THE T. & R. BULLETIN

OFFICIAL ORGAN OF THE INCORPORATED

RADIO SOCIETY OF GREAT BRITAIN

Vol. 13. No. 1

CONTENTS

OUR MOTHER TONGUE

IN everyday life it is said that a man is judged by the company he keeps ; the radio amateur who uses telephony stands to be judged by the words he utters.

The increase in telephony operation, particularly for international working, has made many of us conscious of the fact that our friends abroad may be summing us up by the sound of our voices.

Ofttimes in the past we have spent an interesting hour at the receiver attempting to identify, by their accents, those heard speaking. The voices of the Scotsmen, the Lancastrians, the Yorkshiremen, the Men of Devon, Wales and Kent, have brought to our ears many pleasant memories of days spent in their company. A feeling of personal interest has been borne in upon us, and a nearness which annihilates distance ; in short, the unseen speaker has identified himself by his voice.

But to-day things seem to have changed, if what we hear from our American friends is correct. "Any evening when the G's are coming across on 'phone" they tell us, the air is thick with pseudo-American accents, accents which would never be recognised by the friends of those who use them. Meet these men in everyday life and their native accent is present in all its charm ; place them before a microphone, and a new being is born.

Only last month when short skip was prevalent on 14 Mc. we overheard a conversation from a station not a thousand miles from Lady Godiva's town, speaking with an accent which would have done credit to a Texas ranger.

Such imitation may be the sincerest form of flattery, although we doubt it ; for we can think of nothing more likely to bring a smile of contempt to the face of a true American than to hear an English amateur attempting to speak with a vicious twang.

We know from bitter experience that it is the easiest thing in the world to copy someone else's manner of speech, but in this great Movement to which we belong, let us preserve to the best of our ability our true personality. Speak naturally and remember our Mother Tongue is English.

* * *

In presenting to our members the results of our Annual B.E.R.U. Contest we offer, to all who have been successful, our heartiest congratulations. The "also rans" may take consolation in the knowledge that they have made a contribution to the advancement of Empire friendships. May it long continue thus.

J. C.

The 1937 Olympia Transmitter

By G. McL. Wilford (G2WD.)

PART I.—THE DUAL CHANNEL EXCITER

Introduction.

In presenting this, the first of a series of articles dealing with a modern transmitter, the author has endeavoured to cater for both low-power and high-power interests.

The transmitter consists of three separate and distinct units which will be described in three articles. In this issue the Exciter is discussed, whilst a High Power P.A. and a speech amplifier modulator will follow in the next two issues.

Preliminary Investigation.

The basic idea behind the development of the transmitter was to provide two-band working without coil changing either in the exciter or P.A. By merely changing the position of switches and changing aerial couplings this has been accomplished, but only after many months of experiment. At least five different circuits were tested before the present arrangement was decided upon. The resultant circuit is extremely efficient and simple to adjust.

The exciter unit is designed for operation in the 14 and 28 Mc. bands but there should be no difficulty in employing it equally efficiently in the 7 and 14 Mc. bands or in the 3.5 and 7 Mc. bands. In this connection the reader is referred to the author's articles on "Transmitter Design" * for details of suitable coil sizes for bands other than 14 and 28 Mc. The coils can be wound on *Eddystone* DL9 four pin formers and by merely changing the crystal other bands may then be used.

Before commencing a detailed description of the unit the author wishes to pay a tribute to *Stratton and Co.* and *Eves Radio* for the help given in either making or obtaining the few special parts which are not carried in their normal stock. Assistance was also rendered by *Messrs. Dubilier, Raymart, Q.C.C.* and *Premier Supply Stores.*

General.

In an exciter of the type under discussion the main object in the mind of the designer was to obtain sufficient output to drive the P.A. up to inputs of the order of 200 watts and at the same time produce a unit which in itself would be highly efficient when used as a low-power transmitter. These requirements may at first sight appear simple of achievement but many unforeseen difficulties occurred. The reader who constructs either or all of the units can rest assured that ample R.F. will be available in the place where it is most wanted, i.e., the aerial.

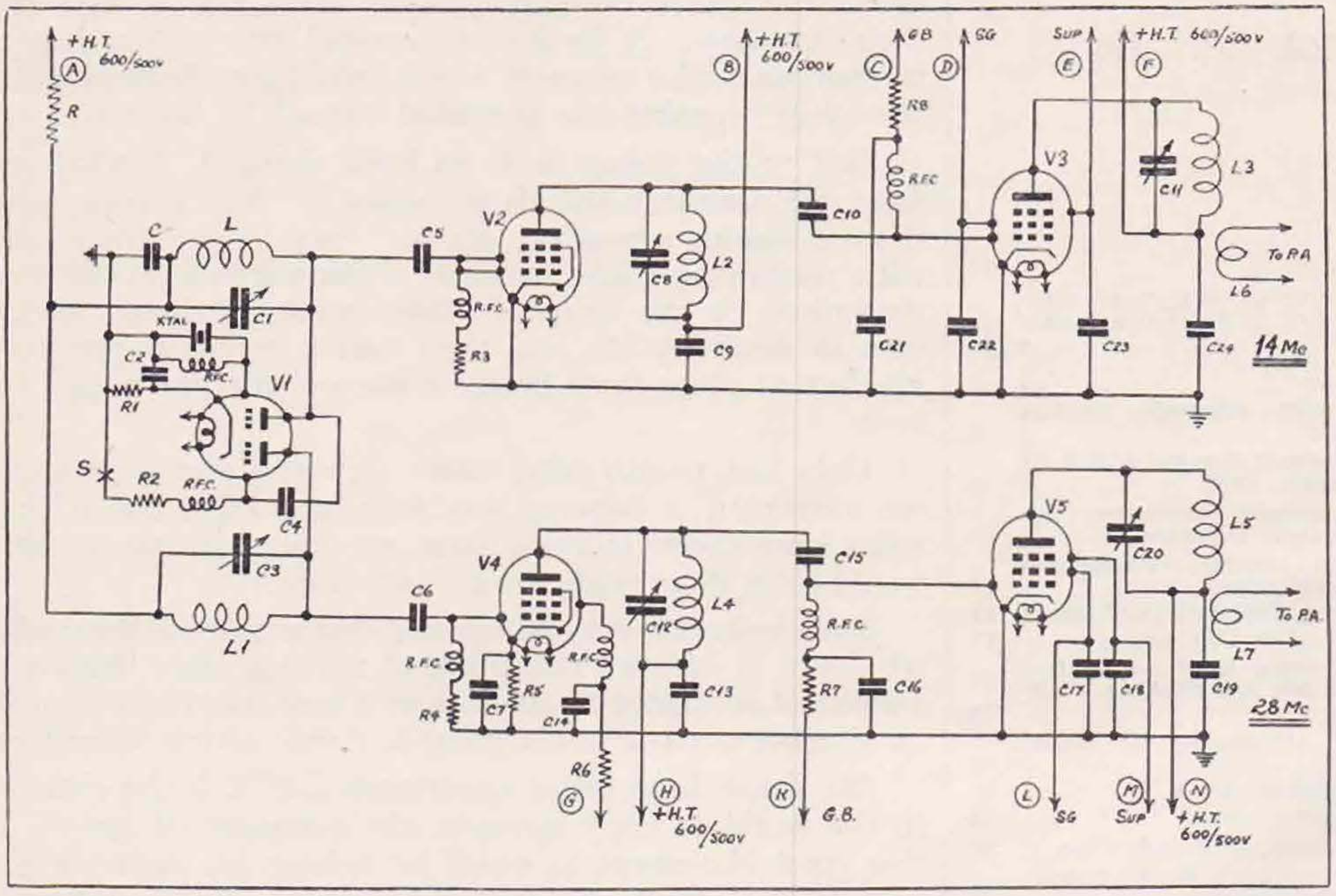


Fig. 1.
Circuit diagram of Exciter Unit.

* T. & R. Bulletin, April to June, 1936.

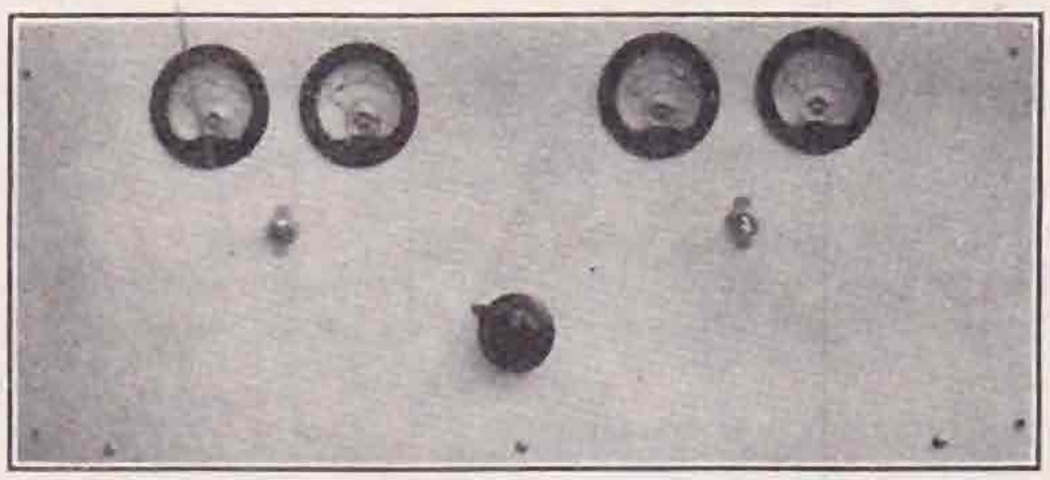
Construction.

The exciter will be considered in three sections :—

(*a*) The oscillator doubler.
(*b*) The 14 Mc. Channel.
(*c*) The 28 Mc. Channel.

(*a*) *The Oscillator Doubler.*

This section is designed round the Jones exciter circuit using a *Marconi* B30 twin triode, which is similar in every way to the American 53 or 6A6. The circuit is especially suitable because it produces good harmonic content on either 14 or 28 Mc. with only one doubling stage. This circuit, unlike the Tritet, is not "hard" on the crystal, which is an important point in its favour.



Front view of panel. Meters, reading from left to right : B30 (Cathode), 1st Doubler (plate), output valve (grid), output valve (plate). Left-hand switch B30 (2nd Triode grid). Right-hand switch, plate circuit for output valve. Centre knob controls the 6-pole crystal oscillator switch.

Reference to Fig. 1 shows that the oscillator doubler valve V1 occupies the same position as in the exciter itself. The valve with its associated fundamental and harmonic tank circuits can be seen clearly from the photograph overleaf. The 14 Mc. channel is towards the rear edge and the 28 Mc. channel nearest the front panel.

The coil L and condenser C1 form the fundamental crystal frequency tank circuit and L1, C3 the 2nd harmonic tank circuit. Only three condensers C1, C11 and C20 are fitted with knobs. All others are mounted parallel with the chassis on small right angle brackets made of "Tufnol," a production of *George Ellison, Ltd.*, Perry Barr, Birmingham.

The crystal condenser C1 is fitted with a knob so that, when the 14 Mc. channel is in use the crystal loading can be adjusted slightly. The same holds good when the 28 Mc. channel is in use.

C11 and 20 are also fitted with knobs to permit correct loading when link coupling to the P.A. is used or when the exciter is operated as a low-power transmitter.

All other variable condensers are associated with *pre-tuned* circuits which, once they have been adjusted, need never be touched. Slots in the spindles permit adjustment (with an insulated tool) in a similar manner to that employed for I.F. trimmers.

As will be seen from the photographs, only the coils and condensers are above the chassis.

An important point to be noted here is that the value of every R.F. choke and by-pass condenser shown in Fig. 1 was fixed as the result of considerable experiment and each component is absolutely essential if the highest efficiency is to be obtained.

KEY TO FIG. 1.

C1, 11	*100 μμF. type 900/100, Eddystone.*
C3, 8, 12, 20	*45 ,, ,, 900/40 ,,*
C, C2, 7, 14, 16, 21	*.01 μF, mica, type 691, Dubilier.*
C4, 5, 6, 10	*.0001 μF., ,, ,, M, T.C.C.*
C15	*.0005 ,, ,, ,, M, ,,*
C9, 13	*.01 ,, ,, ,, 620, Dubilier.*
C18, 23	*.001 ,, ,, ,, 690 ,,*
C17, 22	*.01 ,, ,, ,, 577, ,,*
C19,24	*.01 ,, ,, ,, B770, 1,000 v. test, Dubiler.*
R	*6,000 ohm, 40 watt, Ohmite, Eves Radio.*
R1	*400 ,, 8 ,, Premier Supplies.*
R2	*50,000 ,, 2 ,, ,, ,,*
R3	*15,000 ,, 2 ,, ,, ,,*
R4	*40,000 ,, 2 ,, Dubilier.*
R5	*750 ,, 8 ,, Premier Supplies.*
R6	*20,000 ,, 20 ,, ,, ,,*
R7	*50,000 ,, 2 ,, Dubilier*
R8	*30,000 ,, 2 ,, ,,*
RFC	*Sectional wound type (3, Q.C.C., 6 Eddystone).*
V1	*Marconi, B30.*
V2	*Eves Radio, type 42.*
V3, 4, 5	*,, ,, ,, RK25 or 802.*
S & SP	*SP on/off, type S80, Bulgin.*
Coil formers	*4 or 5 pin, type DL9, Eddystone.*
Valve holders	*V1. 7 pin ceramic, Clix.*
	V2. 6 ,, ,, Raymart.
	V3, 4, 5, 7 pin, L, Raymart.
Coil sockets	*L and L1, type 949 or 950, Eddystone.*
	L2 and L4 ,, 953 ,, 954, ,,
Crystal holder	*Enclosed type, Brookes.*
Meters	*Howard Butler, Eves Radio.*
DT switch	*6 pole, Wearite.*

Coil Table.

L, 11 turns 20 s.w.g., D.S.C. winding, length 1 ¼ins
L1, 7 ,, 18 ,, enamel ,, ,, 1 in.
L2, 7 ,, 18 ,, ,, ,, ,, 1 in.
L5, 3 ,, 18 ,, ,, ,, ,, 1 in.
all wound on 1½ in. diam. formers, Eddystone.
L3, 8 turns 10 s.w.g. bare winding, length 1½ ins, diam. 1¼ins
L5, 4 ,, 18 ,, enamel, spaced ¼ in., between turns, diam. 1¾ in.
L3 and L5 are mounted directly on their respective condensers.

Link turns for each of these are 2 turns, position to be adjusted to give correct loading of V3 or V5, i.e., 60 to 75 mA.

(*b*) *The* 14 *Mc. Channel.*

The circuit used is conventional in every way. The first valve, V2, is a type 42 used as a triode, i.e., the screen is connected to the control grid, the cathode to earth, whilst the grid leak R3 provides sufficient bias should excitation fail.

It will be noticed that all earth connections are made to a common bus bar which is connected to the main earth terminal on the back of the chassis. This also holds true for the 28 Mc. channel. The valve V2 is capacity coupled to the fundamental tank of the oscillator. V3 can be either an RK25 or 802. This valve was chosen for two reasons: (1) ease of excitation and R.F. output; (2) it can be suppressor modulated for low-power 'phone work.

The suppressor is keyed and gives with a small filter (see Fig. 3) absolutely clickless keying using inputs up to 200 watts in the final P.A. For suppressor phone it will, of course, be made negative in the normal manner. (See "Transmitter Design" articles for method of adjusting for this type of telephony.)

C11 has its associated inductance mounted directly thereon and the condenser itself is assembled on to an *Eddystone* type 1007 bracket. The link coil is mounted on an *Eddystone* 1046 terminal saddle assembled on top of an *Eddystone* 1029 insulating pillar. The link output goes down through the chassis and is terminated in a *Clix* two-socket strip into which are plugged two *Clix* solid plugs with the plating removed. These carry the link to either the P.A. or the aerial for low power and, as before mentioned, this condenser has a knob for final tuning.

The RK25 or 802 is capacity coupled to the preceding valve V2. V2 is the doubler and V3 the buffer operating on the same frequency as V2. V3 needs no neutralising.

(*c*) *The* 28 *Mc. Channel.*

It will be noticed in the oscillator circuit that a switch S is shown in the grid circuit of the second half of V1. This is left open when on 14 Mc. to take the load off the second triode but is closed when the 28 Mc. channel is in use, as the second triode is working as a doubler. The crystal and holder were supplied by *Brookes* (7,150 kc. fundamental); the output from the second triode is in the 14 Mc. band.

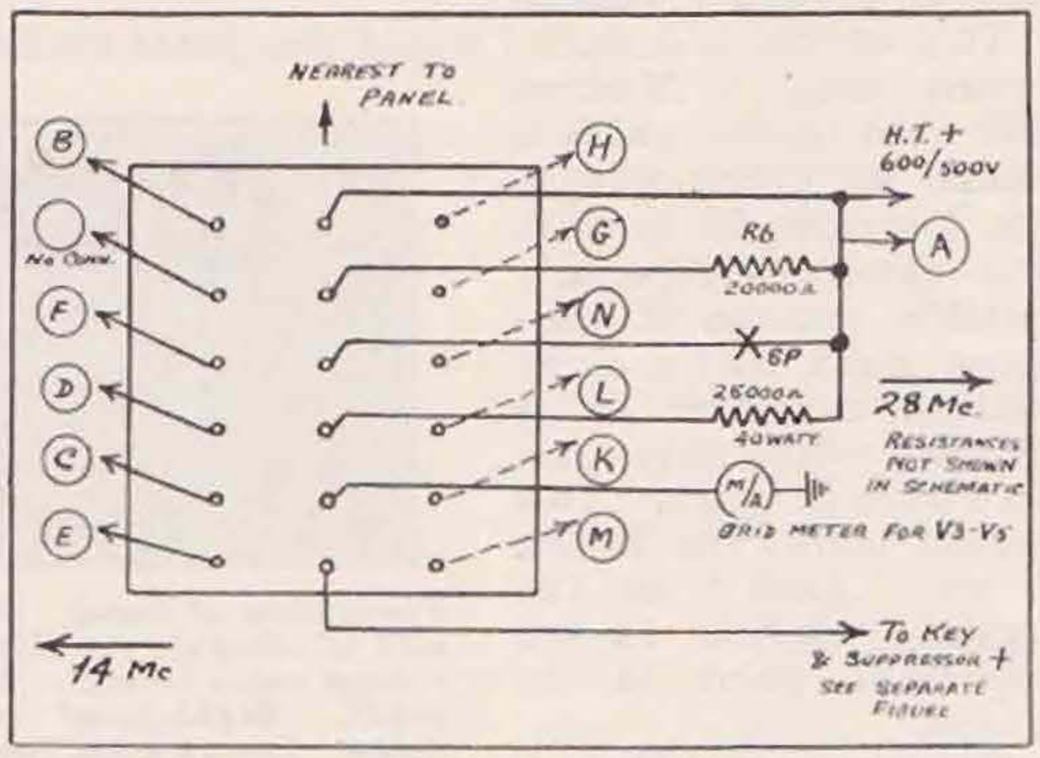
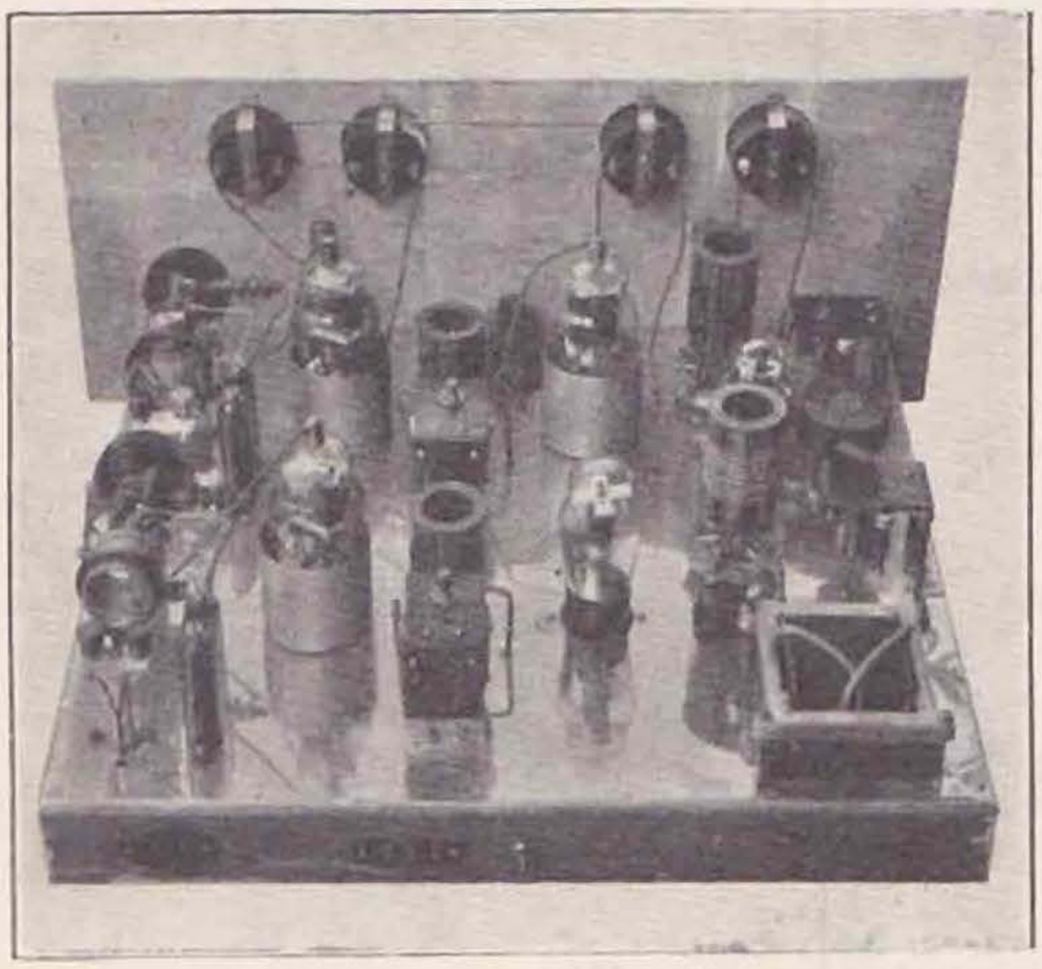


Fig. 2.

Change-over switch arrangements. The letters in the circles correspond to those shown in Fig. 1. The point X marked SP represents a snap switch which is arranged to cut off the H.T. supply from V3 and V5 when tuning previous stages. After tuning, the switch can be left closed.

The next doubler valve, V4, is an RK25 or 802 (pentode connected), capacity coupled to V1. The circuit is again normal in every way except that the valve is self-biassed by R5 (750 ω.) and its by-pass condenser C7. The value for R5 was found by experiment and is designed to keep the plate current down to normal. It will be appreciated that we now have a very highly biassed doubler to 28 Mc. The next valve, V5, is also an RK25 or 802, again chosen for the reasons given previously ,and its circuit is exactly the same as for V3 in every detail, except the grid leak value. The methods of mounting the coil L5 on C20 and the link are identical with the methods used for V3 and the same remarks made there apply in this case.

It will be seen in the circuit diagram, Fig. 1, that each supply lead is designated with a letter in a circle, these correspond with the designations for the change-over switch (Fig. 2). The method of change-over, using a *Wearite* 6-pole (with mid position "off"), makes band-changing very simple indeed. To move from 14 Mc. to 28 Mc., close S and put the 6-pole switch to its correct position, switch on power and proceed. To move from 28 Mc. to 14 Mc., open S and change over the 6-pole switch. It may be found necessary to "touch up" the crystal tuning condenser control owing to the different loading when working out of the fundamental or second harmonic tanks but a position of C1 can be found which is satisfactory for both. This is a matter for individual experiment. It will also be noted that only one power supply is used for the whole unit. The author uses a 500/450/0/450/500, 250 mA. *All Power* transformer with a U18 *Osram* rectifier, the reduced voltage for V1, i.e., about 300 volts, being obtained by means of an *Ohmite* 6,000-ohm 40-watt resistor R in the supply circuit. It is *not* desirable or necessary to use a greater voltage than this on V1. Although



DUAL CHANNEL EXCITER.

Rear view. The 28 Mc. channel is next to panel. Note the condensers mentioned in text without knobs.

600 volts has been employed in experimental work, 300 volts is quite sufficient to obtain full output for driving the 14 or 28 Mc. doublers V2 and V4. The two inductances L and L1 are mounted on *Eddystone* 949 ceramic sockets and L2 and L4 are plugged into *Eddystone* 954 or 953, DL9 chassis mounting sockets. Where necessary small stand-off insulators are used under the chassis to support the heavier resistances, etc. These are shown in the underside view photograph. The power leads are brought into the chassis by a chassis mounting valve holder of any standard type, as are also the 230-volt A.C. leads for the filament transformer, which is in one corner of the chassis at the rear edge.

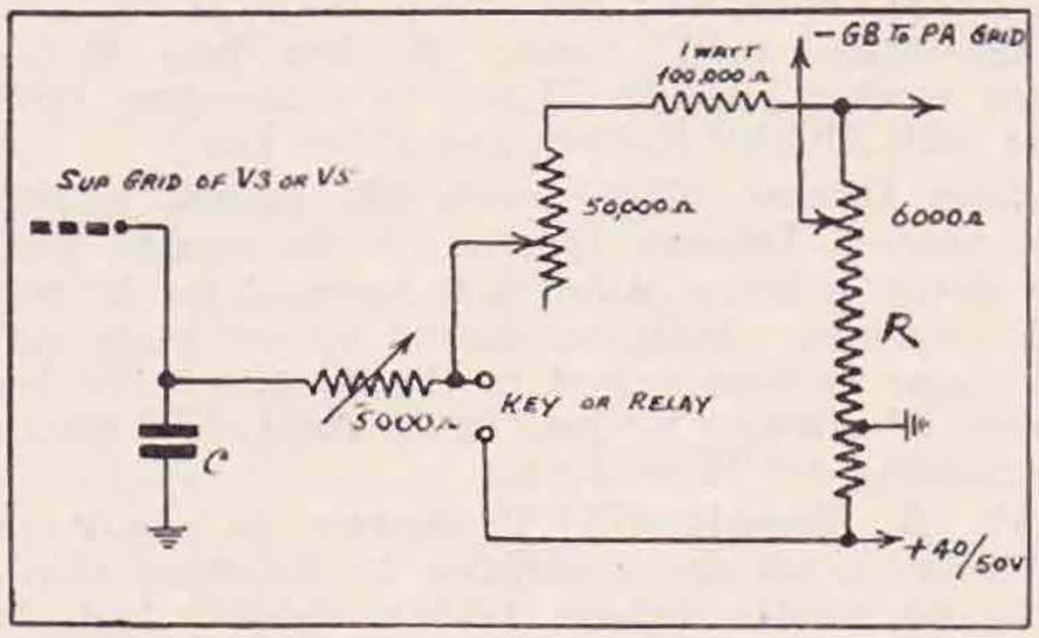
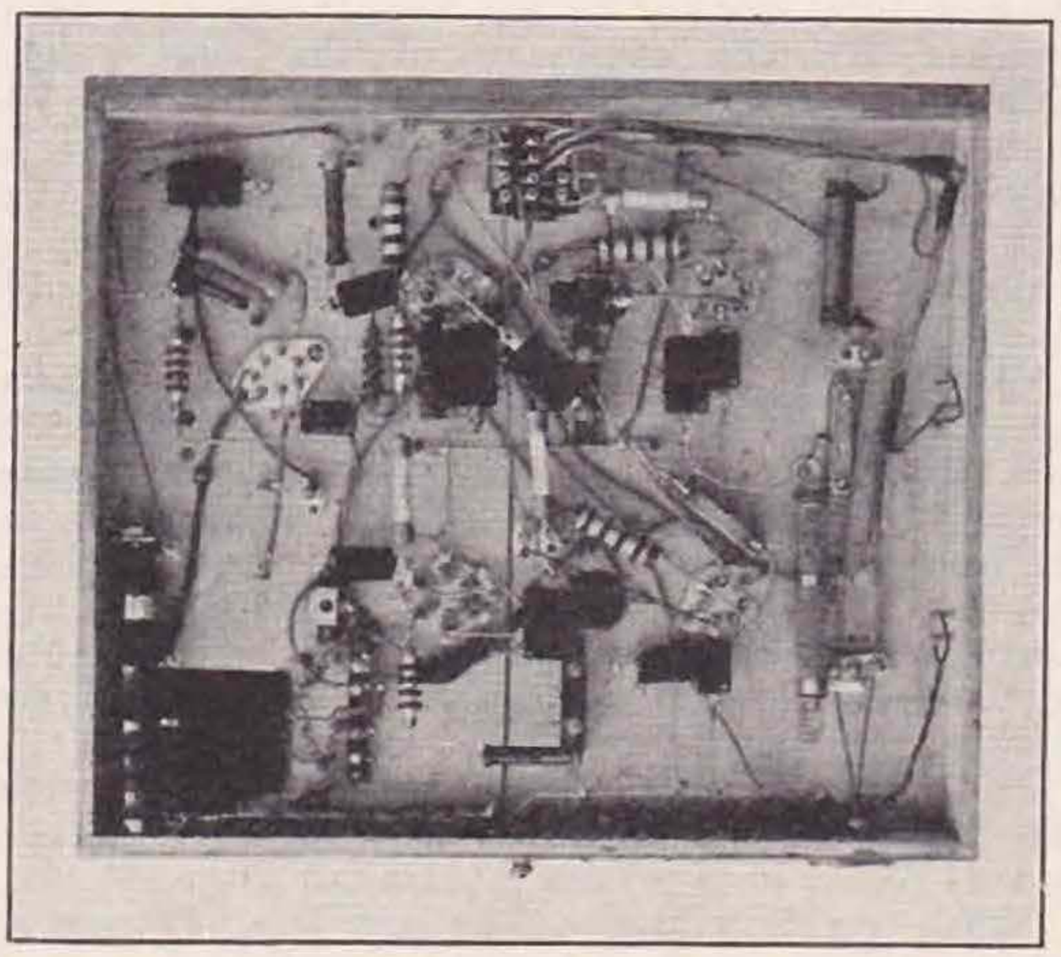


Fig. 3.
Suppressor grid keying for V3 and V5, and grid bias arrangements for the P.A. valve. R 6,000ω 50 watts (bias pack resistance). C may be any value from 1 to .25 μF., but former value found best by author.

This transformer was re-wound with a 13-volt and a 6.3-volt heater winding, the 13-volt section being for the B30 and the 6.3-volt for the other valves.

At one corner is a *Bulgin* D.P.D.T. switch, one-half of which is used to light V2 and V3 and the other (when changed over) for V4 and V5. This method was used because the output from the 6.3-volt winding was insufficient to run V2, 3, 4 and 5, due to an oversight on the author's part! This arrangement causes a time lag of about 15 seconds when changing bands to allow the heaters to warm up, but it is proposed to rewind the 6.3-volt section at an early date.



Under chassis view, showing wiring and layout of components.

The transformer running the exciter should have one 13-volt .6 amp. and one 6.3-volt 4-amp. winding but if a 6A6 is used instead of the B30 a transformer having a 6.3-volt 5-amp. secondary will run the while unit.

Fig. 4 shows details of the condenser mounting brackets.

Keying the Exciter.

Fig. 3 gives the complete schematic keying diagram and at the author's station this is made up on a small Tufnol panel 6 ins. by 4 ins., which is screwed to the side of the transmitter rack.

The diagram is straight-forward and requires no explanation except that it should be stated that, by the adjustment of the 5,000-ohm variable resistance, any keying speed may be obtained from 5 w.p.m. to as fast as any "bug" can send dots. The correct value of C can only be determined by experiment, but 1μF was found best at the author's station. There is no doubt that this method of suppressor keying is in many ways the answer to the amateur's prayer but it is, of course, only applicable to R.F. pentodes where the suppressor is brought out as a separate element. The keying is clean and produces a really nice tone.

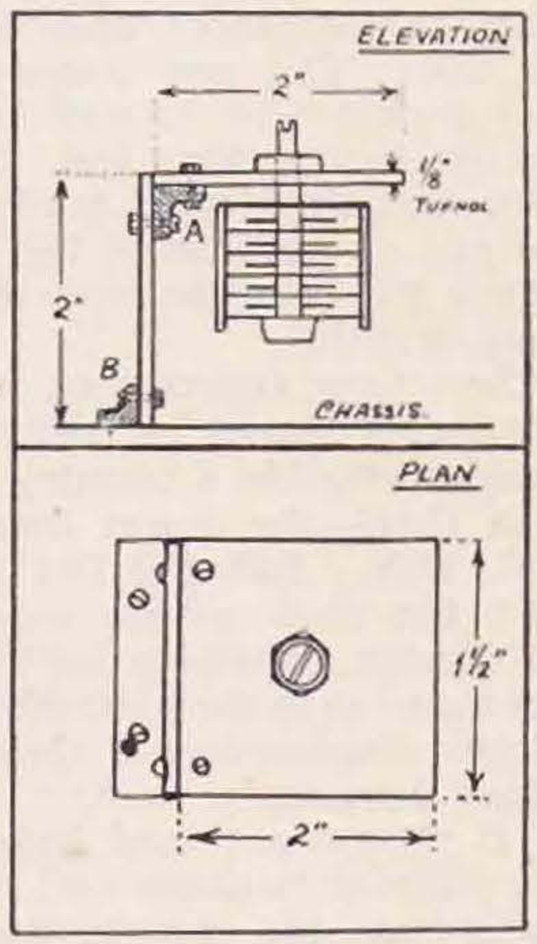


Fig. 4.
Method of mounting condensers C1, C3, C8, C12. A and B, ½ in. × ½ in. × 16 S.W.G. Aluminium angle. Screws 6BA.

Operating Notes.

The tuning-up process, although simple, requires study because, as the majority of the circuits are more or less pretuned, care must be taken to get exact resonance in each to avoid re-tuning each time. Once properly adjusted the unit should "stay put" indefinitely. The care in tuning is especially important on the 28 Mc. channel.

It is of the utmost importance to remember that the condensers with no knobs *must on no account* be tuned with a screw-driver. A tool made of insulating material is an *absolute necessity*.

The 14 Mc. Channel.

With the heaters warmed up and the power switched on (the grid circuit of the second triode of the B30 valve having been opened by means of the switch S), the milliammeter should show the familiar resonance dip as the crystal tank is brought into tune. This having been found, the doubler valve V2 has its plate tank tuned to resonance. The crystal tank may have to be adjusted slightly to keep the plate current of the first triode to a value of about 40/50 mA. The plate current of V2 should be about 40/45 mA. As the plate circuit of V2 is brought into resonance, the grid meter of V3 will show a reading of 8 to 10 mA. This circuit also having been tuned, the plate

(*Continued on page* 57)

The Seventh Annual B.E.R.U. Contests, 1937

FOR those of us who live in the British Isles it seems a long hark back to those cold cheerless days of February when "Test B.E.R.U." rang out from amateur stations in almost every part of the British Empire. How much more satisfying it would be if we could but capture in print something of the thrill that is associated with this annual event, and bring back those moments of expectancy as each section draws to a close? Instead, this unprosaic account will fall into the hands of many competitors whilst they are basking in the sun at some holiday resort, contests and Ham Radio temporarily forgotten.

How we all plan, year by year, to improve on past performances and how frequently many of us fail! The new transmitter, which has caused our pocket-book to wilt under the strain, is ready for its first serious test, that new sky-wire which was measured with mathematical precision is to be put on trial, as is the latest word in receivers, which has been the envy of our local friends for the past month.

Zero hour approaches, watches are synchronised, cigarettes stored in, pencils sharpened. The DX bands resemble a country village in their quietude and then—the storm breaks. Dah, Dit, Dit Dit Dit, Dah; Dah Dit Dit Dit, Dit, Dit Dah Dit, Dit Dit Dah echoes across the world, amateurs in foreign countries hastily examine their atlases for a clue as to the whereabout of the mystic country, Beru—discovering, if they are lucky, that such a place does *really* exist.

If we are a G and have had contest experience we exercise patience and listen for the elusive Test calls from the remote zones, if we are new to the game it's ten chances to one we shall make the mistake of crashing out a Test Call which will almost certainly be abortive. Experience has taught those of us who have operated in previous B.E.R.U. Contests that it pays to answer DX rather than to initiate Test calls.

The Senior Contest.

Conditions during the Senior Contest were on the whole normal for 14 Mc. operation and slightly better than in 1936 for 7 Mc. Good use was made of the latter band for G-EI and VK-ZL QSO's, whilst most of the leading G's were successful in improving their score with DX contacts during the evening hours.

The 28 Mc. band produced very few QSO's due to a sudden falling off in conditions, but among the leading British stations we find that G5WP worked ZL3DJ, and G6CJ exchanged reports with ZE1JJ. VU2AU had contacts with G6DH and VS6AH, whilst the latter raised VE5BI, 5EC, ZL1GX, 1CK and VK4YL in a straight run between 0140 and 0300 G.M.T. on February 13. G6WY had QSO's with VK2GU and VQ4KSL between 1030 and 1100 G.M.T. on the 14th, but with these exceptions and a few others 28 Mc. was little used.

As in past years, 3.5 Mc. was neglected by almost all of the leading stations, but it should be mentioned that VK3MR contacted EI8B at 2016 G.M.T. on the 13th, both stations being reported 559.

For the second year in succession Mr. Ivan Miller, VK3EG, led the field with the truly magnificent four-figure score of 1,193. Ivan had 124 contacts with stations in 23 zones. No less than 30 G's were worked and 23 ZL's. An interesting QSO was with ZK1AB (Gilbert and Ellice Isles).

John Hunter, G2ZQ, with 997 points, retains the Colonel Thomas Trophy for the second year by virtue of being placed first amongst the British Isles stations. John has moved up one place and this year finishes second in the Empire. His log shows 83 stations worked in 21 zones, VK QSO's accounting for 14 contacts.

W. E. Russell, G5WP (known to many as "Rusty"), springs a surprise by finishing third, only 63 points behind G2ZQ. G5WP had 79 contacts in 20 zones. India was the missing zone compared with G2ZQ's log.

Merv Campbell, VK3MR, drops into fourth place after finishing second last year. His score of 884 was obtained from 112 contacts in 17 zones. Merv is the great friend of the G's, for he gave no less than 44 of us points. On his entry appeared the remark "Conditions were very bad throughout the test." A score of 884 belies the fact!

Yet another home station raises its head to stake a high claim. Jack Wyllie, doyen of the newly prefixed Scottish stations, pulls right up into fifth place with a score only one point lower than that of VK3MR. Considering that the new prefixes were only brought into use on the opening day of the Senior Contest and that every Scottish station had to spend time explaining his status, we think the high total reached by our Vice-President speaks wonders for the efficiency of the gear used. GM5YG, with Jim Stove as operator, had 78 contacts in 17 zones.

Sixth place was held by D. J. M. Adams, VK2AE, with a score of 831 from 91 contacts in 20 Zones, a pretty stout effort for a youngster using only 40 watts.

W. E. Marsh, SU1WM, leads the Egyptian entrants by finishing seventh with a score of 822 as a result of only 16 hours operation. It seems certain that Mr. Marsh would have been placed in the first three if business affairs had not kept him inactive for part of the time. SU1WM had 134 contacts in 16 Zones and emulated the performance of Captain Eric Cole (then SU1EC) in 1934 by working 80 G's. (Were *you* in the queue?)

Jack Mead, VK6LJ, finished a good eighth with 805 points from 14 zones. He contacted 36 G's and 34 VK's in the East Australian Zone.

Ninth position was taken by Dud Charman, G6CJ, "King of Aerials," who, with a score of 783 points, gave the Old Country its fourth high

The New Guide—

TABLE 1.—SENIOR TRANSMITTING CONTEST.

Position.	Name.	Call.	Input Power in Watts.	Points.
1	I. V. Millar	VK3EG	78	1,193
2	J. Hunter	G2ZQ	200 on 7 and 3.5 Mc. and 250 on 14 Mc.	997
3	W. E. Russell	G5WP	50	934
4	M. Campbell	VK3MR	100	884
5	J. Wyllie	G5YG	100	883
6	D. J. M. Adams	VK2AE	40	831
7	W. E. Marsh	SU1WM	70	822
*8	J. Mead	VK6LJ	50	804
9	F. Charman	G6CJ	50	782
10	G. Brown	G5BJ	250	755
11	J. J. Curnow	G6CW	210	741
12	W. P. C. Andrew ...	VE3WA	200	733
	F. J. Towell	VU2AU	10	733
14	Miss M. Mackenzie ...	VK4YL	50	709
15	G. Merriman	VS6AH	50	686
16	E. H. L. Mazery	VQ8AB	30	683
17	H. A. M. Whyte	G6WY	120/180	682
18	G. J. Dent	ZS6AM	45	624
19	F. E. Frame	ZL4BQ	95	617
*19	C. N. Edwards	ZL1AA	100	617

* Non-Member, R.S.G.B.-B.E.R.U.

TABLE 2.—JUNIOR TRANSMITTING CONTEST.

Position.	Name.	Call.	Input Power in Watts.	Points.
1	R. G. D. Holmes ...	G6RH	24	768
2	M. Campbell	VK3MR	7 Mc. 18 / 14 Mc. 24	722
3	F. Charman	G6CJ	25	708
4	T. Martin	G2LB	25	702
5	J. S. Nicholson	VU2JP	25	693
6	G. W. Slack	G5KG	25	686
7	O. A. F. Spindler ...	VU7FY	10	663
*8	H. J. Buckley	ZS5U	16	661
9	F. H. Cooper	G2QT	25	660
*10	A. J. Frame	ZL4BQ	25	644
*11	W. C. Hall	VK2XT	20	612
12	W. H. Tittley	ZT5V	24	607
13	E. R. Cook	ZT6AQ	25	580
14	F. J. Towell	VU2AU	8	579
15	J. B. Corbin	VK2YC	25	577
16	S. W. P. Henton ...	G5VU	25	529
17	V. de Robillard	VQ8AF	25	505
18	R. A. Bartlett	G6RB	25	502
19	J. Regnaud	VQ8AA	—	493
20	L. O. Rogers	G2HX	25	487

* Non-Member, R.S.G.B.-B.E.R.U.

TABLE 3.—RECEIVING CONTEST.

Position.	Name.	Call.	Points.
1	E. W. Trebilcock	BERS195	1,324
2	M. G. Bourke	2AOU	1,165
3	A. R. Gilding	BERS311	1,077
4	W. L. Ely	BRS1535	1,070
5	E. J. Lee	BRS1173	1,015

place. Dud had 68 contacts in 18 zones, working 19 VK's. A description of the aerials he used would make a story by itself.

George Brown, G5BJ, one of the most prominent Birmingham amateurs, occupied tenth place with 755 points gained from 65 contacts in 17 zones. George worked 14 VK's and 11 ZL's and used 14 Mc. exclusively.

A notable feature of the Senior Contest was the absence of a New Zealand station amongst the leaders. We have to go to the nineteenth position before a ZL appears; there we find 4BQ finishing level with his colleague, ZL1AA with a score of 617 points.

The positions of the first 20 stations are set out in Table 1; the following is a list of all other entrants in order of merit with their scores:—

21, E. S. Cole, G5IW, 613; *22*, W. H. Tittley, ZT5V, 609; *23*, J. S. Nicholson, VU2JP, 607; *24*, B. T. Pook, VS1AL, 603; *25*, G. E. King, ZE1JF, 593; *26*, Miss N. Corry, G2YL, 587; *26*, L. M. Mellars, ZL1AR, 587; *28*, F. H. Hawthorn,* ZL1GX, 575; *29*, F. de Burgh Whyte, EI8G, 562; *30*, W. G. Ryan, VK2TI, 557; *31*, E. R. Cook, ZT6AQ, 532; *32*, R. A. Bartlett, G6RB, 525; *33*, W. E. Lane, VQ4CRH, 522; *34*, A.G Lapworth, G6DL, 518; *35*, K. J. Cook, ZC6AQ, 517; *36*, J. Regnaud, VQ8AA, 508; *37*, F. H. Cooper, G2QT, 502; *38*, R. G. Holmes, G6RH, 498; *39*, E. J. Lake, VK4EL, 497; *40*, A. Tibbits, VP2AT, 495; *41*, G. M. Salt,*, ZL1CK, 493; *42*, A. H. Ridley,* ZE1JV, 490; *43*, A. O. Milne, G2MI, 484; *44*, J. W. Mavis, ZE1JE, 482; *45*, C. S. Ludwig, VQ4KSL, 472; *46*, L. A. Deane, VK5LD, 470; *47*, D. M. K. Harrower, GM6NX, 467; *48*, C. E. Roach, VE1EA, 465; *49*, G. W. Luxon,* VK5RX, 454; *50*, V. de Robillard, VQ8AF, 449; *51*, D. Dunn,* VK2EG, 442; *52*, D. H. Duff,* VK3EO, 440; *53*, J. F. Irvine,* VK3TU, 439; *54*, T. B. Wimbush, SU2TW, 434; *55*, H. J. Buckley,* ZS5U, 428; *56*, G. W. Slack, G5KG, 427; *57*, P. H. Adams,* VK2JX, 420; *58*, W. S. Pennel,* ZS1Z, 419; *58*, L. A. Moxon, G6XN, 419; *60*, A. D. Gay, G6NF, 418; *61*, D. Hunter, VP1AA, 403; *62*, R. O. Davidson, ZS4D, 400; *63*, R. J. Berry, VK2NY,* 395; *63*, C. C. Newman, ZB1J, 395; *65*, D. Brown, ZL1HY,* 390; *66*, J. B. Corbin, VK2YC, 373; *67*, B. W. Naylor, VE5BI, 367; *68*, R. I. Walker, VQ4SNB, 354; *69*, G. Hutson, G6GH, 352; *70*, R. W. Rogers, G6YR, 338; *71*, J. W. Gill, G6OS, 334; *72*, T. E. Rowlands, ZL3JX, 327; *73*, M. E. Collett, VK2XL, 325; *74*, R. A. C. Anderson,* VK3WY, 312; *75*, J. W. Mathews, G6LL, 307; *76*, C. B. Dowden, VE1HK, 305; *77*, D. H. Fisher,* VK7AB, 304; *78*, R. H. Rowe,* ZL3GR, 301; *79*, G. G. Stopani-Thomson, VS6AS, 285; *80*, F. W. Garnett, G6XL, 277; *80*, E. M. Gauci, ZB1H, 277; *82*, L. B. Hubsher, VK4UL, 264; *83*, G. A. Clinton,* ZS5AH, 256; *84*, A. R. Stansfield, VO4Y, 247; *85*, L. O. Rogers, G2HX, 246; *86*, J. Clarricoats, G6CL, 243; *87*, W. B. Mickelborough,* ZL1BC, 238; *88*, E. R. Radford, G2IM, 231; *89*, A. Brown, G2WQ, 228; *90*, L. C. Evans,* ZL2AB, 227; *91*, J. D. Pinchbeck, G5DF, 221; *92*, F. H. Pettitt, SU1SG, 215; *93*, J. Drudge-Coates, G2DC, 213; *94*, F. A. Robb, GI6TK, 207; *95*, L. E. Pole,* ZL2MN, 205; *96*, J. Wilmott,* VK6JW, 204; *97*, J. R. Ower,* VE4IZ, 203; *97*, G. H. Scarfe, ZU5D, 203; *99*, A. F. Wood,* ZL1FE, 190; *100*, R. F. Galea, ZB1E, 182; *101*, J. Davies, G2OA, 180; *102*, J. Croysdale, G5US, 176; *103*, L. F. Viney, G2VD, 170; *104*, C. P. Wright,* VK7LZ, 158; *105*, J. F. Lategan, ZS4U, 156; *106*, J. D. Parminter,* ZL2OU, 149; *107*, R. T. Stanton, ZL3AZ, 147; *108*, T. H. Beaumont, G6HB, 146; *109*, E. H. Swain, G2HG, 144; *110*, H. K. Bourne, G2KB, 142; *111*, R. E. Jones,*, VK3RJ, 139; *112*, F. J. Wadman, G2GK, 138; *113*, J. J. Alvares, VS6AF, 135; *114*, H. T. Brunsden,* VK2BX, 134; *115*, H. Mee, G5MY, 133; *116*, E. G. Ingram, GM6IZ, 132; *117*, C. H. Ranft, G5RF, 128; *118*, R. Barr, GI5UR, 118; *119*, Dr. J. Lunt, ZT1Q, 117; *120*, C. A. Butler, G2YB, 116; *121*, L. H. Wood,* ZL1CV, 113; *122*, S. C. Pleass, ZT6K, 108; *123*, D. W. Milne, GM6BM, 102; *124*, S. W. Thorpe, ZS1AH, 99; *125*, F. T. Hine,* VK2QL, 90; *126*, G. A. Awcock, VE2AA, 75; *127*, J. N. Walker, G5JU, 74; *128*, F. C. Whitmore, ZE1JJ, 54; *129*, G. P. Anderson, G2QY, 44; *130*, J. K. Tutton, VK3ZC, 44; *131*, E. H. Pawson, G8AP, 30; *132*, B. Pashley, G6PJ, 15.

* Non-Member, R.S.G.B.-B.E.R.U.

The Junior Contest.

The Junior event produced the surprise of the year, the winner being Mr. R. H. Holmes, G6RH, of Bexley, Kent. Mr. Holmes, although well known as a DX worker, was not regarded by those who *thought* they knew as a serious competitor. His achievement is all the more praiseworthy because his station is located on the fringe of that dreaded QRM area, "South London"! Well done, G6RH!—in winning the Junior for Great Britain you have made history, for never before has this Trophy settled for a year in the land of its birth.

From an examination of the winner's log it seems clear that he owes his success to the fortunate incident of working six Irish Free State stations in the middle hours of February 28, the 70 points thus gathered put him well above his nearest competitor. During the event G6RH scored 768 points and had 62 contacts with 20 zones, including 13 with VK and 9 with the Free State. His input was 24 watts and the 14 Mc. band was used throughout.

Merv Campbell, VK3MR, not content with a fine performance in the Senior, tackled the Junior to such good effect that he ran second with a score of 722, obtained from 81 contacts in 16 zones. Again the G's accounted for a large number of points, 34 of them being worked during the two week-ends. He had 11 contacts with ZL and 8 with VK6; 38 of his QSO's were made by calling the other station.

Knocking hard for recognition we again bump against the Aerial Wizard of Stoke Poges. The "Country Churchyard" station finished third in this section with 708 points from 53 contacts. Nineteen zones were worked and, like G6RH, Mr. Charman was grateful to the Awards Committee for allowing EI to count as a separate zone. He also worked 8 VK's and 4 ZL's.

Another British station, G2LB, operated from Birmingham by Tom Martin, filled the fourth place only 6 points behind G6CJ. Tom had 60 QSO's with 15 zones. The VK's gave him 119 points and the ZL's 54 but his "hot spot" was VE, from which country 231 points were collected, representing 21 contacts, including VE5AZ and VE5EM.

For the past two years the Junior Cup has been held by J. S. Nicholson, of Travancore, India, but this year Nic has to sit back and remain satisfied with a Zone Award. Finishing fifth, VU2JP put up the good score of 693, gleaned from 76 contacts in 17 zones. The G's gave him 29 contacts and the VK's 16.

George Slack, G5KG, another Aerial expert, occupied sixth place 7 points behind VU2JP. His score was obtained from 58 contacts in 14 Zones. Canadian stations produced 20 QSO's and Australians 11.

Another well-known South Indian station appears amongst the leaders ; Mr. O. A. F. Spindler, VU7FY, taking seventh place with 663 points from 56 contacts in 15 zones.

South Africa at last comes into the picture through Mr. H. J. Buckley, ZS5U, who with a total of 661 fills the eighth place. He had 58 contacts with 12 zones and worked 16 VK's and 4 ZL's, the latter an outstanding achievement.

F. H. Cooper, G2QT, of Ashford, Kent, made the Honours for the first time by scoring 660 points to finish ninth with contacts in 16 zones.

Last to be mentioned is Alan Frame, ZL4BQ, who with a score of 644 deserved a higher place by virtue of his fine work in contacting the record number of 111 stations. No less than 50 VK's and 37 G's were included in his total which was obtained from contacts with 14 zones.

A remarkable feature of the Junior event was the almost complete neglect of all bands except 14 Mc. Examination of the first 10 entry forms shows that out of 666 contacts only 14 were made on 7 Mc. and none on either 3.5 or 28 Mc.

The positions of the first 20 stations are set out in Table 2 ; the following is a list of all other entrants in order of merit with their scores :—

21, R. W. Rogers, G6YR, 477 ; *22*, J. A. Faithful, VS8AA, 458 ; *23*, W. S. Pennel,* ZS1Z, 453 ; *24*, H. J. M. Box, G6BQ, 441 ; *25*, C. B. Dowden, VE1HK, 439 ; *26*, W. E. Marsh, SU1WM, 434 ; *27*, J. Mead,* VK6LJ, 431 ; *27*, K. J. Cook, ZC6AQ, 431 ; *29*, H. Atthill, G8CV, 430 ; *30*, G. Koenig, VQ8AC, 418 ; *31*, A. Tibbits, VP2AT, 413 ; *32*, A. Guildford, VK4AP, 400 ; *33*, L. A. Moxon, G6XN, 397 ; *34*, A. H. MacKenzie, VK4GK, 395 ; *35*, C. C. Newman, ZB1J, 384 ; *36*, M. E. Collett, VK2XL, 377 ; *37*, T. B. Wimbush, SU2TW, 375 ; *38*, J. D. Pinchbeck, G5DF, 370 ; *39*, E. G. Ingram, GM6IZ, 368 ; *40*, P. G. Day, G6PD, 360 ; *41*, M. Chitty, G5IU, 349 ; *42*, R. F. Galea, ZB1E, 343 ; *43*, L. A. Deane, VK5LD, 341 ; *44*, A. H. Ridley, ZE1JV, 336 ; *45*, A. W. L. Summers, G5SS, 329 ; *46*, W. R. Sheward, ZS1AN, 320 ; *47*, R. G. Street, ZB1K, 318 ; *48*, F. H. Pettitt, SU1SG, 310 ; *48*, J. Nobes,* ZL1CB, 310 ; *50*, G. Edwards, G2UX, 309 ; 51, S. Riesen, G5SR, 308 ; *52*, R. E. Dabbs, G2RD, 290 ; *53*, F. A. Robb, GI6TK, 287 ; *53*, J. F. Isaac, G5JI, 287 ; *55*, L. F. Viney, G2VD, 283 ; *56*, H. J. Merriman, G6GM, 273 ; *57*, C. J. Irvine, VK3DF, 272 ; *58*, G. P. Anderson, G2QY, 250 ; *59*, F. H. Watts, G5BM, 249 ; *60*, R. H. Rowe,* ZL3GR, 243 ; *61*, H. K. Bourne, G2KB, 238 ; *62*, T. F. Hall, G2TH, 237 ; *63*, R. A. Priddle,* VK2RA, 231 ; *64*, P. G. Tandy, G2DU, 230 ; *64*, J. Paine, G6PR, 230 ; *66*, C. E. Roach, VE1EA, 229 ; *67*, F. J. Lubach, VK4RF, 220 ; *68*, C. P. Wright,* VK7LZ, 218 ; *69*, R. W. Hall, G2SN, 214 ; *70*, H. Mee, G5MY, 206 ; *71*, R. J. Bradley, G2FO, 201 ; *72*, E. R. Radford, G2IM, 196 ; *73*, G. H. Scarfe, ZU5D, 192 ; *73*, J. Drudge-Coates, G2DC, 192 ; *75*, W. E. Lane, VQ4CRH, 191 ; *76*, A. Reid, GM5YN, 188 ; *77*, T. E. Rowlands, ZL3JX, 181 ; *78*, J. H. Payton, G2JN, 168 ; *78*, J. D. Taheny, EI5J, 168 ; *80*, G. McB. Salt,* ZL1CK, 165 ; *81*, J. M. Kirk, G6ZO, 164 ; *82*, R. A. Hill, ZE1JB, 156 ; *83*, J. Thorpe, G5TO, 155 ; *84*, J. W. Mavis, ZE1JE, 148 ; *85*, F. B. English, G6AZ, 146 ; *86*, L. Hill, G5WI, 145 ; *87*, H. E. Manning, G2GI, 142 ; *88*, D. M. Adams, VK2AE, 136 ; *88*, W. McIlwaine,*, EI9F, 136 ; *90*, B. E. P. Sadler, G2RC, 135 ; *91*, C. H. Ranft, G5RF, 133 ; *92*, A. E. Lambourne, G5AO, 132 ; *93*, S. C. Pleass, ZT6K, 123 ; *94*, F. W. Warren, EI7J, 121 ; *95*, R. E. Jones,* VK3RJ, 120 ; *96*, S. W. Thorpe, ZS1AH, 119 ; *97*, M. F. Long, G2CL, 113 ; *98*, J. F. Lategan, ZS4U, 101 ; *99*, Dr. J. Lunt, ZT1Q, 99 ; *100*, H. T. Brunsdon,* VK2BX, 98 ; *101*, P. T. Daly, EI5G, 92 ; *102*, F. T. Hine,* VK2QL,

THE B.E.R.U. TROPHIES

Left to Right: Senior, Junior, Receiving and Miniature.

A miniature is presented to each winner.

90 ; *102*, J. N. Walker, G5JU, 90 ; *104*, N. Landles, GM2LQ, 89 ; *105*, J. K. Tutton, VK3ZC, 74 ; *105*, J. Alexander, G8DK, 74 ; *107*, A. G. Parker, G6QZ, 69 ; *108*, W. H. G. Davy, GI2UO, 59 ; *109*, J. B. Duncan, GM6JD, 57 ; *110*, J. L. Bates, VK4UR, 44 ; *111*, B. Pashley, G6PJ, 30 ; *112*, J. G. Stonestreet, G2JN, 29 ; *113*, D. W. Milne, GM6BM, 15.

* Non-Member, R.S.G.B.-B.E.R.U.

The Receiving Contest.

This Contest staged during the first week-end of the Senior and the first week-end of the Junior attracted some 41 entrants—not nearly enough to produce a good fight. The winner is again Mr. Eric Trebilcock, BERS195, of North Australia, who amassed the fine score of 1,324 points. He logged 124 two-way contacts in 24 zones. The British Isles gave him 79 points from 29 stations heard, whilst 82 points were scored for the reception of 32 ZL's. Only 8 zones were missed and several of these had no entrants. VR2FF (Fiji) was logged working VK.

Second place was secured by Martin Bourke, 2AOU, of Jersey, Channel Isles, with a score of 1,165 representing the reception of 65 stations in 22 zones. Egyptian stations gave him 60 and the Canadians 111 points.

A. R. Gilding, BERS311, of Punjab, India, finished third with 1,077 points. He logged the record number of 127 stations and his most productive zones were VK, G and ZL. Sixteen others were heard.

A British Isles station, BRS1535, operated by W. L. Ely, of Woking, was fourth only 7 points behind BERS311. Twenty zones were heard and 70 stations logged, VK contacts produced 70 points.

Close behind with a score of 1,017 came R. J. Lee, BRS1173, of Heathfield, second in the 1936 Contest. Mr. Lee scored with 63 contacts from 19 zones.

The positions of the first five stations are set out in Table 3, the following is a list of all other entrants in order of merit, with their scores :—

6, J. E. Ironmonger, 2AII, 1,003 ; *7*, P. Seymour, 2AZX, 972 ; *8*, S. C. Isaacs, BRS2178, 953 ; *9*, L. F. Woodhams, 2AWX, 910 ; *10*, A. P. de Boer, BRS1852, 901 ; *11*, P. D. G. Frazer, 2AZF, 898 ; *12*, T. Rae, BRS2730, 885 ; *13*, R. J. H. Baldwin, 2CBL, 860 ; *14*, E. F. Fowler, 2CHK, 848 ; *14*, H. S. McLintock, 2BHM, 848 ; *16*, H. de L. Banting, 2AUB, 841 ; *17*, L. Hill, 2ACG, 839 ; *18*, J. A. Hay, BRS1948, 800 ; *19*, E. R. Ayre, 2BAL, 881 ; *20*, B. Farleigh, BRS2339, 772 ; *21*, H. J. Houlding, BRS720, 762 ; *22*, R. Batchen, 2CFI, 741 ; *23*, T. Arnold, BRS1681, 735 ; *24*, A. D. Taylor, 2BDT, 727 ; *25*, E. C. Ilott, 2ADY, 693 ; *26*, F. E. Wingfield, 2BIU, 684 ; *27*, B. Farleigh, BRS2339, 671 ; *28*, J. Schefer, 2AUV, 644 ; *29*, H. S. Chadwick, 2BIC, 637 ; *30*, H. A. Grant, BERS342, 624 ; *31*, H. S. Brown, BERS265, 584 ; *32*, A. G. Dunn, 2AGK, 517 ; *33*, W. Sansom, BRS2489, 510 ; *34*, G. A. Hook, 2CIL, 420 ; *35*, K. Holloway, 2AOH, 420 ; *36*, E. H. Godfrey, BRS2479, 415 ; *37*, D. R. L. Duthie, 2BQL, 361 ; *38*, D. E. White, BRS1951, 360 ; *39*, B. H. Lagden, 2ACN, 358 ; *40*, F. J. Harris, 2BOF, 161 ; *41*, R. Oliver, 2CBA, 104.

(The entry from Mr. Farleigh, BRS2339, was filled in incorrectly, separate entries being forward for both Senior and Junior sections of the Receiving Contest. The error was not discovered until after the report had been prepared and the tables approved, Ed.)

The Zone Winners.

In accordance with the rules, Zone Awards will be issued to the following :—

Senior Contest.

Zone.	Winner.	Call.
Australia, VK2, 3, 4, 5, 7, 8 ...	I. V. Millar ...	VK3EG
British Isles ...	J. Hunter ...	G2ZQ
Canada, VE1, 2, 3	W. P. Andrews...	VE3WA
Egypt	W. E. Marsh ...	SU1WM
Hong Kong ...	G. Merriman ...	VS6AH
Kenya	W. E. Lane ...	VQ4CRH
Malta	C. C. Newman ...	ZB1J
Mauritius	L. Mazery ...	VQ8AB
New Zealand ...	F. E. Frame ...	ZL4BQ
	C. N. Edwards	ZL1AA
Rhodesia	G. E. King ...	ZE1JF
South Africa, ZS, ZT, ZU1-3 ...	W. S. Pennell ...	ZS1Z
South Africa, ZS, ZT, ZU4-6 ...	G. J. Dent ...	ZS6AM

Junior Contest.

Zone.	Winner.	Call.
Australia, VK2, 3, 4, 5, 7, 8 ...	M. Campbell ...	VK3MR
British Isles ...	R. H. Holmes ...	G6RH
Egypt	W. E. Marsh ...	SU1WM
India	J. S. Nicholson...	VU2JP
Malta	C. C. Newman ...	ZB1J
Mauritius	V. de Robillard	VQ8AF
Irish Free State ...	J. D. Taheny ...	EI5J
New Zealand ...	A. J. Frame ...	ZL4BQ
Rhodesia	A. H. Ridley ...	ZE1JV
South Africa, ZS, ZT, ZU1-3 ...	W. S. Pennell ...	ZS1Z
South Africa, ZS, ZT, ZU4-6 ...	H. J. Buckley ...	ZS5U

Receiving Contest.

No Zone Awards are made in connection with the Receiving event as the leading British Isles and Indian stations will automatically receive certificates of merit.

Check Logs.

The Tests and Awards Committee were glad to receive Check Logs from D. R. Aston (G8DR), W. Skanstedt (VE2DR), F. de B. Whyte (EI8G), W. Blyth (GM5YX), C. R. Cooke (VK6CP), H. Hodgens (EI5F), N. Walding (ZL1FT), A. M. Crawford (VE5NP), D. O. O'Dwyer (EI8B), A. Cook (VE4KZ), E. J. Dunkley (VU2LZ), G. E. King (ZE1JF), A. A. Hammond (G6AH), G. W. Luxon (VK5RX), G. Merriman (VS6AH) (Junior), G. Edwards (G2UX), V. M. Desmond (G5VM) and A. N. Young (ZL166).

These logs and the many interesting comments contained in covering letters were much appreciated by the Committee.

Suggestions and Comments.

ZE1JE recommends that in future the Junior event should commence at 1900 G.M.T. instead of 2100 G.M.T. The Awards Committee decided on the latter hour this year as an experiment in order to allow home members in business on Saturday evenings to compete. BRS1948 suggests that the Receiving event be staged over four week-ends. The Committee decided to reduce the period to two week-ends to meet the wishes of

members, many of whom are unable to devote time to a Contest extending over a month. This same competitor lamented upon the selfishness of G stations who continued to work local telephony contacts. Short skip was a prominent feature of the Contests this year.

VK3EG suggests that in order to encourage the use of 7 and 28 Mc. the 15 points sliding scale should work for each band. G6CJ agrees but suggests the starting score for each zone be reduced to either 10 or 12 points.

G5WP, who used five separate aerial systems, considers that in order to reduce the strain of 24 hours almost continuous operation, the period be lengthened to 36 or 48 hours, or even extended over an 8-day period with a limiting operating time of, say, 90 hours.

BERS195 was unable to put in more than 16 hours during the first week-end but even so he scored 33 more points than in the corresponding period last year. He, like many other competitors, complained about U.S.A. stations answering Test B.E.R.U. calls.

VK5RX reports that the dropping off in entrants from South Australia is due to the fact that VK5 is now grouped with VK2, 3 and 4. Mr. Luxon says that VK5's have no chance against VK2, 3 and 4 due to the fact that European signals reach South Australia several hours after they arrive in the other States.

VK3ZC asks for two entry forms to be sent to each overseas member. As our representatives are supplied with a batch of spare forms, members who wish to enter both contests should apply to them in advance for a second copy.

2AZX, an old B.E.R.U. entrant, criticises the tones of certain British stations and says that a marked falling off in quality was noticed.

GI6TK suggests that Northern Ireland be made a separate zone, but as GI licences are issued by the G.P.O., London, the Awards Committee consider it desirable to include GI in the G zone. GI6TK also thinks that February is a poor month for DX, but our impressions are that this month is as good as any for long-distance work. BERS265 recommends an alteration in the arrangement of the entry forms. This will be considered by the Awards and Tests Committee.

Conclusion.

Lack of space prevents a detailed account being given of the equipment used but those interested may apply to Headquarters for permission to borrow the logs. We consider that a good deal of useful information could be extracted by members of our Propagation Groups.

Several entrants failed to complete the analysis form in spite of the special request to do so.

In concluding this account of our Annual B.E.R.U. Contest the Council and the Awards Committee desire to express their thanks to all who contributed in making the event a success.

Headquarter's Welcome the Bucharest Delegates

On Monday, June 14, Messrs. Jim Lamb (W1AL) and John Stadler (VE2AP) arrived in London after attending the C.C.I.R. meeting in Bucharest and were welcomed at Headquarters by Messrs. Watts, Gay, Clarricoats and Milne.

In the afternoon an informal business meeting took place under the chairmanship of our President, Mr. E. Dawson Ostermeyer. The opinions expressed on each of the technical questions discussed at Bucharest were considered in turn and a good deal of valuable information obtained. (At a later date the I.A.R.U. will furnish us with an official account of the proceedings, which will probably be published in this journal.)

A complimentary dinner given in the evening was attended by the Council and London D.R.'s. In proposing the health of " Our Guests," Mr. Watts mentioned the close relationships which exist between the A.R.R.L. and the R.S.G.B. and expressed the hope that the visit of the I.A.R.U. delegates would do much to strengthen that bond. Mr. Lamb responded and conveyed official greetings from the President and Directors of the A.R.R.L. Mr. Stadler, in a humorous (we nearly wrote " whimsey " !) speech spoke of the pleasure he had derived from the trip and made some informative remarks concerning amateur radio in Canada, Germany, France and Roumania.

On Tuesday, June 15, Messrs. Milne and Clarricoats accompanied our visitors to South London, where they were given an opportunity of inspecting the stations of G2MI, 2IG and 6WY.

Later in the same day an informal dinner party was given by Mr. Watts at his Highgate home, and during the evening Messrs. Lamb and Stadler were able to contact W1EH, the station operated by Mr. Kenneth B. Warner, Secretary, A.R.R.L.

During the full period of their stay in England a nightly schedule was maintained by G2MI and G6CL with the A.R.R.L. stations W1EH, W1TS, W1DPE and W1DF.

We hope to display later in the year films taken by Mr. Stadler during his European trip.

The Left Book Club—Scientist's Group

At the present time there is very little understanding between the scientific worker and the general community; the Universities and professional societies doing very little to help matters. The Left Book Club has, therefore, formed an active nucleus of scientific workers which goes under the title of The Scientists Group, where professors, students and industrial scientists can pay serious attention to the relation between science and political-cum-economic questions.

As the Scientists' Group require representatives of every phase of scientific work, will all R.S.G.B. members who are either Left Book Club members, or are interested in the above, please get into touch with Mr. I. B. Clark, 2BIB, 1, Moor Path, Luton, Beds.

Reports Wanted

G2YY (Berwick) on his 14062 and 14376 kc. C.W. transmissions from B.E.R.S. members.

G8NF (Manchester) on his 1850 kc. C.W. transmissions from 2300 to2330 B.S.T. daily.

Dummy Aerials—Theoretical Considerations

By J. H. Edwards and H. G. Coleman *

IT is often highly desirable to construct a dummy aerial which is not just a damped resonating circuit, but the actual equivalent of some aerial which it is proposed in the future to use. It is obvious that before such a dummy aerial can be constructed it is necessary to know something about the aerial of which it is to be the dummy. The following tests, therefore, provide a simple method of evaluating the principal characteristics of an aerial.

Since this will be of particular interest to those who have not yet obtained their open aerial licence it should be pointed out that all the following tests can be made quite satisfactorily with valves of the SG 2 class instead of a P.A. and valves of the HL 2 class as oscillator. By reducing the screen and anode voltages of the SG 2 valve to a very low value (just sufficient to give values of anode current which can comfortably be read on a sensitive milliameter) the amount of energy put into the aerial may be less than that produced by an ordinary regenerative receiver. Either some sort of wave meter will be necessary for the tests or a calibrated tank circuit.

The various rejection frequencies of the aerial will be referred to as primary, secondary, etc., resonances, not in the more common phraseology of first, second, etc., harmonics. The secondary resonance is not in general at the second harmonic frequency of the primary resonance and so on, consequently it is thought advisable to use a different nomenclature to avoid confusion.

The first test is to determine the primary and secondary resonances of the aerial. In general the secondary resonance will not be at exactly twice the frequency of the primary resonance, but the differences between the primary and secondary resonance frequencies, secondary and tertiary resonance frequencies, etc., are usually very nearly the same. Consequently by determining the primary and secondary resonance frequencies it is easy to exterpolate for the higher resonances, and it is sufficiently accurate to assume the acceptance frequencies as half-way between these.

Battery bias the SG 2 valve to cut off and apply a very small oscillation feed, tune the tank circuit until the anode current dips, making sure that the screening is adequate to avoid any appreciable interaction between the tank circuit and the oscillatory circuits. Note the setting of the tank circuit. Attach the aerial and find the tuning point for the dip once again. (The term aerial is used to include such earth and feeders as are in use, unless otherwise specified.) If the dip has been rendered negligible by the inclusion of the aerial, tap down the tank circuit until an adequately measurable dip occurs. (It is assumed, of course, that the resonance of the aerial has been roughly estimated first and an oscillator provided of approximately this frequency.) Note the change in setting required to compensate for the presence of the aerial. Repeat this on a number of different frequencies and it will be noted that at some frequencies an increase of tank capacity is required and at other frequencies a reduction of tank capacity is required. Those frequencies at which a decrease in capacity is required are frequencies above the resonance of the aerial, and those for which an increase in capacity is required are frequencies below the resonance of the aerial. From this a rough idea can be obtained of the setting of the oscillator at which no alteration in capacity will be required, and by a series of trials this point can be found accurately, when the frequency can be measured and is the resonance frequency of the aerial. Repeat the same process at approximately double the frequency to find the frequency of secondary resonance. If there is any doubt the test should be made at approximately half the first frequency to make sure that the first frequency found was the *primary* and not the *secondary* resonance.

The next test is to determine the capacity of the aerial. For this purpose a much lower frequency should be used. A suitable value is one-eighth of the resonance frequency. In any case, for accurate measurement, the ratio of this frequency to the resonance frequency should be known. Set the oscillator to the required frequency, note the tuning dip on the tank circuit (1) with the aerial disconnected and (2) with the aerial connected across the whole tank circuit (tuning condenser); note the change in setting of the tuning condenser required to bring the tank circuit back into resonance. For this purpose it is advisable to use a straight line capacity condenser of known capacity, when the change in capacity can easily be worked out from the variable settings. If this is not obtainable a condenser of some other law but of good make should be used, but the law must be known so that the actual capacities used can be worked out and the difference determined, but the calculation in this case may be somewhat involved. The tank condenser should always be used for this purpose near to its maximum, as the law of the condenser is not usually followed accurately near its minimum. The capacity of the aerial is now given by multiplying the difference capacity required by the factor

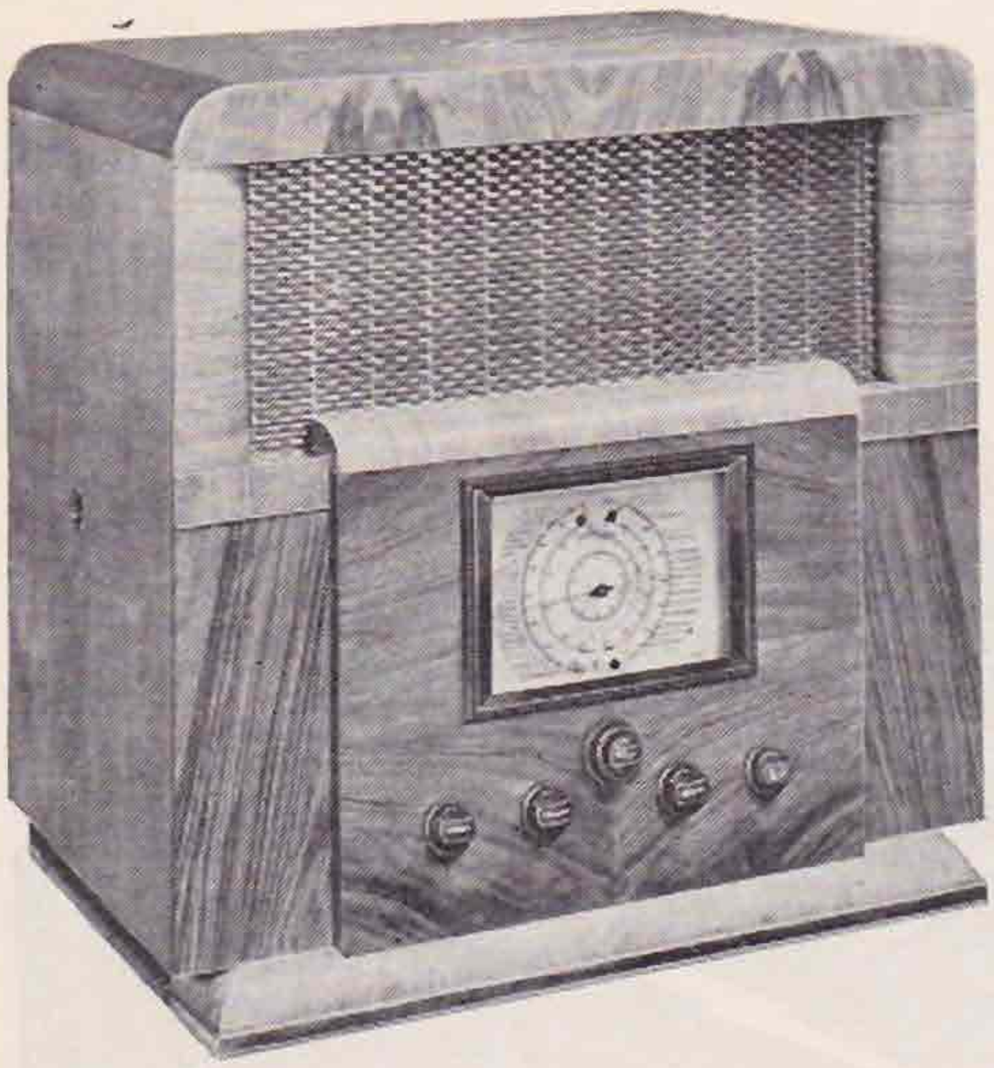
$$1-\frac{3}{R^2-1}$$

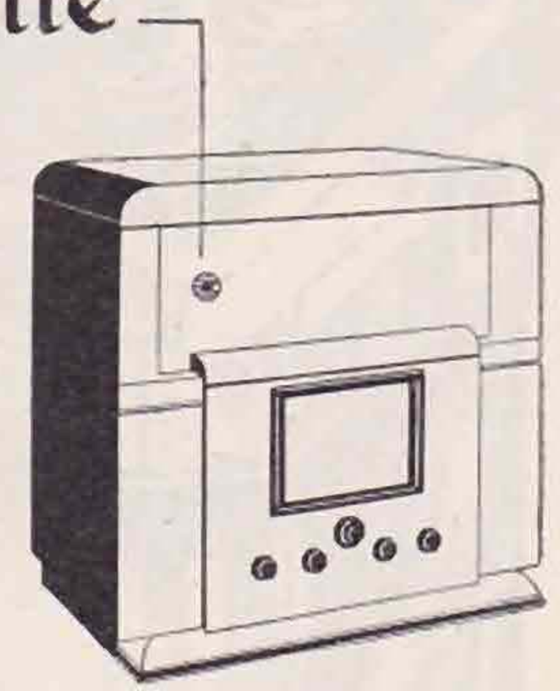
where R is frequency of resonance/frequency used.

To determine the resonance impedance of the aerial, place an ohmic resistance of known value (a carbon filament lamp of about 5,000 ohms resistance is suitable) across the tank circuit and

*362 Valve Company, London.

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





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

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

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

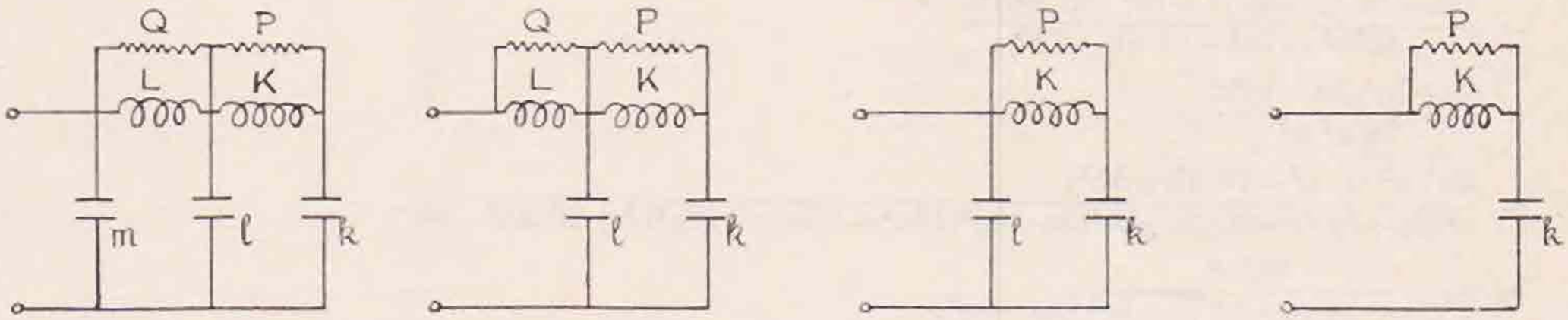
The moving coil loudspeaker gives extremely natural reproduction, and this applies also to records, which may be reproduced through a pick-up connected to the receiver. There is provision for extra loudspeakers and, of course, ample power for operating them. The cabinet (size 19½" × 20" × 13½") is of walnut, selected for the beauty of its grain, and is a fine piece of furniture on its own. Voltage range: 200/250 AC 50/100 cycles; 3 watts undistorted output; consumption: 90 watts. Price 19 guineas, or by hire purchase.

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

read the anode current dip on resonance (with the oscillator set to the primary resonance frequency of the aerial). Now connect the aerial to the whole tank circuit through a variable condenser whose calibration is known, and set this condenser to such a value that the tuning dip, when the tank circuit is brought into resonance again by reducing its capacity, is the same as was previously found with the resistance. For this test it is essential that the tank condenser should be of a low loss type for accurate results. The phase impedance of the aerial is now given by

$$\frac{r}{2}+\sqrt{\frac{r^2}{4}-\frac{10^{21}}{4\pi^2F^2C^2}}$$

where C is the capacity of the series condenser in $\mu\mu$Fd., F is the frequency in M/c. and r is the value of the fixed resistance used. If the capacity required is too small to be comveniently determined it means that the value of resistance chosen has been too high in proportion to that of the aerial and that further tests should be made with a resistance of lower value so as to obtain an answer more accurately. If the depth of the tuning dip, with the aerial attached, is greater than that with the resistance attached it means that the resistance used is of lower value than that of the aerial and the tests should be made again with a higher value of resistance.



The four types of Artificial Aerial dealt with by the authors. From left: Full wave, ¾ wave, ½ wave, ¼ wave.

The approximate values to be expected are as follows :—

Primary resonance frequency—that frequency corresponding to a wavelength of twice the length of the aerial (single aerial with or without earth) or twice the length of one arm in the case of balanced dipoles. In the case of unbalanced dipoles the calculation may be quite complicated, and with them the secondary resonance may not even approximate to the second harmonic of the primary resonance, but in the former cases the secondary resonance may be expected to be found at about this harmonic. The capacity can be expected to be about $\frac{1}{30}$ x length of the aerial (half this figure for a dipole) and the phase impedance about 2,500 ohms for a single aerial or twice this figure for a dipole. Of course, if there is a series condenser or its equivalent in circuit the values will be correspondingly modified.

An aerial can be best represented by an equivalent circuit consisting of an inductance tapped at an infinite number of points with infinitesimal condensers going from each of these points to earth and a resistance alongside the inductance and connected to it also at an infinite number of points. It will be necessary, however, to stagger the turns of the inductance so as to correctly represent the proportion of inductive coupling between the various parts of the aerial. Even this is not a theoretically exact equivalent of an aerial, but the actual differences between its properties and those of an aerial would be indetectable by instruments in the ordinary way. However, in practice it is obviously impossible to produce such an apparatus, and to obtain an approximate equivalent to an aerial we have to be content with a finite number of tapping points on inductance and resistance and a corresponding number of condensers. With a resistance in parallel with an inductance and a condenser from the far end of the inductance to earth a fair equivalent to an aerial is obtained for use at wavelengths down to four times the length of the aerial. For shorter wavelengths the equivalence rapidly departs, and at a wavelength twice the length of the aerial the impedances are not even of the same order. By adding a condenser from the near end of the inductance to earth a fair equivalence may be obtained down to a wavelength of twice the length of the aerial, and so on. In other words, if one counts up the total number of condensers and inductance segments used and subtracts one from the figure so obtained, the result is the number of quarter waves which can be used on the dummy with a fair equivalence to the effect of the aerial. The diagrams and data below show a number of such dummy aerials, and the values required for the condensers, inductance segments and resistance segments to produce reasonable equivalence to the effect of the aerial.

Let a = frequency of primary resonance.
Let b = frequency of secondary resonance.
Let c = capacity of aerial.
Let d = phase impedance of aerial at primary resonance.

(The units used are Microfarads, Microhenrys, Megacycles and Ohms).

It is assumed in the formulæ given that there is no coupling between the various segments of the inductance, i.e., that each segment consists of an independent screened coil. Of course, one cannot expect to obtain exact values of the various resonance frequencies by calculation alone. If two of the condensers are made variable it is possible to adjust until the primary and secondary resonances are obtained exactly, but as the adjustment of each of the values reacts upon the others, each successive condenser becomes more difficult to adjust, and it is not advised that any attempt should be made to adjust more than two of these. It should be mentioned that any of the other rejectance or acceptance frequencies may be chosen for the two to be accurately adjusted. Without this adjustment the dummy can be assumed to respond in approximately the same manner as the aerial will respond, except for the fact that the tank tuning circuit condenser will require to be set to a slightly different value.

One of the resistances may be made variable to enable exact adjustment to be made to the impedance at the primary resonance.

General Purpose A.A.s.

If, however, it is not desired to make the dummy for a specific aerial but only to correspond in its effects with an average aerial of a given length, the following values can be used—where "s" is the length of the aerial in metres :—

Full Wave Artificial Aerial.

k = 2.0 × s μμfds.
l = 1.1 × s μμfds.
m = .5 × s μμfds.
K = 1.1 × s μhenries.
L = .9 × s μhenries.
P = 22,000 ohms.
Q = 17,000 ohms.

Three-quarter Wave Artificial Aerial.

k = 2.3 × s μμfds.
l = 1.4 × s μμfds.
K = 1.3 × s μhenries.
L = .5 × s μhenries.
P = 34,000 ohms.
Q = 13,000 ohms.

Half-Wave Artificial Aerial.

k = 2.8 × s μμfds.
l = .9 × s μμfds.
K = 1.6 × s μhenries.
P = 64,000 ohms.

Quarter-Wave Artificial Aerial.

k = 3.6 × s μμfds.
K = 1.2 × s μhenries.
P = 64,000 ohms.

The above values are for a single wire earthed at one end. Dipoles, etc., must be considered as two separate components, the values of each being connected in series.

In this article we have endeavoured to cover the essential mathematics concerned in the design of artificial aerials. Contrary to general opinion careful consideration of the problem shows that the mathematics involved are exceedingly complex.

By careful approximation, however, the mathematics necessary have been reduced to a minimum whilst still retaining every essential calculation in order that this contribution may remain a reliable introduction to an involved problem.

Full Wave Artificial Aerial.

$$k = \frac{(3a+b)\,(b-a)\,(15a^4+12a^3b-78a^2b^2+60\,a\,b^3-9\,b^4)\,c}{16\,a^2\,b^2\,(17\,a^2-14\,ab+5b^2)}$$

$$l = \frac{(3a+b)\,(b-a)\,(a+b)^2\,(3a-b)^2c}{4a^2b^2\,(17a^2-14\,ab+5b^2)}$$

$$m = \frac{(a+b)^2(3a-b)^2c}{16\,a^2\,b^2}$$

$$K = \frac{8a^2\,b^2\,(17a^2-14\,ab+5b^2)}{\pi^2(3a+b)\,(b-a)\,(a+b)^2(3a-b)^2(15a^4+12a^3b-78a^2b^2+60\,ab^3-9b^4)}$$

$$L = \frac{8a^2b^2}{\pi^2(3a+b)\,(b-a)\,(a+b)^2\,(3a-b)^2c}$$

$$P = \frac{32a^4\,(17a^4+18a^3b-8a^2b^2+6ab^3-b^4)\,(17a^2-14ab+5b^2)^2D}{(b-a)^4\,(5a-b)^2(3a+b)^2\,(15a^4+12a^3b-78a^2b^2+60ab^3-9b^4)}$$

$$Q = \frac{32a^4(17a^4+18a^3b-8a^2b^2+6ab^3-b^4)\,D}{(b-a)^4(5a-b)^2(3a+b)^2}$$

¾ Wave Artificial Aerial.

$$k = \frac{(b-a)^2(5a-b)\,(3a+b)c}{8a^2(3a^2-2ab+b^2)}$$

$$l = \frac{(a+b)^2(3a-b)^2c}{8a^2(3a^2-2ab+b^2)}$$

$$K = \frac{16a^2(3a^2-2ab+b^2)^2}{\pi^2(a+b)^2(3a-b)^2(b-a)^2(5a-b)\,(3a+b)c}$$

$$L = \frac{4a^2}{\pi^2(a+b)^2(3a-b)^2c}$$

$$P = \frac{64a^4(3a^2-2ab+b^2)^2\,(79a^4-28a^3b+10a^2b^2+4ab^3-b^4)D}{(b-a)^6(5a-b)^3(3a+b)^3}$$

$$Q = \frac{16a^4(79a^4-28a^3+10a^2b^2+4ab^3-b^4)D}{(b-a)^4(5a-b)^2(3a+b)^2}$$

½ Wave Artificial Aerial.

$$k = \frac{(5a-b)\,(b-a)c}{4a^2}$$

$$l = \frac{(3a-b)^2c}{4a^2}$$

$$K = \frac{4a^2}{\pi^2(3a-b)^2(5a-b)(b-a)c}$$

$$P = \frac{256a^4D}{(5a-b)^2(b-a)^2}$$

¼ Wave Artificial Aerial.

$$k = c$$

$$K = \frac{1}{\pi^2(3a-b)^2c}$$

$$P = \frac{256a^4D}{(5a-b)^2(b-a)^2}$$

Sunshine, Celluloid and Stills

By The Navigator.

WHILST the title of this article may not be strictly correct, we believe it sums up fairly well the resultant effect of our memorable dash around the South of England during N.F.D. to film and photograph the work being done at the various stations.

For several years we have felt that a documentary film of N.F.D. activities would have a wide appeal at home and abroad, but the difficulty of obtaining the services of a skilled camera man prevented the fulfilment of this desire. Fortunately for the Society, our contacts brought us into touch with the well-known Finchley Amateur Ciné Society, with the result that one of their most prominent members, Mr. F. G. Wise, offered to prepare a film.

The task was, to say the least, a difficult one. Firstly, because it was our wish to cover as many as possible of the London and Southern England stations; secondly, the possibility of bad light and rain had to be considered; and, thirdly, the technique required was somewhat different to that normally encountered in ciné work of an open-air nature.

By careful planning, in which task the writer was most ably assisted by Messrs. H. A. M. Clark (G6OT) and J. W. Mathews (G6LL), a route was eventually evolved which took in no less than 15 stations. With this before us the D.R.s and others concerned were asked to furnish details of the exact site of each station, for it had become apparent that if such an ambitious programme was to succeed, minutes must be saved throughout the journey.

Our studies of the route convinced us that a start must be made some hours before the opening of the Contest if we were to arrive in reasonable conditions of daylight. As a result it was decided to begin with the North London District stations in the early afternoon of June 5. Unfortunately, transport difficulties intervened to prevent the arrival of tents and gear at G6ZOP, but several shots were taken showing the erection of their aerial system.

G6ZOP, Mill Hill.
Left to right: G5NM, 6ZO, 2AI, 5QF, 2QY, 6PM and 2VD.

The delay at the first station was reflected all along the line, with the result that the last of the stations scheduled to be visited, that of G6LBP, at East Hanningfield, Essex, had to be missed owing to failing light.

The Arkley station, G6XNP, was in better state, and both gear and personnel made their bow to our Camera Man.

G5BOP—near Hatfield.
Left to right: G2GO, 2SX, 6CL, 5BO, 5FA, 6LL, 6OT.
Mrs. G6CL seated in the centre.

From Arkley the car party, piloted by G6OT, arrived on the site of G5BOP, where shots and "stills" were made of the aerial system, gear and operators. Copies of many of the "stills" taken by Mr. Wise will be available later at moderate prices.

After a welcome halt for tea at G6LL, the car was headed for Manuden, one of the most picturesque Essex villages it has been our good fortune to visit. G6QKP, complete with its two operators, was in process of being tested and judging by the location and site, a good score should have resulted.

From Manuden, our route was *via* Bishops Stortford to Rookwood Hall, Abbess Roding, where Mr. T. A. St. Johnston (G6UT), under whose call the station was operated, extended a cordial welcome, as did the personnel of the station and the Misses Rowe, from whom permission was originally obtained to use the Rookwood Hall site.

Pleasantries were exchanged over soothing nectar, and an excellent "still" of the writer was obtained, which, if rumour is correct, may blossom out from hoardings as a "Beer is Best" advertisement!

A delightful journey through Essex and Herts. saw the party back in North London by 10.30 p.m.

* * *

Perfect weather accompanied us throughout the trip on the morrow. Leaving North London at 8.35 a.m., Frant, Sussex, was reached at 10.40 a.m., only 10 minutes behind schedule. The station,

operating under the call of our District 16 Representative (G2UJP), was located on high ground, some three miles south of Tunbridge Wells, amid scenery which makes one wonder why anyone leaves England for a continental holiday. The shots of a certain member of the party negotiating a barbed wire fence, whilst hardly scientific, will undoubtedly cause amusement when displayed in September !

From Frant the party proceeded to Ide Hill, where many of the South London DX gang and not a few of the keenest 56 Mc. workers, were waiting to extend a welcome. This station was in charge of G2ZQ, and many interesting flashes were obtained of the personnel and the apparatus.

Westerham Heights Guest House, at the top of Westerham Hill, was selected as the site for the District 13 stations operating on 1.7 and 14 Mc., the former under the call G2CXP, and the latter under the call of our D.R. (G2WVP). Much interest was shown in the gear used, as both stations were working within a few yards of one another. Shots were also taken of the 56 Mc. apparatus and aerials operated by G5OX. Good reception of signals from G5CD and 5RD, both thirty or more miles distant, was obtained during our visit.

Lunch was taken at Westerham, and then began the most difficult part of the journey, for it had been planned to visit seven more stations between lunch and 7 p.m. Narrow lanes, heavy main road traffic, misread directions and a " technical hitch " prevented the complete fulfilment of our original plans, but at the finish we found we had missed but one station, namely, G6WNP, at Denham.

G6LKP, with G2NH and 5WP on duty, was located without difficulty in ideal surroundings at Albury Heath, Surrey. A commercial superhet working off dry batteries and the neatest transmitter seen on our rounds, were the high spots at this station.

From thence a cross-country run brought us to G6NAP (Stoughton), with G6GZ on the key—a typical N.F.D. station, as our Camera Man has portrayed for us. Then came the QRM ; first a defective petrol supply, and then a delay through misleading directions, but eventually the Thames Valley group were located at Wisley Hut, working under the call G5VBP, and as will be seen when the film is shown, those who were operating at the time had decided that comfort came before appearance ! A hasty good-bye, and the party were on their way (slowly at first, because of a particularly bad road surface), to Speen, Bucks. through crowded Thames-side resorts, past historic Runnymede, Windsor and Slough, with but an hour left to cover some thirty miles. We eventually pulled in at

G6WNP, Denham, Bucks.
G5IJ and 6ZA at Key.

G6CJP at five minutes past " Tattoo." A hearty welcome greeted us from the chief operator and his staff, which included G5CV, 5OG and 2BY. In the same field was located G6YKP, and as our films will show, both stations were located in ideal surroundings. Our Camera Man was fortunate in securing some excellent shots of the masts being disassembled and the gear being packed for its return.

Cheerios from the Heroes of Speen, a hasty *glance* at Ishbel MacDonald's venture, " The Plow Inn," and we were speeding across Bucks. and Middlesex for home and bed.

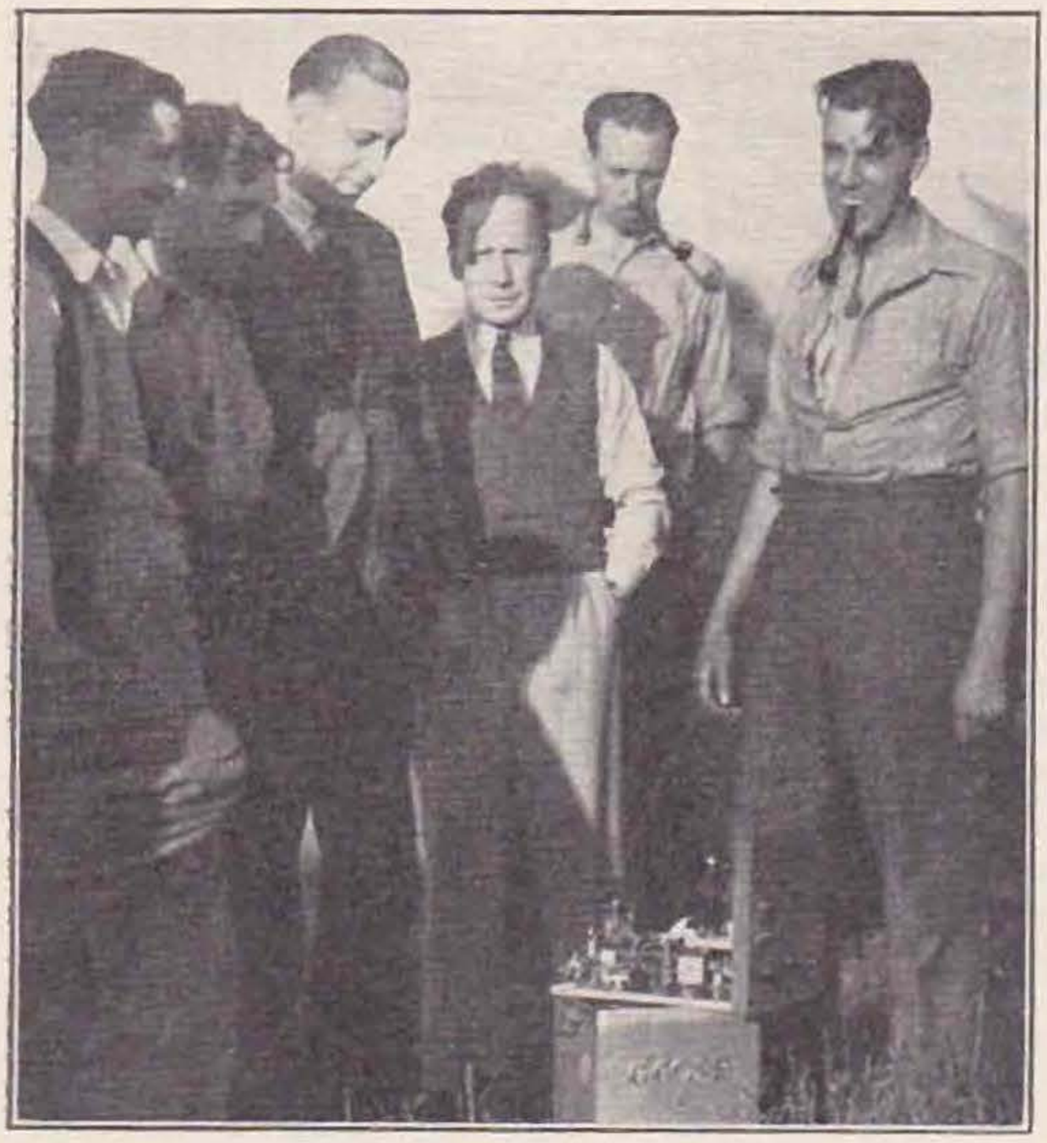
In planning the trip we had calculated that we should cover just over 300 miles, our mileage indicator when checked at G6CL at the end of the run, showed that we had covered 320 miles during the week-end.

Fifteen stations were filmed, some 200 members were met, and nearly 600 feet of film were shot.

In concluding this very sketchy account of a never-to-be-forgotten week-end, the writer desires, on behalf of all members in the Districts visited, to record his grateful thanks to Mr. Wise for his contribution to the historical records of the R.S.G.B. He also wishes to pay a warm tribute to Mr. H. A. M. Clark, who acted as car driver, and to Mr. J. W. Mathews for innumerable services, all of which greatly assisted in the success of the project.

Finally our thanks to the operators, D.R.s and others who gave us such a cordial welcome wherever we went. Our one regret is that time prevented us from visiting more than the 15 stations mentioned.

And now for Convention and the Film Show !



G6YKP—G6CJP—Speen, Bucks.

The chief operators, G6YK (third from left) and G6CJ (extreme right), with the transmitter used at the latter station.

Our Twelfth Convention

INCLUDED with this issue is a circular outlining the events and functions arranged for our Twelfth Convention. Members who intend to be present are most cordially invited to fill in the form and return it to Headquarters not later than August 14. With full information on hand we can then proceed to assign members to the various parties, but remember, many of the attractive visits will be fully booked up within a few days of this issue appearing. Our advice, therefore, is *book your place at once* for every function you wish to attend.

We will now outline briefly our plans :—

On Thursday afternoon, September 2, a party of not more than 30 members will be taken by motor coach to the Mitcham works of the *Mullard Radio Valve Company*. The cost of this trip will not exceed 3s. a head, payable in advance after notification by Headquarters.

During the evening of the same day members of the coach party and any other members and lady friends will be conducted round the Television Exhibition at South Kensington. There will be no charge for this visit, but members not in the coach party will meet at South Kensington station (which is 10 minutes by Underground from Victoria) at 5.45 p.m.

After this visit the usual "Gathering of the Clans" will take place on our Stand at Olympia.

On Friday, September 3, a party, limited to 30 members, will be allowed to visit the Radio Assembly Factory of the *Gramophone Company*, Hayes, Middlesex, by special permission of the Factory Controller. Lunch will be taken at 12.45 p.m. and at 2.45 p.m. the party will proceed to the Research Laboratory of *Electric and Musical Industries, Ltd.*, Hayes, for a demonstration of Television.

Members included in the two visits will meet at Headquarters at 9 a.m. The cost of the coach trip will not exceed 5s., excluding lunch, which will be arranged at a moderate price. Payment for this trip must be made in advance and after notification by Headquarters.

A second party will, during the same afternoon, be shown over Broadcasting House. This party, limited to 30 members and lady friends, will meet outside Broadcasting House at 1.20 p.m.

In the evening the Annual Conversazione will take place at the Florence Restaurant, Rupert Street, W.1. A running buffet will be available and every opportunity afforded members for "ragchewing." No advance booking is required for this function, but we wish to advise the caterers of the approximate attendance. Last year nearly 200 attended ; we hope to see this figure surpassed on September 3. The price of admission will be 1s. 6d. and the function will be confined to R.S.G.B. members and visiting overseas amateurs only.

The "high spot" of the evening will be a display of the N.F.D. films, together with the "world première" of the special film showing several well-known London stations in operation !

Saturday, September 4, will begin with the Delegates' Meeting at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment. Details of this meeting will be sent to our D.R.s.

From 10 a.m. until 11.30 a.m. Technical Groups will meet in the Tea Room at the I.E.E., providing sufficient response is received to our suggestion. At 11.30 a.m. a Business Meeting will be held at the I.E.E. and at 1 p.m. an informal lunch will take place at Slaters Restaurant in the Strand.

Prior to the afternoon meeting the usual Convention photograph will be taken.

At 2.15 p.m. our President will greet the company and immediately afterwards the trophies and awards will be presented.

At 2.30 p.m. one of our Vice-Presidents, Mr. Maurice Child, will deliver a lecture and demonstration on "Direction Finding." Tea will be taken at 4 p.m. and the meeting will break up at 5 p.m.

The final event takes place at the Florence Restaurant, where the Annual Convention Dinner will be held. The dinner will commence at 6.30 p.m. and the price of tickets will be 5s. if purchased prior to August 31. *After that date the price will be increased to* 6s. Owing to space limitations accommodation in the main room is limited to 180, but members booking late will be invited to dine in a separate room and join the party later. This function is of necessity confined to R.S.G.B. members and invited guests only, but lady friends of members can be accommodated elsewhere in the restaurant. During the dinner it is anticipated that the usual Draw for Components will be arranged, but no variety programme will take place as we are of the opinion that many members will appreciate the opportunity of indulging in informal discussions with their neighbours.

Dress is informal for all Convention functions.

This then is our programme. It is now up to you, and you, and you, to see that our labours to provide a feast of good things have not been in vain.

FILL UP YOUR FORM NOW.

CONVENTION 1937

SEPTEMBER 2nd, 3rd and 4th.

Reports Wanted

G8QH (London, S.W.15) on his 14,280 C.W. and telephony transmissions.

Publishing Date August 25th

Some Notes on Co-operative Direction and Position Finding

By Maurice Child, F.R.S.A.

DIRECTION and position finding as an interesting and useful phase of radio science has not been given much time and serious thought amongst British amateurs as a whole, and except in one or two cases of local societies in the earlier days, and more recently two or three near London, has not, it would appear, been thought of much importance or utility.

Various reasons may be assigned to explain this attitude, and it may be as well to enumerate some of them with a view to eliminating arguments of old standing and to show subsequently how the supposed difficulties can, with the necessary good will and team effort, be more imaginary than real.

Probably the most outstanding exception to the general statement cited in the first paragraph is the Golders Green and Hendon Radio and Scientific Society, which has consistently organised and carried through a long series of field day trials and competitions since 1926, and consequently, by virtue of its members' experience and ability, may be considered a useful reference to those persons or societies wishing to embark on such experiments.

Enumerating the points of difficulty, we get the following :—Organisation ; Transport ; Apparatus (both transmitting and receiving) ; Map Interpretation and the Accurate Transferring of Bearings to Maps ; Judging the Value and Accuracy of Results ; and, lastly, Expense.

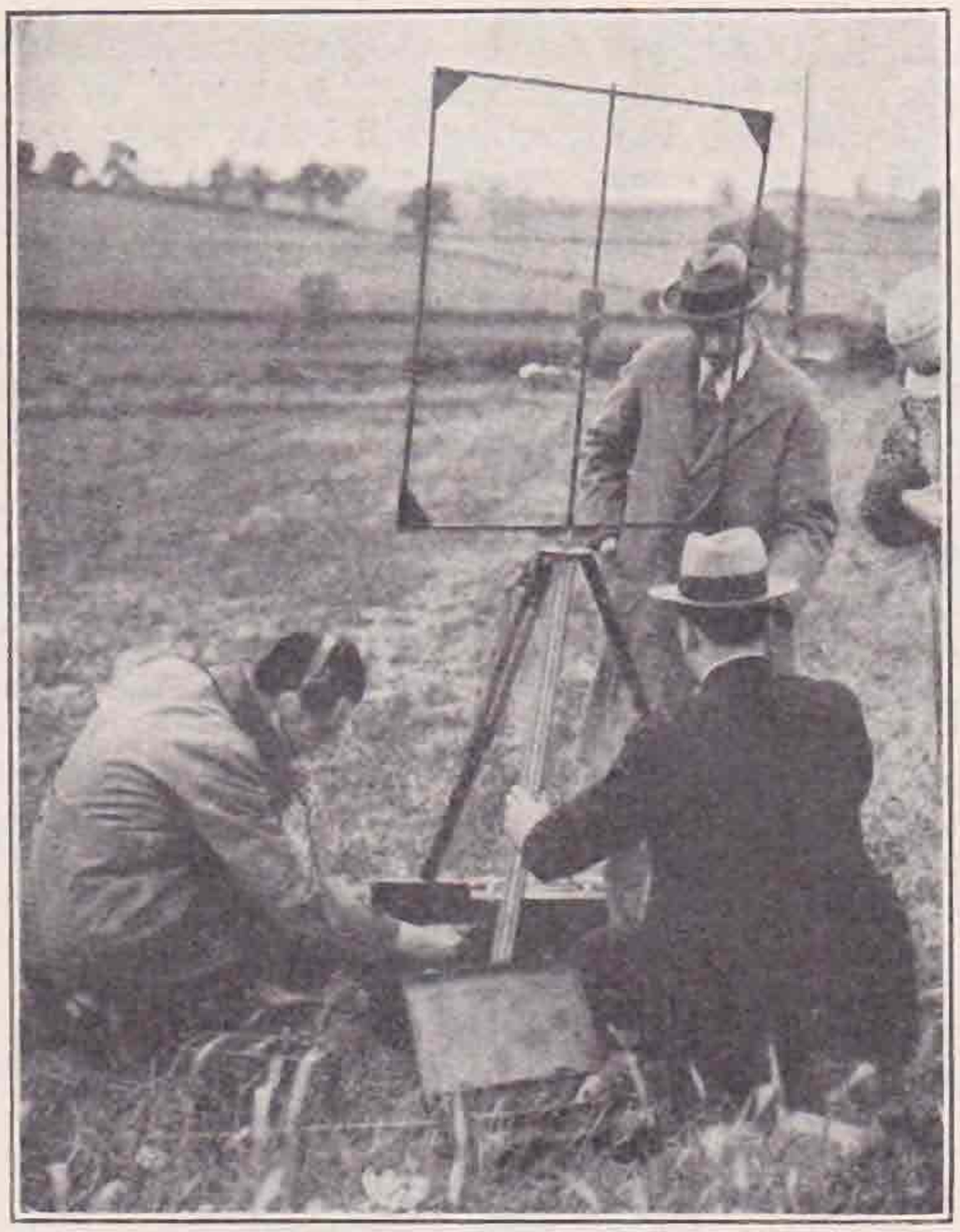


Fig. 1
The First D.F. Competition Field Day of the Golders Green and Hendon Radio Society, 1927

Organisation

D.F. work cannot be carried out single-handed. The theoretical minimum of personnel is two, but except for a very circumscribed series of tests, little can be done with such a number. Transmitting equipment being essentially cumbrous, requiring power, aerials, etc., needs conserving for as many receiving groups as possible.

Receiving equipment needs transport, and practice has demonstrated that there is ample work for three people operating the direction finder itself.

The planning of a field day needs careful consideration and a preliminary journey into the area in which tests are to be carried out. Good sites for the transmitter must be obtained, and regard has to be taken as to times and duration of signals, packing up and moving to other positions, if any.

Needless to say, the complete success of any D.F. field day is entirely bound up with the transmitting end, and consequently active, thoroughly competent and reliable personnel is essential. Fortunately, however, with so many experienced and practical amateurs well distributed throughout the country, neither man-power nor apparatus should be at all difficult to find.

The principal organiser will not necessarily be a man of great technical ability, but who will have the confidence of all in not only drawing up details of any combined effort, but will secure the necessary co-operation and see that everything is run to a strict schedule.

Transport

Not only the transmitting equipment, but every D.F. group, naturally will require a means of conveyance, but nowadays most societies have members with cars who are usually only too willing to give their services if for nothing better than to be able to take an active part in any scheme involving experimental work and/or competition and the chance of a good social gathering at the conclusion of events.

Apparatus

To members of this Society it is not necessary to dwell on the construction and form of the transmitter. A power of from 10 to 15 watts in the aerial is sufficient for tests up to 15 miles, and a H.T. generator driven from large capacity car batteries has been found the most practical means of obtaining the requisite power coupled with portability.

Some form of rotary switch designed to give a special pre-determined signal is required, and saves much laborious hand work and further ensures that the D.F. groups who cannot read Morse will be able to pick up the required station with the minimum loss of time and inconvenience when jamming is prevalent. A disused spring gramophone motor can usually be adapted with a little ingenuity for this purpose.

The direction finder is, however, an entirely different proposition, and it is here that much ingenuity of design is called for.

Since very little published data is available, and no commercial sets are made for the class of work to which this article refers, it follows that everyone must think out things for himself and construct what he considers will serve his purpose best and at the same time suit his pocket.

Fig. 1 shows a most primitive set made from odd junk and costing only a relatively few shillings, mainly spent on valves and batteries, and with which the writer started in 1926 with the sole object of testing the practicability of obtaining anything approaching accurate bearings on 160 metres over land and in the fairly hilly and wooded country a few miles south of St. Albans.

The photograph shows one of the R.S.G.B.'s oldest supporters and lecturers, Mr. G. G. Blake, with Mrs. Blake and Mr. A. P. Dudgeon (who assisted with the map work) and the writer. The frame was of very light construction, and consisted of five turns on a 3-ft. square. At two and a half turns from one end a connection was made to a small inductance of five turns, the other end of which was joined to the remaining two and a half turns. An exact electrical centre point was obtained by clipping an earth wire on to the inductance coil.

The frame was unscreened and the circuit formed the well-known Hartley type. The receiver was 0–1–2, ordinary general purpose valves being employed with about 40 volts H.T. Whilst the transmitter was not actually found it was nevertheless approximately located in a "cocked-hat" with about half a mile sides.

The results were encouraging and unexpected, and the lessons learnt by this preliminary test enabled many improvements in detail to be made, and in the following year a hidden transmitter at Barnet Gate was located and found within 2½ hours from the time of the first transmission, the D.F. receiver starting to operate at Rickmansworth some 10 miles distant.

It should be mentioned, however, that the transmitter emitted I.C.W. wave form.

Subsequent experiments were made with pure C.W., and considerable modifications had to be made with the D.F. apparatus to avoid the troubles of varying notes as the frame was swung, and to-day the necessary technique to avoid this trouble, which is a very real one, especially now that recent work is being conducted on the 7 Mc. band, is well established.

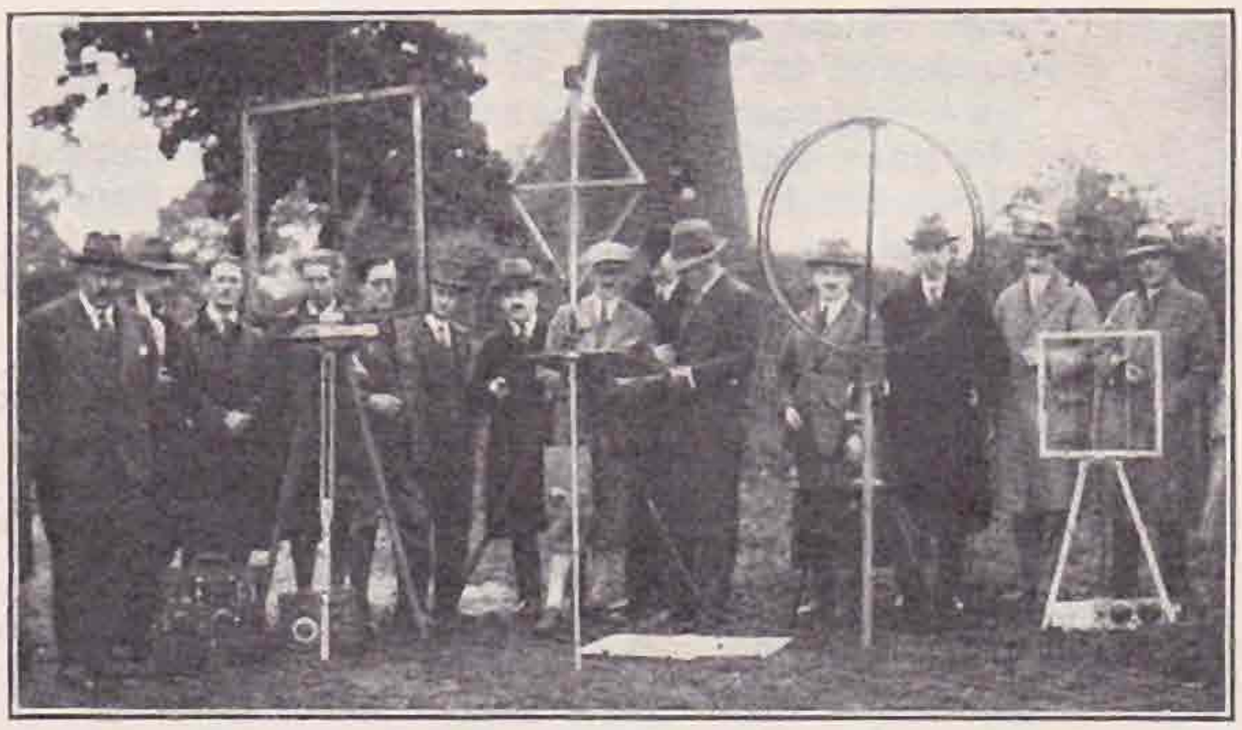


Fig. 2
Competitions Groups of the Golders Green and Hendon Radio Society, 1928

It is not, however, the purpose of this article to go into technical details, since it is proposed to deal fully with this at a later date by way of a lecture at the Annual Convention in August.

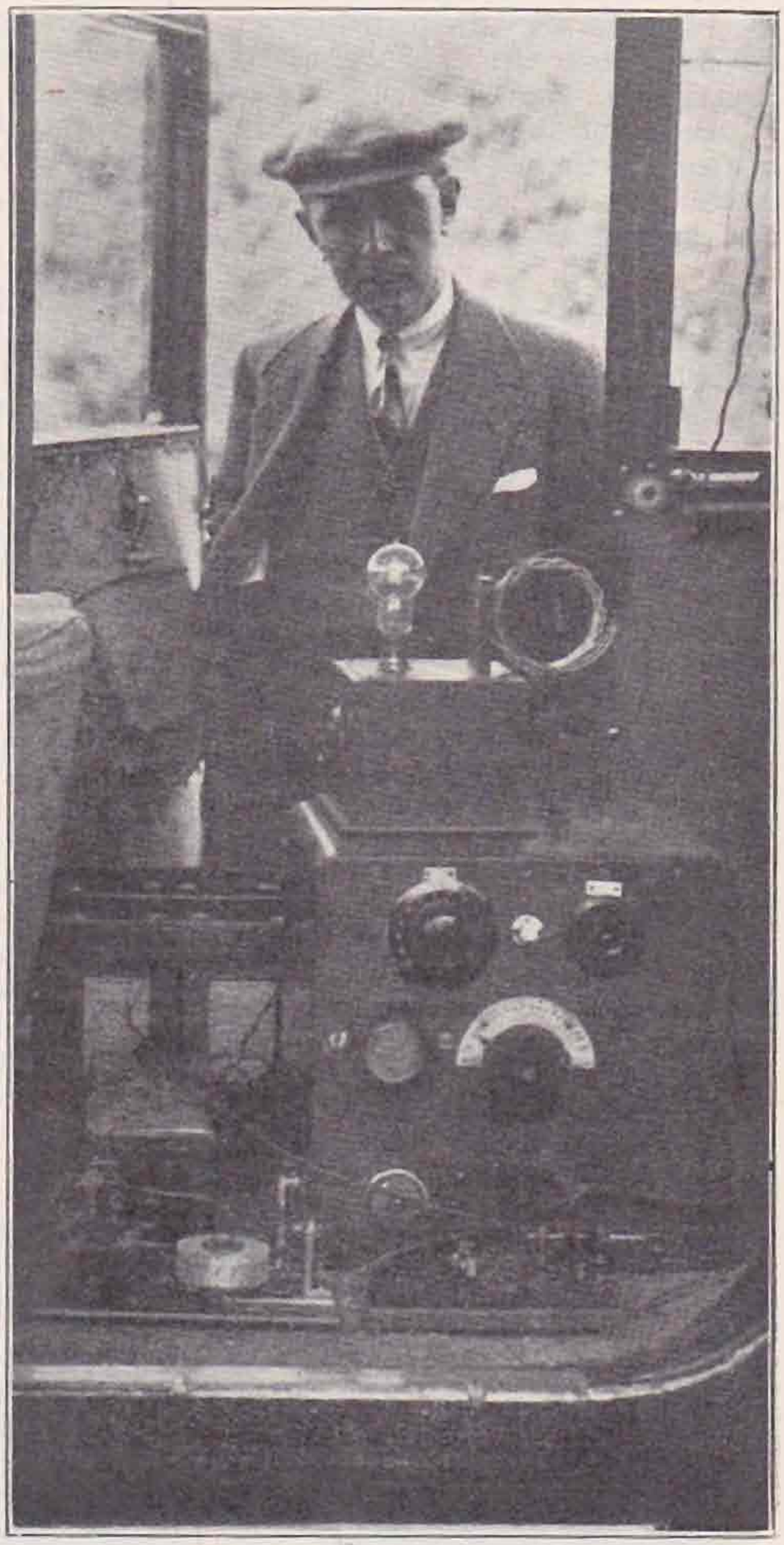


Fig. 3
The author with the transmitting gear used for the 1931 D.F. Field Day organised by the Golders Green and Hendon Radio Society

Fig. 4 shows the author's latest D.F. portable apparatus, with which it is easily possible to set up, take a bearing, and re-pack in the car within five minutes.

Maps

The usual maps used are 1 in. to the mile Ordnance Survey, and, of course, these need to be mounted on a suitable board for the convenience of readily plotting the bearings obtained.

A very careful study of the map, especially with reference to the prevailing magnetic variation to be allowed for, likely spots to afford sites for setting up the D.F. receiver, the method of obtaining true north lines through the receiver position from which to lay off with a protractor the observed angle or bearing is necessary.

Positions close to main or even secondary roads must in general be avoided on account of the likelihood of overhead telephone wires and underground pipes, both of which are potential sources of error. Clumps of trees or woods adjacent to the receiver are very frequently sources of error, but not necessarily so. The writer has found by special experiments that it is possible to get as much as 7° of error on the 160-metre band, due to absorption of trees, but much work on other frequencies in this direction needs carrying out in a comprehensive and systematic form.

Judging

Appended is a sample of the programme of the Golders Green and Hendon Radio Society's last field day held this year, and readers will be able, by studying this, to form a good idea as to a method of judging in competitions which considerable experience has shown to be a satisfactory basis.

Conclusion

In concluding this short survey, the writer expresses the hope that it will, if nothing more for the moment, stimulate some interest in the possibilities of concerted amateur effort in D.F. He proposes to show at Convention a representative collection of amateur made D.F. sets all of which have functioned well in D.F. tests, and which, when skilfully handled, are capable of giving bearings within the limits of accuracy of a good magnetic compass.

That such apparatus, together with experienced personnel, is a national asset is beyond argument, and although he is bound by a promise of secrecy not to divulge the nature of the occasion nor details concerning the circumstances, he can say that less than twelve months ago a certain emergency arose when his active co-operation, together with two others (the only ones available) was officially asked for, and was gladly given.

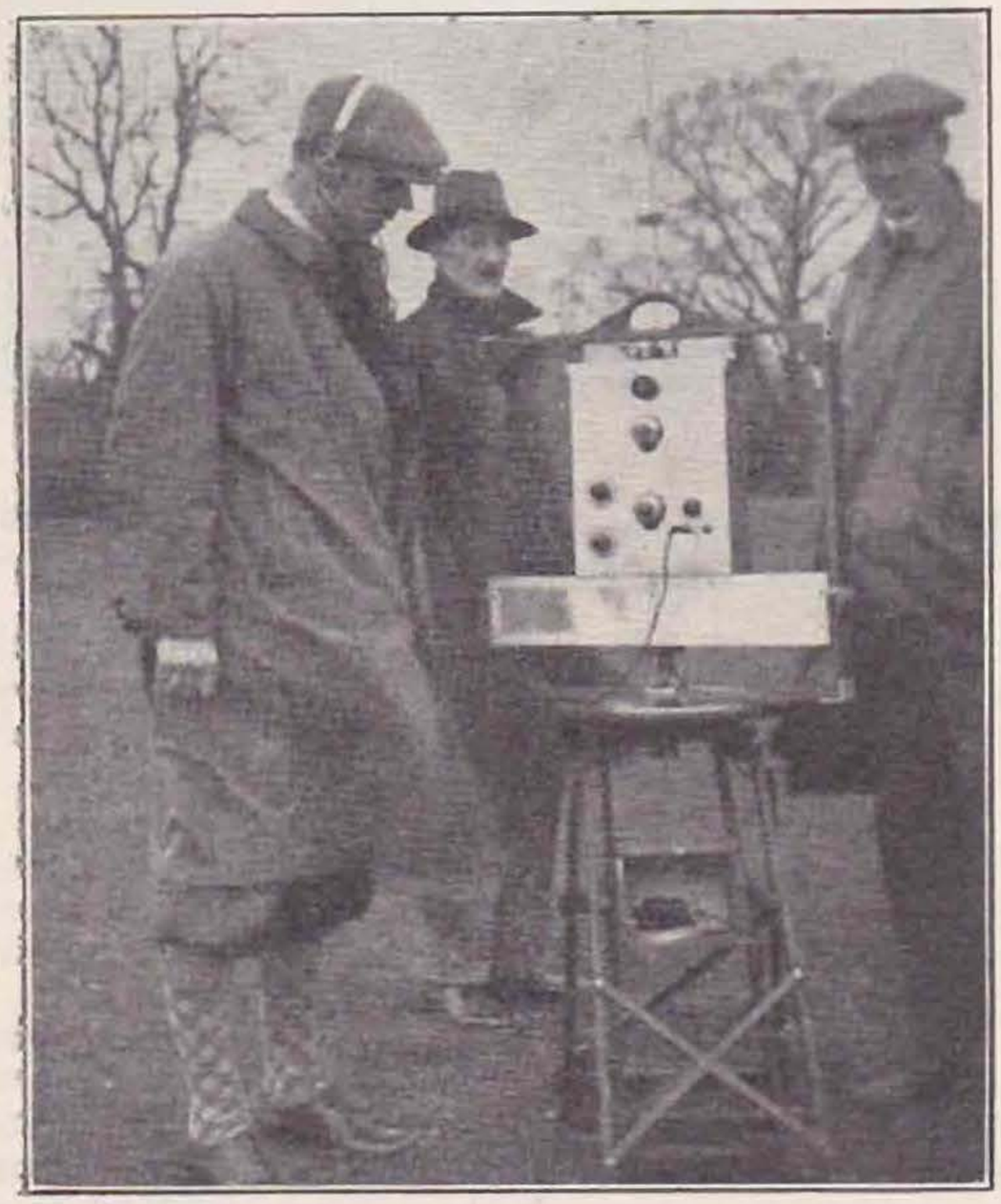


Fig. 4
D.F. Gear in use during 1934

Appendix

Golders Green and Hendon Radio Scientific Society

THE CORONATION DIRECTION FINDING COMPETITION, MAY 23, 1937

1. OBJECTS.

Part A. To ascertain the direction of a mobile transmitting station called Station X erected anywhere on the map referred to in para. 2.

Part B. To locate transmitting Station X and report arrival there.

2. MAP.

Ordnance Survey, 5th Edition, England and Wales, 1 inch to 1 mile, sheet 95 Luton, year 1935.

3. TRANSMISSIONS.

(*a*) *Mobile Transmitter* (Station X).

Call sign G5CD. Frequency 7,500 Kc. Signal — . . — — . . repeated.

(*b*) *Time Table.*

Part A.

Test.	*Time.*	*Stn.*
No. 1.	11.00–11.05	X
	11.10–11.15	X
No. 2.	12.00–12.05	X
	12.10–12.15	X
No. 3.	13.00–13.05	X
	13.10–13.15	X
No. 4.	14.00–14.05	X
	14.10–14.15	X
No. 5.	14.15–14.50	X
	14.55–15.00	X

Part B.

Test.	*Time.*	*Stn.*
No. 6.	15.15–15.20	X
	15.25–15.30	X
No. 7.	15.35–15.40	X
	15.45–15.50	X
	15.55–16.00	X
	16.05–16.10	X
	16:15–16.20	X

Station X remains at location for Part B. until 16.45.

4. PROHIBITED AREA.

The prohibited area is that rectangular area confined by four imaginary lines joining points of intersection of :—

1105–1350 : 1350–1130 : 1130–1340 : 1340–1105.

The area must not be used by competing groups between 10.30 and 15.20.

5. DIRECTION FINDING GROUPS.

(*a*) A group will consist of not more than three active members. Spectators may be attached to groups if desired.

(*b*) The boundary lines of the prohibited area must be marked on the map in black.

(*c*) The position of the receiving station shall be marked with a small circle and numbered to correspond with the transmission.

Tests 1 *to* 6. One bearing only, of each test, to be marked on the map and to be projected to the edge of the map, and corresponding numbers to be marked in the margin.

(*d*) No lines shall be drawn on the map except those which have reference to the work done on the day of the competition.

(*e*) If more than one map is used they must be securely joined.

6. MARKING.

Part A.—Marks will be awarded in respect of the accuracy of the bearing shown in each of the tests 1 to 6 and the distance between receiver and transmitter on each occasion according to the following formula :—

$$T_a = 100 - 2e + d$$

where e = errors in degrees

d = distance in miles

T_a = marks per bearing in Part A.

(*Continued on page* 57)

The Month on the Air— June, 1937

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

G2ZQ, having produced 12 excellent contributions for this page, now finds it necessary to discontinue, and the writer has undertaken the difficult task of continuing where John Hunter left off. Those of you who read "The Month on the Air" will agree that he made a fine job of it, and I am sure that we all join in thanking him for starting this contribution.

There is much to report for June, especially DX, which shows that although it may be hot summer in England, we are missing the fun if we don't listen for those who are not finding the weather so inviting for outside attractions.

In the South, N.F.D. was blessed by the best weather yet, and everyone reported conditions bad, and yet BERS195, our old friend Trebilcock, in Northern Australia, heard 13 N.F.D. stations, 11 of them on 7 Mc. Good support was given by Empire stations ZB1EP, SU1C and ST2LRP, all of whom put strong signals into G. The Swiss portables came through on 3.5 Mc. to help pile up the points.

I am glad that non-transmitting stations are lending their support and ears to this column, and the star station this month would appear to be 2ANT, of Sutton Coldfield. The following were heard on 'phone by him: K7EST, K7FVV, K6BAZ, K6CMC, K6DTT, K6JLV, K6MUL, K6MVV, K6NTV, W7AXS, W7CEO, W7DNB, VE5EF, VE5FY, VE5JK and VE5OC—phew! He also thinks that YI2BA is genuine, in fact nearly everybody who sends in reports believes the same, so we can accept that as final. Here is YI2BA's address. He is ex-AC8DM and should be QSL'ed c/o Port Directorate, Basra, Iraq. Thank you, G6IF. He is a friend of G5RV and was actually at District 14 Field Day last year.

Those of you who have worked OS1BR, and fondly imagined you had contacted Hedjaz, will be shocked to learn that he is an unlicensed station in Egypt. This news comes from G5OU (Channel Isles), who knows him, and was forwarded to us by G6IF. Egypt is holding another unlicensed station in Z8OI who is operating a 300-watt station at Ismailia. Apparently "OI" stands for "Old Ismailians," so we still can't be sure if some odd call is genuine or not, until we get the sleuths on his tail. Whilst on the subject of bogus calls, it has now come to light that EP1A, worked by many, is in reality in Jugoslavia. When he is not trying to fool the world, he signs YU7CI, so that accounts for the returned mail from Teheran. Thanks, G2ZQ.

BRS770, of Bolton, heard ZC4P and is not at all sure that he really is in Cyprus. In view of the last paragraph, we had better wait and see! He has a T8 chirpy note on the H.F. end of 14 Mc. BRS770 reports the reappearance of K4SA's 'phone. K4ENY in Virgin Isles has also been putting a fine 'phone signal over to G. BRS770 says the PY, LU, CO, YV, OA, and CE 'phones have made his receiver sound really efficient! 2ATI, of Stoke, sends his first report with a fine list of good DX: TA2BS, VP6MR, HS1BJ, VU2AU, VS7JW, VS1AI, VS7MB, OQ5AA, OA4AM, and FN1C. By the way, G6WY has received a card from FN1C, so he's genuine!

Here's one for some of the well-known DX 'phone men. 2BFL, of Croydon, heard ZP4AB stating he was using 6 watts and has to incline his aerial 80° to get over a nearby mountain. While on the subject of 'phone, G6CL has been conducting a series of land line experiments with Ken Warner (W1EH) and G2MI, Hayes, Kent. Clarry just puts the earpiece up against the microphone, and W1EH got 100 per cent. copy from G2MI for several minutes. This test was also tried with VK2XU, who heard some of what G2XV said from Cambridge.

From VU2LJ we glean some news from India.

The operators at ST2LRP. Left to right: ST2BN, 2LR, 2CM. Seated: BERS405.

He has heard HZ1AA state that his QRA was in El Khobar, Persian Gulf, and that he was W6LBM. It looks as if this station is genuine, but very mysterious. BERS311 noted during the B.E.R.U. contests that very few stations were heard outside the bands, and the few that were heard were also heard inside. This confirms the report from the A.R.R.L. during their test that no Empire station was heard outside. He also reports ZN4ZN, and G2ZQ tells us that this is a ship often in the Mediterranean.

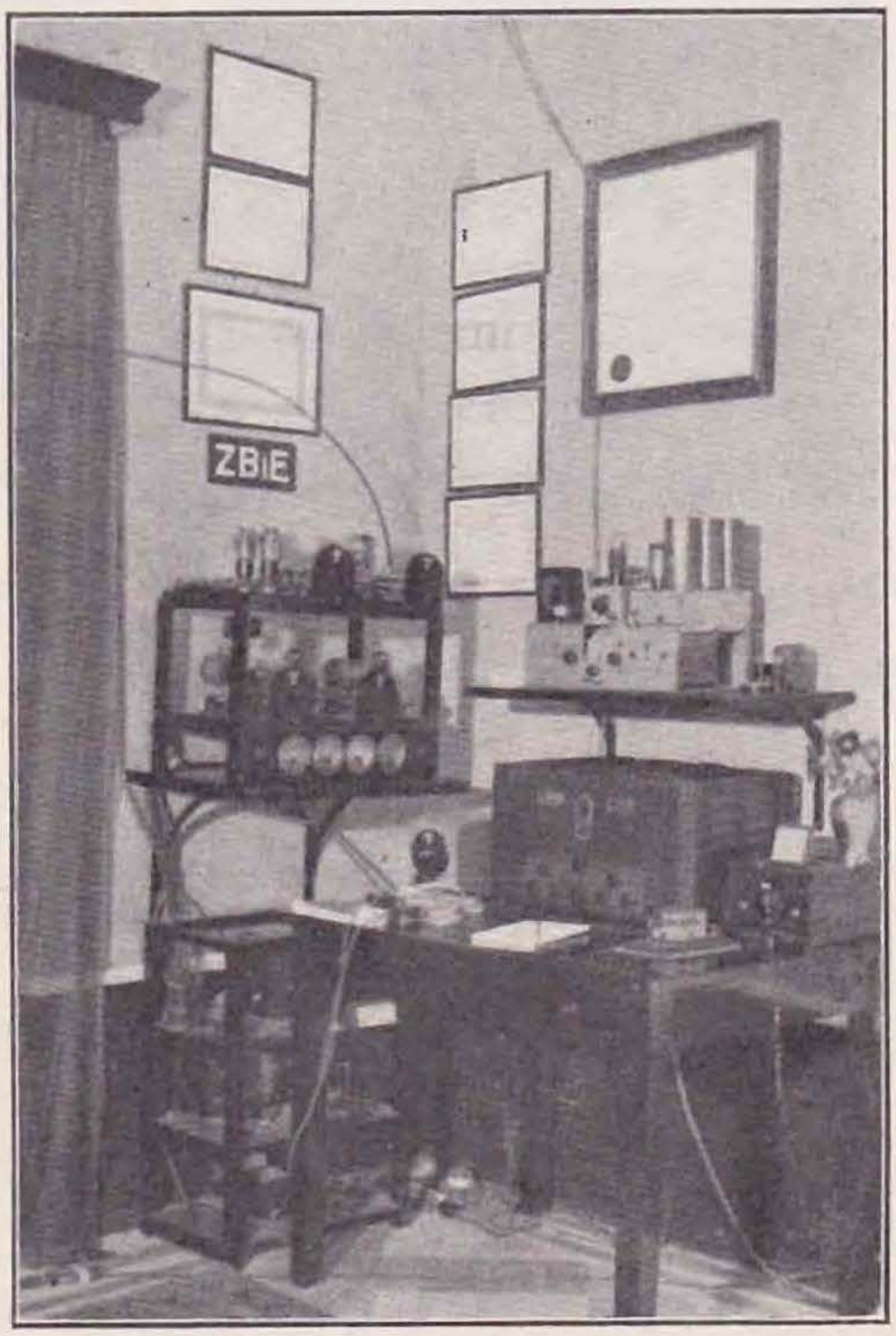
Besides TA2BS being worked and heard, TA1CC has been worked by many G's, including G2WQ, G2ZQ, and G6WY. After immense trouble, G6WY obtained his QRA, which is: Emile H. Urkecz, Aldürk Strass 28, Art, Angora, Turkey. He is apparently a native, knowing no European language, so prepare for some trouble if you work him.

CN1CR is another worked by G2ZQ, G6KP and others, and he gives his QRA as c/o Italian General

Consulate, Tangier, which is an International Zone, so here is another new country to go for.

G2MI informs us that he worked XZ2DY (ex-VU2DY) in Burma, so, subject to official confirmation, XZ is the new prefix for Burma. Our genuine 25-watt friend, G6ZO, continues to show how QRP can win every time. He worked YI2BA and also obtained his QRA. He wishes to say that there was a misprint in last month's notes. K6BAX should read K6BAZ. W6BAX, the genuine owner of the call, sent a card to G6ZO stating that his power was 3½ kW., shortly to be increased to 7 kW. What a super-Californian kW.!! Besides working J8CF and VU2BA, G6ZO has heard some interesting DX: XU6SW 14320, OQ5RM 14080, HK4LE 14060, HK4AG 14010, VS1AN 14320, ST2BN 14360, FN1C 14200, HS1BJ 14070, OQ5AE 14320, CE5AF 14030, and many other stations. He says that the full QRA of HS1BJ is: Sangiem Pawtongsoona, Radio Technical Section, Bangkok. And he QSL's. He wants to know if the Scilly Is. count as a separate country as he is going to take a portable there in September with call G6ZOP. (Don't be scilly!—Ed.). The ruling of the R.S.G.B. is that separate prefixes only count in the British Isles. T4TWO is the latest comic ship call heard and he QSL's too.

2BYF, of Sheerness, has heard VR4BA in the Solomon Is. and had three witnesses to prove it. Is this the first time this station has been heard in G? He also heard VU2CQ, CE3DW, PK1MX, XE3AC, using a s.s.super. BRS1535, of Woking, has heard FQ8AB in Gaboon, French West Africa,



ZB1E—Malta.

on 14265, and he wonders if he is genuine. He is in the latest Call Book. ZK1AA is another heard by him on 14285, also CR7RA 14350 and VQ4KTC 14325. There are several new Kenya stations reported. VQ4CRI and VQ4CRU are very active with self-excited rigs.

G2ZQ, now that he has more time on the air (no notes to write), has added TA1CC, CN1CR, FN1C, FQ3AA (Dakar, Senegal), and FY8A to his new countries worked. The last named is in Cayenne, French Guiana, and can be QSL'ed via Box 62. Apparently FQ3AA cannot give his full QRA, but requests that cards be sent via the R.E.F. BERS388 is now licensed as ST2CM and ZQ was his first QSO. The latter also reports hearing Z8OI and HK4EA 14380. W9OKZ, Editor of the Call Book, requests that QRA's be sent to him and not to W9FO, who used to be the Editor. Anyway, as far as G's are concerned, any QRA sent to G6WY will duly appear in the Call Book.

G2PL is still working those rare stations,and reports S8/9 from HS1BJ, J8CF and XU8JR, and 70 W6/7's; he has also worked FQ3AA and is another to confirm XZ2DY as being in Burma. G5MY and G2ZQ both worked XTF5Q, who reported that he was a Danish man-of-war, west of Iceland, and will QSL. G5MY also worked CX7G reported in last month's issue.

Chinese stations have been coming through during the month and those reported are XU8VK worked by G2WQ; XU6LN, by G5AQ; XU8JR, by G6WY and G2PL. G6WY has put 'phone through to OA4AQ, ZS1AH, VK2XU, and VU2BA, and had an interesting QSO with OE3AH, whose little son, aged 4, was repeating every word his father said in English. BRS2830, of Westcliff, also reports that YI2BA is genuine, so that matter is now finally closed!

Don't forget this is your page. Send reports of all the interesting things heard on any band, with frequencies, if possible, to G6WY not later than 25th of the month.

The Council member referred to by John Hunter in the last issue was G6WY, who worked 35 SP stations in their contest, bad notes and all! Are there any competitors?

News from Switzerland

Mr. R. Stuber (HB9T), Traffic Manager of U.S.K.A., informs us that the following Swiss stations operated as portables during N.F.D.:—HB1C, 1G, 1K, 1S, 1AJ, 1AM, 1AV, 1AZ, 1BB, 1BE, 1BM, 1BT, 1BU, and 1BY. The station HB1CC was a pirate.

Mr. Stuber tells us that the following British portables have been awarded diplomas for working the greatest number of Swiss portables:—

District 1	G2OIP	32	points
,, 5	G2HXP	32	,,
,, 13	G5PYP	36	,,
,, 14	G5UKP	36	,,
Scotland	GM2TMP	20	,,
N. Ireland	GI2KR	20	,,

Due to an error, presumably in translation, we stated in the May issue that in future all Swiss stations would use the prefix 1; this is incorrect. The prefix 1 is used by portable and mobile stations and the prefix 9 by fixed stations.

Something New

Type E40-G3. Data:

Heater Voltage (AC or DC)	.. 4.0 v.
Heater Current	.. 1.0 A (approx.)
Second Anode Working Volt.	.. 500-800v.
Screen Diameter	.. 3 ins.
Screen Colour	.. Green
Dimensions: Length (approx.)	.. 6 ins.
Neck Diameter	.. 1 in.

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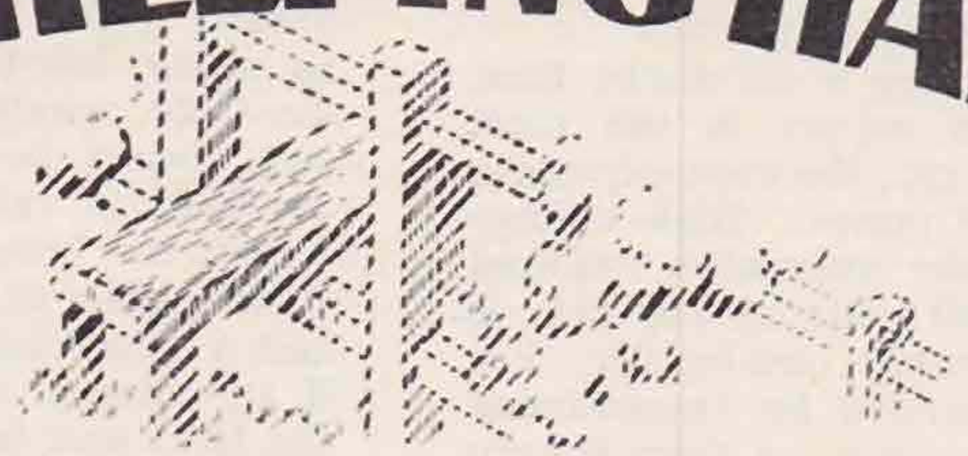


By Austin Forsyth (G6FO)

PART V—GETTING READY FOR TRANSMISSION

READERS of this section will probably expect to find under such a heading advice and suggestions with regard to obtaining a icence and building transmitters. Before that stage is reached, however, there is quite a lot of ground yet to be covered, which can be summarised under the sub-heading "Aerial Arrangement, Power Supply and Station Lay-out."

As regards the two former, the deciding factors are governed not so much by anything we can write as by the individual case—some may have ample space for aerials of any shape or size, while others will not be so fortunate; anyway, the subject of aerials is to be dealt with fully in one, or more probably two, articles which will appear in due course. The only thing we shall say now is: Try and arrange the location of the apparatus so that aerial efficiency is as high as possible. This means that it is better to use a room, or part of a room, for operating where the aerial lead-in can be coupled to the transmitter with the minimum of loss. At some stations we know half the radiating system has to be brought indoors owing to domestic considerations making it impossible to have the most suitable room; this sort of thing cannot, of course, be helped, but remember that the aerial is the vital factor in getting out, and if any sacrifices are to be made, they should be in favour of the aerial!

Power Supply.

This again depends on circumstances. Some of us have no mains and must use batteries, others are on D.C., while the most fortunate have A.C. Battery-operated stations will necessarily be tied to low-power and will be more than ever dependent on aerial efficiency for their results. In connection with dry batteries for transmission—with which, incidentally, a great deal of useful and interesting work is possible—it is false economy to buy the ordinary type, and *Exide* triple-capacity in 120-volt blocks are a sound investment. *Milnes* Units are also worth the attention of the man who is likely to be without mains for some time to come, and several stations are doing very well with them. These units have the great advantage of being almost everlasting, and are re-chargeable from a 2-volt accumulator or any similar source. H.T. accumulators are another solution to the battery problem, but they require careful maintenance for a satisfactory life and service, and it is preferable to have charging facilities in the station to ensure this. We have a 240-volt H.T. accumulator unit now entering on its sixth year, and though still capable of two-thirds the original rated capacity, it has involved considerable care and attention to makethis possible; they are charged *in situ* from the station power pack.

The station connected to D.C. mains has an

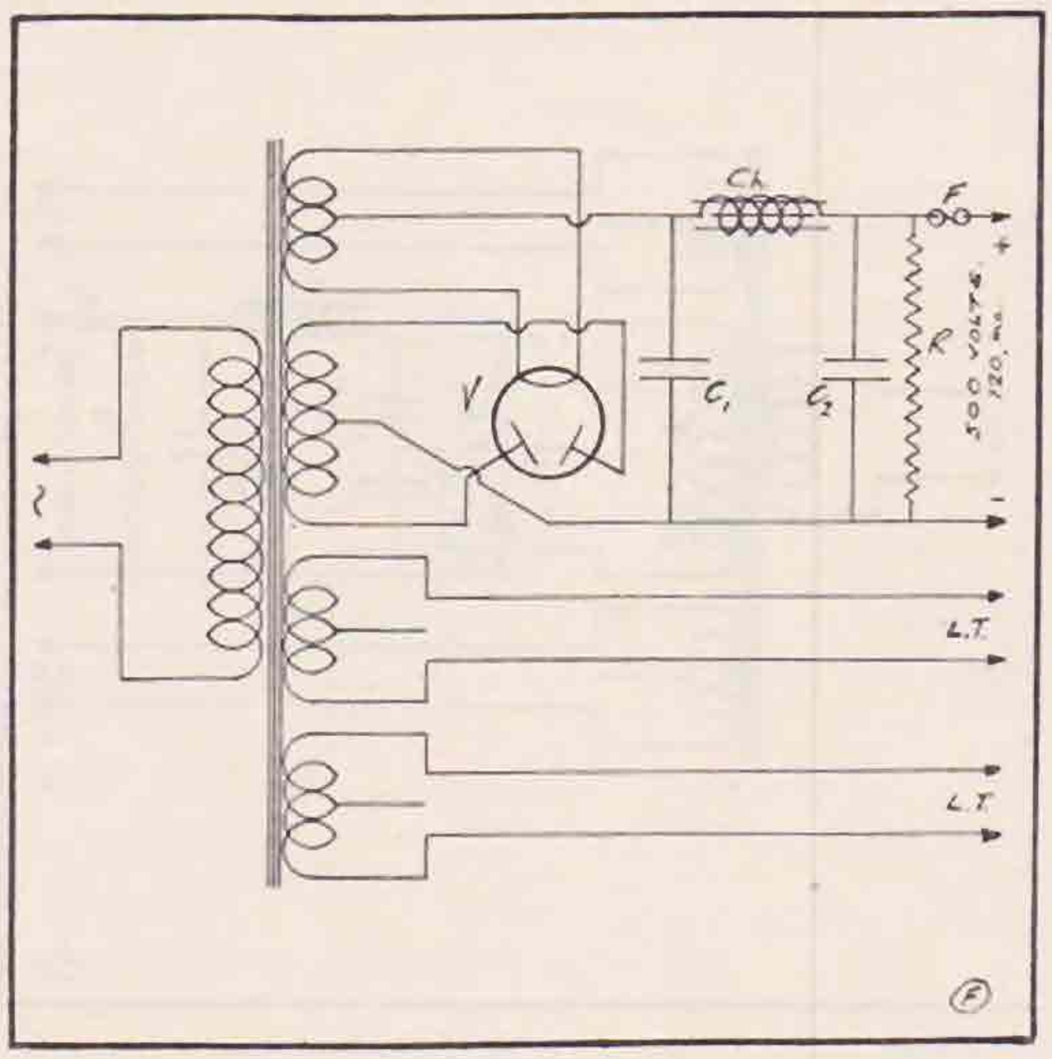


Fig. 1.
H.T. SUPPLY UNIT, VALVE RECTIFIER.

Power Transformer, 500 v.-0-500 v., 120 m/a. Epoch 1007 or similar.
V—Full-wave rectifier, "362" RB. 500/120, Hivac UU. 120/500, etc.
Ch.—Smoothing choke, 20 h. 120 mA, Epoch 1030.
C1—2 ufd. smoothing condenser, 600 v. D.C. wkng., Epoch 1135.
C2—4 ufd. smoothing condenser, 600 v. D.C. wkng., Epoch 1136.
R—40,000-ohm 10-watt bleeder resistor, for steadying output; passes approx. 13 m/a. Bulgin P.R.16.
F—Fuse. Bulgin F.12/S.

advantage for low-power working in that, though the voltage is low—usually 230 volts, and with bad regulation—there is an inexhaustible supply of milliamps.; good work is possible under these conditions. Sometimes, on the three-wire system of D.C. distribution, 460 volts can be obtained across the two outers, and then the 25-watt man has a power supply which is well-nigh perfect.

Coming to A.C. mains, there is no doubt that, generally speaking, such a supply is the most convenient, and, in the long run, the least expensive and most efficient source of power. High voltage is readily available, and the apparatus required for an H.T. unit giving 500 volts at 120 mA. is comparatively cheap and easily obtainable. For these reasons, a supply intended for transmission should preferably be of this rating, as there is very little to be saved by choosing a smaller rating on the grounds of economy. For 25-watt working—and telephony operation at lower input—a 500-volt supply is desirable, though this should not be taken to mean that a 60-watt unit is the minimum on which 'phone working can be carried out. Good QRP telephony is possible with 200-volt supplies, but for useful all-round work with modern circuits and equipment, the rating suggested is definitely to be recommended.

Though valve rectifier circuits of the type shown in Fig. 1 are widely used, efficient and reliable, there is the factor of valve replacements to be considered; rectifier valves do not last for ever, and though not unduly expensive these days, the cost of renewals can be saved if a *Westinghouse* metal rectifier is employed instead. Both the principle and application of these elements is probably well known to most readers, but for those who may not be familiar with them, we suggest the study of a useful *Westinghouse* booklet on the subject—"The All-Metal Way." These rectifiers have the great advantage of being indestructible if they are properly used, and the power unit, once built, can be put away and forgotten. A suitable circuit arrangement with values—these are critical for the rated output—is given in Fig. 2. While the first cost of a 60-watt output with a metal rectifier is somewhat greater than that of the corresponding output using a valve, the first cost is for all practical purposes the last. A special transformer is necessary with the metal rectifier, while the rectifying element itself is rather more expensive than a valve similarly rated.

A point worth mentioning with regard to L.T. supplies from A.C. mains is that, though it is desirable to use separate L.T. transformers—to preserve L.T. regulation when keying or otherwise putting a variable load on the main H.T. winding—it is always worth buying a power transformer having as many low-tension outputs as possible. Two 2v.–0–2v. windings having similar current ratings can always be connected, if necessary, to give 4v.–0–4v. if valves requiring more than the usual 4 volts are being used.

As a 500-volt supply can give a very nasty shock and a great deal of expensive damage can be done if an external short-circuit occurs or any part of the H.T. unit fails, it is very important adequately to protect the power pack against these dangers. It should be built in a ventilated metal cabinet—often obtainable quite cheaply on the second-hand market—and fuses should be used on both primary and secondary sides; with a slow-heating valve rectifier, these can take the form of flash-lamp bulbs of the low-consumption type, and it is advisable also to fuse the smoothing condensers.

Station Lay-out.

We could write at considerable length about this as it is a most important point in the efficient and enjoyable operation of a station. "Lay-out" does not mean the disposition of the various items of the equipment so much as their proper interconnection and switching. For those about to commence amateur work, advance planning of some sort is of the greatest importance if the station is to bear the hall-mark of efficiency. This does not necessarily mean appearance as such, but rather the efficiency denoted by clean, quick change-over arrangements and a wiring scheme which permits of experimental work without it being necessary to trace and disentangle masses of leads. All this is again dependent to a great extent on the individual case—the amount of space available, whether the gear can be permanently rigged up, and so on. Some amateur stations are established in a corner of their owner's bedroom, others possess a small "hide-out" of their own; some do the best they can in the living-room–always under the disapproving eye of the feminine section of the ménage—while the lucky ones are those with

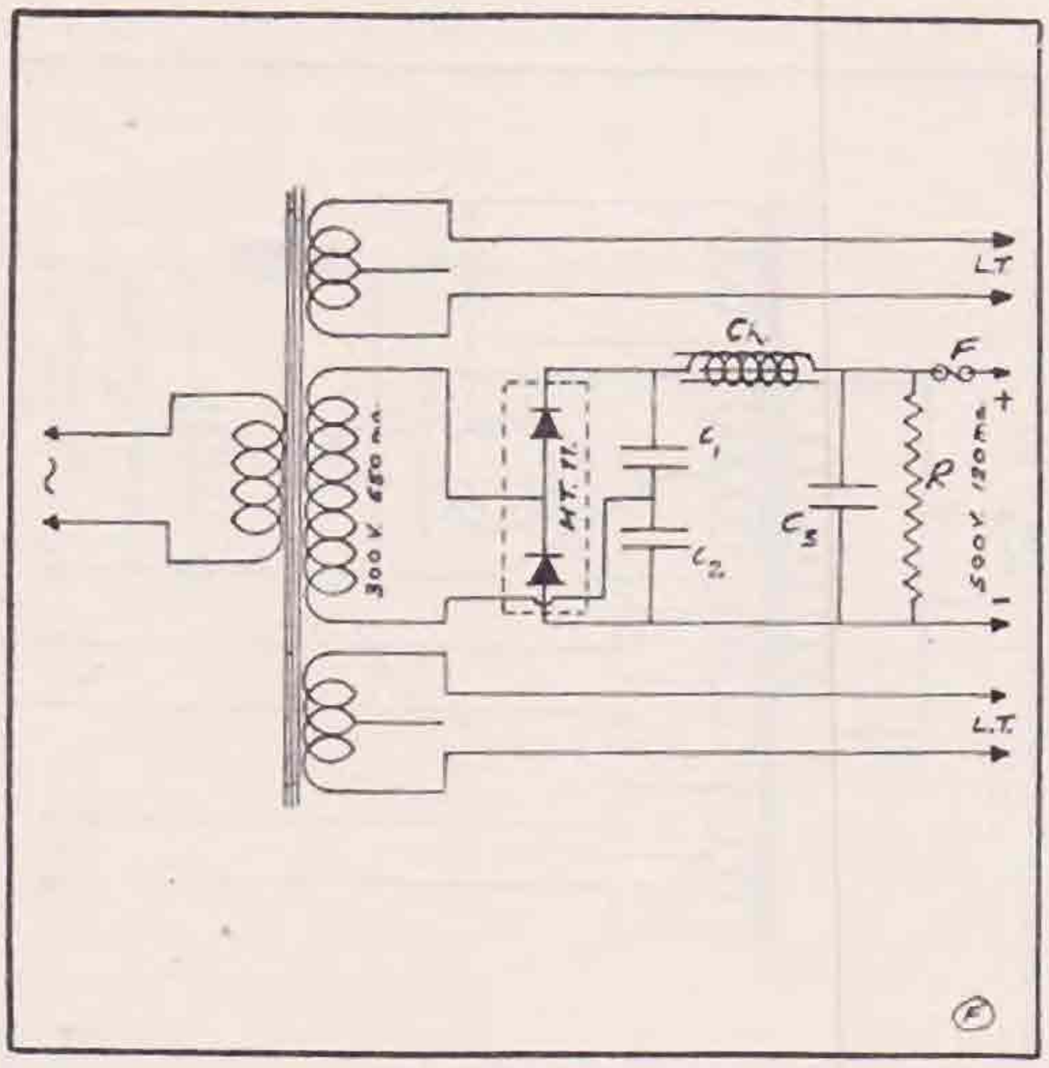


Fig. 2.

H.T. SUPPLY UNIT, FULL-WAVE METAL RECTIFIER.

Power Transformer, 300 v. 550 mA, Savage W130 or similar.
Westinghouse metal rectifier, type H.T. 11.
C1, C2—Voltage doubler condensers, each 6 μfd. 500 v. D.C. wkng., Dubilier dry electrolytic, type 0281.
C3—4 μfd. smoothing condenser, 600 v. D.C. wkng., Epoch 1136.
Ch.—Smoothing choke, 20 h. 120 mA, Epoch 1030.
R—40,000-ohm 10-watt bleeder resistor for steadying output; passes approx. 13 mA. Bulgin P.R.16.
F—Fuse. Bulgin F.12/S.

enough space (and free from the irksome necessity of keeping it tidy) to have a workshop and radio room to which only the favoured few can gain admittance.

In all these cases, in the interests of efficiency, and in order to get the best out of the gear when it is in use, perhaps for limited periods only due to other demands on time, some form of lay-out is essential. This has already been explained to mean the correct arrangement electrically of the various parts of the whole outfit so that it will function as soon as the switches are made. This looks very much like a statement of the obvious, but in how many stations is it not necessary to check a number of connections and carry out an extensive search for components before operations can be started?

It may be argued that where much experimental work is done, and there is continual chopping and changing of receivers, transmitters and so on, it is not possible to have a "cast-iron" lay-out to suit all conditions under which operation can take place. This is true to a certain extent, but the point is that what might be called the permanent features of the station should be separated from the purely experimental side. Even then, some sort of planning is at the least desirable.

It is clear that any suggestions we can make must of necessity be largely concerned with the switching, since different cases will vary so widely, but even if we do not cover any particular required arrangement, it is only a matter of thought and commonsense to produce one's own wiring plan, once the point has been grasped that it is advantageous to work systematically.

However, we can assume that the station does not have to be moved about, and that once the transmitting licence has been obtained, the receiving side will have been standardised, while lay-out in the physical sense will be determined by circumstances. It therefore boils down to arranging an efficient "send-receive" system, and this, though not complicated, is not quite as simple as it would appear.

The amateur who is either an AA, or is just about to go on the air with a new call, will have (or should have) four essential items of apparatus: Receiver, monitor frequency-meter, transmitter (which may be further sub-divided into transmitter proper and modulator) and power supply. The problem is to arrange a quick change-over from "send" to "receive," with continuous monitoring on either C.W. or 'phone, without it being necessary to manipulate rows of switches and insert plugs in numbers of inconvenient sockets.

In our experience, all the required change-over motions can be brought to a single main switch, with a subsidiary control for C.W. to 'phone, and, of course, a third switch for aerial change-over—though this can be operated from the main control if a relay arrangement is used. The aerial switch can be eliminated if a separate receiving aerial is employed, but this is not altogether desirable for various reasons, one being RF pick-up on the receiver tuned circuits when transmitting. It is better to use the transmitting aerial for reception also, breaking for this purpose into one side of the feeder line if a simple receiving system is being used; this applies to any twin-feeder arrangement, and in the case of single-wire aerials the change-over is simply from transmitter to receiver.

To cover the average case, from which deviations can be worked out to suit individual requirements, we give in Fig. 3 a complete wiring diagram, which assumes items in the equipment as follows: Receiver with series-fed transformer-coupled L.F. stage; monitor frequency-meter having a listening circuit in the plate lead; any type transmitter; modulation by choke-control; A.C. supply, with three H.T. outputs and several L.T.

All equipment is tied to a common earth, which improves balance and stability and to a certain extent simplifies the wiring. On "receive," everything is dead on the transmitting side except heaters which, in most cases, have to be kept running owing to the time lag in starting up.

Note the monitor connections. Its output is brought into the receiver L.F. stage, so that in the "send" position the outgoing signal is heard, which enables a check to be kept on C.W. quality and keying, the monitor output being, of course, amplified at the same time. On "receive," the signal of the station being worked appears in the 'phones or speaker, all this without having to make any connections or motions except moving the switches. With the main control-switch S1 in the middle position, both transmitting and receiving sides are dead.

The secondary switch S2 changes over from C.W. to 'phone. The actual connection required depends upon the type of modulation being used. This switch is only needed for the change of system from C.W. to 'phone, the main change-over being at all times controlled by S1.

Notice also that the various connections on the transmitting side are taken from the power supply to S1 and then to a power panel, on which the necessary sockets are arranged with fuses and meter jacks. The transmitter in use is plugged to this panel, thus facilitating experimental work where a standard transmitter is being used, and allowing easy access to the power for any other purpose. The L.T.'s which may be available from the power pack are taken straight to another panel, single-pole toggle switches being used to make the circuits as required. In the ordinary way certain valve heaters will be brought to this L.T. panel and switched on, being left on all the time the station is running. It is therefore not necessary to take the L.T. leads through the switch S1.

The main switch S3, complete with fuses and neon pilot, controls the supply to the whole station, with secondary H.T. switches S4 and S5 for receiver and transmitter H.T. supply. S5 should be mounted so that it can be reached quickly if things begin to smell warm in the transmitter or power pack! It will also be noted that "by-pass" switches S6 and S7 are included to close the "send" side of the main change-over S1. This is because it frequently happens that the transmitter has to be run for adjustments or testing with the receiving side entirely dead, or else the supplies at the power panel may be wanted for other apparatus, for which it is not necessary to have the monitor. Further. it is occasionally convenient—for certain checking adjustments—to run transmitter and receiver together.

Various modifications of this suggested scheme can easily be introduced to take care of special conditions. For instance, more or less H.T./L.T.

voltages may be available, or the receiving side might be on batteries. But Fig. 3 should cover the case of the average low-power station, where H.T. up to about 500 volts is used, and the wiring will stand for a long time without requiring alteration. In any case, whatever the deviations introduced or wiring scheme adopted, there are two important points which we counsel you to bear in mind: (1) Even the most carefully wired installation can develop faults. Therefore, use good quality cable, with distinctive colourings if possible, and *keep a plan*. There are few more difficult or annoying things than having to trace cabled wiring which was carried out some years before, the plan of which has long since been forgotten or lost! (2) The switches must stand up to their jobs, both electrically and mechanically. S1, in particular, is very important in this respect, and we ourselves prefer to use for it DPDT switches on porcelain—the good ones, with heavy copper contacts and without those abominable "lightning arresters"—these being mounted side by side and ganged to the number required. Ganging is by an ebonite strip fixed to the insulated cross-pieces. The only disadvantage of this arrangement is that the contacts are open, and it is a bit too easy to get a bite from the H.T.! However, a heavy coat of insulating varnish over all but the contact faces will minimise this risk. This switch S1, in the case of an active station, is changed over many hundreds of times in the course of a week's operating, so that if the type suggested is not adopted, the one used should be mechanically capable of standing this sort of thing.

With regard to the permanent wiring, all A.C. circuits should be bunched, run in sheathed cable, and the sheathing earthed. All leads on the receiver side are best kept away as much as possible from those carrying A.C.

With regard to metering, it is the fashion nowadays to build meters into the transmitter or transmitters, but while this is very nice where filthy lucre is no object, it too often happens that most of us have to be content with one or perhaps two good meters only. In this case meters are better not built into the gear, and it will be noted that in the lay-out of Fig. 3 metering is possible in any circuit which may be connected to the power panel, by using the ordinary plug-and-jack system. Grid-current readings, however, involve jacking in the transmitter itself, as it is not generally practicable to bring grid leads out unless mains bias is being used, in which case it is simply a matter of a third panel being added to carry the bias output connections.

Finally, some remarks on the disposition of the various pieces of apparatus. The power supply unit, once built and tested, can be stowed away

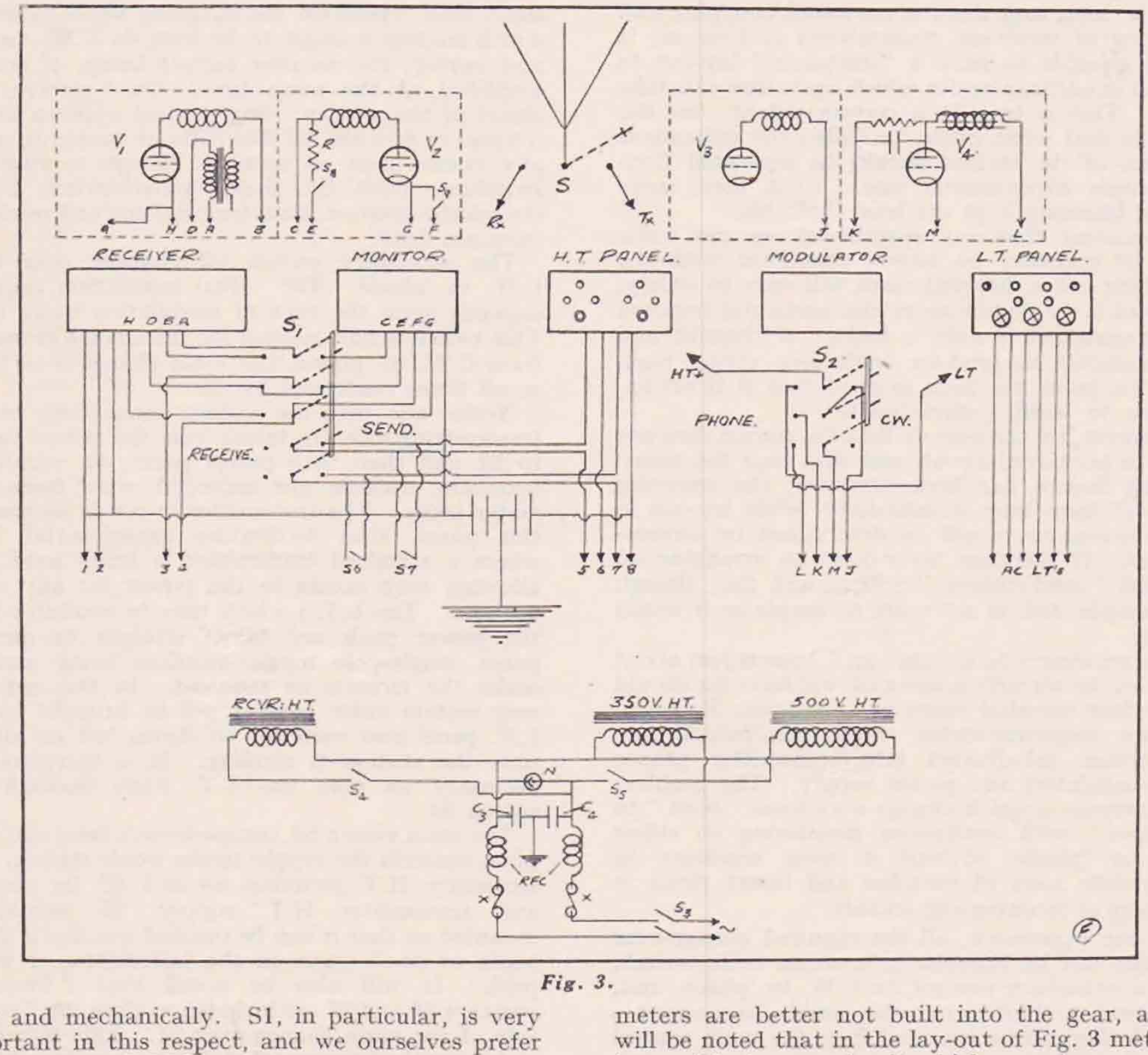


Fig. 3.

under the bench or table, with heavy well-insulated leads running from it. The receiver, monitor frequency-meter, switches S, S1, S2 and S5 should be conveniently and comfortably arranged so that they are " easy to the hand " and then fixed down. The other switches and panels can be disposed as of secondary importance from the point of view of convenience. As regards the transmitter and modulator, these should be set up separately from one another and from the receiving gear ; shelving which is not liable to be affected by vibration from the operating position is the arrangement to be aimed at.

A station such as this can be built up vertically on a plan space not more than 3 ft. by 2 ft., and will be just as effective as if it were spread round a large room.

One last point which might give some readers food for thought : There is no reason why one suitably designed and switched amplifier should not be used for receiver and monitor output, modulator speech amplification and B-C reception.

Key to Fig. 3.

V1—Detector valve in Receiver.
V2—Monitor valve.
V3—Output (PA) stage of Transmitter.
V4—Modulator valve, choke control system.
S—Aerial change-over switch, Rx " receive," Tx " send."
S1—Main change-over switch, " send-receive," 5-pole double-throw.
S2—" Phone—CW " change-over switch, 3-pole double-throw.
S3—Station main switch, DPST, with fuses, filter and neon pilot.
S4—Receiver H.T. control switch.
S5—Transmitter H.T. and L.T. control switch.
S6—SPST by-pass H.T. switch, 500 v. supply.
S7—SPST by-pass H.T. switch, 350 v. supply.
S8, S9—DPST switch ; allows monitor to operate in " receive " position.
R—Compensating resistor in monitor plate, equal to primary of L.F. transformer, say 2,000 ohms.
C1—2 μfd., 250 v. D.C. wkng.
C2—2 μfd., 500 v. D.C. wkng.
C3, C4—0.1 μfd., 250 v. A.C. test.
RFC—Mains H.F. chokes, 300 turns No. 20 DCC on 2 in. diam. former.
X, X—2 amp. fuse.
N—Neon pilot.
A—Plate side of first L.F. transformer in S/W receiver.
B—H.T. plus connection to V1.
C—H.T. plus connection to V2.
D—H.T. plus side of first L.F. transformer in S/W receiver.
E—By-pass H.T. plus feed to V2.
F—By-pass L.T. plus feed to V2.
G—L.T. plus to V2.
H—L.T. plus to S/W receiver.
J—H.T. plus, transmitter PA stage, V3.
K—Plate of modulator valve V4.
L—H.T. plus feed to V4.
M—One leg of L T. feed to V4.

1—H.T. minus, Receiver. 5—H.T. plus, 350v. 9—L.T. plus to other stages in Receiver.
2—L.T. minus, ,, 6—H.T. minus, 350v.
3—H.T. plus, ,, 7—H.T. plus, 500v.
4—L.T. plus, ,, 8—H.T. minus, 500v.

Inter-connection of receiver and monitor is shown by electrical key inset. These may require changing if other circuit arrangements are in use.

H.T. panel carries 150 mA fuses, meter jacks in positive lead of each supply, and positive and negative H.T. sockets.

Modulator panel carries modulator valve V4 and switch S2.

L.T. panel carries necessary sockets or terminals for both sides of available L.T. feeds, with SPST toggle switches in one leg of each.

The lay-out assumes the usual and correct procedure of taking all negatives and the L.T. feeds on the transmitter side directly to their various units. The single exception is the L.T. feed to V4, which can conveniently be taken through S2.

Trade Notice

An 8-pin valve holder, suitable for the American Octol type valves, has been produced by *Messrs. British Mechanical Productions, Ltd.*, better known as Clix.

Brass valve sockets are tightly riveted into a tough Bakelite disc, and are extended at the rear to soldering ends, which readily take the solder, and do not have to be scraped before a joint can be made.

Through no fault of the makers, care must be taken when inserting a valve as, due to the design of the valve itself, the sockets are equidistant. It would be manifestly impossible to produce a holder which overcomes this danger at anything like the price which is asked for the model under review, namely, 10d.

This neat and simple little component should prove very acceptable to the constructor, and the price is very reasonable.

GM.

Swedish people have a very keen appreciation of Scottish jokes and practically every paper in Sweden has its regular Scottish story. It is therefore not altogether surprising to find the following " Stray " in the Swedish amateur journal, *" QTC."*

" As is now generally known, Scotland has a new prefix, namely, GM. SM7YE explains that this is no doubt so that they need not say good morning more than once ! "

The Tonbridge P.D.M.

The 56 Mc. Band

By E. H. Swain (G2HG).

INFORMATION has been received from W9FM, giving full details regarding the 56 Mc. DX worked in the States during the early part of May. Unfortunately space will not permit the report to be given in full, but the following is a brief summary.

W9WLX, of Fort Thomas, Ky., worked several stations on May 13 between 8.00 and 9.00 p.m. E.S.T., including W1ICI, W2ITU, W1KBM, W1KGY and W1IGY.

On May 14, W1JQA, of Randolph, Mass., heard W9FP and W9UAQ, of Chicago, and W9URQ in South Dakota. W9YSV in Chicago heard W1JLK, W1GEY and others. W9UAQ worked W1GUY and W1JQJ, and later received 12 cards from Eastern stations reporting his signals. W1GUY, of Springfield, Mass., heard W9WLX, and worked W9FP and W9UAQ. He also heard a W6.

During the morning of May 15 the band was still open and W8QDD of Dayton, Ohio, heard several W1 stations. W1JIS heard W8QDD, W9UAQ and W9CLH. W1GUY heard two W8's, two W9's and one W6. W1JQA heard and worked several W8 and 9's.

W9FM mentions that he wrote to the National Bureau of Standards in Washington for data on the ionosphere for May 14 and 15. The reply to his letter stated that, in the past, a few scattered reports of long distance transmission on 56 Mc. have been interpreted as being propagation by way of the "Sporadic E" layer. The ionosphere measurements of the Bureau on the evening of May 14 indicated strong "sporadic E" reflections at normal incidence up to 11 or 12 Mc., which is sufficient to account for the 56 Mc. communication of that evening. The records for May 15 had not been developed at the time of the Bureau's letter.

Our American friends certainly seem to be enjoying better conditions than ourselves. Last year during May and June we heard quite a number of commercial harmonics on the band, but so far this year they have been practically absent. However, there has been a little excitement on the band as YL2CD heard G6DH at 08.05 on June 3 at R5. On June 20 at 21.15 B.S.T. G2MV heard F8JT calling CQ at R6, and is awaiting confirmation of the reception.

G2KI reports that he was listening from 22.00 B.S.T. onwards on June 11, and heard a number of commercial harmonics on a slightly below the 56 Mc. band. Soon after this he heard a "CQ" at the low frequency end of the band, but the signal faded out before it signed. The band was being "churned up" with various signals appearing and disappearing in a fraction of a second. At 23.20 B.S.T. he heard a T8 R3 signal on about 57 Mc. which appeared to be sending CQ. Then on 57,300 kc. he heard an RST 326 signal calling CQ de OH ? but could not get the call sign owing to bad fade. G2KI mentions in his report that at the time of this reception it was lightning badly, and it is rather interesting to note that this is the second time attention has been drawn, in these notes, to the fact that the band has opened up for DX during a thunderstorm. The other occasion was on September 5, 1936, when various commercial harmonics, including JNB, were heard.

Turning to more local work, the writer was rather surprised to hear G6FL, of Longstanton, Cambridgeshire (about 62 miles), on May 28, at R4 fading to R1, and G6DH at Great Clacton (about 60 miles) at R5 fading to R2. Skeds were made with these stations and G6DH was heard on May 30 at R2 and again on June 1. DH heard signals from G2HG on June 1, 2 and 4. G6FL was heard on June 1, 2, 3 and 4, with a bad fade on each occasion.

Nothing further was heard of either of these stations in spite of the skeds until June 23, when 6FL was logged at R3 with a bad fade, and again on June 27, when a QSO was established.

G6FL is using a directional aray beamed on London, but G6DH and the writer are using plain aerials consisting of eight half-waves end-on.

Naturally this work is by no means outstanding, and far greater distances have been covered. It is, however, rather interesting to note that the contacts are of the back garden to back garden variety between comparatively low-lying stations (G2HG is located less than 100 ft. above sea-level), and that judging by the unreliability and fading the contacts are due mainly or partly to reflected rays.

The 28 Mc. Band

By Nelly Corry (G2YL).

Judging by the reception of commercial harmonics, conditions during June were normal for the time of year, and there was not a single day when the band was completely dead. Unfortunately, activity was, according to G6DH, the lowest he has known it for three years and he and G2XC, still the most active Gs, only had 17 QSOs each from June 1-27.

G6DH heard W4DHM on June 4 and worked VK3BQ and VK3CP the following morning but neither continent was reported again during the month. Apparently no Asiatics were heard at all, and the only African signals were ZE1JU (worked by G2XC and G6DH on June 13 and heard on June 20 working VKs) and ZS1C and ZS1H (worked and heard, respectively, by G6DH on June 13). South Americans reported by G6DH were PY2LJ, worked on June 4, LU4BH, heard on June 8 and LU1BJ's 'phone, heard on June 26. On the latter date K4EPO was also audible, working Ws and calling "CQ Ten" on 'phone.

European amateurs were logged on 18 days, but only totalled about 17 different stations in ten countries. G2XC, who was usually active between 16.00 and 19.00 G.M.T., had 16 contacts with stations in D, I, OK, OZ, SP, YL and YU. He also heard F8HS, while the only other countries heard by G6DH were represented by ZB1C and GM6NX. The most active Europeans appear to be D4XJF, D4XQF, YL2CD and YU7GL, and it is noteworthy that skip distance has not yet been short enough to enable ONs and PAs to be heard in the South of England, as on occasions in the early summer of recent years.

BOOK CONVENTION DATES
Sept. 2, 3, & 4, 1937

The "Radio" W.A.Z. Plan

IT seems an appropriate occasion to introduce to our members the system evolved by *Radio, Ltd.*, of Los Angeles, of evaluating the DX performance of an amateur station. Appropriate because the publishers have just prepared a large scale map showing clearly the exact boundaries of the 40 Zones into which the world has been divided. This map is now available from R.S.G.B. Headquarters, price 1s. 2d. post free.

We can do no better than quote at some length from the article which appeared in *Radio* dated February, 1936.

"Nearly all of us are interested to a degree in working DX. Large numbers of QSL cards proudly bear the '*W.A.C.*' (worked all continents) designation; many bear lists of the countries or prefixes worked. Even most old-time amateurs like to brag that some DX stations have reported them the 'loudest G station heard here, o.m.; R99 plus.'

"Despite such well-nigh universal interest in DX, there seems to be no satisfactory 'yardstick' by which to measure or compare the DX performance of different stations. 'W.A.C.' once the goal of every amateur who was either mildly or enthusiastically interested in DX, has been 'made' by such a large number of amateurs that it is no longer a badge of special distinction, except in a few localities.

"Realising this, many such persons in the last few years have taken to listing the number of countries (or prefixes) worked, and elaborate tables have been published of just what places are considered by the compilers as 'countries.' But such schemes lack the element of fairness to many stations. In several places on the earth's surface a considerable number of small countries are grouped together in one natural geographical area; DX operators that can work one, can usually work all just as easily, unless some have very few stations. On the other hand, there are several large countries which lie in two or more natural geographical areas, and it may be, and frequently is, a much more difficult feat to work stations in several parts of such a country; yet the station so doing takes credit for working but one country.

"Accordingly, *Radio* have attempted to evolve a zone scheme (w.a.z.—'worked all zones'), which may be used as a fairer basis of comparison. As hinted above, it may not only be used by those who have worked all zones, but also by others who can readily compare their progress towards the ultimate goal with that of other stations having the same objective.

"It is not necessary to join any association, to subscribe to any magazine, or to obtain any certificate to be entitled to call one's station a w.a.z. station. The designation is simply an indication of performance, and nothing else.

"'W.a.z.' should, of course, be used only by those who have reached the goal of working all forty zones. The scheme, however, is subject to much wider application as progress made towards that goal can be indicated by a designation such as W 35Z, signifying that the station has 'worked thirty-five zones.'

"In determining zone boundaries we readily admit that no two persons in the world would probably make up exactly similar lists. Careful attention has been given to topographical maps, calls heard lists, and similar factors in compiling the zones. For convenience in determining the zone in which a distant station may be located, zone lines have in most cases been made to coincide with political, or call area boundaries, even where slight departures from natural geographical boundaries were necessitated. Deliberately, no consideration has been given to the number of amateur stations which may be located within a particular zone, as this is a factor of no permanence."

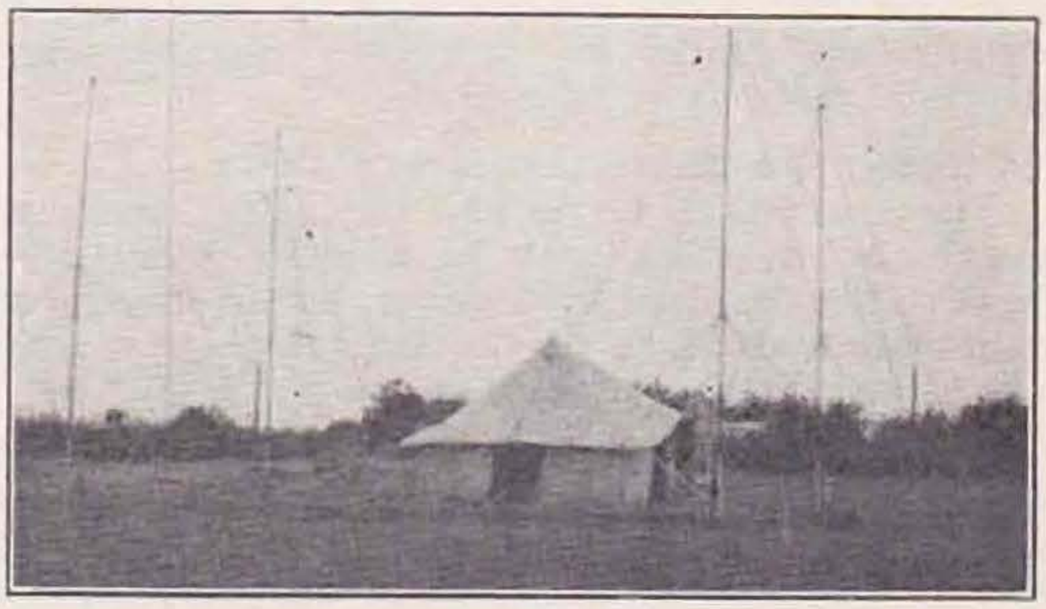
The map, which contains a list of the countries and areas forming the 40 zones, should appeal to every amateur who has at any period of his life been interested in international amateur radio.

News from Sudan

Mr. W. E. Dunn, latterly G2LR, of Cranwell, informs us that there are now three fully-licenced stations in the Sudan :—

ST2BN, Mr. H. McTrusty, Durham Light Infantry, Khartoum.
ST2CM, Mr. C. Turner, R.A.F., Khartoum.
ST2LR, Mr. W. E. Dunn, R.A.F. Khartoum.

During N.F.D. they operated a portable under the call ST2LRP, and were successful in working 33 stations during that period. Most of the British 14 Mc. portables were contacted, and Mr. Dunn in his report pays a tribute to the fine quality of signals transmitted by our stations. The three GM portables (8CFP, 6IZP and 2TMP) were all given S8 reports.



A view of ST2LRP, near Khartoum.

G portables were audible throughout the 24 hours, which speaks well for their efficiency.

Empire Calls Heard

D. Edwards (2ANT), Sutton Coldfields, Warwicks. February 28-June 2.

14 Mc. phone: ve3abd (5, 7), 3aex (4, 5), 3gk (5, 7), 3gs (5, 7), 3lc (5, 7), 3ll (5, 7), 3md (5, 8), 3ms (5, 7), 3qj (5, 8), 3qv (4, 6), 3qz (4, 6), 3wv (5, 7), 4ea (5, 7), 4mo (5, 7), 5ef (4, 6), 5fy (4, 4), 5jk (4, 6), 5oc (4, 6), 2abd (4, 6), 2fy (4, 6), 2hf (4, 6), 2hx (4, 4), 2no (5, 7), 2oq (4, 4), 2rw (4, 5), 2ti (5, 7), 2xu (5, 7), 2yw (4, 6), 3al (5, 7), 3er (4, 6), 3ft (5, 7), 3mr (4, 6), 3kx (5, 7), 3xd (5, 7), 4ju (4, 6), 4vb (4, 6), 5ai (5, 7), 5aqw (4, 6), vo1k (5, 8), 1p (4, 6), 1x (5, 7), 2z (5, 9), 6l (5, 9), vp5pz (5, 8), 9r (5, 8), yi2ba (5, 8).

New Ideas for a 56 Mc. Superhet Receiver

By E. G. Ingram (GM6IZ).

IT is quite evident that a great deal more information about the qualities and vagaries of 56 Mc. signals would be forthcoming if properly stabilised transmitters and receivers were used and while at the present time there are several good superhets which perform remarkably well, the writer has for a long time been considering the possibility of producing a receiver for this frequency which would be as stable as a modern broadcast superhet, and as easy to tune.

To those who are keen on the subject from a theoretical standpoint, the following may be of some interest, but to warn others the idea has not been practically treated by the writer and he cannot vouch for the effectiveness of the project. The circuit is not drawn in all its details as the writer does not wish to fall foul of the many technicians amongst Bulletin readers and, in any case, the details are really an unknown quantity until practical tests have been made.

Briefly, the description is as follows:—

The first stage is simply the signal frequency input circuit which may be a plain mixer or an H.F. valve, followed by a mixer, but as most of the gain will take place in the I.F. stage, the writer would be in favour of leaving out the H.F.

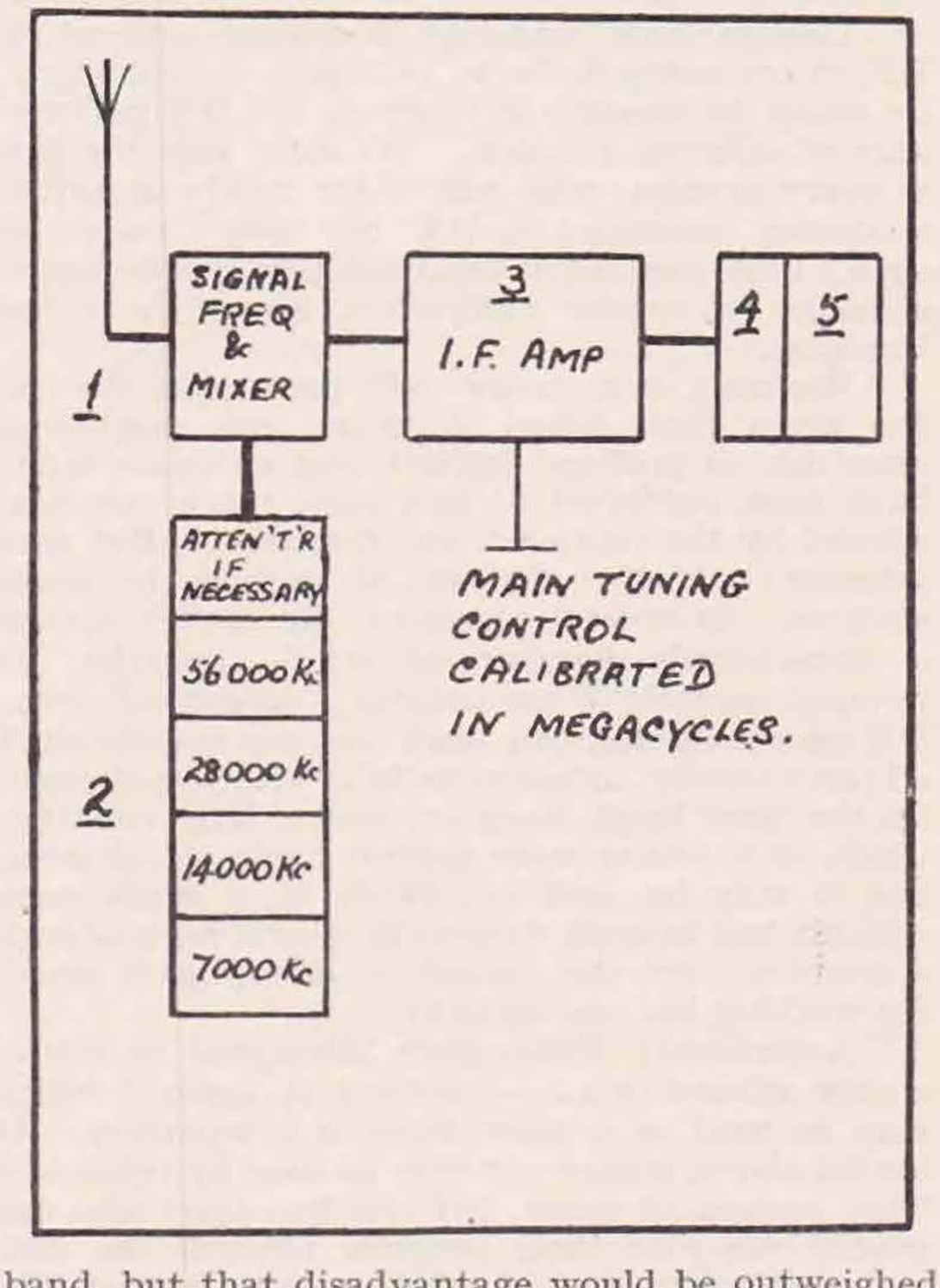
Coupled to the mixer is the local oscillator, the frequency of which is fixed and is crystal controlled. It should not be difficult even with a 7 Mc. crystal followed by two twin triodes, to get an output of .5 to 3 volts on 56 Mc. The reason for crystal control here is, of course, to do away with the usually nasty job of tuning the local oscillator on this very high frequency, and also to provide an absolutely stable I.F. signal when receiving a crystal-controlled transmission.

The third stage is the I.F. and while this in the main follows conventional design, it is exceptional in the fact that it is tunable over a range of, perhaps, 500 to 700 kc. The reason for this is that, as the local oscillator frequency is fixed, the I.F. must be made variable to allow the receiver to tune over part of the band, i.e., with a fixed local oscillator frequency of 56,000 and a variable I.F. of 500 to 700 kc., reception of signals will be obtained on frequencies from 56,500 to 56,700. Naturally, the two (or more) condensers tuning the I.F. stage can be ganged and the dial calibrated directly in Mc. This can be done easily from a standard broadcast frequency meter, knowing the exact frequency of the local oscillator. The I.F. stage would require to be highly selective, but it should not be a difficult matter on this frequency, especially if regeneration is applied.

The fourth and fifth stages are the second detector and the output stage. Nothing need to be said except that the former could be with or without A.V.C., and the latter suitable for individual requirements.

The writer would advise separate and thorough screening for the various stages, as this will definitely improve the signal to noise ratio and minimise interference between harmonics of the oscillator section and the I.F. section. The I.F. stage would give a more even gain over the range if the coils themselves were resonant, say, about 1,500 kc., padded up to 700 kc. and tuned with 200 $\mu\mu$F. condensers to 500 kc.

From the figures given it will be noticed that the receiver would only tune over a small part of the band, but that disadvantage would be outweighed by the stability and accuracy which would be possible. It should be obvious that any portion of the band can be covered by choosing a suitable crystal for use in the local oscillator.



It is hoped that the above will at least give cause for some serious consideration and any criticism, either constructive or destructive, will be greatly appreciated.

Editorial Comment.—We allowed Mr. J. N. Walker (G5JU) (R.E.S., 56 Mc. Group Manager) to examine this contribution, and he has forwarded the following comments :—

" I think, on the whole, the idea, although novel, is quite a good one and worth proceeding with.

(*Continued on page* 57.)

Soliloquies from the Shack

By Uncle Tom.

(Our horn-rimmed poodle, as a result of last month's snarls, finds himself involved in a dog-fight with some of the lesser breeds without the law.)

ISN'T it a nice sensation to be jumped on? It shows that one has got under somebody's skin —and the fashion in skins seems to be so thick nowadays that *that* takes a bit of doing.

Anyway, my few remarks last month about wobbulating 5-metre transmitters have produced a beautiful effusion from two hams signing themselves "Wibble" and "Wobble"—which shows that they have some sort of a conscience, anyway. Let them speak for themselves—but make allowance for the unstable transmission: "The truculent bleatings of your senile contributor Uncle Tom on the subject of 56 Mc. wobbulators and the mode of their employ, although doubtless deliberately provocative, invite a rejoinder.

"One might be excused for presuming that after all these years of listening on his straight receiver for 56 Mc. DX signals which have seldom, if ever, appeared, it would at least have dawned upon his imagination that no amount of elaboration of gear would result in the creation of a refractive upper layer, which, under normal conditions, is seemingly 'non est.' . . . .

"If Uncle Tom can devise no more lucrative or edifying occupation than to curl up in his cabin and chase rainbows, could he not at least be tolerant of another school of thought? These experimenters see possibilities in more usefully exploiting frequencies round about 56 Mc. for purposes of short range communication, using simple and compact gear. . . .

"A 56 Mc. multi-stage crystal rig with inputs up to half a kilowatt, as advocated by this most optimistic of gentlemen, is without doubt a thing of beauty. Its problematical utility in enabling him to make contacts at 20 miles is hardly a proposition calculated to attract hard-boiled business men.

"However, hope springs eternal, and might it be requested, with every politeness, that you convey to Uncle Tom the writers' most distinguished salutations and a Bronx cheer, together with the suggestion that he is a victim to one of the greatest rackets the world has ever seen—reliable 56 Mc. DX."

So that's that! But Messrs. Wibble and Wobble (much as I love them) are wide of the mark. I turned up last month's article, and I find that I did not mention the words "crystal control"—neither did I mention the magic formula "DX." So it appears that their tirade is based largely on the products of their own fertile imaginations.

What I said was: Why play about with 1927 gear in 1937—even on 56 Mc.? Simple, portable gear, O.K.—but need that be a spitch machine? And need its output be so lousy that nothing but a super-regenerator will be able to decipher it? Read last month's issue again, Big Boys, and have another squirt at your Uncle.

The rest of this page is practically written for me by a VK amateur, whose views I leave to speak for themselves:

"I am reading your current outburst in the April issue, and it occurs to me how parallel the case is here in VK. Most of us seasoned Hams (I've had 25 years of it myself) can put up with a deuce of a lot in the way of tolerance concerning misdoings on the key and misadjustment of TX's, but this 'phone business is just about the sticky limit. I am not going to cry sour grapes on 'phone transmission as I use it extensively myself, but at least it is not the kind that savours of spotty aggressiveness. It's not so much what we think about the awful blather that goes on on 7 and 14 Mc., but what Mr. and Mrs. Public are thinking. No longer are these bands a sacred stamping ground. Dual and all-wave receivers take them in and the natural reaction is 'So *that* is amateur radio.'

"Take it from a very important angle. In case of a national emergency. What earthly use are these imitation broadcasters under such circumstances? If a station calls them on the key in answer to a phone CQ, they ignore such a station, or perhaps they cannot even recognise the morse symbol spelling out their own call signs! A pretty state of affairs!

"At one time the amateur DX bands were looked upon as being a wonderful safeguard for emergency traffic from expeditions, aviators, etc., but to-day they are just the opposite. Supposing, for instance, a 'plane carrying radio gets bushed somewhere in Australia (and believe me planes do disappear here), and the amateur 7 and 14 Mc. band is used in the hope of attracting attention. What hope would there be of a C.W. distress signal attracting any of the present-day breed of phone hound? If a *genuine* ham, one who can use morse properly, heard that call, it would be sunk under the whirlpool of 'That's the dope on that' or 'It's yours, take it away,' before many minutes had elapsed. At one time expeditions used the amateur bands for special contact, but not nowadays, and no wonder! That is one aspect of amateur radio communication we have lost, simply because amateur organisations have tolerated the influx of the kind of transmission we hear on the bands to-day.

"The truth is, amateur radio, with certain exceptions, has lost its one-time utility. DX is no longer a novelty. But to these aimless chatterers DX *is* a novelty. Nobody begrudges them the DX, but it is the manner in which they go about it. Imitation movie slang, a false impression of importance because of the presence of a mike, unnecessary duplexing and back-fence QSO's on a DX band, scatter-brained alleged 'second-ops' and girl friends who are allowed to take charge of the mike. One can almost see their puffed-up pride at being allowed to 'broadcast.' There are many more reasons one could quote, but no doubt like myself, you know them all.

(Continued on page 57.)

BOOK REVIEWS

HINTS AND KINKS. Volume 2. 128 pages and 191 illustrations. Published by the American Radio Relay League, West Hartford, Conn. Price 50 c., post paid. Also obtainable from R.S.G.B. Sales Department, price 2s. 6d., post paid.

This book, of the same format and style as the "Handbook," calls itself "A Symposium of the Selected Practical Money-saving Ideas of 236 Experimenters." The description is accurate and complete.

It is a common amateur experience that a visit to another's station discloses ingenious and immediately practical devices or arrangements. Another experience, all too frequent, is the half-remembered details of some gadget that appeared in "QST" . . . and the temper shortens as the search lengthens. Here is the cream of the "brain storms" which have appeared in "QST" since 1934.

The contributions are grouped under such headings as "Improving the Power Supply," "Transmitter Suggestions," "Ideas for the Receiver," etc., and the nine groups cover all phases of amateur work.

This book is, it is felt, not as well known to our readers as it might be. It should be understood that it is a book which, though valuable to beginners, may well prove to have a value in direct relation to the reader's experience. Such experience has often been dearly bought, but here is a very great deal for a few pence.

It would be hard to imagine any amateur not finding the book worth reading, keeping, and using.

T. P. A.

TELEVISION CYCLOPÆDIA. By Alfred T. Witts, A.M.I.E.E. 151 pages and 97 illustrations. Published by Chapman & Hall, Ltd., London. Price 7s. 6d. net.

It is difficult to make up one's mind as to what type of reader this book will suit. The novice will possibly find many of the definitions introducing fresh difficulties; the semi-technical man may not be completely satisfied with a brief definition, and the technical man may find many of the definitions unnecessary and others exasperatingly brief. True, the author has given more than a mere definition in many cases, but the space limitation has constricted the scope. Under such conditions a very careful choice of terms to be defined would seem to be necessary, and one wonders if any reader who does not require a definition of, say, "Ampere," would require a definition of "Centimetre." And if he did, would a definition of "Planck's Constant," no matter how well treated, mean much to him?

Let us suppose that the reader feels curious as to the meaning of "Screen Grid Valve": he finds "A thermionic valve having a screen grid. The term is usually used in reference to a tetrode (q.v.)." So, still being a bit curious, he looks up "Tetrode" and finds "Valve with four electrodes. A screen grid valve (q.v.) is a tetrode." And there you are; one feels that the author should assume either a definite standard of technical knowledge in the reader, or none at all.

Many of the definitions are quite lengthy and deal reasonably fully with the subject in a clear and easily assimilated manner; the illustrations are numerous and praiseworthy. In a few cases the writer is not in agreement with the author. A "Harmonic" is described as an overtone or multiple frequency and the author then says the double frequency is the 2nd harmonic; the fundamental is surely a "harmonic"? The definition of "Insulation Resistance" may lead the reader to understand that leakage only takes place after a critical voltage is exceeded and he may confuse the term with dielectric strength. The definition of "Miller Effect" states that ". . . when the load impedance is capacitative the resistance becomes negative. . ." It is when the load is inductive that negative resistance occurs.

Now, no one realises more fully than the writer that it is easy to criticise adversely the choice of material for such a book and the job of deciding what to include is one which the writer is glad not to have had to do. Television may be looked upon as a branch of electrical technology, but it is much more. It is composed of nearly all branches of science and a Cyclopædia for such a subject is a very ambitious proposition. The author has produced a book which must be of help to many readers who do not want to make a deep study of the subject, but want to take an intelligent interest in it.

The publication is in the usual high-grade style of this house but it is, perhaps, not unreasonable to wonder if it would not be better to publish such books in a cheaper and less lasting form, for the advance of the subject is so rapid that such a book cannot remain up to date very long. The cheaper book would be more attractive and new editions would enable the reader to keep up to date at less cost.

T. P. A.

THE INTERNATIONAL BROADCAST AND SOUND ENGINEER. 1937 Year book. Editor: A. L. J. Bernaert, Assoc.I.R.E. Published by I. Davey, 30, Davis Street, London, E.13. 225 pages and 43 illustrations. Price 6s.

Here is available a digest of progress in Radio and sound engineering, and a number of authoritative articles and technical reviews of equipment.

One of the difficulties which the present-day engineer has to face is the almost impossible job of keeping abreast of technical literature in his own language; few are able to keep in touch with publications in a foreign language except by obtaining "Abstracts," many of which are of little immediate interest.

The opening section of the Year-book is a survey of the important information which has appeared in over 100 technical publications gathered from all parts of the world. The Editor has managed to present this survey in a manner which ensures continuity of interest, and has linked up the extracts very cleverly by judicious arrangement and at times by critical comment. In selecting the matter to be surveyed, he has paid special attention to articles in

foreign papers not usually accessible to the English-reading technicians. The result is a valuable digest of progress which reads smoothly and which will attract the attention of engineers who wish to keep " up to date."

Although the book is almost entirely in English, summaries in the following languages are provided for each section : French, German, Dutch, Swedish, Italian and Spanish.

Eleven technical articles follow the scanning of the world's technical literature, the last one being a " Review of Recent Equipment and Apparatus," which is well illustrated, and supplies much detail of practical interest.

The Year-book is bound in semi-stiff paper covers, and is clearly and attractively printed.

The table of contents, and a long list of agents from whom the book may be obtained in different countries, was published as an advertisement in the January issue of THE BULLETIN, and readers are referred to that for the subjects of the technical articles.

T. P. A.

To The Editor

INTERNATIONAL SHORT-WORDS

DEAR SIR,—Mr. Crocker, in his letter concerning the Promotion of International Friendship, speaks of the great opportunity we have of establishing friendly relationships with fellow amateurs in other parts of the world. He may therefore be interested to learn of a new invention of my father's which will, I hope, become in time one of the greatest moves towards overcoming the present language barrier. The invention is termed " International Shortwords," and it takes the form of a combination of both a language and a code. It is beyond the scope of this letter to enter into a detailed account of its construction and revolutionary ideas, but a brief summary may give some idea of its character.

After many years' research my father found that all objects and ideas can be divided into 452 families or kingdoms, e.g., life, intellect, movement, form, business, quantity, quality, time, temperature, etc. He further found that by allotting a distinctive syllable to each of these 452 root-ideas all subsidiary notions could be clearly expressed by compounds of two or more of the 452 root-syllables. In addition the 26 letters of the alphabet each represent the commonest particles or pronouns, e.g., b = but, e = is, am, are, be, g = they, p = can, v = you, l = the. In short, the invention is intended to have none of the difficulties of declensions, conjugations, gender and other snags one meets in a language, but on the other hand to have the shortness and simplicity of the " ham " code, with the meanings extended to every possible idea required to be spoken of or written in the business world.

It was the amateurs' work which led to the realisation of the possibilities of short-waves. Sooner or later those who have the interests of world peace at heart will realise that the amateur movement is one of the most powerful forces now working for the better understanding and goodwill between the peoples of the earth ; and the astounding thing is that there is no combined effort on our part to achieve this. It has just happened. For in our common interest the nationality of a fellow-ham is of little or no account. That this breaking-down of nationalism has occurred when our amateur code has so few symbols for friendly rag-chewing is all the more amazing. Strong as our friendship is, how much stronger it would be if we all knew International Shortwords, and were able to overcome the ever-present barrier to a better understanding between the nations, that of the diversity of their languages.

International Shortwords has only just been completed, and its possibilities therefore remain to be seen. But if any of your readers would like to have a leaflet giving a fuller description of it, I shall be pleased to arrange for one to be sent to them.

Yours very truly,
R. D. L. DUTTON (G6QQ).

RE 28 Mc. TRANSMISSION

DEAR SIR,—With reference to Mr. Pennell's admirable article on " Effective 28 Mc. Transmission," I note he says that many will probably disagree with him on certain points. There is one matter which I should like to mention, as it is not the first time I have seen it in the BULLETIN. The author says it is practically essential to link-couple the driving stage to the final amplifier. Now in my own experience, I have found after a number of experiments that I can get superior results from capacity coupling. I have absolutely no trouble in neutralising the final amplifier, and I have all the drive I need for a 50-watt stage. My driving valve is a PX4 used as a regenerative doubler, with 350 volts on the anode and the final PA valve is a 210 with 500 volts. The 210 is biased to beyond cut-off by batteries and a 8,000 ohm grid leak is used in addition. It is, however, necessary to use the correct value of coupling condenser, and this is done by means of a .00004μF. variable in series with a .001μF fixed. The variable is adjusted to enable the maximum excitation of the final stage to be obtained. The actual value of the coupling condenser is thus quite small, and the use of larger values gives less drive. I have obtained similar results using a PX25 for PA. As Mr. Pennell says, these valves are not ideal on 28 Mc., and from his experiences with better valves, I can only imagine that I should have found no difficulty in using capacity coupling with them.

I have in the last few days tried the actual coupling circuit suggested in the article, but still prefer my capacity method.—Yours faithfully,
E. J. WILLIAMS, B.Sc. (G2XC).

The Love Call

A few months ago, Miss Doris Fenwick, of New Brunswick, reported on signals from the station of Mr. C. Stone, Maine, U.S.A. Later Mr. Stone reported reception of Miss Fenwick's signals. Last month a two-way QSO resulted—Miss VE1EH has now become Mrs. W1BGU.

Contemporary Literature

ULTRA-SHORT-WAVE REFRACTION AND DIFFRACTION. (T. L. ECKERSLEY, B.A., B.Sc.) (PROCEEDINGS OF THE WIRELESS SECTION I.E.E. MARCH, 1937. PP. 42-60.)

The writer has extended the work of G. N. Watson on the propagation of electric waves over a spherical earth, to take account of the finite resistivity of the earth.

The work is in such a form that the field intensities above the earth can be computed numerically. The effect of refraction in the earth's atmosphere can also be taken into account.

The results for a range of wave-length between 2 and 10 metres and for heights up to 4,000 metres, and instances up to 400 kilometres, are published in the paper in a set of curves, the general properties of which are discussed.

The curves show the field intensity produced by a vertical doublet—a radiator so short as to give a cosine diagram—situated on the earth's surface and radiating 1 kw. Also by the reciprocal theorem the curves give the field produced by a raised transmitter at a receiver on the surface of the earth within the ranges of height and distance specified. Finally, they can be made to give the field at any given height H^1 from a transmitter at any other height H^2 measured above the spherical earth surface.

The result of atmospheric refraction is considered, and a comparison between observation and theory is made in which good agreement is obtained, on the average, when neglecting refraction. It is pointed out that major changes may, however, be produced occasionally by refraction.

* * *

SUPERHETERODYNE PADDING CAPACITIES. (W. T. COCKING.) (THE WIRELESS ENGINEER, May, 1937, PP. 246-247.)

The author discusses the use of fixed padding condensers in place of the usual adjustable trimmer type, pointing out that it is sometimes possible to use a fixed padding condenser of ordinary commercial tolerance. Points in favour of which are economy in initial cost, time saved by not having to adjust, and simplification of design, it being unnecessary to mount it in an accessible position. The formulæ for calculating the padding capacities is given, the case of a four band short-wave superhet being quoted as an example. The relative family of curves is included in the article.

* * *

MEASUREMENT OF THE SELF-CAPACITY OF IRON-CORED COILS. (M. REED, M.Sc., A.C.G.I., A.M.I.E.E.) (THE WIRELESS ENGINEER, MAY, 1937, PP. 252-255.)

The article shows that, in spite of the variation of the inductance of an iron-cored coil with frequency, the self-capacity can still be measured by resonance methods. Including the standard intercept method, there are three such methods available, the choice of method being decided by the behaviour of the coil at the test frequencies. Formulæ, examples and circuits are given.

* * *

QUARTZ AND TOURMALINE. (P. MODRAK, M.Sc., B.E., A.M.I.E.E.) (THE WIRELESS ENGINEER, APRIL, 1937.)

In this the concluding instalment of the article the author discusses the use of quartz and tourmaline plates, bars and rings as oscillators and resonators. The design formulæ for the three types of crystal is dealt with, curves illustrating the results of the writer's experiments being given. The luminous type of resonator is briefly touched upon and suitable circuits are suggested for the various applications.

* * *

FREQUENCY CHANGERS IN ALL-WAVE RECEIVERS. THE PERFORMANCE OF SOME TYPES. (M. J. O. STRUTT, PHYSICAL LABORATORY N. V. PHILLIPS HOLLAND.) (THE WIRELESS ENGINEER, APRIL, 1937, PP. 184-192.)

The various conditions to be imposed on frequency changers are set out under eleven headings, the short-wave range being especially considered. The more important effects inherent to octodes on short waves—interlocking by electron coupling and frequency drift—are explained and discussed, and suggestions for partially curing them are given. Triode hexodes are discussed, and the latest developments in octode type construction are briefly dealt with. Figures for the performance of the new types in the short-wave range are given.

* * *

THE "BI-PUSH" TRI-BAND EXCITER OR TRANSMITTER. (W. W. SMITH, W6BCX.) (RADIO, APRIL, 1937, PP. 8-15, 84.)

The article describes what is claimed to be "the simplest, most economical, most inexpensive, and efficient 10-, 20-, 40-metre transmitter ever seen."

The circuit uses four receiving type valves (6A6, 6A6 and Push-pull 6L6G's). The output is 40 to 45 watts on 10, 20 and 40 metres, one crystal and only three single winding coils covering all three bands. The time taken to change bands is less than 20 seconds. No neutralisation, no shielding and no coupling adjustments are necessary, three variable condensers being the only tuning controls.

It may be used either as an exciter unit for higher-powered transmitters, or as a complete C.W. transmitter in itself, and may also be high-level modulated for 10- or 20-metre phone.

Another Knock Answered

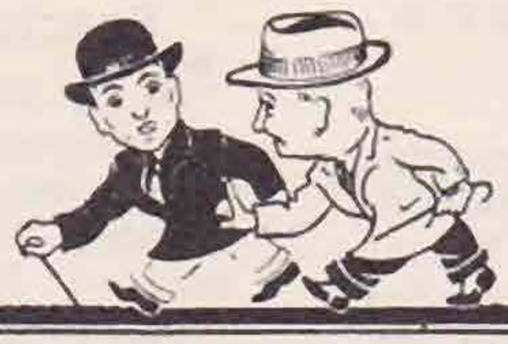
Mr. J. Hunter (G6ZV) tells us that *Hammurlund* and *National* make coil formers with provision for mounting a trimmer condenser. The *Hammurlund* design incorporates a special ridge inside the former for this purpose.

Mr. Hunter also informs us that *Mullard* make the SP4B and VP4B types, which are similar to the *Tungsram* types mentioned under this heading in our last issue.

Stray

Mr. A. L. Thorley (ex G2NQ) is leaving for Dar-es-Salaam, Tanganyika, and hopes to be on the air from there shortly. Frequencies 14,056 and 14,262 kc. He will be glad to QSO G stations.

Mr. D. G. Paterson, of Chandernagore, India, has been issued with the call sign FN1C by the French authorities. He is using a Tritet and P.A. transmitter on 14,440 kc., and reports will be appreciated and acknowledged. Chandernagore is situated 22 miles from Calcutta.

BETWEEN  OURSELVES

Society Trophies 1937-8

The Council have pleasure in announcing that Society Challenge Trophies have been awarded to the following members :—

Rotab.—To Mr. Gerald Jeapes (District Representative for the Home Counties) in appreciation of his work on behalf of the Society, and in recognition of consistent DX work from his station G2XV.

Wortley Talbot.—To Mr. F. Charman, G6CJ (Aerial Group Manager, R.E.S.) in recognition of his technical contributions to the Society's publications.

Courteney Price.—To Mr. J. N. Walker, G5JU (56 Mc. Group Manager, R.E.S.) in recognition of his contributions to the Society's Research and Experimental Sections.

1930 *Committee.*—To Mr. P. Pennell, G2PL, in recognition of his experimental work on the 3.5 Mc. band.

Somerset.—To Messrs. H. Jones, G5ZT, and H. J. M. Box, G6BQ, joint winners of the 1.7 Mc. Transmitting Contest.

B.E.R.U. Senior.—To Mr. Ivan Miller, VK3EG.

B.E.R.U. Junior.—To Mr. R. H. Holmes, G6RH.

B.E.R.U. Receiving.—To Mr. Eric Trebilcock, BERS195.

Colonel Thomas.—To Mr. John Hunter, G2ZQ, leading British Isles Station in Senior B.E.R.U. Contest.

The Powditch trophies will be awarded later in the year.

Appreciations

This month we have to record, with regret, the resignation of Mr. M. Williams, G6PP, from his position of QRA Manager. Mr. Williams has held the post for the past nine years, during which time he has handled literally thousands of changes of address. The Council at their June meeting recorded a cordial vote of thanks to Mr. Williams for his past services, and we feel sure that our members at home and abroad will join us in saying "Thank you, o.m., for all you have done."

Mr. Williams is engaged on important literary work which occupies practically the whole of his time. Our philatelic readers will have read many contributions from his pen.

* * *

We have also to record, with regret, the resignation of the Rev. L. C. Hodge (G6LH) from his post as Representative for Mid-East England. Mr. Hodge has held office for several years, but of recent months his duties have prevented him from continuing in an official position.

We tender him our grateful thanks for his past services and wish him every success in the future.

The position of D.R. for Mid-East England will not be filled for the time being. Reports from members in this District should be sent to the District Scribe, Mr. Arthur Oughton, 51, Fydell Street, Boston. Applications for high power permits and other licence facilities should be sent direct to Headquarters.

Egyptian Amateur Radio

Consequent upon the formation of the Experimental Radio Society of Egypt, and in view of the fact that Egypt is a foreign country, Council have agreed that as from August 1 next our Egyptian B.E.R.U. Group shall cease to exist as such.

Mr. W. E. Marsh (SU1WM), President of the new Egyptian Society, has been appointed official BULLETIN correspondent.

Owing to the change in status, contacts with, or reception reports from, Egyptian amateurs can no longer be accepted for W.B.E. or H.B.E. claims, unless such contacts or reports refer to the period prior to August 1, 1937.

Our Next Issue

Arrangements are being made to publish a special Exhibition issue of this Journal, which will be published on or about August 20. Members are especially asked to note this change of publishing date. Last year, in spite of a similar notice, Headquarters' staff were bombarded by enquiries concerning the date of issue. If your copy has not arrived by August 24, it will then be time to write in.

Visitors to Headquarters

The Council will appreciate it if visitors to Headquarters desiring to interview the Secretary will telephone or write in advance for an appointment. During the summer months work at Headquarters reaches a peak level due to the incidence of Olympia, Convention and the Guide, consequently it is difficult for Mr. Clarricoats to fit in interviews unless prior advice is given. The best times for appointments are between 12.45 and 1 p.m. and between 4 and 5 p.m.

QSL Bureau Matters

The following communication has been received from the Newfoundland Amateur Radio Association :—

"Please be advised that effective immediately this Association will not accept listeners' cards, as we find that our QSL department is being overloaded and the work of forwarding reports from licenced amateurs is being interfered with—and our members suffering accordingly. The licenced VO Amateur list in the Call Book magazine is carefully kept up to date, and any listener who may wish to report to any of our members may do so direct."

In a covering letter our Newfoundland Representative, Mr. E. S. Holden (VO1H) informs us that he personally is prepared to forward any cards

sent to him by listening members of R.S.G.B.-B.E.R.U.

* * *

For the benefit of home members we would mention that reception reports for all countries outside Europe and North America can be accepted by our QSL Bureau. In the case of Europe the restriction only applies to reports concerning 3.5, 7 and 14 Mc. transmissions.

New QRA Manager

We have pleasure in announcing that Mr. H. A. M. Whyte (G6WY), 9, The Mead, Beckenham, Kent, has been appointed QRA Manager in succession to Mr. M. Williams.

Members are asked to notify Mr. Whyte of all changes in address.

Emergency Network

We are informed officially by the G.P.O. that the Home Office does not intend to form an Emergency Amateur Radio Network.

CALIBRATION SERVICE

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

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

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

All communications should be addressed to :—

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

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

Index

It is regretted that, owing to pressure of work, it has not been possible to include the Index for Volume 12 in this issue. We hope to publish this at a later date.

Prefix for Wales

We have much pleasure in informing members that our application to the G.P.O. for a special prefix for amateur stations in Wales has been successful. The prefix GW has been authorised, and will be included in future amateur experimental licences issued in respect of addresses in Wales.

Existing stations in Wales will not be advised individually, but they may regard this notice as authorising them to commence using the prefix at once.

Special Notice *re* 25 Watt Permits

With reference to a paragraph published in a contemporary, we are requested by the G.P.O. to emphasise that 25 watt permits can only be granted to R.S.G.B. members who have been licenced for at least six months and who are recommended by the Council. Applications for these permits must be sent to a member's D.R., who is required to comment upon same and forward it to Headquarters.

Non-members of the Society are required to forward technical reasons to the G.P.O. when applying for this facility.

A.R.R.L. Subscriptions

For the benefit of more recently-elected members, we would mention that R.S.G.B. Headquarters are prepared to accept subscriptions to the American Radio Relay League, at the rate of 12s. 6d. per annum.

Overseas members may (as do many home members) pay their subscription to the League when forwarding their R.S.G.B. subscription.

Membership in the A.R.R.L. brings QST free.

TECHNICAL ENQUIRY BUREAU

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

The Rules governing the service are :—

1. Questions must be written legibly and concisely on one side of the paper.
2. A sixpenny postal order must accompany each question.
   The postal order must be made payable to the R.S.G.B., and the letter addressed to Technical Enquiry Bureau, R.S.G.B., 53, Victoria Street, London, S.W.1.
3. The service is only available to fully paid-up members of the Society.

Dutch 56 Mc. Tests

The N.V.I.R. are staging their third 56 Mc. Relay Test from 16.00 G.M.T. Saturday, August 28, to the same hour Sunday, August 29. The first purpose of the test is to relay code words by means of intermediate stations through the whole of Holland. The second purpose is to attempt to work DX.

A 50 watt station with directional aerial will operate from near Flushing and every effort will be made to work British stations. Schedules will be gladly arranged.

Secretary's Vacation

Our Secretary expects to be on vacation from July 17 to August 3, and from September 18 to 25. Members are asked to keep correspondence down to a minimum during these periods. Mormal routine matters will, of course, be handled as usual.

QRA Section

Manager: H. A. M. Whyte (G6WY).

NEW QRA'S

G2BT.—Marconi School of Wireless, Chelmsford, Essex (Operator G5RV).
G2IH.—I. le D. Hughes, "Silver Birches," Mudeford, Hants.
G2ML.—D. H. Priest, Bawdsey Manor, Woodbridge, Suffolk.
G2OF.—W. G. D'Arcy, 19, Merewood Terrace, Sandhill Estate, Headington, Oxon.
G2PH.—Portable, Newcastle-on-Tyne (Operators: G6IR and G5QY).
G2PI.—P. Halligey, Room 1, Block 7, R.A.F., Duxford, Cambs.
G2UG.—W. H. Burton, "Lyndhurst," 3, Doniford Road, Watchet, Som.
G2WD.—G. McClean Wilford, 116, Coleshill Road, Water Orton, Warks.
G5GF.—H. Stopher, "Hilton," 36, Pleasant Grove, Shirley, Surrey.
G5GZ.—G. L. Grisdale, 44, Clinton Crescent, Barkingside, Essex.
G5HI.—H. L. Assig, 27, Pollards Hill West, London, S.W.16.
G5IU.—M. Chitty 12, Park Mansions, Moor Park, Mddx.
G5LB.—L. G. Blundell, 22, Piquet Road, Anerley, London, S.E.20.
G5RV.—R. L. Varney, "Arvika," Galleywood Road, Chelmsford, Essex.
G5UX.—G. A. Hume, 19, Patten Road, Wandsworth Common, London, S.W.18.
G6AC.—A. N. le Cheminant, 21, Raymend Road, Victoria Park, Bristol, 3.
G6AI.—A. Lord, 3, Holly Avenue, Syke Side, Haslingden, Rossendale, Lancs.
G6CO.—H. B. Crowe, 22, Chipstead Gardens, Cricklewood, London, N.W.2.
G6GQ.—D. Robertson, 84, South Side, Clapham Common, London, S.W.4.
G6HD.—T. C. Herdman, 88, Beulah Hill, Upper Norwood, London, S.E.19.
G6KC.—Alec Hey, 39, Boxtree Lane, Harrow Weald, Mddx.
GM6MS.—A. H. Mason, 390, King's Park Avenue, Rutherglen, Scotland.
G6NL.—C. R. Thomas, c/o Royal Naval Wireless Station, Stonecutters Island, Hong Kong.
G6OB.—R. S. G. Bartle, 21, Farmcombe Road, Tunbridge Wells, Kent.
G6QQ.—R. D. L. Dutton, 37, Holden Street, Lavender Hill, London, S.W.11.
G6SH.—S. Hobson, 28, Wheatley Hall Road, Doncaster, Yorks.
G6SS.—G. C. Kingsbury, 189, Albert Road, Southsea, Hants.
G6VH.—F. H. Goldsmith, 40a, Little Heath, London, S.E.7.
G6XB.—G. E. Jones, 137, Surbiton Hill Park, Surbiton, Surrey.
G6ZN.—T. H. Herdson, 55, Gervase Road, Horbury, Nr. Wakefield, Yorks.
G8AR.—Ernest E. Ellis, 10, Angrove Gardens, St. Gabriels, Sunderland, Durham.
G8CR.—R. Webster, c/o G. Daws, 62, Retford Road, Worksop, Notts.
GM8FT.—J. Murdoch, 26, Loney Crescent, Denny, Stirlingshire, Scotland.
G8HD.—J. L. Simmons, Newlands, St. Giles Avenue, Scarthoe, Grimsby, Lincs.
G8HF.—A. G. Laws, 8, "Futtrells," Horn Lane, Plymstock, Plymouth, Devon.
G8HW.—A. G. Courtney, The High School, Wellesley Road, Colchester, Essex.
GI8MI.—J. M. Lowden, Ballywooley House, Crawfordsburn, Co. Down, N.I.
G8MO.—E. G. Ewing, 68, Linden Road, Bristol, 6.
G8MR.—Harold Dove, 10, Welbeck Street, Sutton-in-Ashfield, Notts.
G8NN.—G. B. Neale, 18, Vainor Road, Sheffield, 6, Yorks.
GM8NW.—R. S. Wood, 1, Bank Street, Galashiels, Scotland.
G8OL.—J. K. Fish, 10, Victoria Avenue, Sleaford, Lincs.
G8ON.—H. S. Chadwick, 25, Raines Road, Worksop, Notts.
G8OR.—E. S. Booth, 22, Colborne Way, Worcester Park, Surrey.
G8OS.—E. R. Ayre, Lordings Farm, Billingshurst, Sussex.
G8OT.—A. S. Tripp, 1, Broxtowe Drive, Mansfield, Notts.
G8PB.—P. A. Tremaine, "Rose Cottage," Rivenhall, Witham, Essex.
G8PF.—H. P. Bennett, X.6 Flight, "B" Squadron, E. & W. School, R.A.F., Cranwell.
G8PG.—Angus D. Taylor, "The Bungalow," Thurstaston Road, Heswall.
G8PH.—H. C. Holley, 33, St. Luke's Road, Victoria Park, Bristol, 3.
G8PL.—L. A. Kippins, 24, Percival Road, Romford, Essex.
G8PN.—C. C. Newton, 6, Savery Terrace, Lipson, Plymouth, Devon.
G8PO.—J. E. Ironmonger, 2, Jubilee Road, Retford, Notts.
G8PP.—L. Parnell, 91, Globe Road, Romford, Essex.
G8PQ.—A/A D. C. Derry, Y1 Flight, "A" Squadron, E. & W. School, Cranwell.
G8PR.—A. Donald Rock, 4, Linton Road, Old Hill, Staffs.
G8PX.—F. A. Jefferies, 1, Lovelace Road, Oxford.
G8PZ.—S. D. Perry, 19/21, Artillery Street, Colchester, Essex.
GM8QD.—J. G. Kerr, 72, Ochil Street, Tollcross, Glasgow, E.2.
G8QH.—E. Hayter Simmonds, 17, Roedean Crescent, Roehampton, London, S.W.15.
G8QI.—Wm. T. J. Cox, Post Office, Stackpole, Pembroke, South Wales.
G8QL.—H. B. Lambert, "Aronda," Ringswell Avenue, Honiton Road, Exeter, Devon.
G8QM.—V. J. Flowers, 72, Willifield Way, Golders Green, London, N.W.11.
G8QO.—G. A. Chroston, Florence Villa, Chester Road, Whitby, Wirral, Ches.
2AGR.—W. A. Rice, 49, Colebrook Road, Shirley, Birmingham.
2AIW.—Wm. A. Cowan, 4, Strathaven Terrace, Oban, Argyll.
2AJF.—W. J. Ridley, 9, Airlie Gardens, Ilford, Essex.
2ANB.—R. Brand, 56, Meadow Road, Loughton, Essex.
2ARA.—A. R. Drake, 44, Woodville Gardens, Ealing, London, W.5.
2AWH.—H. R. Jeakings, 2, Cutcliffe Gardens, Bedford.
2AZY.—K. Maynard, "Largo," Camden Road, Bexley, Kent.
2BIU.—Fred E. Wingfield, "Fernside," 14, Gore Park Road, Eastbourne.
2BLL.—Wm. Layton, 310, Gravelly Lane, Erdington, Birmingham.
2BSO.—F. J. Bedson, Tower House, 78, Westmoreland Road, Bromley, Kent.
2BWP.—H. W. Palmer, "Gwelo House," Beacon Road, Herne Bay, Kent.
2BXA.—Thomas Wills, 2, Jessamine Road, Shiregreen, Sheffield, 5, Yorks.
2BXU, W. H. Baker, 16, Devonia Terrace, Alphington Nr. Exeter, Devon.
2CCC.—R. Patterson, c/o Edwards, 76, Castle Street, Forfar, Angus, Scotland.
2CHQ.—R. J. Leaman, 35, Sycamore Road, Lynthorpe, Yorks.
2CIW.—S. Stephenson, "Garwhin," Stepney Road, Scarborough, Yorks.
2CPN.—W. Norris, 1, Stanley Street, Ilkeston, Derbyshire.
2CQQ.—C. H. Cox, 17, Links Road, Blackpool, Lancs.
2CQZ.—D. Westwood, 31, Godley Street, Royston, Nr. Barnsley, Yorks.
2CRF.—Robert Sunter, Lyndhurst, 26, Springbridge Road, Alexandra Park, Manchester.
2CRJ.—B. A. Pettit, "The Laurels," Worrin Road, Shenfield, Essex.
2CRM.—James Bolton, 6, Ash Street, Blackburn, Lancs.
2CRO.—R. Priestley, 49, St. Georges Avenue, Anchorsholme, Cleveleys, Lancs.
2CRS.—Reginald Watson, The School House, Wraysbury, Mddx.
2CRY.—H. J. Self, 14, Frederick's Road, Beccles, Suffolk.
2CSH.—D. W. Harries, 99, Ardington Road, Northampton.
2CSI.—J. E. H. Jones, "Gwernant," Kingstonridge, Lewes, Sussex.
2CSL.—B. Arnold, "Draycott," 976, Bristol Road South, Northfield, Birmingham.
2CRQ.—F. Macfarlane, Cestria, Bryn Marl Road, Mochdre, Colwyn Bay, North Wales.
2CSY.—H. Eveleigh, High Street, Sidmouth, Devon.
2CTC.—S. R. Cooke, Moorwood Hall, Lifton Place, Leeds, 2, Yorks.
EI6M.—E. Myles-Hook, Western Union Cable Station, Valentia Is., Co. Kerry, I.F.S.

Cancelled: 2ACD, 2ADP, 2AHK, 2AII, 2AKB, 2AMF, 2ANX, 2AOP, 2ASO, 2ASV, 2AVS, 2AZI, 2AZK, 2BAL, 2BAO, 2BDO, 2BDT, 2BGC, 2BGN, 2BVJ, 2BYK, 2BYL.

NEW MEMBERS.

Home Corporates.

H. J. Chater (G2LU), 175, Aldermans Green, Coventry, Warwicks.
R. M. Evans (G6CU), 5, St. Luke's Road, Maidenhead, Berks.
H. J. Gratton (G6GN), Richmond House, Sydenham Road, Bristol, 6.
F. J. R. Taylor (G6YD), 8, Kingswell Road, Ensbury Park, Bournemouth.
E. W. D. Rodwell (G8AG), Adair Road Post Office, Ipswich, Suffolk.
A. P. Morgan (G8DV), Signals Section, 4 (AC) Sqdn., R.A.F., Odiham, Hants.
J. E. A. Smith (G8KB), 491, Bramford Lane, Ipswich, Suffolk.
F. H. Lucie (G8NA), "Wimborne," Glentrammon Road, Farnborough, Kent.
A. A. Rosier (G8OX), 189, Beechwood Avenue, Earlsdon, Coventry.
E. J. Beard (G8PU), 38, Bloomfield Road, Blackwood, Mon.
P. Newton Nield (2AFN), 5, Park Street, Loughborough, Leics.
F. L. Nunn (2AGO), 41, Orford Street, Ipswich, Suffolk.
P. Geldart (2ALJ), 8, Lairlawn Road, Lytham, Lancs.
J. A. Willdridge (2AZQ), 32, Wellfield Road, Walton, Liverpool, 9.
R. C. Gittins (2BDV), 36, Belgrave Road, Torquay, Devon.

P/O R. M. Bangay (2BIP), R.A.F. Station, Finningley, Nr. Doncaster, Yorks.
P. G. Samuels (2CAN), 41, Houblon Road, Richmond, Surrey.
R. R. Waite (2CAX), 61, Broadway, Northampton.
P. T. Beer (2CBK), 4, Alexandra Road, Barnstaple, North Devon.
S. P. Mason (2CHC), 104, Fentham Road, Erdington, Birmingham.
B. A. Pettit (2CRJ), "The Laurels," Worrin Road, Shenfield, Essex.
H. C. L. Barnett (BRS2926), 99, Auckland Road, Potters Bar, Middx.
D. Anderton (BRS2927), 53, Warren Road, Torquay, Devon.
H. C. Broom (BRS2928), "Netherdreu," High Cross, Hardhorn, Blackpool, Lancs.
J. Thomson (BRS2929), 18, Croft Crescent, Markinch, Fife.
L. G. Western (BRS2930), The Hanningfield Hatchery, East Hanningfield, Nr. Chelmsford, Essex.
D. H. Welchman (BRS2931), 21, Silver Street, Gainsborough, Lincs.
M. C. Blake (BRS2932), 4, Blanchard Place, Colebrook, Plympton, S. Devon.
D. R. J. G. Hull (BRS2933), 143, Pershore Road, Edgbaston, Birmingham.
J. Dickson, Jnr. (BRS2934), 2, Balgreen Park, Edinburgh.
J. Downie (BRS2935), 2, Mountjoy Terrace, Musselburgh, Midlothian.
D. F. Middleton (BRS2936), 3, Grange Road, Edinburgh, 9.
J. A. Murray (BRS2937), "Wayside," West Waye, Terriers, High Wycombe, Bucks.
W. V. Williams (BRS2938), "Myrtle Glen," Wembley Avenue, Lancing, Sussex.
A. T. Cartlidge (BRS2939), 261, Carlton Road, Worksop, Notts.
E. A. Topham (BRS2940), Market Place, Thirsk, Yorks.
W. C. Pond (BRS2941), 458, Green Lane, New Eltham, S.E.9.
E. Whitehead (BRS2942), 750, Longmoore Lane, Fazakerley, Liverpool.
K. C. Barrett (BRS2943), 44, Micklefield Road, High Wycombe, Bucks.
H. A. Spashett (BRS2944), Smallgate, Beccles, Suffolk.
H. G. Algar (BRS2945), Fair Close, Beccles, Suffolk.
L. R. Borley (BRS2946), 2, Cornwall Road, Felixstowe, Suffolk.
R. G. Smith (BRS2947), Burnside, Queen's Park South Drive, Bournemouth.
A. Brims (BRS2948), 80, Harcourt Avenue, Sidcup, Kent.
J. P. Barnes (BRS2949), 2, Osmond Villas, London Road, Faversham, Kent.
P. Gourlay (BRS2950), 75, Woodside Avenue, Rosyth, Scotland.
R. Johnson (BRS2951), 41, Scott Park Road, Burnley, Lancs.
J. Stace (BRS2952), "Rosen-Laui," Boughton, Faversham, Kent.
W. Duggan (BRS2953), "Kelston" Townhill Road, Sketty, Swansea, Glam.
C. H. Ashmore (BRS2954), 33, Winfield Street, Rugby, Warwicks.
H. E. Evans (BRS2955), 39, Waterloo Road, Wolverhampton.
J. E. Hirst (BRS2956), 20, Azalea Street, Beckett Street, Leeds, 9.
J. M. Smith (BRS2957), 45, Glasslyn Road, Crouch End, N.8.

Dominion and Foreign.

Leif Salicath (LA1G), Voksenlia Per Oslo, Norway.
M. C. Brooke (VE5QP), R.R.Nr. 1, Eburn, B.C., Canada.
L. Bose (VU2JN), 57/2, Puddopukar Road, P.O., Elgin Road, Calcutta, India.
B. M. Tanna (VU2LK), Satya Sadan, Santa Cruz, India.
C. F. H. Johnson, Jnr. (W2IUV), 70, Heights Road, Clifton, New Jersey, U.S.A.
J. B. Tomczyk (W9DBC), 1322, Munroe Street, N.E. Minneapolis, Minn., U.S.A.
P. L. Lowth (ZE1JD), Railway Telegraphs, Bulawayo, S. Rhodesia.
M. S. Reda (FRS40), 14 Insha Street, Cairo, Egypt.

R.S.G.B. Slow Morse Practices

Details will be found below of the slow Morse practices organised by the Society for those members wishing to learn or improve their code. As usual, test matter will be taken from recent issues of the T. & R. Bulletin. The page number and month of issue will be given at the end of each test—by telephony. A telephony announcement will also be given at the commencement of each test to assist those interested in tuning in the sending station. It is emphasised that reports will be appreciated and are desired in order to ascertain useful range of transmission and numbers utilising the service. If, however, a reply is desired, a stamp should be sent. Will stations in areas not at present served offer their services to Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4. (Telephone: Silverthorn 2285.)

G2YV, of Cannock, Staffs, has discontinued sending for the time being but expects to resume at a future date. G6ZQ, of Cheltenham, has suffered a family bereavement but hopes to obtain the services later of a local transmitter to carry on the good work in that neighbourhood.

Schedule of Slow Morse Transmissions.

			B.S.T.	k.c.	Stations
July	19	Monday	2315	1741	Gi6XS
,,	20	Tuesday	2200	7184	G6UA
,,	21	Wednesday	2315	1741	Gi6XS
,,	22	Thursday	2200	7184	G6UA
,,	24	Saturday	2300	7145	Gi5QX
,,	25	Sunday	0945	7155	Gi5UR
,,	25	Sunday	1000	7260	G5JL
,,	25	Sunday	1015	1825	G5SU
,,	26	Monday	2315	1741	Gi6XS
,,	27	Tuesday	2200	7184	G6UA
,,	28	Wednesday	2315	1741	Gi6XS
,,	29	Thursday	2200	7184	G6UA
,,	31	Saturday	2300	7145	Gi5QX
Aug.	1	Sunday	0945	7155	Gi5UR
,,	1	Sunday	1000	7260	G5JL
,,	1	Sunday	1015	1825	G5SU
,,	2	Bank Holiday.			
,,	3	Tuesday	2200	7184	G6UA
,,	4	Wednesday	2315	1741	Gi6XS
,,	5	Thursday	2200	7184	G6UA
,,	7	Saturday	2300	7145	Gi5QX
,,	8	Sunday	0945	7155	Gi5UR
,,	8	Sunday	1000	7260	G5JL
,,	8	Sunday	1015	1825	G5SU
,,	9	Monday	2315	1741	Gi6XS
,,	10	Tuesday	2200	7184	G6UA
,,	11	Wednesday	2315	1741	Gi6XS
,,	12	Thursday	2200	7184	G6UA
,,	14	Saturday	2300	7145	Gi5QX
,,	15	Sunday	0945	7155	Gi5UR
,,	15	Sunday	1000	7260	G5JL
,,	15	Sunday	1015	1825	G5SU
,,	16	Monday	2315	1741	Gi6XS
,,	17	Tuesday	2200	7184	G6UA
,,	18	Wednesday	2315	1741	Gi6XS
,,	19	Thursday	2200	7184	G6UA
,,	21	Saturday	2300	7145	Gi5QX

G5BKP, Leckhampton.

NOTES and NEWS from the BRITISH ISLES

DISTRICT REPRESENTATIVES.

DISTRICT 1 (North-Western).
(Cumberland, Westmorland, Cheshire, Lancashire.)
Mr. J. Noden (G6TW), Fern Villa, Coppice Road, Willaston, near Nantwich, Cheshire.

DISTRICT 2 (North-Eastern).
Yorkshire (West Riding, and part of North Riding).
Mr. L. W. Parry (G6PY). 13, Huddersfield Road, Barnsley, Yorks.

DISTRICT 3 (West Midlands).
(Warwick, Worcester, Staffordshire, Shropshire.)
Mr. V. M. Desmond (G5VM) 199, Russell Road, Moseley, Birmingham.

DISTRICT 4 (East Midlands).
(Derby, Leicester, Northants, Notts.)
Mr. J. J. Curnow (G6CW), " St. Anns," Bramcote Lane, Wollaton Notts.

DISTRICT 5 (Western).
(Hereford, Oxford, Wiltshire, Gloucester.)
Mr. J. N. Walker (G5JU), 4, Frenchay Road, Downend, Bristol.

DISTRICT 6 (South-Western).
(Cornwall, Devon, Dorset, Somerset.)
Mr. W. B. Sydenham (G5SY), "Sherrington," Cleveland Road, Torquay.

DISTRICT 7 (Southern).
(Berkshire, Hampshire, Surrey.)
Mr. E. A. Dedman (G2NH), 75, Woodlands Avenue, Coombe, New Malden, Surrey.

DISTRICT 8 (Home Counties).
(Beds., Cambs., Hunts., Rutland and the town of Peterborough.)
Mr. G. Jeapes (G2XV), 89, Perne Road, Cambridge.

DISTRICT 9 (East Anglia).
(Norfolk and Suffolk.)
Mr. H. W. Sadler (G2XS), "The Warren Farm," South Wootton, King's Lynn, Norfolk.

DISTRICT 10 (South Wales and Monmouth).
Capt. G. C. Price (G2OP), The Mount, Pembroke Dock.

DISTRICT 11 (North Wales).
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, 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), 41, Brunswick Park Road, New Southgate, N.11.

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

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

DISTRICT 15 (London West).
(West London Postal Districts, Bucks, and that part of Middlesex not included in District 12.)
Mr. H. V. Wilkins (G6WN), 81, Studland Road, Hanwell, W.7.

DISTRICT 16 (South-Eastern).
(Kent and Sussex).
Mr. W. H. Allen (G2UJ), 32, Earls Road, Tunbridge Wells.

DISTRICT 17 (Mid-East).
(Lincolnshire and Rutland.)

DISTRICT 18 (East Yorkshire).
(East Riding and part of North Riding.)
Mr. W. A. Clark (G5FV), "Lynton," Hull Road, Keyingham, E. Yorks.

DISTRICT 19 (Northern).
(Northumberland, Durham, and North Yorks.)
Mr. H. C. D. Hornsby (G5QY), " Newlands," 105, Kenton Lane Newcastle-on-Tyne, 3.

SCOTLAND.
Mr. James Hunter (G6ZV), Records Office, 51, Camphill Avenue, Langside, Glasgow.

NORTHERN IRELAND.
Mr. T. P. Allen (GI6YW), 62, Balmoral Avenue. Belfast.

New Members are cordially invited to write to their local District Representative.

DISTRICT 1 (North-Western).

MANCHESTER.—An attendance of 19 was recorded at the last Manchester Meeting, which was devoted to a discussion of N.F.D. arrangements.

A record number attended this function at Grant's Tower, where the members operated a Tritet/PA transmitter on the 7 Mc. band only, scoring 105 points. Thanks are due to G2LK, 2BDA, 2GA, 5YD, 2ARC, 2OI, 5WR and 2AXH, for apparatus loaned for the day, also to 6OM, who supplied the generator, complete with batteries to drive it, and L.T. supply for the valves. Those present included 2LK, 2HW, 2AXH, 2ALW, BRS2900, 2BDA, 2GA, 2OI, 2ARC, 2BMG, 6KS, 5YD, 8NL, BRS2182, 2CDC, 2DF, 6QA, 5RX, 2WQ, 2QN, and many others who omitted to log their call signs, all of whom are thanked for their efforts to make the day a success.

Please note that in view of the holidays prevailing there will be no August meeting in Manchester ; the next will be on Wednesday, September 1, at Brooke's Café, as usual.

Rochdale.—Active stations include G8DJ, 6QA and 5XF, but there is nothing of particular interest to report this month.

Liverpool.—The chief item of interest in this area during the month of June was the operation of the 3.5 Mc. Field Day Station at Heswall. This received quite good support although it was regretted that several of the older members did not attend. The station was established on fairly high ground just outside Heswall and the transmitter consisted of a C.O. link coupled to an 801 P.A., power being supplied from a small generator driven from car batteries. The receiver was an SW3 and members are indebted to G2OA for the loan of the receiver and the construction of the transmitter.

The meeting held later in the month was devoted to a discussion of the results and experience gained, and it was decided to put a 56 Mc. portable station in the field in conjunction with the 56 Mc. Field Day to be held on July 4. It was arranged that a group should proceed to Buxton with G2DC and by the time these notes are in print the results of this effort will be known.

There are no individual reports of any note but quite a number of stations are active. Owing, however, to the intervention of the summer holiday period, no further meetings will be held in Liverpool until September next, when members will as usual meet on the third Wednesday in the month.

Preston.—This group was responsible for the 14 Mc. N.F.D. station and the transmitter comprised a 6L6 Tri-tet using a 7 Mc. crystal, capacity-coupled to an 807 feeding a 66 ft. Hertz running due north and south with the free end at the north end about 35 ft. high. The aerial sloped from the free end down to the transmitter. The weather was dull most of the time, there was some rain and conditions appeared to be rather poor, most of the stations being somewhat erratic. About four ZL's and VK's, a few W's and one XU were heard, but conditions as a whole were not favourable on this band. The receiver was a 1935 *Eddystone* Ham Band Two, which functioned exceptionally well, and this was lent by G8MD, to whom thanks are expressed. During the first twelve hours the high tension was supplied from a 400-volt bank of wet H.T. cells with an input of 24 watts, but an offer from 2IN of the loan of a generator was gratefully accepted, and this was put into use during the last twelve hours of the test. The output was 230 volts A.C. and this was fed into the usual power pack. The members would like to take this opportunity of thanking Mr. Johnson for the loan of this machine.

The operators were G8MD, 6BH, 5UG, 8GG and 5ZT. 5AG, 6VQ and numerous BRS visited the station but could not stay as operators.

Blackpool.—Several local members visited G5ZTP for N.F.D. and examined the gear put together by 5ZT at such short notice.

G5SO having once again returned to St. Annes, celebrated the event by selling all his gear as he is making a fresh start, the first item of which—an Ultra Skyrider—he demonstrated to the Blackpool and Fylde Short Wave Radio Society recently—5MS has acquired a T20 and intends to use it as a doubler for 28 Mc. to drive his 35T, 6QV also has T20 14 Mc. P.A. in action and has started working DX on 14 Mc. now instead of 7 Mc. 8AK has F.D. going and has worked FNIC from batteries on 14 Mc. 8GG is trying to make the transmitter look less Heath Robinson-ish and is on 14 Mc. 8NO is busy on 7 Mc. when business permits. BRS 2851 is now 2CQQ and is concerned with transmitter design and construction. BRS2870 is now 2CRO and similarly occupied. A welcome is extended to 2CJP and BRS2928, both new members of R.S.G.B.

DISTRICT 2 (North-Eastern)

Huddersfield.—The letter budget is now on its second round, and is proving very popular. Best wishes to 2ARN and 2BBX, who now await the morse test. G8FO has designed a fine new layout, and 8CW reports active.

Leeds.—We wish to thank all who helped to make the local station such a success in the N.F.D. The only report is from 2AHL, who is building a 56 Mc. transmitter.

The T.R. is away from town for a period on business, and in the meantime 2AHL has consented to act as deputy.

Barnsley.—An active part was not taken in N.F.D., but G5DW invited as many as his QRA would permit to a Ragchew Party, which proved very enjoyable. Congratulations to 2CQZ, ex BRS2487, and G5KM, who has worked a VU, which makes him WAC. 8IJ has rebuilt the transmitter, and asks for reports. Co-operation in 56 Mc. tests is requested by 2BH.

DISTRICT 3 (West Midlands)

Coventry must have indisputably won the N.F.D., if, instead of for contacts, the points were awarded for the number of times the transmitter blew up. Total number of burn-outs equalled six, which only goes to prove that even at N.F.D. a small item such as a fuse should not be forgotten! A humble little fly was to blame!

A station was built and entered for the 56 Mc. Field Day and an opportunity taken to run a local Field Day in conjunction with this event.

G8OX and G8PJ are to be congratulated upon obtaining their full tickets.

G5GR has taken on the job of District Scribe and reports should be sent to him at 40, Medina Road, Coventry.

DISTRICT 4 (East Midlands)

Worksop.—G8CP, having been successful with another transmitter, is now QRT for a time. 2AII is congratulated upon becoming G8PO. He is active on 7 and 14 Mc. using 59 Tri-tet MVS Pen and a '10 final. G6MN, 8ON and 2CAV are also active.

A meeting will be held at 3.30 p.m. on Sunday, July 25, at the Trent Bridge Hotel, Nottingham, to discuss district arrangements. It is hoped that all members who are able to do so will turn up on this occasion.

Twenty-seven members were present at the June meeting, when matters of general interest were discussed.

The T.R. for Leicester reports that the local group are flourishing.

DISTRICT 5 (Western)

There was great disappointment at the failure of Messrs. Lissen to give their demonstration of High Q products but a demonstration of 2BMK's efficient modern transmitter, employing 6A6/RK25 valves, was quickly arranged to fill the gap.

N.F.D. went off very well with ideal weather and the arrangements for the comfort of all taking part were very good. A good deal of credit goes to the Committee, who all worked well, and to the ladies who looked after the catering.

G5WI has been admitted to the Powell Ward, Bristol General Hospital, and everyone hopes his stay will be both beneficial and not too prolonged. He will be glad to hear from all.

Two new calls have been issued to Bristol members, these being G8PH and G8QQ.

G6RB, 6VF, 8DP and 6GN are busy working DX on 14 Mc., whilst 6VF has a C.C. transmitter working on 56 Mc., on which band activity is rapidly increasing. Other active stations are G5FS, 6VK, 5UH, 5KT and 5BU.

The action of a local amateur (not a member) who came on the 1.7 Mc. band with very heavily modulated speech and music on the night of June 5 is condemned as being very unsportsmanlike.

In Cheltenham G5BM has contacted G6IH and G5ML from home QRA to home QRA, distances of 30 and 40 miles, on 56 Mc., using a dipole 57 ft. above ground. G8DT hopes to be on 56 Mc. shortly, whilst G8LB is testing telephony on 14,060 kc.

The 3.5 Mc. N.F.D. station at Cheltenham succeeded in getting a contact with ZB1, which is very good going for this time of the year.

DISTRICT 6 (South-Western).

National Field Day provided a very enjoyable time for those who took part in it on behalf of District 6. The weather this year was much more kind than on previous occasions, and this naturally helped greatly to make the event a greater success. From rumours that have been coming in it seems that the district has not done as well from the score point of view as had been hoped. Apparently the 1.7 and 14 Mc. bands decided on that week-end to be awkward, particularly so 1.7. Here a very plucky ham, G6LQ, carried on the operating single-handed, backed up by some very valuable assistance on the part of a few BRS men. In view of this splendid effort it was a great pity that the band shut down for him. 6LQ, a member with heaps of experience on 1.7, says that in the whole period only *six* stations were heard on the band, and he managed to work them all. In view of the scores put up by stations further East on this band, it makes one wonder whether the South-West will ever stand a fair chance in this competition.

FORTHCOMING EVENTS

July 21.—District 14 (East Essex Section), 8 p.m., at G5VQ, 149, Westbourne Grove, Westcliff-on-Sea.
,, 22.—District 13 (Anerley, Tooting, Brixton, Kennington and New Cross areas), 8 p.m., at Brotherhood Hall, West Norwood.
,, 27.—District 14 (East London Section), 7.30 p.m., at G6UT, 28, Douglas Road, Chingford, E.4.
Aug. 4.—S.L.D.R.T.S., 8 p.m., at Brotherhood Hall, West Norwood.
,, 25.—R.M.A. Exhibition opens at Olympia.
Sept. 2-4.—Twelfth Convention.

The 14 Mc. band was very poor for long periods, but occasionally opened up and produced something astonishing for a few minutes. As a general rule it seemed that when incoming signals were strong it wasn't much use calling them, but if and when they weakened off, then contacts were possible. 7 Mc. did not produce anything startling, but G6RF's station put up a useful score, having bagged quite a crop of Europeans.

The best effort was undoubtedly that of G6GM and G6FO in North Devon, on the 3.5 Mc. band. The total of 120 points does them great credit, and they and their little band of helpers are to be heartily congratulated.

It is hoped that by the time these notes appear all those who intend to take part in the telephony part of the District 6 56 Mc. G2CI Cup Contest, fixed for Sunday, July 18, will have sent in their names to the D.R. Provided entries arrive before Friday, July 16, competitors will be sent an official log sheet, and, on the Friday evening, so as to arrive on the Saturday, a six-figure code number, to be used throughout the competition. It is hoped that all those who have portable 56 Mc. permits will take part. The power input limit is 5 watts.

Exeter.—Informal meetings are being held on the first Wednesday of each month during the summer. The Exeter area was very much to the fore in helping with the 14 Mc. N.F.D. station. Headed by G5OA, who provided the "rest" camp, and made all the arrangements as to gear, great work was done by them, and the D.R. thanks them all.

Plymouth.—The small but enthusiastic band of workers under G6RF are to be congratulated on their work with the 7 Mc. station. This was their first N.F.D. experience and we are all sure that the knowledge gained this year will be of great value in the future. The operators at the station were G6RF, 6XD, 8PN, 8HF.

North Devon.—A great event here! On Thursday, June 3, the first official Society meeting was held at Northam, with 2ADJ as host. Members present were 2ADJ, 2BAD, 2CBK, 2CGA and G6FO. while G6GM gave the meeting his blessing over the air! 2BAD was enrolled as a new member. Various R.S.G.B. matters were discussed and it was decided for the future to hold regular monthly meetings at different QRA's.

The District A2 station on 3.5 was run by 2ADJ, 2CBK, G6FO, and G6GM. A score of 120 points was made, and a very enjoyable week-end spent.

Bridgwater.—Members in this area, at their monthly meeting, visited Burnham Radio, and were very much interested in all they saw. The visit was very much appreciated. Members present were G5LM, G5AK, G6LO, 2BJC, 2CFG, BRS2445, and 2782.

As mentioned before, the District A1 station on 1.7 Mc. was run by G6LQ. It is hoped that in future years a better reward will be forthcoming for his valiant efforts.

DISTRICT 7 (Southern).

N.F.D. is naturally the main news of the month, and the experiment in this district of separating the four stations seems to have been a marked success, as it enabled far more members to take an active interest. There will be no general district meeting for August, but it is hoped to arrange the B.B.C. Daventry Station visit for September, and details of this will be given next month.

Portsmouth.—Local members thoroughly enjoyed N.F.D. putting G6NZP to work with considerable success. A 44-ft. mast was made from timber lengths, stayed and erected in well under one hour. The South Hants R.T.S. semi-portable C.O.P.A. transmitter was used. Further field days are contemplated. G2XC and 8BD now have T20's with improved results. 6NZ is active. Welcome to 8JB, who joins us. Local activity continues high.

Croydon.—The fine weather is apparently responsible for the lack of reports. G2MV has his new all-bands rig going well—two 6A6's and a T55. At last G2KU has W.A.C. (when the cards arrive !). By the time this is published 2BWY should have his full ticket—good luck, O.M.! G8JS has been transferred to the Manchester Airport, so he will be on the air from there soon and would welcome a QSO with old friends. G5AN is still gathering DX and would like a few more local reports for these notes.

Southampton.—G5OB is erecting new aerial.

5PT reports good results on straight receiver with 2 R.F. stages. 2IL has overcome teething troubles on new 7 Mc. transmitter. 2VF is trying 4-stage transmitter on 14 Mc., but finds difficulty in keeping it stable. 8OV active daily on 7 Mc. phone. 2ATT is building power packs for transmitter and has erected new 56 Mc. aerial. 8DM is experimenting with push-to-talk on 7 Mc.

DISTRICT 8 (Home Counties)

N.F.D. seems to have tired out the membership so much in this district that there are no notes to record from any sector, with the exception of Peterborough. Here, G2NJ is collecting interesting data on the Dellinger effect: he reports that on May 25 at 17.56 B.S.T. he was in contact with GM8MQ on 7 Mc. when the wipe-out occurred. He has also won the reception test organised by the local society, having received GM6LD (Dundee), who was using .75 watt. 2UQ also reports having observed the wipe-out referred to above. 6LX is welcomed back after an operation for appendicitis.

A very successful district meeting was held in Cambridge on June 25, at which a pleasing attendance of 17 members was recorded. N.F.D. final clearing-up was attended to and various other matters discussed. The next meeting will be held at the Fitzroy Arms, Fitzroy Street, Cambridge, at 8 p.m. on August 6, when all are welcome.

DISTRICT 9 (East Anglia).

At this time of the year, with holidays about and the call of the open air, it is satisfying to find that there is so much activity in the District.

N.F.D. seems to have been a successful event at all four stations in District 9, and there have been no reports of serious failure of gear. The weather was excellent, and even on the 3.5 Mc. band static was non-existent. The scores of the stations were as follows:—1.7 Mc.—27 points; 3.5 Mc.—112; 7 Mc.—111, and 14 Mc.—88. The 7 Mc. station was unfortunately closed down for several hours owing to a last-minute lack of operators.

Lowestoft.—G8DD has again completely re-built his gear. He is experiencing trouble with neutralising his P.A. stage, but in spite of this is getting some DX. Mr. Lark, BRS2395, has applied for an A.A. ticket. 2CJF, now recovering from a successful operation, is testing with a modulated C.O. stage. 5QO has modified his TX to work on three wave-bands by coil changing, and is building a dynatron C.O. for driving on 56 Mc. He is also planning a S.S. Super.

Norwich.—G5IX has completely re-built his driver unit, and can now successfully drive on all bands from 3.5 to 28 Mc. He has also erected a Windom aerial in the hopes of raising some DX. G6QZ is very active, and has completed a very stable e.c. frequency meter. He is making observations on the behaviour of the higher frequencies, on which he finds that for e.c. oscillations the RK25 valve is much more efficient than a 6L6. He is now trying a Taylor T20. No other Norwich stations have reported this month.

King's Lynn.—2ABX is again rebuilding, and G2XS has been very active holiday-making, and chasing round some of the "more reserved" hams *en route.*

Mr. Pullford, G5XS, of Felixstowe, has finished re-building on the rack principle, and is testing on 7030 kc. Reports and QSO's would be very welcome. We understand he has introduced two new members to the R.S.G.B. Good work, o.m.

2CTR is the call just allotted to Mr. Spashett, of Beccles. Mr. Algar is awaiting his A.A. ticket, and is collecting gear in the meantime. Mr. Self, late BRS2395, has just received his three-letter call, and is proposing to start TX construction shortly.

Reports of activities are now wanted from Ipswich, Swaffham, and Great Yarmouth, also a few more from Norwich and Lynn.

A penny post-card sent to the scribe before the 25th of each month will do.

DISTRICT 10 (South Wales and Monmouth)

Apologies for the lack of notes for last month's Bulletin, but the Scribe was indisposed.

A report to hand this month comes from G8FJ (ex 5NS), who is now on the P.O. staff at the Rugby station. G8CT recently had the honour of taking a message for the Prime Minister of New Zealand, now in this country. The message was transmitted by ZL2JG, and relayed to 8CT via W8ZY. Incidentally, 8CT has now W.A.C. four times, and also has the W.B.E. certificate.

Things are going strong in Cardiff, where the active stations are 5BI, 6ON, and 8NP. 2BSN should be on the air by the time this is in print, having been granted a licence subject to the usual code test. 5BI is on 56 Mc. and awaits co-operation in this direction.

The Cardiff Club hold fortnightly meetings, but the proposed visit to Portishead Radio on July 4 had to be cancelled owing to lack of support.

Both 6ON and 8NP have installed "Skybuddys," and 5BI and 8NP have Taylor T20's as P.A.'s. On June 17, the Club paid a visit to the local headquarters of the Territorial unit of Royal Signals, and spent a very interesting evening inspecting and operating Army wireless gear. Though this apparatus looks obsolete to our eyes, it certainly does its job, as is shown by the unit's regular contacts with another unit in Liverpool with about a quarter of a watt input on about 50 metres.

In Swansea, most stations are active. 6JW is preparing for 28 Mc. activity. 5KJ is extending his activities to 56 Mc. 8HI has had successful DX contacts on QRP, and has applied for increased power facilities. 2UL thanks the local membership for their co-operation before and during the N.F.D. event. Although absent during the actual event, 8HI's help with gear and transport was much appreciated. 5KJ took charge of the Swansea station, while 2UL assisted 2OP, who would otherwise have had to run a one-man station.

Although no details as to results are to hand from these stations, the 7 Mc. station under 2NG did quite well, and worked SU1C.

The 1.7 Mc. station, run by 2JL, 5BI and 8AM, did all there was to do before 11.00 on the Sunday, and did not make one contact after that time. The weather was good, and a very enjoyable time was spent. We thank 2BG for supplying the generator, etc, again this year.

Congrats to 2ACD who is now G8QI.

DISTRICT 12 (London North and Hertford)

The D.R. wishes to thank all those who operated stations and loaned gear for use during National Field Day, also the Golders Green Radio Society for loan of generator.

Details of most other activities in the district during the month are without interest, owing to N.F.D. and preparations for the 56 Mc. field day. It is hoped during this event that some useful information will be gained, as several stations are bringing into operation some very up-to-date equipment.

G6CL by working VK has now qualified for WAC and WBE telephony awards. G5QF is on 14 Mc., as is G5BO.

No reports has been received from any other parts of the district.

DISTRICT 13 (London South).

Aided by *real* summer weather, N.F.D. 1937 may be recorded as an unqualified success. Four stations were erected and operated throughout in a spirit of real enthusiasm, and the D.R. would again like to extend his most sincere thanks to all those who assisted so nobly in making the event a genuine success. Everyone seemed thoroughly happy, and may it be placed on record that not a single " grouse " was heard !

The number of reports this month is very small ; the only explanation that can be offered is that as the D.R. was on leave last month, everyone refrained from writing—very thoughtful, but a little difficult when constructing these notes, which are therefore rather short. G5PY and 2UX are now concentrating on 56 Mc. transmissions, and assisted by 2ADY held a miniature 56 Mc. Field Day on Epsom Downs on June 20. Several stations were heard, including 2MV, 6GR, and 2OD. A special note from 2UX, the T.R. for Balham and Tooting Area, remarks on the huge success of N.F.D. at the 7 Mc. station which was operated under the call G5PYP at Dulwich Hamlet Football Ground. G6OW must be congratulated on the fine show he put up in dealing with the many difficulties he encountered on 56 Mc., and it is only to be regretted that his valiant efforts were not crowned with more success.

A meeting of the Central Areas took place at Brotherhood Hall on June 24, and was very well attended. The next meeting will be on July 22. Our thanks are due to LA3G for the interesting talk he gave at the S.L.D.R.T.S. meeting on June 2. Herr Rosenlund has now left for Norway on a month's vacation, but we look forward to welcoming him back again in early August.

DISTRICT 14 (Eastern)

East London.—By the courtesy of Mr. Rowe, station G6UTP again occupied a meadow site at Rookwood Hall, Abbess Roothing, working on the 14 Mc. band. Conditions were not good and only 13 contacts were made. The Misses Rowe as in past Field Days rendered yeoman assistance in looking after the needs of the operators and assistants, G6AH, G8AB, G8JM, 2AJF, 2BVV, BRS2292 and G6UT. The station was also visited by G2NU, 2ANB, and BRS2848, and in addition the H.Q. party, including G6CL, G6LL, G6OT and ex-G5CF, the latter acting as official cinematographer. Thanks are due to 2ANB for providing transport for L.T. batteries, etc. The 3.5 Mc. station, G6QKP, was operated at Manuden, and nearly all British Isles portables were contacted, conditions being reported bad generally ; a respectable number of points were however collected.

Brentwood.—EI6M, of Valentia Island, is visiting Shenfield, and hopes to meet members of the Brentwood area.

Chelmsford.—Congratulations to 2ADP, of Colchester, who is now G8PZ and will be starting on 1792 kc.

East Essex.—It was generally agreed that, apart from conditions, N.F.D. at G5UKP was in all ways the most successful yet held in this area. Praise goes to G5UK especially and to all others who individually contributed to make the event worth while.

At the June meeting held at 2BYX, Laindon, there was an attendance of 12. At this meeting the N.F.D. film of G5UKP was shown. 2BYX has his morse test to pass and hopes to have his full call by the time these notes appear in print. G5VQ, the Westcliff " DX Hound," has been off the 14 Mc. band for some time, having dismantled completely, and is seeking new fields to conquer. He hopes for 56 Mc. DX this time and will be on in the autumn. G2SO is in the midst of one of his frequent rebuilds and may be expected to break out on 14 Mc. one day. G2MY has moved from Thundersley to Southend. Other stations active are : G6CT on 1.7 Mc. (testing for S.R.S. Field Days), G2LC, G5UK, G5QK and G6IF on 14 Mc. ; and G5UK on 56 Mc. Besides these, the usual number of non-transmitting members are active either learning code or on 56 Mc.

Please note that at the next meeting at G5VQ there will be a sale of disused apparatus. Bring all you can spare.

DISTRICT 15 (London West, Middlesex and Buckinghamshire).

N.F.D. was voted a great success again, and though we, as a district, are not first, we shall be surprised if we do not retain our position near the top.

All ten local members attended the June meeting at High Wycombe. Six others came from various distances, one cycling over twenty miles each way, four by car, and the D.R. from town by train.

The next meeting will take place in September, and will probably be held at the proposed West London area clubroom. It is conveniently situated in the Uxbridge Road, West Ealing, and at a fairly low rental which it would seem possible to meet. A free car park is available very near. Look for the announcement in the September Calendar.

Have you seen the district magazine ? If not, write the D.R. for a specimen copy.

Reports are few this month. The T.R.'s seem to have great difficulty in getting them, and the D.R. would ask members to give them support by sending even a postcard occasionally.

London, West.—G6WN had two reports from ZL on telephony transmissions ; 8IL worked VS1, VU, OQ, ST, and J, and testing crystal control 56 Mc., 2CMG who was unable to attend N.F.D., sent very complete log of the portables heard on 7 Mc.

Middlesex, West and North-West.—G6LJ reports arrival of junior op on June 5, and contradicts rumours that his initials will be N.F.D.

Middlesex, South.—G2NN has ' Johnson Q ' with a line impedance of 465 ohms. Found difficulties, but time taken proved well worth while, 2LA and 8HN contemplate supers, while the following are

active : G2KI, 2ZY, 5VB, 6LW, 8IP, and 8MK. BRS2697 spent a lot of time checking conditions during N.F.D. Has constructed super-regenerative for 56 Mc.

The T.V.A.R.T.S. are getting some very good publicity in the local Press concerning recent field days and N.F.D. The Society ran another field day on July 4.

DISTRICT 16 (South-Eastern).

The D.R. would like to congratulate all those who took part in N.F.D. on putting up such an excellent performance. The results from all stations were good, but the log turned in by G5JZP, operating at Brightling Needle, Sussex, was nothing short of amazing, and at the time of writing is better than any other district's 14 Mc. score.

The South of England P.D.M. on Sunday, June 20, seemed to be thoroughly enjoyed by the 28 members who gathered at the " Rose and Crown," Tonbridge. Following an excellent lunch, " Clarry," whom we were all very pleased to see with us, gave a most interesting talk on Society matters generally, with particular reference to the occupation of our bands and the coming Cairo Conference. The whole party then went to Tunbridge Wells, where 2UJ's and 5KV's stations were inspected, and then returned to Tonbridge for tea and further rag-chewing. We should like particularly to thank the Whitstable group, also G2LC and BERS378 who travelled long distances to attend the meeting.

Now there are a few questions that I, as D.R., would like to ask. Firstly, why did certain people say they were coming, and then, without a word of explanation, not come, and secondly, why, with four exceptions, was no one present from any of the other Southern districts ? In arranging these meetings one must give the hotel people a pretty definite idea, in advance, as to how many they will be called upon to cater for ; in the present instance the D.R. had 35 applications prior to the day, of whom 23 came. Now, I don't want to grouse, but is it good enough ? If the type of meeting that we arranged is not popular with the majority of the membership, and we can only assume from the results that it is not, would members be good enough to send in their suggestions in the course of the next few months, so that something different can be arranged next year ?

Gravesend.—The next meeting of the local branch of the M.A.T.S. will be held on July 19 and fortnightly during the summer period. G2IZP, operating in the 7 Mc. band during N.F.D., made a score of 126 points (subject to official confirmation), and was manned by 6BQ (who built the TX), 5FN, and 6VC. Thanks is due to Mrs. 5IL for her kindness in supplying the station staff with tea, etc., during the contest.

Folkestone.—G2IC reports that he has moved temporarily to Margate, but hopes to be on the air from his new QRA before long.

Heathfield.—The group are very active—see above !

Eastbourne.—Active :—G2AO, 5IH (with controlled carrier on 1.7, 3.5 and 7 Mc.) and 2KV.

Tunbridge Wells.—G6OB rebuilding TX and gathering information for a 14 Mc. beam aerial. 2AKQ building superhet, and hard at work on Morse. 5KV sorting out his station after its use on Field Day ! 2UJ on 56 Mc. again with an improved beam aerial and ICW from a motor-driven interruptor. So far, no stations have been heard. This, unfortunately, is not new !

Whitstable.—All are busy preparing for the 56 Mc. Field Day. 2BIB's Epoch super-het, for 112/30 Mc. work, is functioning well and receives the Television sound at R5/6 on LS without an aerial.

DISTRICT 17 (Mid-East).

There appears to be a scarcity of notes for publication this month due probably to other outside activities.

N.F.D. has now faded into a happy memory of a glorious week-end. The 14 Mc. station (with its vertical copper tube aerial) located at Baumber did very well indeed taking into consideration the poor conditions prevailing. Not one W was contacted, although G6GH had anticipated a full bag from that continent. The best work was with VS1, CE and LU and G6GHP was also heard in Australia, although no contacts were made. Reports to hand also indicate that G8FCP on 3.5 and 1.7 Mc. did extremely well.

Boston.—G6GH still continues his weekly schedule with ST2LR, who reports him at times S7 to 8. G6LH has his " G6ZZ receiver " on the air and is very satisfied with what he has already heard.

Cranwell.—Congrats to 2426, who is now G8PQ. He is using a push-pull 6A6 oscillator and 2 P650's in push-pull.

DISTRICT 18 (North Eastern)

Scarborough.—The 7 Mc. N.F.D. station was erected and operated under ideal weather conditions on Oliver's Mount, 500-ft. above sea level. The transmitter used was that of the Scarborough Short Wave Club, constructed by G6CP and G6TG, and operated under the call G6CPP. The circuit was C.O. link-coupled to T25D P.A., powered by a 500 volts generator. A Windom aerial was used up to Sunday afternoon, and afterwards a 66-ft. voltage-fed Hertz was substituted. A total of 47 contacts is considered satisfactory in view of the prevailing conditions during most of Sunday on this band. The following took turns at the key : G5HZ, 5MV, 5GI, 2CP, 6CP, 6TG, 8KU, whilst G8BB, 2BGO, 2BMD, 2CID and others helped with the erection and operation of the receiver. The D.R. (G5FV) made a visit during Sunday afternoon.

G5MV is now WBE in addition to WAC. G8BB is testing on 28 Mc. with an A.A. The rest of the local members have apparently nothing of interest to report to G6TG, who is still acting T.R. in the absence of G2CP.

Hull.—Although conditions on 14 Mc. during N.F.D. were not quite as good as we hoped, the score, we feel, will do us justice. Combine this with perfect weather and real ham spirit and the result is, and was, N.F.D. par excellence.

The T.R. would like to thank all those who, by their unstinted efforts, helped to make things run so smoothly. We would especially like to record appreciations to those who helped with the transport, 5HA for building the TX and those who lent receivers.

Response to the appeal for reports is somewhat better and from information at hand the following

are active: G5MN has had trouble with a new power pack; a new aerial is also to be erected. 2AGK is contemplating a 28 and 56 Mc. AA Licence if he can get his 59 to quadruple. 2CAQ is busy on a speech amplifier and is experimenting with PA's. G6OS has been trying phone on 14 Mc. and seems to be getting across the Atlantic well.

We are hoping to arrange Code practice classes in the near future and the T.R. would like to hear from members who would support these. All being well, we shall have two or more 56 Mc. stations in action during the summer and full details of these will be announced at the meetings. The next will be held on July 28, at the usual QRA.

DISTRICT 19 (Northern).

Apart from Field Day reports, news from the district is very scanty.

Will all T.R.'s please try and remember to send their reports to the D.R. by the *25th of each month?*

N.F.D. passed over quite well, and luckily the weather favoured us. Our sympathies to G2FO and company, who had appalling bad luck.

Newcastle and District.—G5RI is testing out a Bruce directional aerial on 14 Mc., and we congratulate him on his success in the ZS contest. G5WZ and G5QY are busy with 56 Mc. skeds, comparing long wires with beams. G6IR is also on 56 Mc., as well as 14 and 1.7 Mc.

G5AY and G2XT are on 1.7 Mc. 2BGG is making 56 Mc. gear, and hopes to have his full permit soon. G6IR and G5QY had a pleasant visit to Northallerton, meeting G2FO, G6ZT, G8HQ, G8OH, and 2CBA. Our thanks to G8OH for his hospitality!

Scotland

News this month concerns almost exclusively National Field Day, and as it may interest members to hear how this event went off in Scotland, it is proposed to give details under each district. Generally speaking, the weather was bad throughout the country, and we cannot recall a past N.F.D. which was treated so shabbily by the "Clerk of the Weather." Conditions were also rather poor, especially on 14 Mc., on which band a marked blank period was experienced by all stations from about midnight on Saturday till around 6 a.m. next morning. W stations were notably absent and not a single W contact was made throughout Scotland.

"A" and "E" Districts.—Three stations were operated, and despite the deplorable weather, everything went according to plan. Very heavy rain was experienced for many hours of the contest, and some of the heaviest fell during the time camps were being struck. The highest score was made by the 3.5 Mc. station, followed by the 7 Mc. station, which was operated by the R.S.G.B. members of the Glasgow Radio Club, who made a good show for their initial effort. Extremely poor conditions prevailed at the 14 Mc. station, and a long blank period was experienced during the early hours of Sunday morning. During this spell the operators report hearing on several occasions a "hiss" which was picked up and not caused by the receiver.

J. G. Kerr (2AZK) has been granted the licence GM8QD, and J. Troy (2BUJ) has passed Morse test and awaits call.

"B" District.—The district have the distinction of making the highest score in Scotland, and two of their stations made the highest individual scores on 7 and 14 Mc. respectively. Their 7 Mc. station ran up a really creditable total, as they were forced to operate with low power, through a fault which was only located after returning home after the contest. A piece of cab-tyre flex was the cause of the trouble; this was only purchased while going to the site, and was the only untested piece of gear in use! Instead of 800 volts being available from the generator, the output at the transmitter end of the flex was only about 200 volts, there being no less than seven breaks in the length of the wire! A rather novel and unusual feature of this camp was the use of carrier pigeons between the site and Aboyne. At the 14 Mc. station the district had the best run of DX worked at any Scottish Station—PY, LU (2), SU (2), ST2, ZB1, and U9. The 3.5 Mc. also did well and worked everything heard, they report a peculiar blank-out during a heavy downpour between 23.00 and 24.00. Results were much as expected, at the 1.7 Mc. station.

"C" District.—The district shared with "B" the distinction of being the only Scottish districts to run four independent stations. Weather was fairly good until Saturday midnight, after which heavy rain fell until 10 a.m. and intermittent rain thereafter. Conditions were fair on 3.5 Mc. and 7 Mc. and bad on 14 Mc., with the exception of two hours at the start. DX was VU2, ST2 and ZB1.

"D" District.—Due to unforeseen circumstances regarding licences, only one station was put into the field, but as a little consolation the station made the highest individual score of any Scottish station and had the most contacts. Some DX was obtained —ST2, ZB1 and SU.

GM2TM has left the district to take up an appointment in Kenya, and everyone wishes him the best of luck in his new sphere.

"F" District.—It has been decided to cancel meetings during the summer owing to the great difficulty found in obtaining accommodation. Meetings will be resumed during September.

"G" District.—A very good start was made by the district in their first N.F.D. appearance. Weather was very showery, and conditions on 7 and 14 Mc. poor, but nevertheless VU2, SU, ST2 and PY were worked. On 3.5 Mc. all stations heard were worked, and the district finished amongst the leaders on this band.

"H" District.—The members of "H" enjoyed their first experience of N.F.D., and despite lack of operators put up a good show.

Northern Ireland

While the G stations at N.F.D. enjoyed perfect weather, our portables were operating under very trying conditions; torrential rain at frequent intervals during almost the whole period. The most suitable attire was found to be thigh boots, oilskins and sou-wester. But the weather conditions did not seriously impair the work, and had the propagation conditions been better they would have found GI ready to take advantage of them. 14 Mc. work

was almost non-existent, 7 Mc. was "curate's eggish," 3.5 Mc. was less affected than the other band, but foreigners were rare, and 1.7 Mc. was fair. This District, probably like other outlying districts, again found that foreign contacts on 3.5 Mc. which are "local" to southern districts, are very much DX to us, and we have become more or less resigned to the main trophy remaining in a southern district.

A sincere tribute must be paid to the splendid work and spirit of the N.F.D. crews; no hitch occurred at any time, and the team-work made one proud to be one of the gang. Our score may be low, the weather and conditions foul, but N.F.D. for us was "the best ever," and the first meeting to arrange for N.F.D. of 1938 has already been held!

The crystal register for GI is filling up well, and a chart showing the frequencies occupied by stations on the register will be published as a supplement to the July issue of *Gist*, the official organ of the R.T.U. It will take the form of a loose sheet which can be pinned on the wall of the shack and additions made as they are published. Copies of this issue will be available to non-members of the R.T.U. Applicants should send sixpence to the Hon. Secretary, R.T.U., 3, Kings Crescent, Knock, Belfast. Early application is advised as the issue is, of course, limited.

A hearty welcome is extended to 2CQX on joining the ranks of amateur radio; the call-sign hides the identity of one whose voice is better known to Ulstermen, surely, than any other, and who has brought a breath of the Ulster countryside and a whiff of turf smoke to many an exile. Yes, "Mat Mulcaghey," the inimitable dialect writer and "character" so well known to B.B.C. listeners. Though a new-comer to amateur ranks, "Mat" started many years ago with a coherer and what must have been the first transmitter in Ireland.

The R.T.U. had a most enjoyable visit to the 3 and 5 metre Post Office station operating the radio link between Portpatrick and Ballygomartin, some 40 miles across the North Channel. The 5-metre transmitters work on separate channels around this wavelength, and both horizontal and vertical dipole arrays are in service. The receivers have a common quench supply, and the background noise is very low. The 3-metre transmitter uses one ultra-short channel with several other channels superimposed, each of which is modulated by speech . . . double modulation, which is received on the superhet principle, but necessitates 3 detectors; A.V.C. (known there more accurately as "A.G.C.") is employed.

5SJ is getting QRO results with a single 6L6 tri-tet and working W with ease on 14 Mc. 2KR holds the watts-per-mile 'phone record; best DX is 1½ miles. BRS2868 applying for ticket. 5UR doing well with a single '59. 2SP working W and LU. 5QX working DX and investigating aerials. 2BFJ holidaying in F3 and 8. 8LF on holiday. 5TK, using a hand-gen and a bug key, and complains of his call being pirated on 14 Mc. 6XS busy with 56 Mc. gear.

BOOK CONVENTION DATES
SEPT. 2nd, 3rd, 4th, 1937

VALVE REVIEW

MULLARD CATHODE RAY TUBE TYPE E40-G3.

The *Mullard* type E40-G3 cathode ray tube is a high vacuum double electrostatic oscillograph with a 2½ inch diameter screen. The tube comprises a two anode lens system with a control grid and an indirectly heated cathode. The bulb is approximately 6 inches long overall, partly covered with aquadag and is fitted with a side contact type base, the second anode being brought out to a separate terminal on the side of the base. The screen colour is green and the carbonising is internally connected to the second anode.

Operating Conditions.	*Makers.*	*Test Conditions.*
Heater volts ...	4.0	4.0
Heater current (approx.)	1.0 amp.	1.0 amp.
Second anode volts (max.)	800	500
First anode volts (max.)	300	150
Grid volts	0-25	-9
Deflection Sensitivity.		
D1-D1 Plates ...	.30-.19 mm/v	1.0 mm/v
D2-D2 ,, ...	.24-.15 mm/v	0.6 mm/v
Inter-electrode Capacities.		
Grid — all other electrodes	6.7 μμf.	not measured
Def. Plates D1-D1 ...	2.9 μμf.	not measured
Def. Plates D2-D2 ...	3.7 μμf.	not measured

Tests made, show that the tube operates in a very satisfactory manner and is suitable in every way for amateur requirements. The size of the spot and thickness of the trace is rather disappointing after the use of gas focused tubes, but the reliability and long life of the tube should compensate for this, and in any case this point is not detrimental unless great accuracy is required. For observing solid figures, modulation trapesium, etc., where often a thick line is not material the tube may be brightened up sufficiently to be easily visible in daylight, but where a thin trace is required it is necessary to shield the screen from direct light.

The focus of the spot depends upon the ratio of the first and second anode voltages and the brightness on the beam current controlled by the negative grid voltage. In practice, altering one affects the other to some extent and a change in intensity (grid voltage) caused appreciable defocusing of the spot. It would appear, therefore, that the tube is unsuitable for any purpose where modulation of the grid is required, as for television experiments.

The circuit should be so arranged that the second anode is earthy and a push-pull input to the deflector plates is advisable in order to avoid defocusing over parts of the screen.

It is also as well to screen the tube in an earthed metal shield to prevent interference from stray magnetic fields. If required the tube may be used with magnetic deflection in addition or instead of electrostatic.

At a price of £3 10s. the tube, although small in size, is capable of all measurements for which a large tube may be used and should not be confused

with foreign miniature types. The acquisition of such a tube by amateurs, apart from giving them vital information about the operation of their apparatus, might help to clear the ether of many obnoxious noises.

An oscilloscope using one of these tubes is reviewed below.

D. N. C.

* * *

Furzehill Laboratories Type D Oscilloscope

Below is a review of a type D oscilloscope submitted for test by the *Furzehill Laboratories*, of Boreham Wood, Herts.

This instrument is a portable oscilloscope containing a hard cathode ray tube, power supply, and time base arranged for all-mains operation. The apparatus is mounted in a black crystalline finished metal case measuring 10 inches long, 4¾ inches wide and 7 inches high, fitted with a carrying handle.

A *Mullard* E40G3 cathode ray tube is mounted vertically, the screen being viewed through an aperture in the top of the case. There is a removable celluloid scale two inches square fitted over the screen for convenience in measurement.

The C.R.O. tube is screened internally by a mu-metal screen and the tube-holder is centrally fixed so as to be capable of rotation in order to get the axis of the tube in line with the scale.

The *Mullard* tube is reviewed separately above.

The front of the instrument comprises an operating panel having the following controls:— Intensity and focus, coarse and fine controls for the time base and an on-off switch for the time base. The two axes of the tube are brought out to small terminals. There is no mains on-off switch.

The H.T. supply is rectified by a *Hivac* UU60/250 rectifier valve and the time base circuit utilises a *Mazda* Thyratron type MR/AC1. When the work terminals (Y axis) are in use a small amount of the input is applied to the time base in order to synchronise and give a stationary figure. The time base is rated to cover from 50 cycles to 10,000 cycles.

On test the oscilloscope worked very satisfactorily. The adjustment of the focus and intensity, as expected, were not independent of each other and it was found easier to take each knob in either hand and rotate them together as required in order to focus a thin line or small spot. The line obtained tends to be rather thick unless the intensity is kept low, and in this case it is advisable to shield the screen from direct light. The time base is not particularly linear, but is sufficiently so for all normal purposes.

(*Continued on page* 57.)

Empire B.E.R.U. News.

Australia

By VK4GK *via* G6WY.

Congratulations to the N.F.D. Stations; BERS195, the world's best receiving station, lived up to his reputation by hearing 13 of them, each of whom will receive a report. BERS337 also heard a number.

VK4RJ, who has built a super which works quite well, is looking for G contacts. We have been pleased to hear VK4RY on the air again after his recent illness; he now uses an 807 in the final stage.

Conditions on 28 Mc. are very poor, but many members are active on 56 Mc. VK4AP must have about half of the W stations standing by for his signals on that band.

Ceylon.

By VS7RP.

Conditions for the month have again been very variable. On 7 Mc. QRN has been very heavy, and except for local QSO's on Sunday mornings, this band is of no use at the moment. The 14 Mc. band has also been very erratic. QSB and QRN have been fairly bad.

VS7JW, 7GJ, 7RF, and 7MB are active but do not report. VS7EB hopes to be active again very shortly.

VS7RA has found conditions most variable. During the month he has made contact with G, ZE, ZT, VQ8, EI, HA, and OK. VS7RA followed a very interesting QSO between G5ML and G6SR on 'phone. 6SR told 5ML that he was being received on two spots in the band, but this "harmonic" was not noticeable in VS7. VS7RA has now qualified for W.A.C., both 'phone and CW, and is probably the first VS7 station to do so. (Congrats., OM.)

VS7MB reports conditions very bad and variable.

VS7RP came on the air at the end of May and managed to contact XU and J. There appear to be a few pirates using VS7 calls, because 7RP has had quite a number of QSL cards forwarded to him. In many cases the call signs do not exist. The only stations active at the moment are VS7GJ, 7RA, 7EB, 7JW, 7RF, 7MB, and 7RP. The cards reporting bogus calls emanate from W and I.

Irish Free State.

By EI9D.

At the general meeting of I.R.T.S. held in Jury's Hotel, Dublin, on June 3, Mr. H. Hodgens (EI5F) and Mr. R. N. V. Sadlier (EI4D) were unanimously elected president and vice-president respectively. Two additional members were elected to the committee, which now comprises Messrs. E. A. Donovan (EI2M), T. Green (IR72), W. Watts (IR62), N. Maddock (EI2J), H. Riley (EI2G) and Rev. N. H. F. Waring (EI8J).

National Field Day passed off quietly. A and B stations were both located at Brittas Bay, Co. Wicklow, where a bungalow was very kindly placed at our disposal by Mr. C. B. Coombs, to whom we again express our sincere appreciation. Our thanks are also due to Mr. W. Watts, who provided a tent and very serviceable gear at A station, and to Mrs. A. Woods and Messrs. A. D. Campbell and P. J. Murphy, who very kindly, and very efficiently, looked after the commissariat.

The weather was very bad throughout most of the period and, unfortunately, trouble was experienced with the power amplifier at B station which necessitated closing down at midday on Sunday. Between the two stations eight licensed operators put in an appearance, but only six of them found it possible to stay overnight. Accordingly, we were somewhat understaffed, and it is felt that out of thirty or so licensed amateurs in Dublin more could have given their support.

On the West Coast, EI5J, with the help of a BRS friend, established a portable station in the mountains overlooking Sligo. He was later joined by EI7J and operation was confined to 7 and 14 Mc. With a plate supply obtained from two single-capacity 120-volt dry batteries they filled a couple of log sheets with contacts, and put up a score which the writer, as an operator of the official I.R.T.S. station, prefers not to think about! Very fb, OMs.

We are very pleased to welcome Mr. W. Watts, Barrow Cottage, Athy, Co. Kildare, as a new member of B.E.R.U. Section, and to congratulate BRS2539, Mr. E. Myles Hook, Western Union Cable Station, Valentia Island, Co. Kerry, who is now EI6M.

Malaya and Borneo

By VS1AA.

Reports are still lacking and news is scarce.

1AF is on leave in Penang and 1AA and he have had many interesting chats. His visit was very much appreciated.

QRM is still very bad on 14 Mc., telephony stations being chiefly to blame.

Please accelerate the Letter Budget, OM's.

Malta

By ZB1E.

The ZB1 Group are endeavouring to improve their status. Up to the present the experimental licence issued limits activities to the 1.7, 7 and 14 Mc. bands only, and these are restricted by very wide "buffer edges." C.W. only is permitted.

However, recent interviews granted to the B.E.R.U. Representative by the authorities show that the latter are sympathetic with our demands for a "fair share" of the amateur frequency bands,

and that the near future should bring more favourable licence conditions. It is hoped that the buffer edges will be appreciably reduced, and the use of the 28 Mc. band permitted. Applications for the use of telephony will be considered, and a special permit issued in approved cases.

Summer conditions this year have set in earlier than usual, and the hot weather already enforces a slackening of activities. ZB1J is building a new all-battery receiver, and 1P is wondering why his tri-tet shattered the crystal. 1L has prepared a modulator which should give excellent speech quality. The N.F.D. portable station proved successful and provided a " rare day."

The following are active: ZB1H, 1J, 1K, 1L, 1O and 1P.

South Africa

Division 1.—Our apologies for the non-appearance of these notes last month; ZS1B was on leave.

ZS1H has left 56 Mc. for the time being and is again on 28 Mc., using low power. Reports indicate that his signals are almost as strong as when on high power. He has just received a report from Europe on his 56 Mc. transmissions but has to check it against his log.

ZS1B had one of his masts down in a gale recently and in order to keep on the air he tied the loose end of the aerial to a chimney about 20 ft. above ground, making the aerial look like an inverted " V." Reports indicate an increase of from one to two R's over the original aerial, although it appears to be rather directional. He intends giving it a thorough try-out, even if its appearance is the joke of the neighbourhood.

ZS1AN is to be congratulated on winning a zone award in the *Rand Daily Mail* DX Contest.

14 Mc. has been very spasmodic lately and the wipeout periods are becoming more frequent, with the result that most S.A. stations have now gone up to 7 Mc. This latter band, incidentally, is becoming very congested.

We again appeal to members to forward any news for this column to ZS1B.

ZS1B.

Division 5.—Winter conditions have definitely arrived and have made themselves conspicuous, DX being very rare, and except for certain periods of the day, only very near stations can be contacted.

The " HOS " trophy was fought to a finish, and as far as can be ascertained at the time of writing, ZT6AL is believed to be the winner by one point from ZU5L.

The next contest to take place in this country will be the " Streeter Memorial." Funds are being raised by contribution and all amateurs in the Union are requested to contribute.

ZS5U has been testing on 'phone again and ZS5AK also expects to be doing so soon.

The following B.E.R.U. members have also been active: ZS5Z, 5R, ZT5R, 5Y, ZU5AF, 5D, 5V, 5L and 5Q.

ZU5Q.

Division 6.—It is really a pleasant task to record the progress of the African Radio Research Union. Recently a Floating Trophy, suitably inscribed, was presented to the Union by Mr. Humby, on behalf of Messrs. Herbert Baker and Co. This trophy is to be competed for in the near future, and from the general trend of gossip, it certainly appears that every " ham " wishes to be the recipient of the cup!

Mr. Oscar Egenes (ZT5R) is doing Alpine work for the A.R.R.U., and he has our earnest and sincere co-operation.

Morse classes for the associate members are now in force, and we are endevouring to cater for the associates to the same extent that we are for the licensed amateur.

ZS6T has made a come-back, and has an excellent transmitter; his signal on 14 Mc. is certainly the result of many months of studious rebuilding. ZS6C and ZS6AM are now transmitting musical frequencies on 7 Mc., and the reproduction is exceptionally good. ZT6M still maintains his 28 Mc. DX schedules, and every mail brings a fair amount of QSL cards.

ZT6AQ is silent, owing to his having moved to a new locality. He intends starting again soon. ZS6M is now domiciled in Mafeking, and we understand he will start operating next month.

ZT6X has, together with ZU6C, monopolised the 3.5 Mc. band, and they certainly seem to enjoy contacting the Natal amateurs.

ZU6AD has acquired a Bug Key, and it is a Bug—the dots come so fast they miss the receiving aerial entirely!

ZT6AD has an HRO; his DX, just prior to writing these notes, was VU2 and PK1.

ZT6AC has dismantled his outfit, with a view to trying out a new circuit, which will be completed soon.

ZU6AQ is a newly licensed amateur; his locality is a bad one, and a request is made for all members to kindly report on his signal strength.

ZU6N has returned from the States. Five years' companionship with W6ITH has resulted in a surprising come-back. He works W6ITH every afternoon on 14 Mc. telephony.

ZU6V is still active on 14,276 kc., and recent DX included XU2, FN1, VK5 and W6. The rectifiers in use are Marconi U12's, and these valves are certainly an acquisition.

The writer has developed a cry—" Dope! " and more " Dope." Information to Box 4020, Johannesburg.

ZU6V.

A SILENT KEY

We regret to record the death of C. Harling, on May 21, 1937, at Witbank, Transvaal.

His active service on the Western Front left him an invalid for life, which proved fatal in his latter years.

Operating under the call-sign of ZT6D, his station was at one time the most popular in South Africa, and his DX contacts were envied by many an amateur.

The African Radio Research Union extends to his bereaved family, their deepest sympathy.

ZU6V.

Egyptian Notes.

By Frank Pettitt (SU1SG).

The successful conclusion of the Anglo-Egyptian Treaty has rendered it necessary for the R.S.G.B. Council to consider the position of its B.E.R.U. Group in Egypt.

During his recent visit to England H.H. Prince Abd el-Moneim (SU1AM), Patron of the newly formed Egyptian Society, discussed matters of policy with Messrs. A. E. Watts and J. Clarricoats, and as a result it was agreed that :

1. The R.S.G.B. will in future cease to consider its Egyptian Group as being a part of the British Empire Radio Union of Societies, Groups and Associations.
2. The E.R.S.E. will arrange to appoint one of its members to act as official Bulletin Correspondent.
3. The E.R.S.E. will be allowed to regard the T. & R. Bulletin as its official journal.

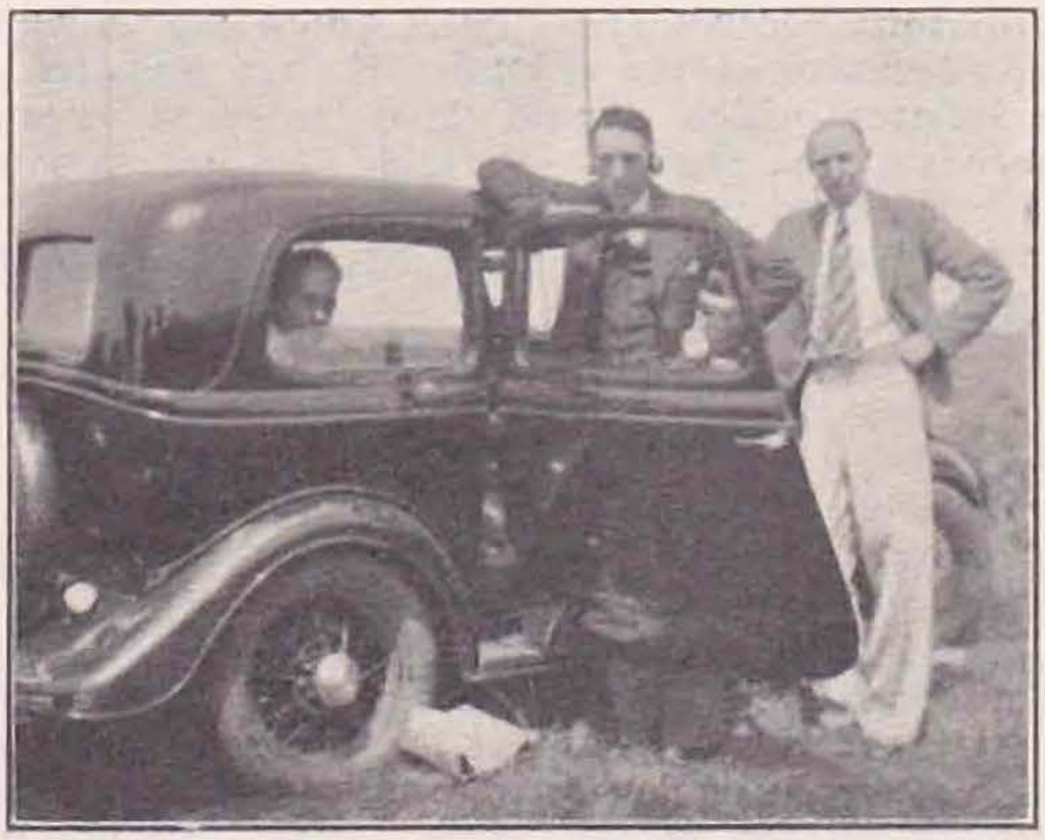
Three well-known Council Members. Ham Whyte (G6WY), Arthur Milne (G2MI), and Cecil Page (G6PA) at the Tonbridge P.D.M.

The Experimental Radio Society of Egypt is under the Patronage of Prince Abdel-Moneim, and the executive officers are :—President, Mr. W. E. Marsh, B.Sc. (SU1WM) ; Vice-President, Mr. E. M. Chorlian (SU1CH) ; Hon. Secretary, Mr. G. Moens (SU1RO) ; Hon. Treasurer, Mr. J. Thomas (SU5NK) ; QSL Manager, Mr. F. H. Pettitt (SU1SG).

The severance of our association with the B.E.R.U. constitutes a sentimental rather than a material loss, but we may be consoled by the fact that Headquarters is still taking an active interest in our welfare, both as members of the R.S.G.B. and members of E.R.S.E.

We are happy to announce that Mr. W. E. Marsh (SU1WM) has been appointed official Bulletin Correspondent. All news of interest should be sent him by the 20th of each month.

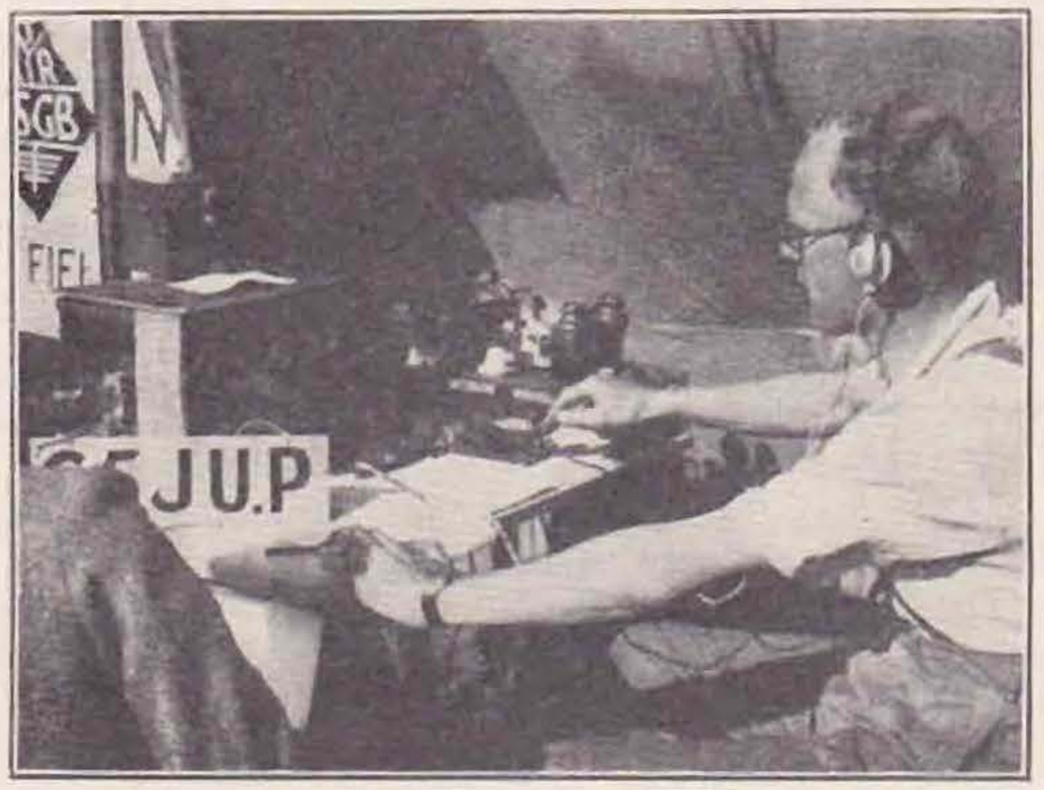
We now enter upon a new era of amateur radio in Egypt. The E.R.S.E. is the first step towards the realisation of our ambition of becoming members of a Society which will be recognised locally and receive international support.



The 1.7 Mc. station operated by District 3 at Bird's Farm, Rubery. G6DL in car, 2CKU, and G8DK.

The success of the next step rests with us, as members ; we must both individually and collectively co-operate in every way possible, and above all foster the spirit of harmony and good fellowship in accordance with the best traditions of amateur radio. Our efforts in this direction present us with the opportunity of demonstrating in a material and practical way our sincere appreciation of the honour accorded us by H.H. Prince Abdel-Moneim in consenting to become our Patron.

In closing these my last notes as B.E.R.U. Representative for Egypt, Palestine and Sudan, I wish to thank Headquarters R.S.G.B. for their friendly co-operation during my period of office. The kindly consideration with which I have been treated by all concerned will always remain a happy memory.



The gear used at District 5 N.F.D. station G5JUP. Mr. J. N. Walker the D.R. takes a hand at the key.

1937 OLYMPIA TRANSMITTER (*Continued from page* 5).

supply to V3 is switched on by means of SP, shown in Fig. 2, and the plate tank tuned to resonance or minimum current, which will be between 5 and 8 mA. The key must be closed when tuning V3 and the bias supply switched on. Upon opening the key the valve will stop oscillating at once.

To test for output a 40-watt 230-volt gas-filled lamp may be clipped across the two link turns. The power output should be sufficient to light the lamp to full brilliancy. This process being completed, all that remains is to go over the tuning again to obtain maximum efficiency. The 14 Mc. channel is now ready as a low-power job, or to drive the P.A. to be described in the next article.

Tuning the 28 *Mc. Channel.*

The procedure is exactly the same as for the 14 Mc. channel but now both triodes of the B30 valve are in use. The 6-pole C.O. switch is thrown to its correct position, switch S is closed and the switch SP in the plate circuit is opened. The second triode of the B30 is first tuned to resonance, then the plate of V4 ; when this circuit is resonant, grid current (5 to 8 mA.) will again show in the meter in the grid circuit of V5. Switch SP and the key are now closed and the V5 plate tank tuned to minimum dip, which should be between 5 and 10 mA. To test for output the 40-watt 250-volt lamp should again be clipped across the two-link coils. This will light to full brilliancy, thus showing that almost equal outputs can be obtained from either channel. The crystal tank may need touching up, as the first triode of the B30 is now more heavily loaded. The current for the B30 should be 50/60 mA. and 55/65 mA. for V4, whilst V5, when loaded, should give between 60/75 mA., depending on the voltage of the H.T. supply.

Both channels now being tuned, either can be used by merely changing over the 6-pole switch and connecting the P.A. grid tank to output or aerial if the set is to be used by itself.

There is nothing tricky in the tuning, but the author always uses an absorption wavemeter to check each stage in order to make sure the frequency is correct.

If the coil specifications are followed closely, no trouble at all should be experienced.

56 Mc. SUPERHET (*Continued from page* 34).

" There is no real necessity for the crystal oscillator stages to double right through to 56 Mc. If the final output is arranged on 14 Mc. and heavily biased, so that strong harmonics are produced, the 56 Mc. content will be quite strong enough to effectively provide the local oscillations required by the frequency-changer. Any tendency of the latter to ' lock ' would also be considerably minimised.

" The very small coverage is a rather bigger disadvantage than the writer suggests. The band extends practically from 60 Mc. to 56 Mc., that is, 4,000 kc., whereas this scheme only allows a band of 200 kc. to be swept, so that only 5 per cent. of the band is covered, which is too small to be of value. The range of the I.F. stages could be considerably increased, however, and probably made to cover from 1,500 to 500 kc. by using a normal .0005 μF gang condenser. This would give a coverage of 25 per cent. of the band.

" I suggest, as a further improvement, the use of a calibrated E.C. oscillator in place of the crystal, so that by three or four preset adjustments of this, the whole band could be covered.

" The lining up of the I.F. stages would be rather simpler than in the case of the normal ultra-high frequency oscillator, frequency-changer, but the overall gain would probably be less, due to the necessity of varying the intermediate frequency.

" For tests on fixed frequencies between a few stations over a period of time, this type of superhet would undoubtedly show a definite advantage, in that a high degree of calibration would be possible."

" SOLILOQUIES " (*Continued from page* 35).

" Cairo is not so far away, and anything might happen there. Certain it must be that little can happen in the amateur's favour unless he takes steps to police his own ranks, and very swiftly. Some of those Cairo delegates might own dual-wave receivers, and might, with the rest of the world, have writhed in impotent anger at the rot they hear some time or other. Unless it is cleaned up, all this ' Rotten Operating ' will swing the pendulum against us all in the end.—Old Hombre.—VK."

DIRECTION FINDING (*Continued from page* 22).

Part B.—In addition to the marks for Part A., marks will be awarded for Part B. for reporting at Station X, and will be based on the time of arrival and the distance of the receiver at test 6 from Station X according to the following formula :

$$T_b = 120 - 2t + 6d$$

where t = minutes between 15.20 and time of reporting at Station X.

d = distance in miles of receiver from Station X at test 6.

Penalties.—For contravention of the rules under sub-heading 6, the judges may deduct marks as follows :—

(*b*)	maximum	5 marks.
(*c*)	,,	20 marks.
(*d*)	,,	20 marks.

VALVE REVIEWS (*Continued from page* 53).

For high frequencies above 5 kc. the number of wave cycles obtained on the screen rather cramps the size of each cycle for a detailed examination, and considering the overlap on the three position switch of the time base coarse frequency control, possibly the maximum time base frequency could be raised somewhat with advantage. The sensitivity is such that approximately 50 volts are required to obtain full use of the screen size ; this is by no means excessive.

The oscilloscope was found entirely satisfactory for frequency calibration of oscillators using the familiar " Lissajous " figures and also for observing both modulation envelopes and a modulation trapesium.

For the amateur at the price of 14 guineas net the oscilloscope represents a piece of apparatus not beyond his reach and capable of measuring and observing all the functions of transmitters and receivers to sufficient accuracy for his purpose and can be recommended as a good investment.

D. N. C.