. here.

### South Africa

By ZU6V

During the period under review, a pronounced

local activity was noticed in the 3.5 Mc. band. The 7 Mc. band appeared to be taking its usual seasonal turn for the better. Signals from Division One can be heard in Johannesburg until 8 p.m., and DX, including G's, is audible around midnight. It is dubious whether our signals will penetrate existing atmospheric conditions.

This period was the "off" month for 14 Mc. DX, only a few amateurs being rewarded with W6 contacts. At the time of writing, all continents are audible at some time or another of the day, of these, only a few J contacts have been made.

A survey of the 28 Mc. band resulted in listening to a dead spectrum. It is possible that some information will be available for the next issue of the BULLETIN.

ZT6X has been using a tape-recorder, and forwarding the slips to various amateurs. These slips record operating abilities, and it is rumoured that certain amateurs disown them. Senders of sixty CQ's and two signatures, beware! He will visit Durban amateurs soon and hopes to gather more members to the B.E.R.U. fold.

ZT6AQ's aerial is now 100 ft. high. After months of fruitless calling for J contacts, he worked three in an hour. Ex G6UO seldom contacts anything but DX these days.

ZT1H after months of inactivity appeared for five minutes recently on the 7 Mc. band. Is this the Swan Song O.M.? ZUIT has been reported working 14 Mc. DX. His signals are causing QRM in the States!

ZS6AL was active on 14 Mc and his power is just 49.999 watts. Using an indoor aerial for 7 and 14 Mc. operation ZU6V has received satisfactory reports.

In submitting this month's notes, a request is made for members to supply information which will greatly enhance the value of these notes.

## AROUND THE EMPIRE No. 1

VK3EG, the winner of this year's Senior B.E.R.U. Contest, first became interested in radio in 1925. For some time he served his "apprenticeship" as second operator at VK2RX, and later as second operator at VK2BE,

the portable station of VK2HC. In October, 1933, he obtained his own licence as VK2EG, and three months later received his present call-sign, VK3EG. He has acted as an Empire Link station since June, 1934.

The station is situated in North-east Victoria, 180 miles (air line) from Melbourne. He is fortunate in having a particularly good location on a hill overlooking the town, and well away from the roads. The shack is an old reservoir with concrete walls 2 feet thick.

The transmitter uses a type 46 oscillator followed by another 46, 210's in parallel, 801's in parallel, and a 203A graphite anode valve in the final. Separate power supplies are provided for each stage. Link coupling is used throughout, and all the gear, which is built in the bread-board fashion, is mounted on 2-inch stand-off insulators. The method of assembly allows experiments and changes to be carried out easily.

For the B.E.R.U. Contest a three-valve receiver—detector and two L.F. stages—achieved the desired result. This receiver may be seen on the left of the photograph. A very satisfactory receiver has lately

(Continued on page 98.)





**VK-ZL CONTEST.**—(Continued from page 75.)

when either calling ZL or VK stations by Australian or New Zealand listeners. Overseas listening stations must log VK-ZL stations, when they are calling overseas stations.

5. Australian and New Zealand stations will count their score as Rule No. 8 of transmitting contests.
6. Overseas listening stations will count their score as per Rule No. 9 of the transmitting contests.
7. Entries must be sent as per Rule No. 12 of the transmitting contests.

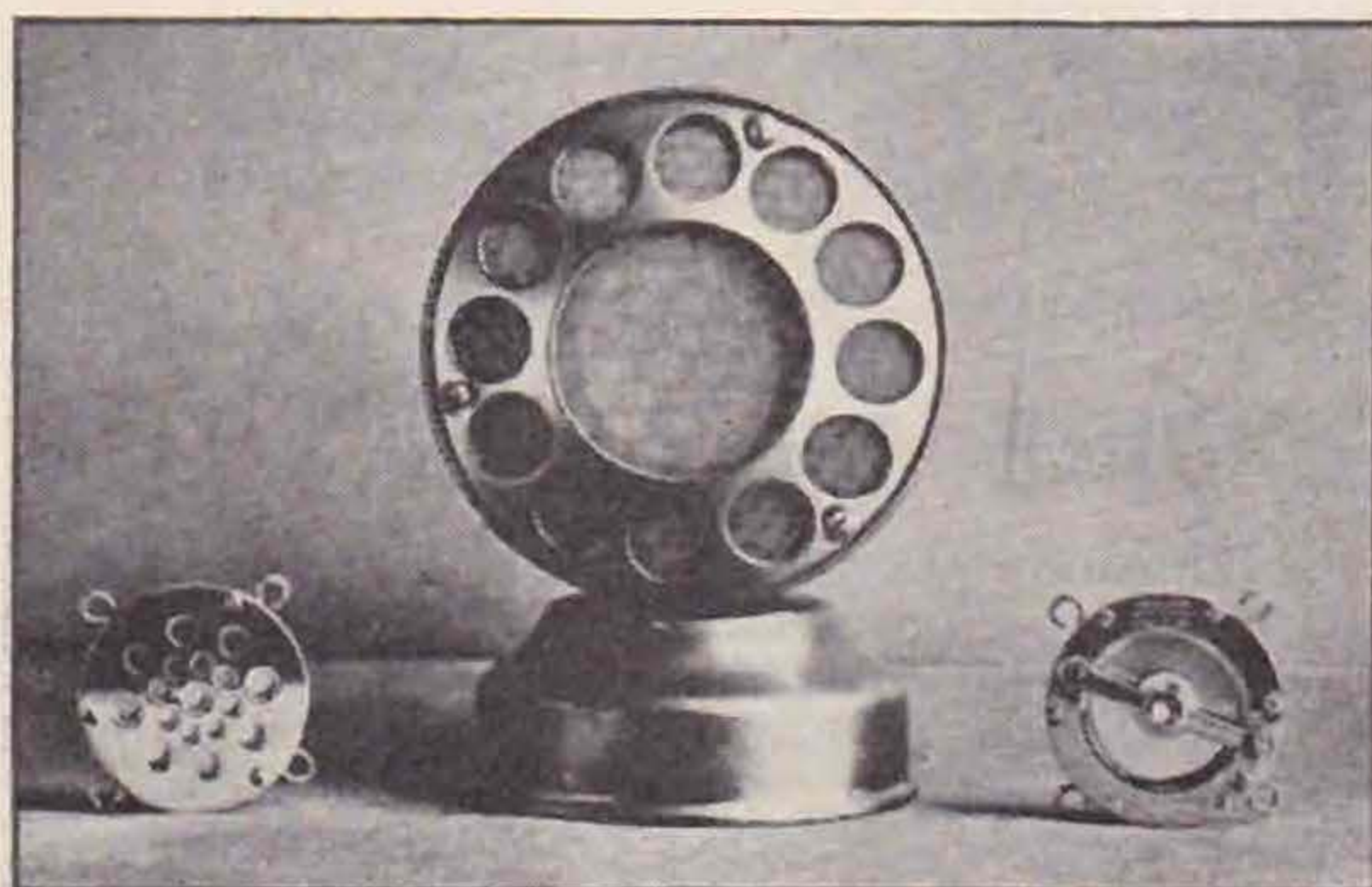
**VK3EG.**—(Continued from page 97.)

been installed for 28 Mc., using a 58, an electron-coupled 57, a 56 and a 2A5.

Three transmitting aeriols are used. The first is a "V" beam (330 ft. on each side) for 40 and 20 metres, radiating N.E. and S.W. The other two aeriols are single wires situated for African and European contacts respectively.

On C.W. 115 countries have been worked, and 40 have been contacted on telephony using a carbon mike with a two-stage D.C. amplifier fed into a 201A as a Telefunken modulator. This modulates the grid of the 203A.

The station operates on all frequencies from 3.5 to 28 Mc., and 56 Mc. equipment is being added. Having already worked Europe, Japan and U.S.A. on 3.5 Mc., and having received a report from South Africa, VK3EG is justly hopeful for W.A.C. on that band.

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