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THE POWER QUESTION

THE advent of the single-signal superhet has without question revolutionised the reception of amateur signals, but with this development we may fairly ask why it is still necessary to use very high power for normal communication purposes.

In the earlier days when the one or two-valve receiver held sway high power was undoubtedly desirable if reliable contacts were to be established, but with a receiver designed to provide high sensitivity as well as selectivity any station running with an input of over 100 watts is probably wasting power.

The view has been expressed on more than one occasion that an input of 100 watts is ample under normal conditions for 14 Mc. DX work. Above this figure we very much doubt whether any real advantage is gained except perhaps when a station is very badly screened.

There is within the shadow of London at least one station using no more than 50 watts to quite obsolete valves which has a reputation for sending the strongest British signal into any part of the world selected. This is achieved by means of an excellent aerial system with beam reflectors. In this and many other stations an efficient receiver is installed, and we have no reason to doubt that given such a receiver the use of excessively high power at the distant end is quite unnecessary.

In making the suggestion that 100 watts is sufficient for all normal needs we are aware that development must not be allowed to stand still; new gear has to be tested and results correlated when higher powers are in use. Our thought lies rather in the direction that as we increase the number of valves in our receivers we should endeavour to reduce the number and size of valves in our transmitters. In other words improvements in Receiver Design should be reflected in Transmitter Design. That an efficient 25-watt transmitter operated under field day conditions can hold its own has been proved by the performance of the leading N.F.D. stations. Let us then during this coming winter endeavour to prove that with our modern receivers we can dispense with some of the watts we have been wasting in making our signal 3 dB louder on the East Coast of America.

Our praise always has been, and will continue to be, for the man who achieves the greatest distance with the lowest possible power. That is real efficiency.

A MATCHED IMPEDANCE AERIAL SYSTEM

By T. B. WIMBUSH (SU2TW-G2TW).

FOR some time the writer has had in mind the distinct possibilities of the system about to be described, but, owing to circumstances beyond his control, has not been able to carry out tests. It was thought desirable, however, to publish details now to enable other amateurs to try this system rather than to wait until facilities exist for the writer to test prior to submitting details.

It is not proposed to hold a lengthy discussion on aerial systems in general, but to confine this description to one particular and popular type—the voltage-fed Hertz with Zeppelin type feeders. It is hoped that the following remarks will enable those who use this type to increase the efficiency and performance on at least one band.

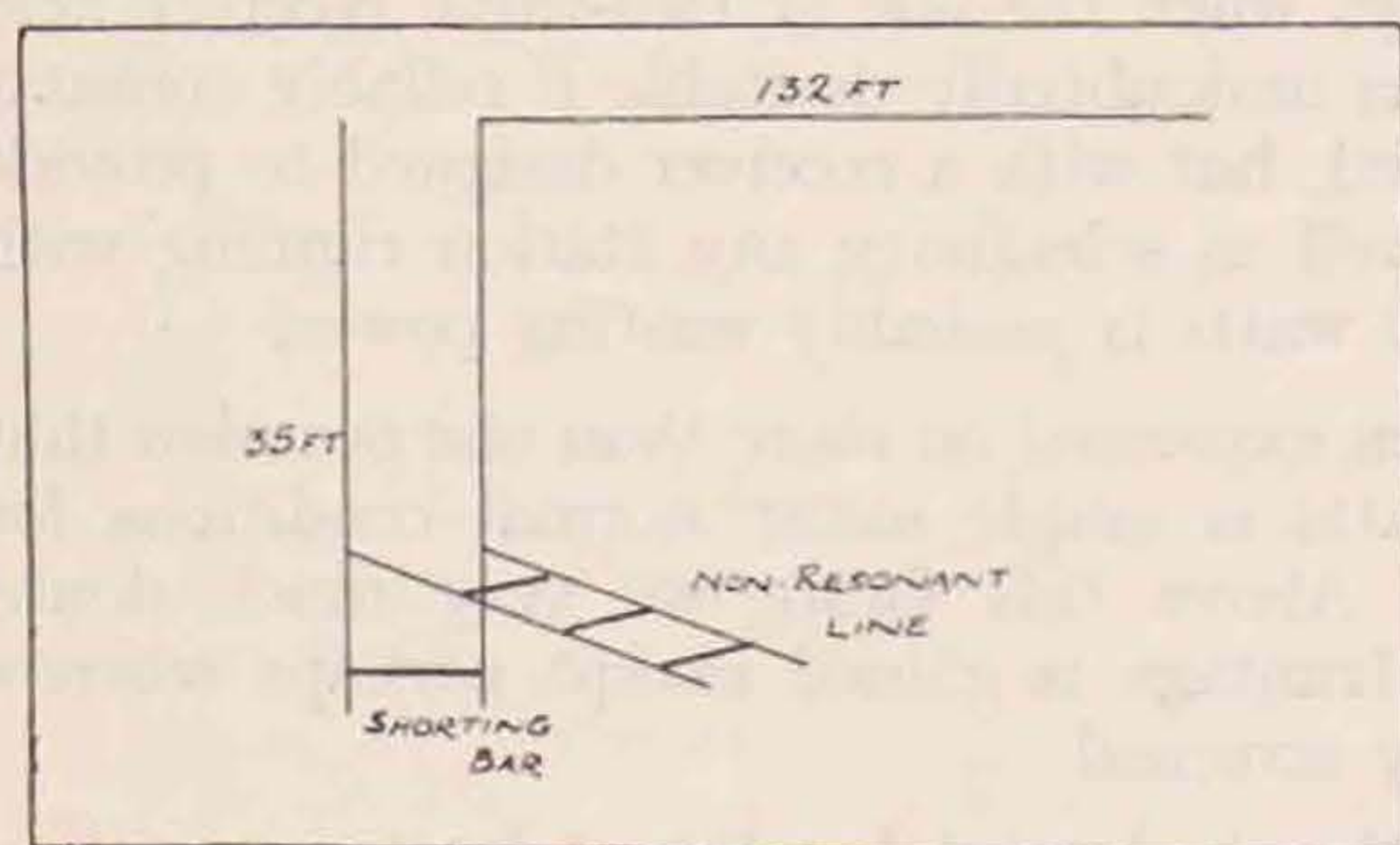


Fig. 1.

The aerial system discussed by the Author. Note the shorting bar at the end of the twin feeders.

A lot of useful information has recently been published on "Aerial Matching Networks," "Collins Couplers," "Impedance Matching Networks," etc., all fundamentally the same and designed to obtain a more efficient transfer of power from one circuit to another by matching the impedances of the circuits in question. Whilst not wishing to provoke the wrath of the various authors and designers of aerial matching networks, the writer would nevertheless point out that when used with single wire-fed and Marconi type aerial systems this nomenclature is quite justifiable, but when used with aerial systems employing Zeppelin or similar type feeders or transmission lines, this is no longer the case. The title "Aerial Matching Network" then becomes a misnomer, since no longer does the network match the aerial impedance to the impedance of the output circuit. Rather it forms an impedance matching coupler between the output circuit and the feeder or transmission line.

Those who have constructed and tried an impedance matching unit with varying degrees of success or failure may do well to bear this in mind, and also that frequently the network has as its output not the supposed feeder impedance—usually about 600 ohms—but an impedance of quite a different value, which is a reflected impedance due to the mis-match of impedances between the aerial and feeder system. Because

of this standing waves will appear on the feed line, and whilst the system represents a tuned condition creating a better load on the transmitter, it is not the correct load so far as the aerial proper is concerned. Undoubtedly this accounts for the dubious results obtained and the discrepancies in tuning noticed by some users of a feeder-tank coupling unit.

Perhaps the most common feeder system to be found at amateur stations is a feed line composed of a number of $\frac{1}{4}$ -wave sections—a resonant feeder system. In spite of the wide frequency range, ease of tuning and adaptation to operate on several harmonically related bands, as a feeder system of high efficiency this type leaves much to be desired. Even though it is perfectly tuned throughout, because of the presence of standing waves the losses can never be as small as those of a non-resonant or matched impedance system.

Problems of Matching.

In any radiating system employing feeder or transmission lines there are three major considerations: the radiator, the feeder system, and the impedance matching devices between feeder line and aerial and between feeder line and transmitter output. Proper consideration of any one of these factors alone will not give an efficient system, but when each is considered with respect to the other, then a highly efficient system results.

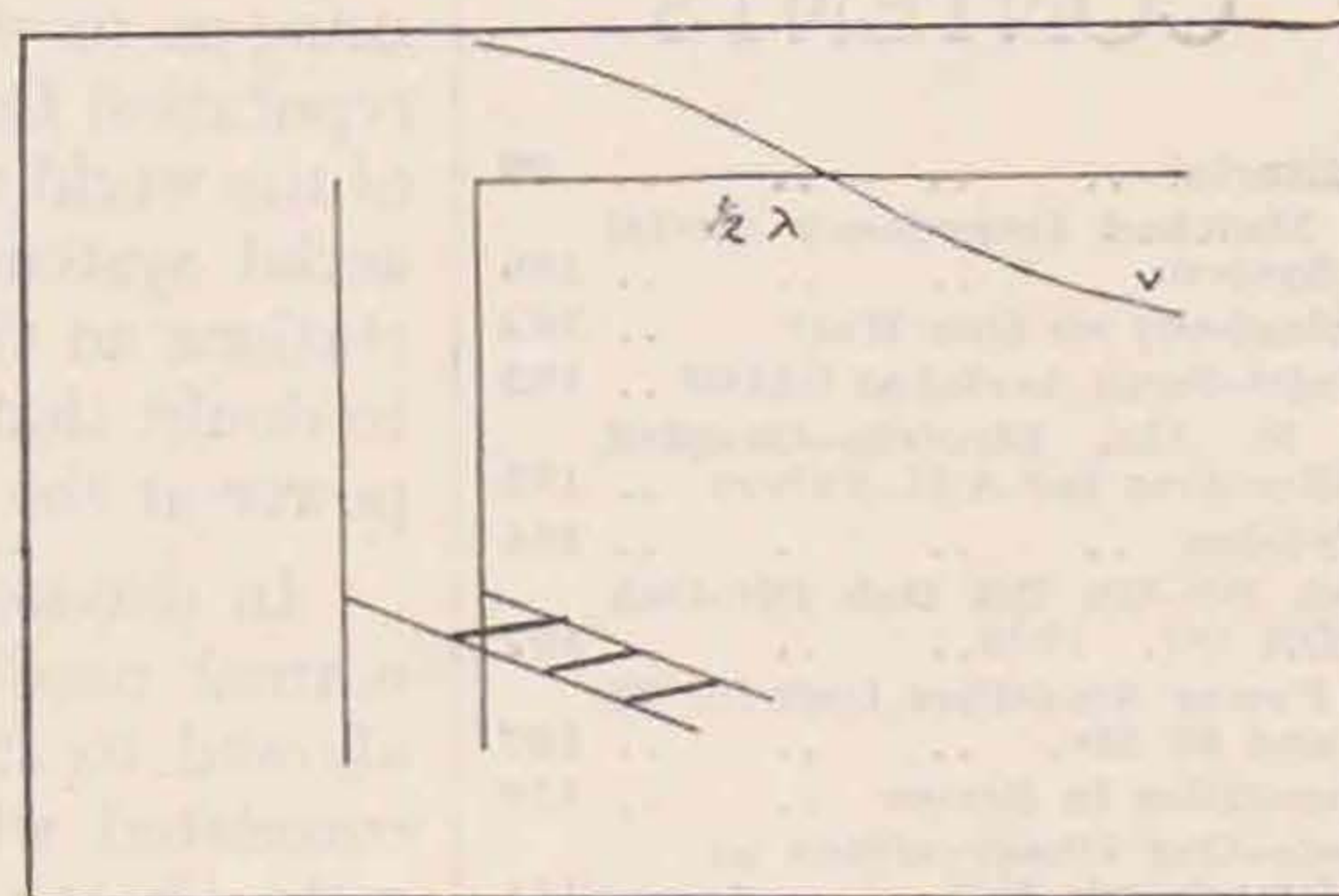


Fig. 2.

Voltage distribution when the system is operated in the 3.5 Mc. band.

Consider, in the first place, the coupling usually employed between a Zeppelin feeder line and the radiator proper. The impedance of a half-wave aerial varies from a very high value at the open end to a very low value at the centre. With an aerial composed of a number of half-waves the impedance varies in very much the same way in each half-wave section. It immediately becomes apparent that whether we feed at the centre or at one end, we are attempting to couple two circuits of very unequal impedances, resulting in a large loss of power and low efficiency. Consider, secondly, the coupling between the output circuit and the

feeder system—prior to the advent of the Collins Coupler. Here we are attempting to couple a 600-ohm feeder line to a 3,000-ohm tank circuit (approximate values), resulting in a further loss of power due to mis-match. Of these two losses perhaps the former is the greater, and whilst an "Aerial Matching Network" helps greatly to reduce the latter loss—even though its title is misleading—nothing appears to have been done to reduce the former.

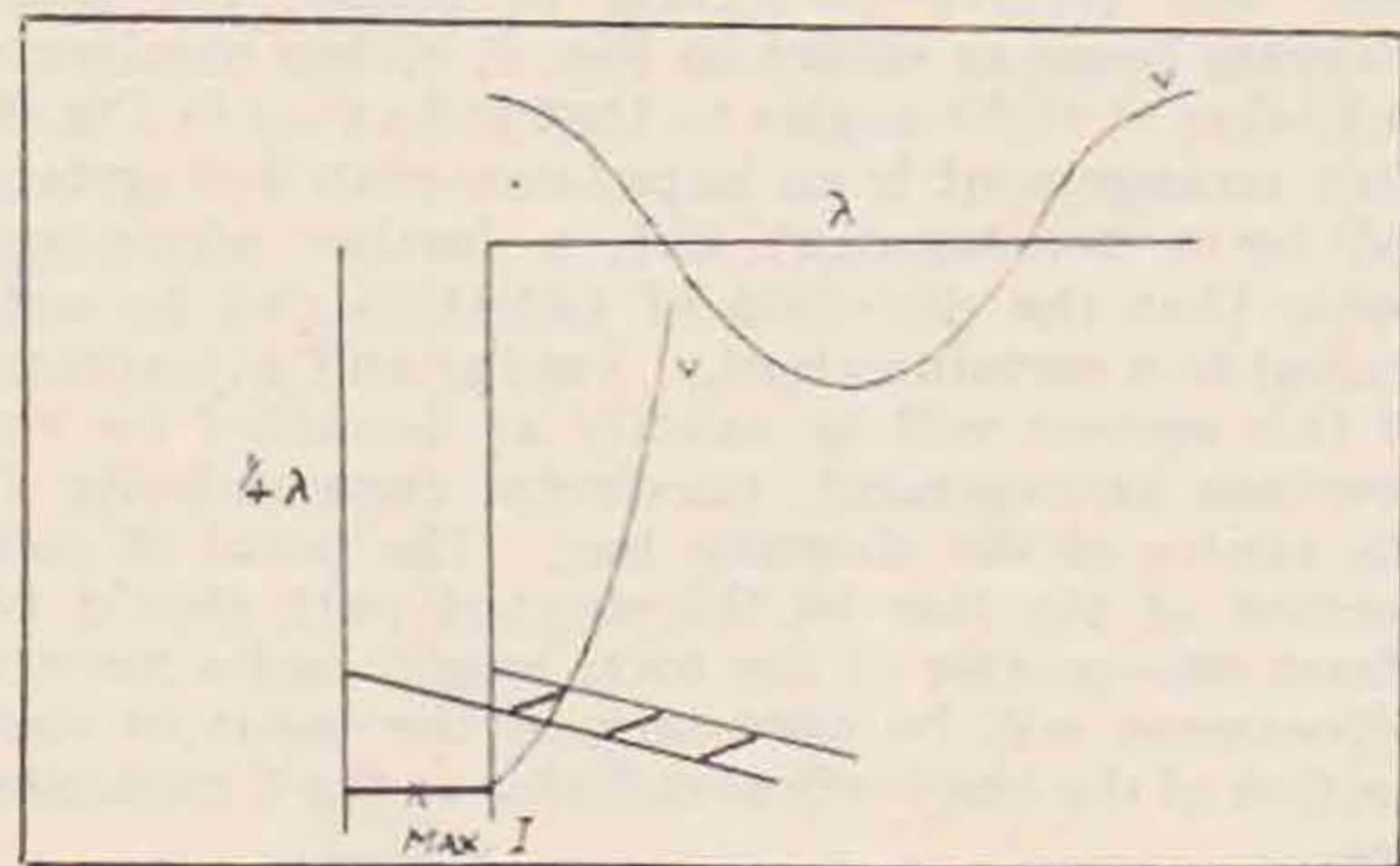


Fig. 3.
Voltage distribution when the system is operated in the 7 Mc. band.

The ideal transmission line would be a non-resonant line terminating in an impedance equal to its surge impedance, when reflection would not occur and standing waves would not be present. There are two main drawbacks to a non-resonant line: the difficulty of impedance match between aerial and line, and the fact that the system can only be used on one band. The following system dispels these disadvantages.

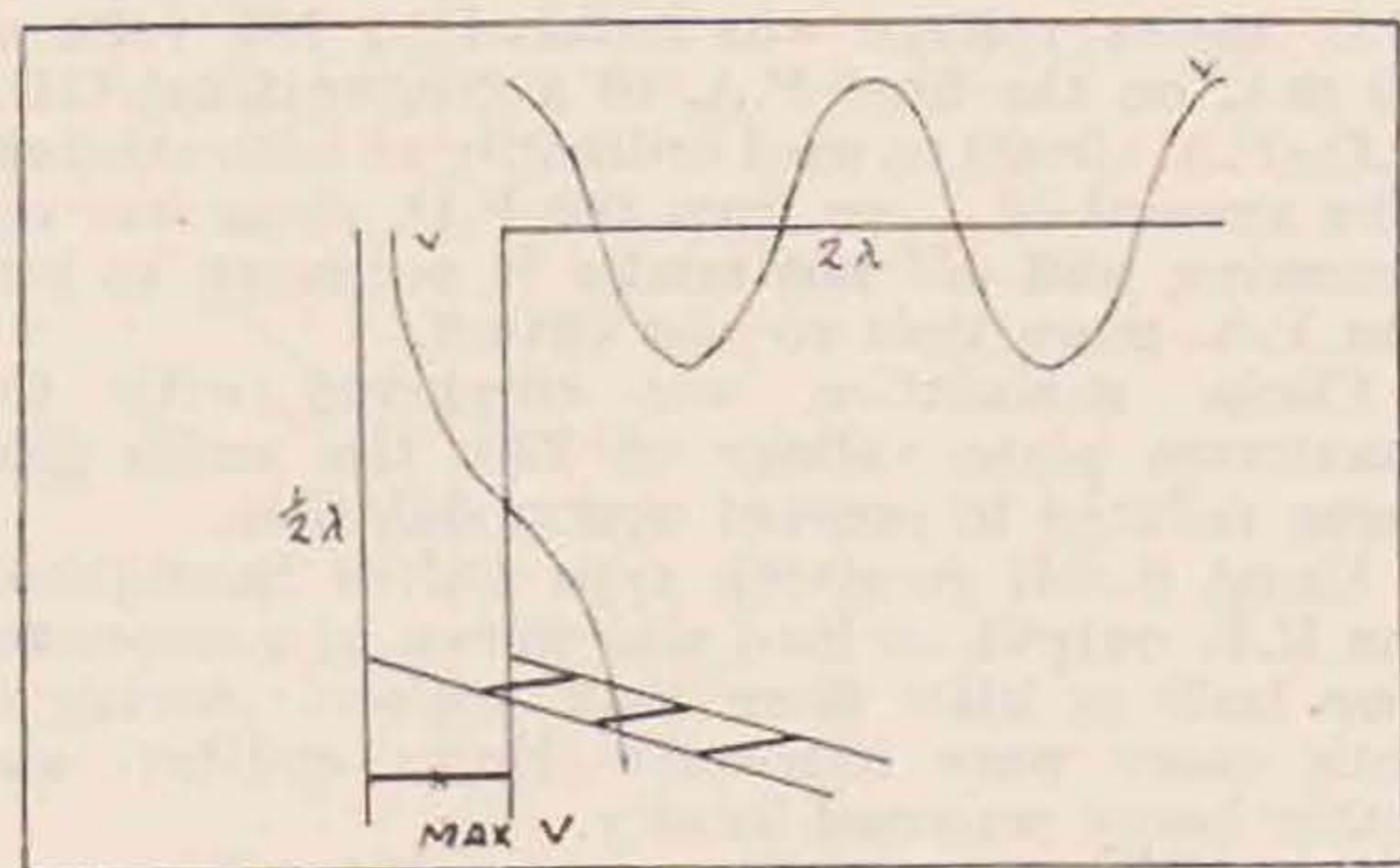


Fig. 4.
Voltage distribution when the system is operated in the 14 Mc. band.

Since a single system cannot be arranged to operate as an impedance-matched radiator with non-resonant feeder line on all the amateur bands, a compromise will have to be made by arranging a radiating system giving the above on one band only with operation as a Zepp-fed Hertz or Marconi on the other bands. Reference to Fig. 1 shows the proposed system to consist of a voltage-fed "top" with twin feeders shorted at one end and the feed line proper tapped on to these shorted feeders. The impedance of a pair of equally spaced conductors a half-wave long varies in a similar manner to that of a half-wave conductor, i.e., from a very

high value at the open end to a very low value at the closed end. Therefore, if the non-resonant feed line is connected to the correct point on the shorted line, it will have the proper terminating impedance; standing waves will not appear on the non-resonant line and there will be a maximum transfer of power to the radiator due to the true matching of the impedance of the line and the top.

Operation.

A similar system to this appeared in *QST* some time ago. A half-wave top on 3.5 Mc. seems desirable, since when operating on increasing harmonic frequencies this would give a good low-angle radiation. A suitable length for the downward shorted impedance matching line would be a quarter-wave or $\frac{1}{2}$ -wave on the band on which maximum efficiency is required. A half or full wave would also be suitable, and an extra few inches may be allowed for adjustment of the shorting bar. The non-resonant line may be any convenient length and the point of connection to the shorted line would be about one-third of a half-wavelength from the shorted end. The system will operate as an impedance-matched aerial fed by a non-resonant line on one band or possibly on two bands by the suitable adjustment of the shorting bar and non-resonant line tapping point,

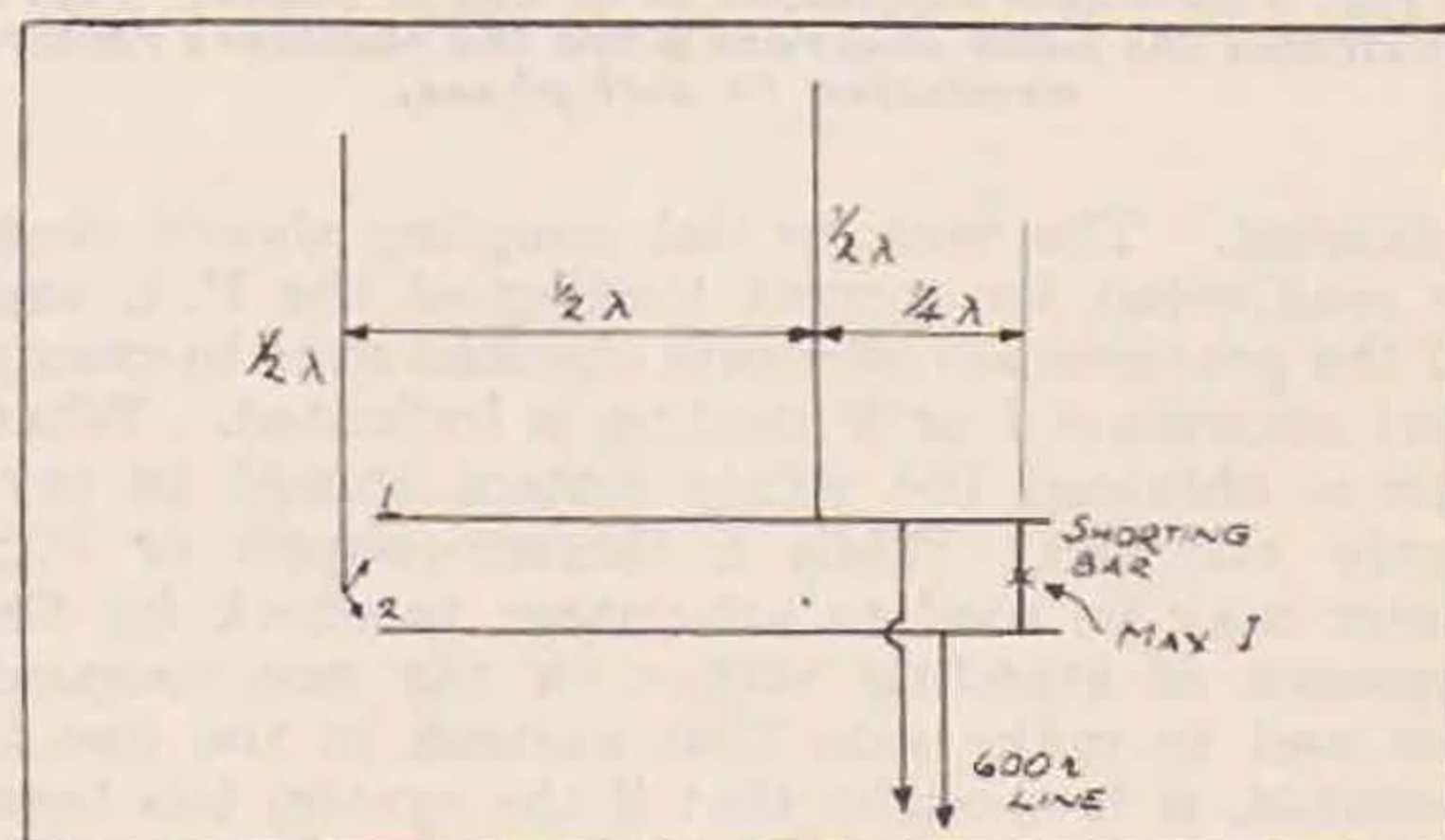


Fig. 5.
An alternative arrangement for those who have insufficient space to erect the system illustrated in Fig. 1.

although it is bound to be most efficient on one band due to the length of the top. The actual length of the top with untuned feeder lines is much more critical than with the normal Zepp-fed top, and if the top is not the correct length it will be impossible to obtain a true impedance match between it and the non-resonant line. Standing waves and circulating currents will then appear on the line with a resultant loss of power. When correctly adjusted there will be maximum current in the top and the current reading along the line will show no variation at any point. The system could be used as a normal Zepp-fed Hertz on 3.5 Mc. by removing the shorting bar, and it would be well to arrange for a suitable length of non-resonant feed line for satisfactory operation on this band, while for operation on 1.7 Mc. it can easily be altered to an end-on or Marconi arrangement.

Figs. 2, 3 and 4 show the voltage distribution when using the system with a 33-ft. line on 3.5, 7 and 14 Mc. respectively. The top is fed at a point of maximum voltage, and on 7 Mc. there will be maximum current at the centre of the shorting bar, and on 14 Mc. maximum voltage.

After deciding upon which band—7 or 14 Mc.—maximum efficiency is desired, the non-resonant line should be connected at a point approximately one-third of the total length of the impedance matching line from the shorting bar, and a suitable ammeter connected in the centre of the shorting bar or a voltage indicator when the line is a number of half-waves. Tune the transmitter and the output network in the normal manner, and then adjust both the point of connection of the non-resonant line and the position of the shorting bar until maximum current (or maximum voltage) is

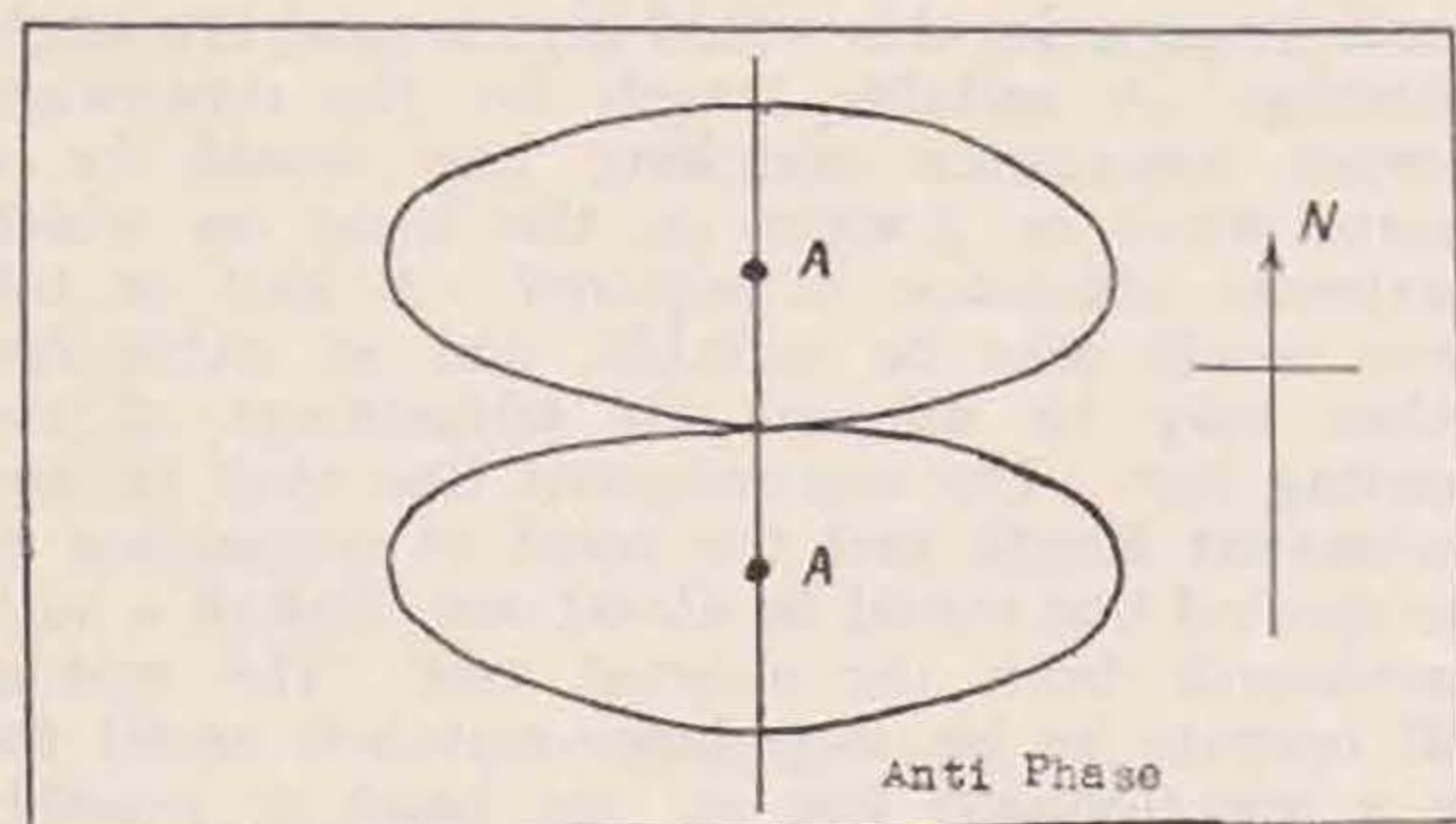


Fig. 6.

Changing the position of the vertical radiators shown in Fig. 5 produces excitation in or out of phase. Fig. 6 illustrates the polar diagram when the radiators receive excitation in anti-phase.

indicated. The tank to line coupling should then be readjusted for correct loading of the P.A. and all the previous adjustments checked over to ensure that maximum I or V reading is indicated. When this is obtained the whole system should be perfectly matched. While a thermo-coupler or F/S meter may be used to advantage to check for the presence of standing waves on the non-resonant line and to make sure that current in the line is constant, it is thought that if the system has been carefully adjusted this should not be necessary. It is realised that standing waves and most of the losses encountered with Zepp-fed Hertz systems will still be present in the impedance matching line, but as a whole the system will be very much more efficient due to the impedances in question being truly matched.

An Alternative System.

A similar arrangement, which was described in QST for October, 1935, may prove of interest to those who have insufficient space to erect the system already described.

Fig. 5 shows the arrangement to consist of two vertical half-wave radiators, spaced a half-wave-

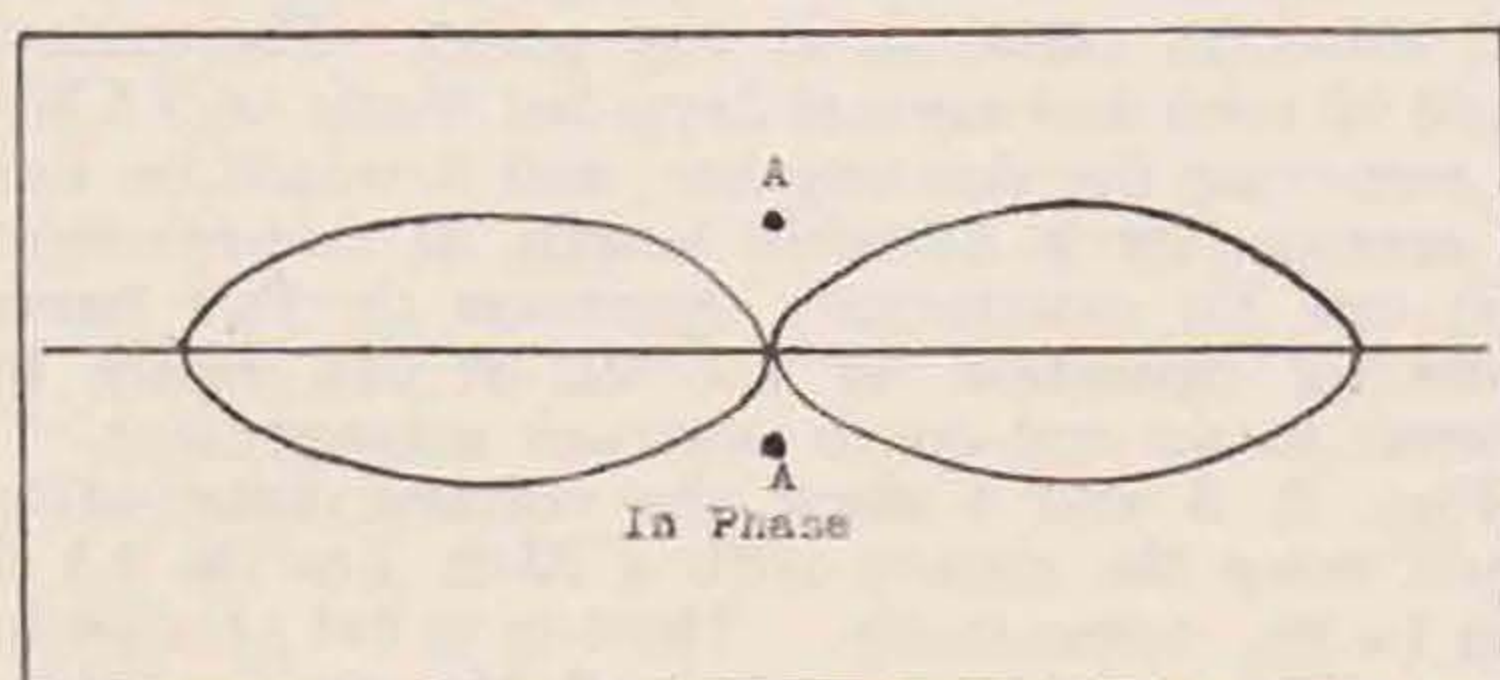


Fig. 7.

Polar diagram when the radiators receive excitation in phase.

length apart and connected to an impedance matching line of total length $\frac{1}{2}$ -wave, with a shorting bar at one end and a non-resonant line connected to this shorted line at a point to give correct terminating impedance. One of the vertical radiators can be changed from one side of the impedance matching line to the other. When in one position the two vertical radiators will receive excitation in anti-phase, giving a polar diagram as shown in Fig. 6. When in the other position they will receive excitation in phase, the polar diagram being as shown in Fig. 7, giving maximum radiation at right angles to that indicated in Fig. 6. This arrangement is an impedance-matched system fed by a non-resonant line, a further advantage being that the direction of radiation can be controlled to a certain extent. Tuning and adjustment of this system will be exactly as described for the previous arrangement, maximum current being at the centre of the shorting bar. The point of connection of the line to the shorted part should be about one-quarter of the total length and a further adjustment will be necessary of the point of connection of the one vertical radiator to the Z matching line.

The writer hopes to have the former system under test in the very near future and would be pleased to hear from any amateur who also decides to test this system, with a view to co-operation or to offer suggestions should any discrepancies be found, either in initial adjustment or operation.

TELEPHONY ON ONE WATT

DURING the earlier part of this year it was agreed that it would be interesting to use phone with an input of 1 watt to see how it could survive the 7 Mc. QRM. Accordingly the D.C. mains voltage was reduced to 100 volts at 10 mA. on the final P.A. of a conventional C.O.-F.D.-P.A. circuit as used ordinarily at both stations. The amount of drive from the F.D. stage was not excessive, and did not render it necessary to bias the P.A. more than to just cut-off.

Choke modulation was employed with the maximum plate voltage of 230, the audio gain being reduced to prevent overmodulation.

Using 6-volt receiving type valves throughout, the R.F. output on load was shown in a resonance loop bulb as little more than a glow. Aerials in both cases were half-wave Hertz end-fed, and rather badly screened locally.

Results were certainly very surprising in view of previous experience of 10-watt operation, for generally reports were similar regarding QRM and QSA, but QSB was occasionally more marked. During March and April over 63 contacts were made with G, F and PA stations, QRM varying from R5 to R9, while the QSA was nearly always reported as W5!

The writers hope that the foregoing may encourage interest in real QRP phone work and at the same time serve to disprove the idea that high power is essential for inter-G working.

G2JB—G2GZ.

Stray

BERS293 is now on the air as VS1AL, and is looking for G contacts.

MULTI-BAND AERIAL AT G6DH

By D. W. HEIGHTMAN.

THE average amateur, when faced with the problem of what aerial he shall use, has generally to reach some compromise which is based chiefly on a desirability to work on several bands and a lack of space for the ideal arrangement, *i.e.* separate aeriels for each band. It is, of course, undesirable to erect several aeriels in close proximity due to the unwanted interference effects between them. We, therefore, come to the conclusion that the best arrangement will be one (non-directional) aerial erected as efficiently as possible, using a method of coupling which will enable quick and easy change from one band to another.

The writer's station, in common with those of many other amateurs, is not screened to any extent by nearby high buildings, overhead wires and the like, therefore no feeder system is used, since the chief advantage of feeders is that the aerial may be placed in an unscreened position. In any case, a multi-band feeder is a complicated and unsatisfactory affair. Again, in the writer's case, no room is available to erect a 136-ft. aerial. The best length was therefore taken as being 66-68 ft., and it was desired to use this on any band from 1.7 to 56 Mc.

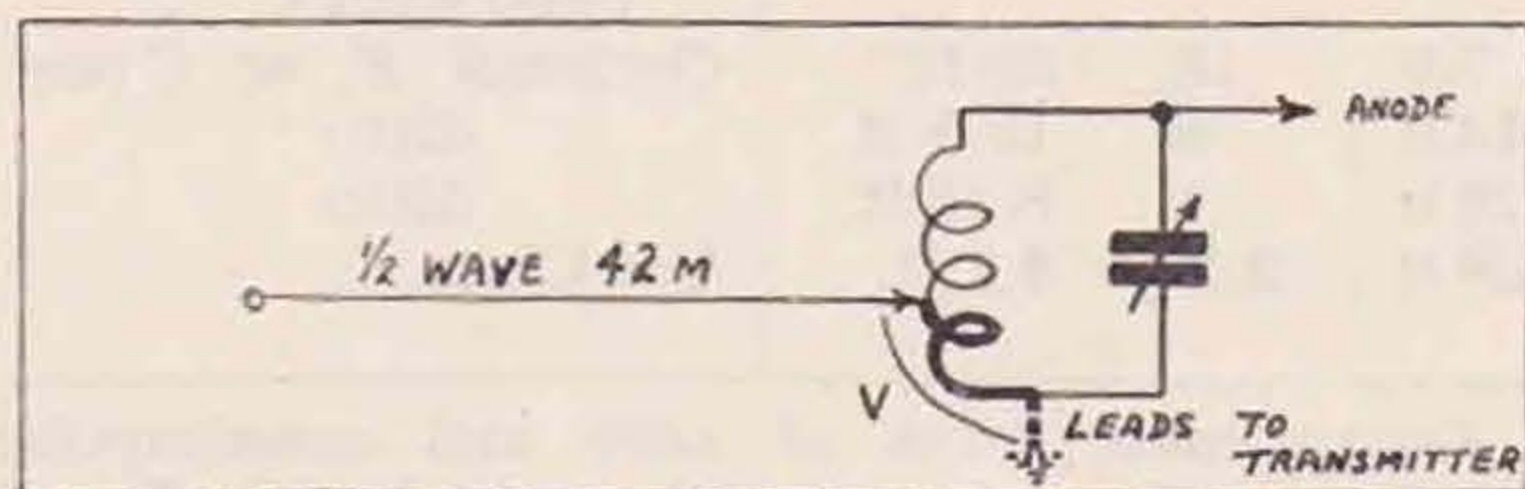


Fig. 1.
Normal tapped-on aerial arrangement.

Prior to the tests about to be described, the aerial was "tapped direct on." It was found, however, that with this coupling, radio frequency currents were getting back into the mains and keying leads, so that touching the leads caused the frequency of a self-excited oscillator to vary; equivalent circuit, Fig. 1. This is due to the fact that, in most cases, the aerial, operating in conjunction with the leads to the transmitter, etc., does not produce zero R.F. potential at the baseline of the transmitter. In an effort to prevent this, R.F. chokes were inserted in all the leads to the transmitter, with suitable by-pass condensers; see Fig. 2. When this was done, however, the aerial take-off was practically nil and the working of it was upset, thus showing that the leads to the transmitter were acting as semi-earth-counterpoises. Further tests have shown that, more or less,

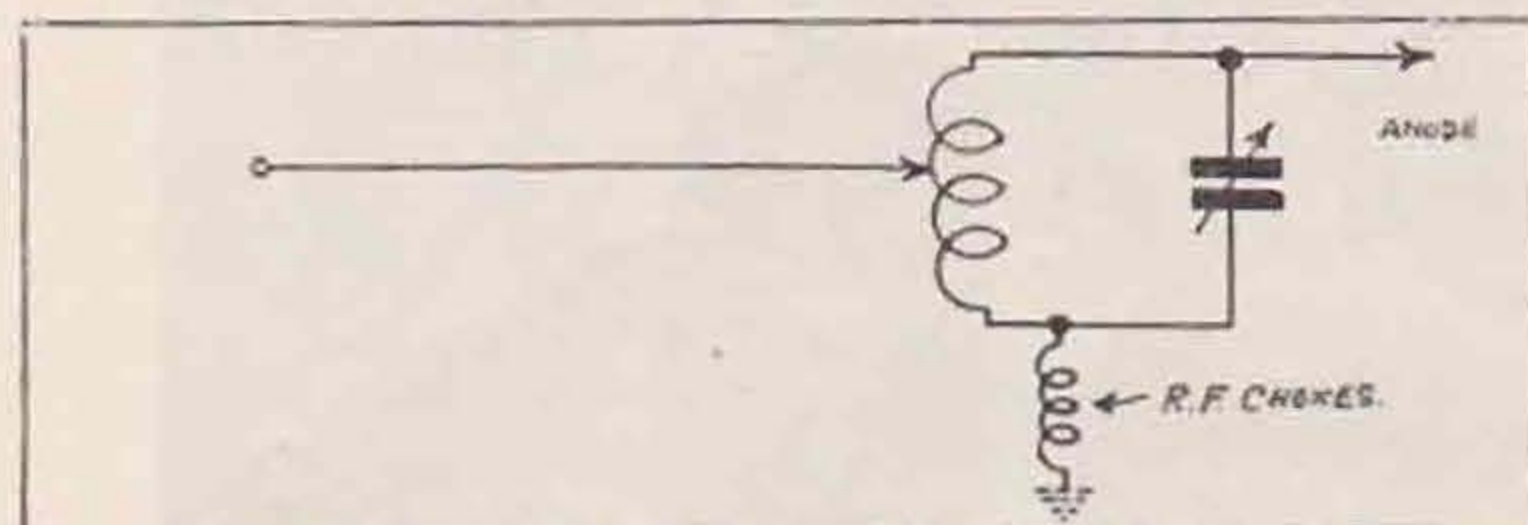


Fig. 2.
R.F. chokes inserted to prevent feed back.

any "tapped direct on" aerial acts in conjunction with the various leads to the transmitter.

Since in these tests no R.F. was getting back into the mains, etc., until the aerial was connected, it was decided to couple the aerial by a coil and use a separate earth or counterpoise. The following remarks apply only when the aerial is operated on its fundamental or harmonic frequencies. The

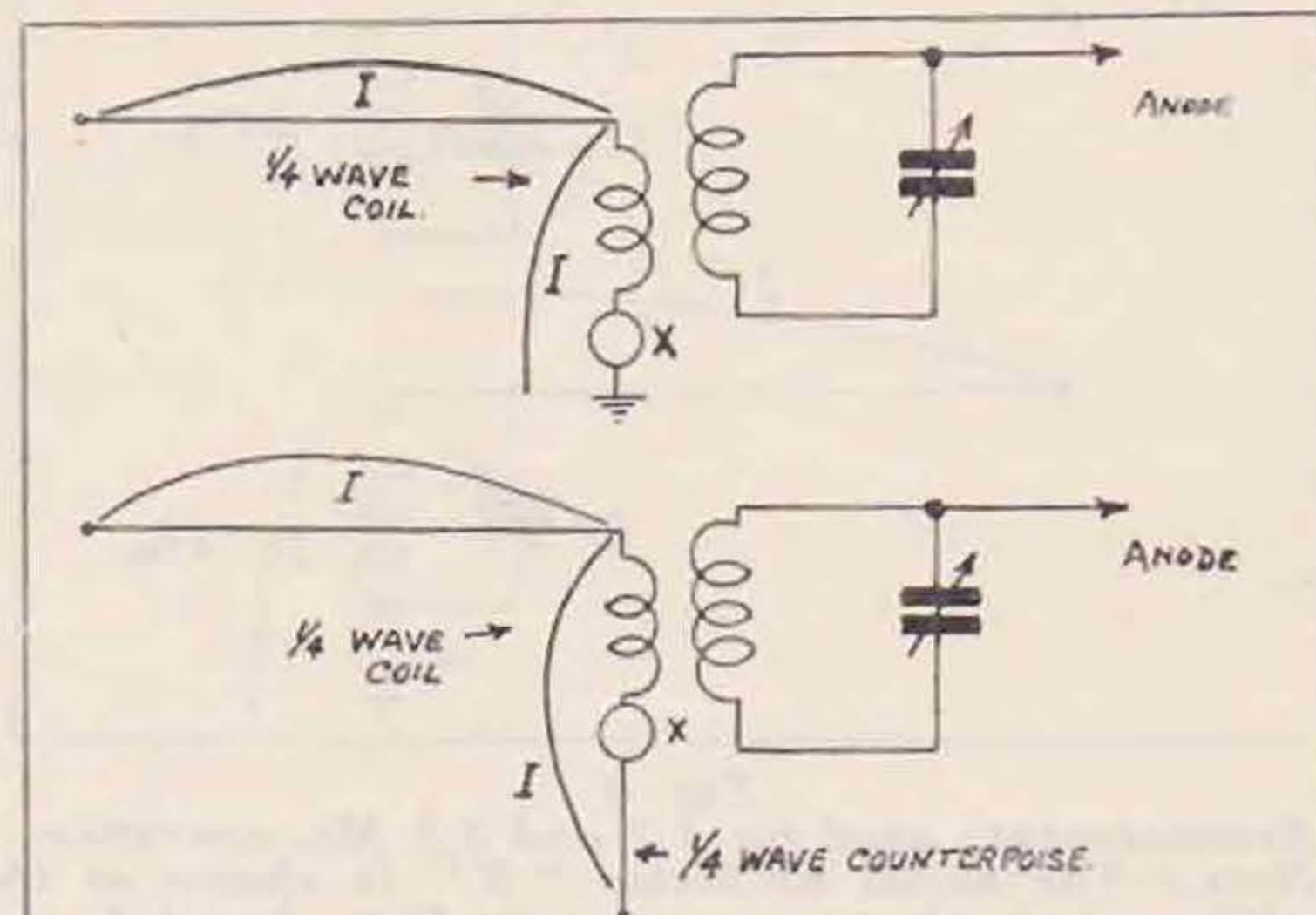


Fig. 3.
Arrangements recommended by the author for 7, 14 and 28 Mc.

method of coupling used for 3.5 and 1.7 Mc. is mentioned later. After a considerable amount of experiment, the best way of coupling the aerial was found to be by means of a coil designed to be exactly one $\frac{1}{4}$ -wave, as in Fig 3. This method of coupling has the advantages of loose coupling, symmetrical distribution of current and voltage in the aerial, no R.F. in leads to transmitter (greater efficiency) and ease of frequency changing from one band to another. If used with a self-excited transmitter the note will be very stable.

As will be seen from Fig 3, the aerial is connected to one end of the $\frac{1}{4}$ -wave coil; *i.e.* $\frac{1}{4}$ -wave for the band in use, whilst the other end goes to earth or to a $\frac{1}{4}$ -wave wire for the band in use. In the writer's case, it is possible to obtain a good earth connection and in actual tests no difference in signal strength is reported, whether the earth or $\frac{1}{4}$ -wave wire is used. Therefore, those using this aerial system have the option of employing the earth connection if this can be made efficient, or where the transmitter is located at the top of a building the $\frac{1}{4}$ -wave wire method can be adopted. If the latter is used, it should be insulated efficiently, as the end of the wire is at high R.F. potential. This counterpoise (it is not, strictly speaking, a counterpoise, but is called that for want of a better word) should be as nearly as possible at right angles to the aerial and can be either indoors or outdoors.

The actual size of the coupling coil for each band will depend on several local variable factors, but those in use at G6DH are tabulated below. The two simplest methods of checking whether the aerial system is resonant on the desired frequency are as follows: (a) If a self-excited oscillator is available the aerial should be coupled loosely to this, with an aerial ammeter connected in the

earth or counterpoise at X in Fig. 3. The frequency of the oscillator is varied above and below the desired frequency. If the meter indicates maximum current below the desired frequency, it will be necessary to take a turn or so off the coupling or *vice versa*, until maximum current is obtained on the desired frequency; (b) where no oscillator is available and the transmitter is crystal-controlled, the aerial is loosely coupled to the

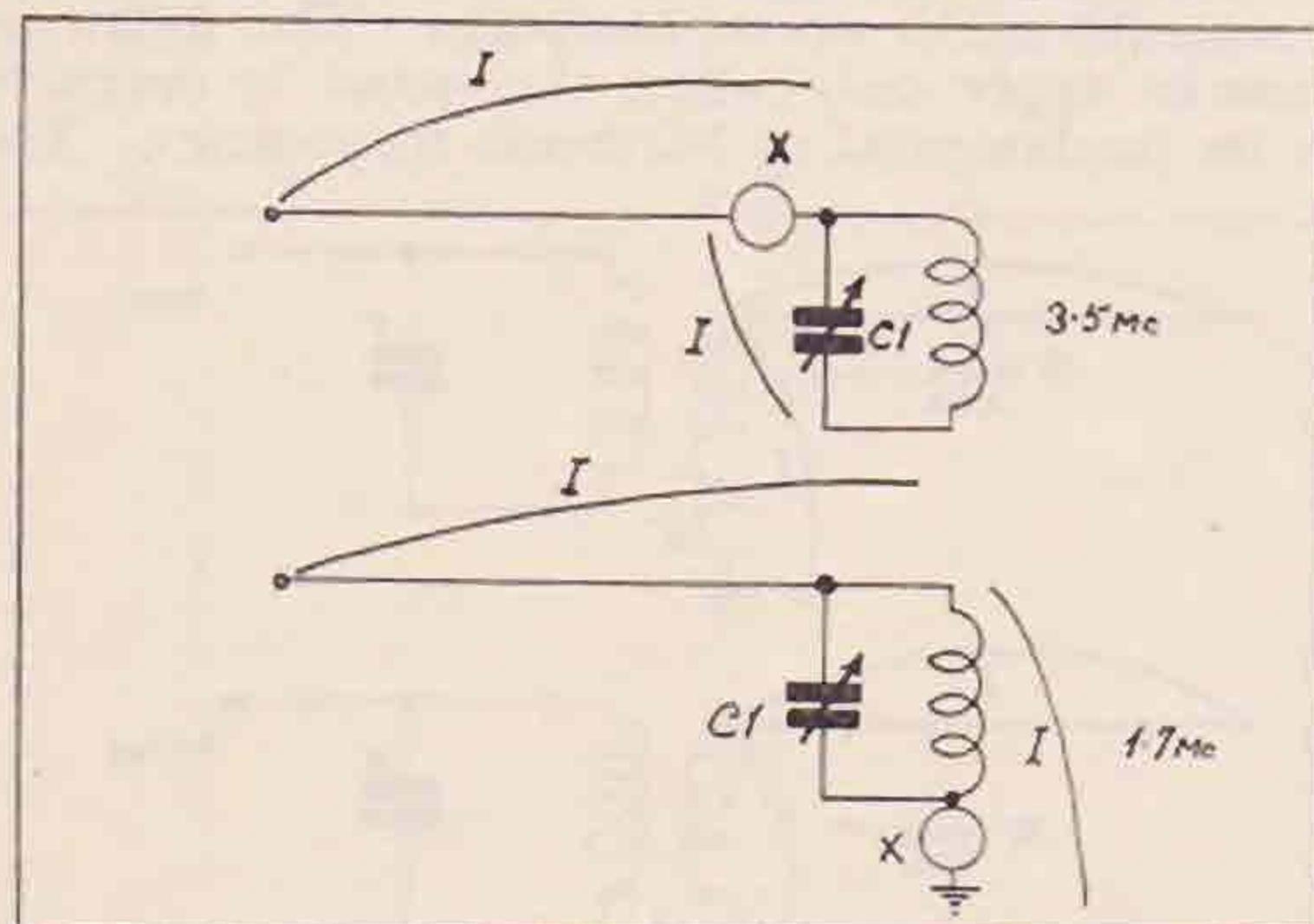


Fig. 4.

Arrangements used for 1.7 and 3.5 Mc. operation. Note.—The aerial ammeter "X" is shown at the position of maximum current in Figs. 3 and 4. C1 .00015 μ F.

transmitter and a small variable condenser of about 20 μ F. capacity is connected across the coupling coil; the condenser should have a low minimum capacity. This condenser is varied and variations in plate current are noted. If it is found that extra capacity is required across the coil to produce resonance, then a slightly larger coil will have to be used until a coil is found which is resonant without the addition of any additional capacity.

Should there be little, or no, take-off, using approximately the correct coil sizes, etc., the connections to the coupling coil should be reversed.

On 3.5 Mc. no earth or counterpoise is used, the arrangement being as in Fig. 4. The whole system is tuned to one $\frac{1}{2}$ -wave by C₁ on this frequency. On 1.7 Mc. the same coupling coil as that for 3.5 Mc. is used, and C₁ tunes the aerial system to $\frac{1}{4}$ -wave. The coupling coil should be very loosely coupled to the transmitter on these two frequencies.

As far as results are concerned, all continents have been worked on 7, 14 and 28 Mc., using this aerial system, with inputs below 50 watts. While no DX has been attempted on 1.7 or 3.5 Mc., good reports have been obtained from the usual distances worked on these frequencies.

At G6DH the aerial is bent nearly at right angles at its centre point, i.e. in the form of an inverted "L" aerial. Possible this may help to make the aerial more "non-directional" than it would be, were it arranged with its whole length horizontal.

Table No. 1.

Band (Mc.)	Turns	Counterpoise	Remarks
1.7	26	—	Use earth. Tune with C.
3.5	26	—	No earth or C'pse. Tune with C.
7.0	16	33 ft.	Optional E. or C'pse.
14.0	9	16.5 ft.	ditto
28.0	4	8.25 ft.	ditto
56.0	3-2	4.1 ft.	Use C'pse.

Approximate sizes of coils and counterpoises for various bands. All coils wound with No. 14 wire and turns spaced one diameter of wire.



The party who visited Holland, Belgium and France during August Bank Holiday.

A 56 Mc. ELECTRON-COUPLED RECEIVER FOR A.C. VALVES

By C. S. POLLARD (G2GB).

NOW that C.W. activity on 56 Mc. is being properly organised and regular transmissions are taking place, every encouragement should be given to the B.R.S. membership to co-operate by standing by for these schedules. Already DX is making its appearance on the band, which, in itself, should induce an extension of the use of straight or superhet receivers. Few, however, will feel disposed to build a superhet specially for use on 56 Mc., and the purpose of this article is to present a simple receiver working on the well-known electron-coupled principle, and having for its recommendation a high degree of sensitivity and stability.

It will be seen that the receiver is constructed from standard components, most of which will already be in the possession of intending constructors. An *Osram* MS4 is used as detector, transformer-coupled to an MH4. It is realised, of course, that theoretically better methods of coupling could be arranged, but in practice plain transformer-coupling has been found to work exceptionally well. Further, a transformer can be produced in almost any "shack," while a choke, for instance, of sufficient inductance for choke-coupling might not be so readily forthcoming. The circuit is shown in Fig. 1.

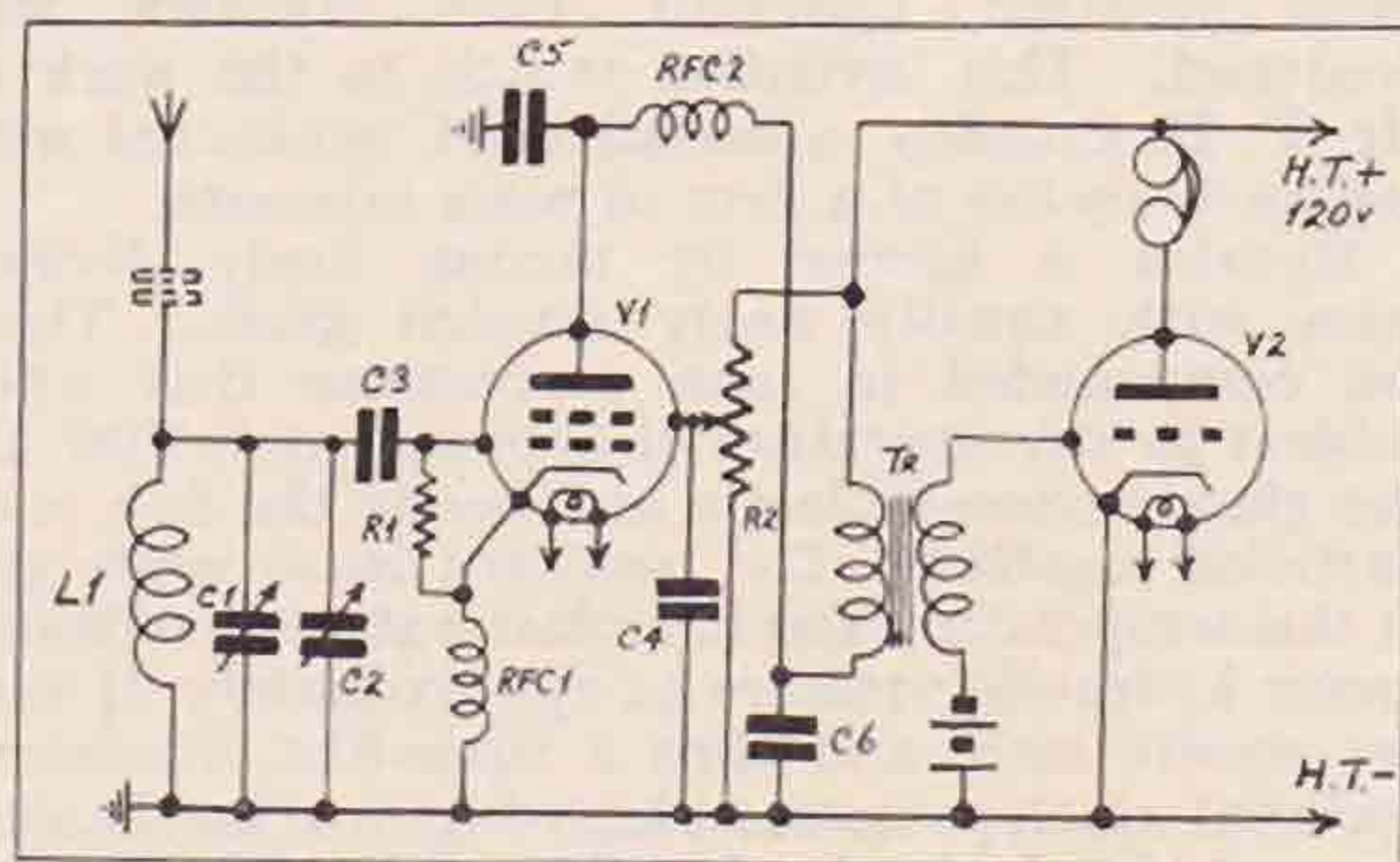


Fig. 1.

Circuit of 56 Mc. electron coupled receiver using A.C. valves.

- C1. 15+15 μ F midget series gap, Jackson Bros.
- C2. 8 μ F midget, type 502, Eddystone.
- C3. .0001 μ F, tubular, T.C.C.
- C4. 1 μ F, T.C.C.
- C5, C6. .0003 μ F tag type, Dubilier.
- R1. 1 megohm, Dubilier.
- R2. 50,000 ohms potentiometer, Varley.
- RFC1 & 2. 5 metre chokes, Eddystone.
- L1. 7 turns $\frac{1}{2}$ in. diameter, 14 gauge wire.
- TR. 3:1 L.F. transformer.
- V1. MS4 valve, Osram.
- V2. MH4 valve, Osram.
- 2 extension rods, 4 inch, Eddystone.

Construction.

Details of the chassis dimensions will be found in Fig. 2, while the photograph shows the layout quite clearly. Care should be taken when cutting out the chassis to include the flanges in the overall measurements. The flanges are then bent at right angles for bolting the chassis together.

A *J.B.* series-gap condenser was used for tuning in the original receiver, and since one set of stator plates is earthed to the chassis, it is necessary to insulate the spindle from the screen. But there is no reason why an ordinary condenser should not be used for tuning, in which case it could be mounted directly on the screen.

A little trouble may be saved in construction by testing the potentiometer to see whether the spindle is insulated from the slider. In many types this is the case, and the necessity for insulating the potentiometer from the screen is thus eliminated. The headphone terminals must, of course, be insulated from the panel.

The panel should not be drilled until the condenser, potentiometer, and valve-holder have been mounted on the screen. The screen and panel should then be bolted into position and the extension rods fitted to the condenser and potentiometer. Thus the exact point of contact between the extension rods and the panel can be marked for drilling. If the screen has been drilled carefully, little difficulty will be experienced in getting these points to check up with measurements. The cathode choke, grid leak, and grid condenser are wired directly to the appropriate terminals on the valve-holder, and the heater wires are taken straight down through the chassis. The *Eddystone* 8 μ F. variable condenser is mounted straight across the tuning condenser. The other components may then be assembled and wiring carried out. The transformer is mounted in such a position that the earthing terminal goes straight on to the screen. Great care should be taken to see that all contacts are really sound, for a slightly loose contact can not only spoil QSO's, but also cause sleepless nights!

There is one important point to be mentioned in connection with the MS4 valve. The cathode will be found to be connected to the metallising, and since in an electron-coupled circuit the cathode is oscillating at high frequency, it would not be conducive to good results for the metallising to try to keep in step with the more nimble cathode. A ring should therefore be scraped round the metallising as near to the valve base as possible. The remainder of the metallising does not affect results. It could be earthed to the chassis if desired, but it is generally considered better to remove it altogether and arrange an independent

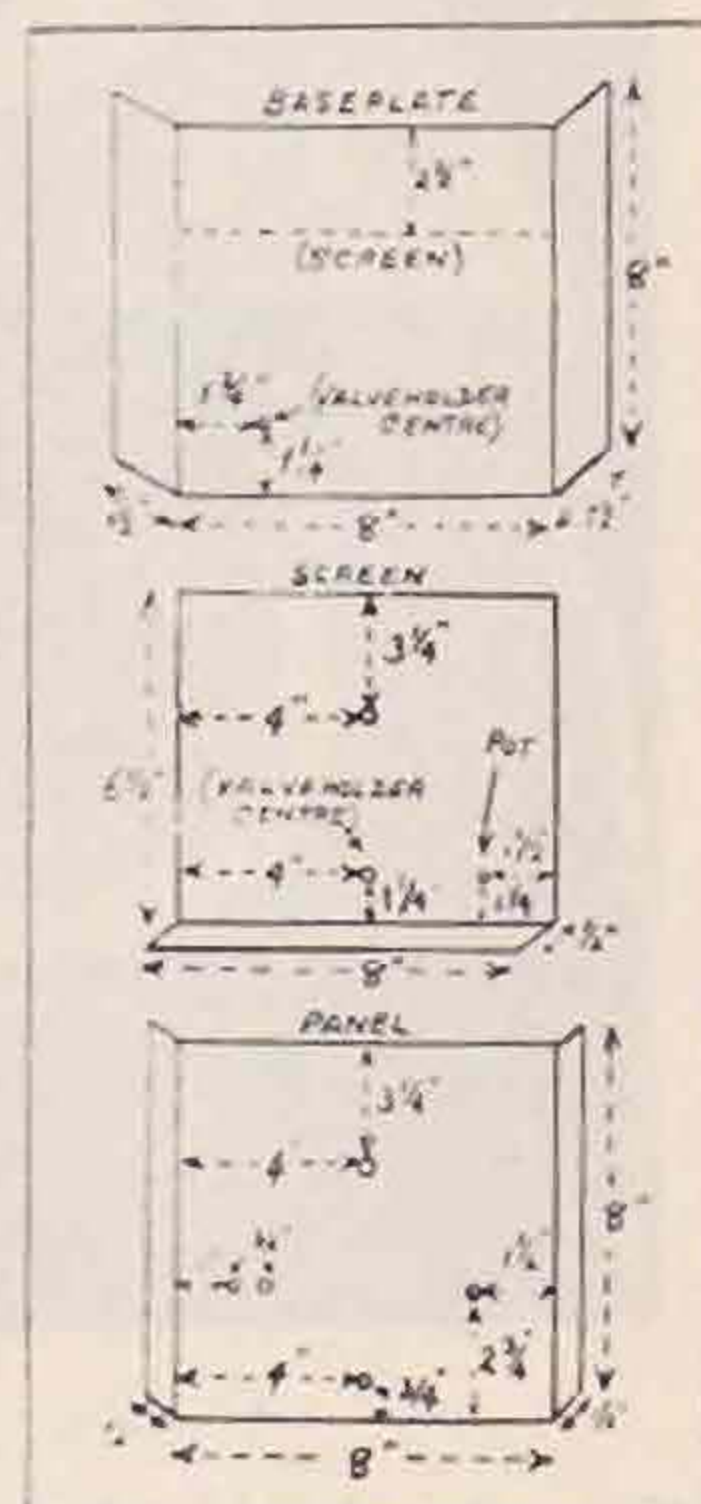


Fig. 2.

Chassis dimensions.

screen, if screening is found to be necessary. Actually, the author's valve is working perfectly satisfactorily with only half the metallising removed.

Decoupling was found to be unnecessary. Provided that the centre-tap of the filament transformer and the chassis of the set are earthed, every trace of hum is removed. Since the total current consumption is less than 5 milliamps, a dry battery may be used for H.T.

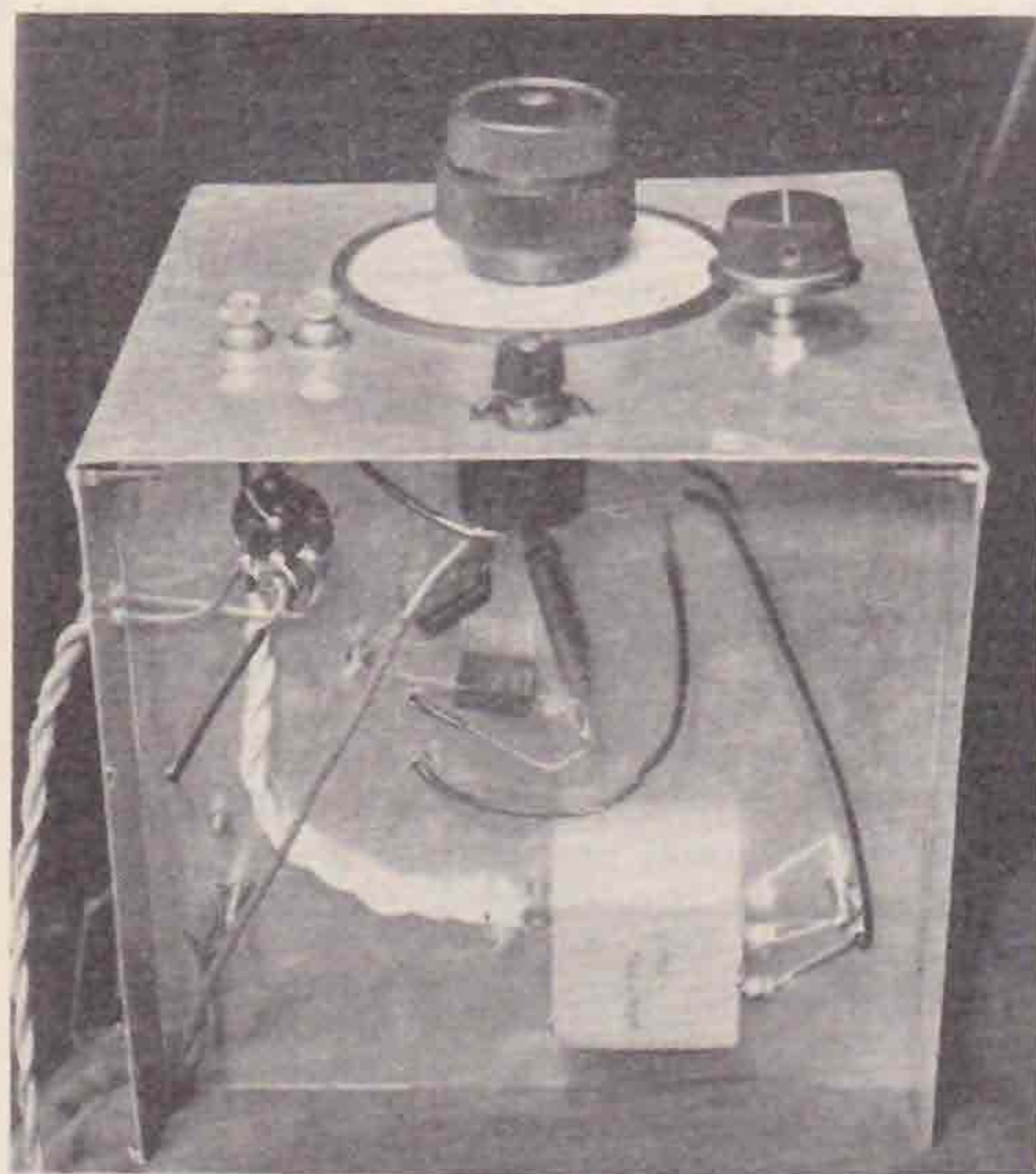


Fig. 3.

View of underside showing position of components and wiring.

Automatic bias may, of course, be arranged, but as this receiver is intended to be built from components drawn, as far as possible, from the shack's stock, a battery was used in the original. The MH4 is given 3 volts negative bias.

Operation.

Aerial coupling may be arranged by a two-turn coil coupled to the cold end of the grid coil, but by terminating the lead-in with a crocodile clip and putting this on the insulation of the tuning condenser near to the fixed vanes sufficient coupling will be obtained. In fact, this was found in practice to be better than inductive coupling.

Individual receivers are bound to differ slightly, and the small condenser, which is wired directly across the main tuning condenser, will be found useful for putting the edge of the band in the right place on the dial. Reaction is almost invariably smooth in an electron-coupled circuit, and no difficulty should be experienced in this respect. While a good slow-motion dial is essential for the tuning condenser, reaction can be controlled with an ordinary knob.

Since the receiver has been built as simply as possible, consistent with good results, improvements could no doubt be made by individual constructors, and if any outstanding improvement is made without sacrificing simplicity, the author would be very glad to hear about it.

MYCALEX

WHEN dealing with frequencies of the order of 56 Mc., and higher, some difficulty is experienced in finding a suitable insulation material, as it is a well-known fact that the majority of materials are unsatisfactory at these higher frequencies, as reference to the following table will show:—

Material.	Power Factor.	Permittivity.	Relative Loss.
Quartz	... .001	3	1
Mycalex	... .002	6.1	4
Mica	... .003	6.5	7
Porcelain	... .008	5	13
Ebonite	... .02	3	20
Bakelite	... .1	5	160
Glass (Pyrex)	.3	4.5	450

It will be seen from the above table that Mycalex gives a very small loss, and whilst not so good as Quartz, has mechanical advantages that for many purposes, more than outweigh its slight inferiority.

Probably the oldest and best known natural insulation material is Mica.

As a dielectric Mica is excellent, but unfortunately, suffers from severe limitations in having no mechanical strength in any one plane, and this outstanding disadvantage has, therefore, led to the productions of several synthetic insulating compounds having mica as their base.

It is important to note that these compounds although superficial, overcoming the mechanical limitations of mica for practical insulation purposes have introduced disadvantages in other directions, since they tend to weaken the physical and chemical properties of the base.

It was, however, in an effort to develop one of these synthetic materials that Mycalex was produced. This invention is due to the work of Mr. P. B. Crossley, a metallurgist, connected with Indian branches of a firm of mica interests.

Mycalex is formed by mixing finely divided mica with equally finely divided glass. These are compounded in such proportions that when subject to a temperature of approximately 700° C., the glass becomes plastic and bonds the fine mica particles together. The resultant mass while still at this temperature and in a plastic state, is moulded under hydraulic pressure of approximately 2½ tons per square inch, and thus a stone-like insulatory material which possesses a high degree of mechanical strength is obtained. It is worth noting at this point that while the high insulation values of both mica and glass are maintained in the compound, the mechanical weakness of both is eliminated.

The following physical properties will immediately show a material that is ideal for work on the high frequencies where very low loss is necessary.

Electrical breakdown strength			
on 1 m.m. thickness	... ..	=	36 kV
Permittivity (K.) Temp. 17° C.,			
Freq. 1,000 kc. ... ..	...	=	6.1
Power Factor (Tan D) Temp. 17° C.,			
Freq. 1,000 kc. ... ..	...	=	.002
Power Loss (K × Tan D) ... ..	...	=	.012
Specific gravity ... ..	...	=	2.45
Water absorption (after 48 hrs.			
at 90° C.) ... ..	...	=	.02%
Tensile strength ... ..	...	=	66,000-73,000
			lbs. per sq. in.
Coefficient of Expansion per °C. ...	...	=	.0000095

(Continued on page 136.)

DAH DIT—DIT DIT DAH DIT—DAH DIT DIT. 1936.

By JOHN CLARRICATS (G6CL), Secretary

Introduction.

NATIONAL Field Day is an event which is looked forward to more and more keenly with the passing of the years. Months beforehand, District notes contain references to the preparations afoot, and the friendly rivalry being set up between competing groups. Because N.F.D. appeals to so many members, the Council feel that it is an event which should be encouraged, but it is desirable in placing this record before our readers to emphasise that the competitive element was only introduced as a secondary consideration. The real object of N.F.D. is to fit ourselves for the operation of emergency transmitting and receiving gear.

Future Plans.

This year it has become clear that much of the equipment used is far from portable in the strict sense of the word, and whilst it is presumptuous to forecast any changes in the rules for next year, the writer is of the opinion that in future not more than one transmitter should be used at each station, and that all gear should be capable of being transported in one car—not a lorry. It is realised that sleeping accommodation in the form of tents and home-made aerial masts require more room than the ordinary motor-car can provide, but if the principle of one car for all the operating gear was made to apply, the event would hold more interest for some of the smaller Districts who at present are unable to compete on level terms with those who possess facilities for shipping to the sites' van loads of gear.

This year's event has brought to light the serious dangers which arise through the transmission of harmonics and overtones. In at least one case a 3.5 Mc. station claimed points for a contact with a "B" station operating on 7 Mc., and vice-versa. Whether this was due to mal-adjustment or unusual conditions it is difficult to say, but it seems highly desirable that some steps should be taken in future years to sign each transmission with the frequency band in use.

The use of dual transmitters at several stations has been criticised by certain members, but we have been compelled to point out that under the present rules a station is not debarred from using two or more transmitters.

During the period prior to N.F.D., certain large Districts expressed the wish that they would like to operate more than the scheduled two stations. To meet an urgent demand from District 2 an arrangement was made for two pairs of stations to operate, both competitive. With increasing interest being shown in this annual event, the time may be approaching when a modification of the existing rules could be made to advantage, but before this is considered we feel that the views of members should be obtained.

There appear to be two alternatives to the present arrangements:—

(a) Allow each District to run four separate stations, one on each band from 1.7 to 14 Mc.

(b) Allow town groups throughout the country to operate portable on any pair of bands. The Shield to be held by the leading group.

It will be apparent that suggestion (b) immediately nullifies the competitive element between districts.

The Chairman of the Tests and Awards Committee, Mr. St. Johnston (G6UT), would appreciate views from members on this and any other point of interest dealing with N.F.D.

The Fourth N.F.D.

Bad weather throughout the greater part of England was the biggest enemy that faced the Districts this year, but fortunately most stations had been erected before the deluge descended, although the writer, in making a tour of the Southern stations in company with G5AR, experienced an uncomfortable journey with wet trousers, after wading through hay grass hours after the rain had ceased. Next year gum boots and a swimming costume will be indented for, prior to commencing the pilgrimage!

It would be difficult to assess the number of members who attended N.F.D. sites this year, but from personal observations it appeared that well over 200 were present at odd times at the stations around London. For the whole country 500 would be a fair estimate, a clear indication of its appeal.

The Leading Districts.

Those who were present at Convention will know that the North London District were judged to be the winners. The success of the winning district was due almost entirely to five members: Mr. Buckingham (G5QF), the D.R. who constructed the "DX Two," which was described in the July issue of this journal; Messrs. Boa (G5BO), Woodhouse (G2SX) and Wilson (G5CW), who operated the transmitter at the "B" station; and Mr. Goddard (G2GO), who provided an extremely efficient battery operated two-valve receiver.

This station scored 449 points, and during the night no less than 52 North American stations were worked.

The District 12 A station totalled 137 points, which placed them twelfth in the list of "A" stations. It is clear, therefore, that the excellent work carried out at Brookman's Park under the call G5BOP, was responsible for the success. Members who visited our stand at Olympia were given an opportunity of examining the actual transmitter used for N.F.D., a truly portable set.

District 15 (West London) finished second with a score of 557, only 29 points behind the winners. Their "B" station scored 400 points, and were second to G5BOP; whilst their "A" station was sixth amongst such stations with a score of 157.

The East Midlands (District 4) were third with a score of 514—150 points at "A" (eighth) and 364 points at "B" (third).

An excellent performance was put up by G2LRP

operated at Cranwell as the District 17 "A" station. With a score of 185 this station easily led the field for the two top bands. District 13 (South London) also did well at their "A" station, G2HGP, totalling 172 points, but unfortunately the "B" station's scores in both Districts were low.

The position of all competing stations can be seen from the table which is appended. The figures in brackets indicate the relative position of "A" and "B" stations in relation to other "A" and "B" stations.

Space does not permit a description of the gear used, but those who have studied District Notes will already have gleaned a good deal of information about most of the stations.

Support from Home and Overseas.

The whole-hearted support given by our B.E.R.U. members, and in particular by those in Egypt, was especially appreciated, and although contacts were not too easy with other parts of the Empire, the fact that our overseas members were in operation ready to give points speaks well for the popularity of this annual open-air event.

We must also pay a warm tribute to the Swiss portables, who again entered into the spirit of N.F.D., thus providing many interesting contacts for British "A" and "B" stations.

Certificates of merit have been awarded to Mr. Green (SU1KG) and Mr. Lips (HB9J), in recognition of the fine work achieved at their stations. XHB9J had no less than 65 contacts with British stations. Mr. Green was operator in charge at SU1A, the Alexandria portable.

Credit is also due to Mr. Wimbush (SU2TW), who put into operation at short notice a portable near Cairo, under the call SU1C. G5SYP, 6HSP and 2NHP were contacted.

We also wish to thank all those who sent in check logs, these were much appreciated by the Tests and Awards Committee.

Of particular interest was a report from Mr. E. Trebilcock (BERS195), of Tennant Creek, North Australia, who heard the following "G" portables:

7 Mc.: G2IOP (944), 2PNP (945), 2RFP (955), 2UJP (933), 2WVP (944), 5BOP (956), 5CYP (955), 5GIP (954), 5TAP (955), 6CTP (956), 6DXP (933), GI2CNP (955).

14 Mc.: G6YKP (956).

The reception in VK8 of 12 "G" portable stations working on 7 Mc. provided a remarkable demonstration of their efficiency. It may interest the operators at G5GIP to know that Mr. Trebilcock heard ZL1FT calling them at 20.00 G.M.T., June 6.

The Kingston and District Amateur Radio Society operated a portable under the call G6RSP, and using an input of only 9 watts, a total of 47 stations were worked on 7 Mc.

EI4G, operating as a private portable, totalled 115 points on our method of scoring. G2DQ, using one watt, worked all "A" stations except three. SU1A scored 368 points, and gave points to 23 "G" portables, a splendid achievement. Mr. Green was assisted by Mr. Hoppin, a prospective member.

Mr. D. Mitchell (G6AA), the D.R. for N. Wales, informed us in advance that it would be impossible

for his District to compete. However, he, in company with G6OK, ran a station from a trailer caravan at a height of 1,200 ft. above sea-level, and during the week-end points were given to many portables.

D.R.'s Comments.

Both Mr. Sydenham (G5SY) and Mr. Graham (GI5GV) commented upon the fact that it was extremely difficult to work stations outside "G" on 3.5 Mc. From an examination of the table it would seem that the Scottish Districts also suffer in this respect. Short of evolving some rather complicated scoring method, it is difficult to decide how to improve the present arrangements.

It is suggested that to encourage work on 1.7 Mc, each N.F.D. station contacted on that band should count 4 points, and each fixed station in "G" 2 points.

Conclusions.

Our fourth N.F.D. was the best supported to date, transmitters and receivers were definitely more

efficient, whilst more attention was given to radiating systems.

The question of modifying the arrangements at present in force is open for discussion, but the writer feels that N.F.D. should continue as a District event.

NATIONAL FIELD DAY.

Position	District	A	B	Total
1	12	137 (12)	449 (1)	586
2	15	157 (6)	400 (2)	557
3	4	150 (8)	364 (3)	514
4	N. Ireland	122 (13)	329 (5)	451
5	3	106 (17)	335 (4)	441
6	16	159 (4)	222 (7)	381
7	7	152 (7)	220 (8)	372
8	5	158 (5)	211 (9)	369
9	13	172 (2)	172 (12)	344
10	6	103 (20)	235 (6)	338
11	14	140 (11)	197 (10)	337
12	17	185 (1)	132 (15)	317
13	10	150 (8)	148 (14)	298
14	2 (S)	169 (3)	125 (17)	294
15	18	105 (19)	172 (12)	277
16	1	147 (10)	119 (18)	266
17	Scotland:			
	"A"	76 (21)	189 (11)	265
18	"B"	109 (16)	129 (16)	238
19	2 (N)	106 (17)	97 (20)	203
20	Scotland			
	"C"	111 (15)	81 (21)	192
21	Irish Free			
	State	112 (14)	76 (22)	188
22	9	70 (22)	116 (19)	186

Figures in brackets show relative places held by "A" and "B" stations.

District 8 withdrew their entry.

CP1AA

Mr. H. E. J. Smith, known to many of us as CT2BK, is now located in Bolivia and is operating as CP1AA. His address is c/o Standard Oil Co. of Bolivia, La Paz.

G6WD

Mr. G. A. Woods, the previous owner of this call-sign, has been receiving cards intended for Mr. J. Ferguson, 2041, Great Western Road, Glasgow, W.3. Will members please note that Mr. Woods relinquished the call-sign over two years ago.

A POWER AMPLIFIER UNIT FOR 28 AND 56 Mc.

By J. N. WALKER (G5JU).

Foreword.

A GOOD deal of interest is evident at the present time in 28 Mc. work, many amateurs obtaining quite good results with their CO, FD, PA, 14 Mc. transmitters, the final stage being converted into a power doubler for use on 28 Mc. This arrangement was used by the writer, but such a set possesses the disadvantage that the output from the final FD falls off considerably when an aerial load is coupled up, unless considerable excitation is available from the previous stage, a condition not always easy to attain. The superior results obtained by the addition of a PA stage have to be experienced to be appreciated. The unit to be described will work well with small valves and low inputs, thus enabling it to be used with practically any type of 14 Mc. transmitter. The RF output for the same DC input is much greater and the feeder current is easily measured.

Construction.

The P.A. is constructed as a completely separate unit, with its own input terminals for L.T. and H.T., and is intended for link coupling to the output of a normal transmitter. This enables a good transfer of drive, keeps the PA well out of the field of the

previous stage, and enables a better degree of neutralisation to be attained. The chassis measures 9 in. by 5 in. and is made of 5-ply wood on 1 in. runners, the top being covered with a sheet of polished copper. The positions in which the various components are mounted is indicated in the accompanying sketch. Incidentally, it is recommended that those parts specified be used, as they have proved themselves really suitable for the work, and there is no doubt that the high efficiency obtained is largely due to their selection.

The grid circuit is completely screened from the rest of the unit by means of a copper screen measuring $6\frac{1}{2}$ in. by 10 in. This is bent to the required shape and flanges formed, by which it is bolted to the chassis; this operation and that of mounting the other screen being left until the wiring is practically finished. The actual circuit consists of a 4-turn coil $1\frac{1}{2}$ in. in diameter, 16 S.W.G. enamelled wire, the turns being spaced one diameter by threading through small ebonite strips. The coil is mounted on an ebonite strip $2\frac{1}{2}$ in. long, which is bolted to the chassis, the bolt itself forming the connection from the "earthy" end of the coil to the choke and condenser underneath. The copper chassis must therefore be cut away at this point and adequate insulation ensured by using a small ebonite bush. On the same strip and close up to the grid coil is mounted a single turn of the same wire, a suitable length of heavy gauge high quality flex being soldered to the ends to form the link coupling to the previous stage. Tuning is by means of the Eddystone 40 $\mu\mu\text{F}$ Microdenser, mounted within the screen.

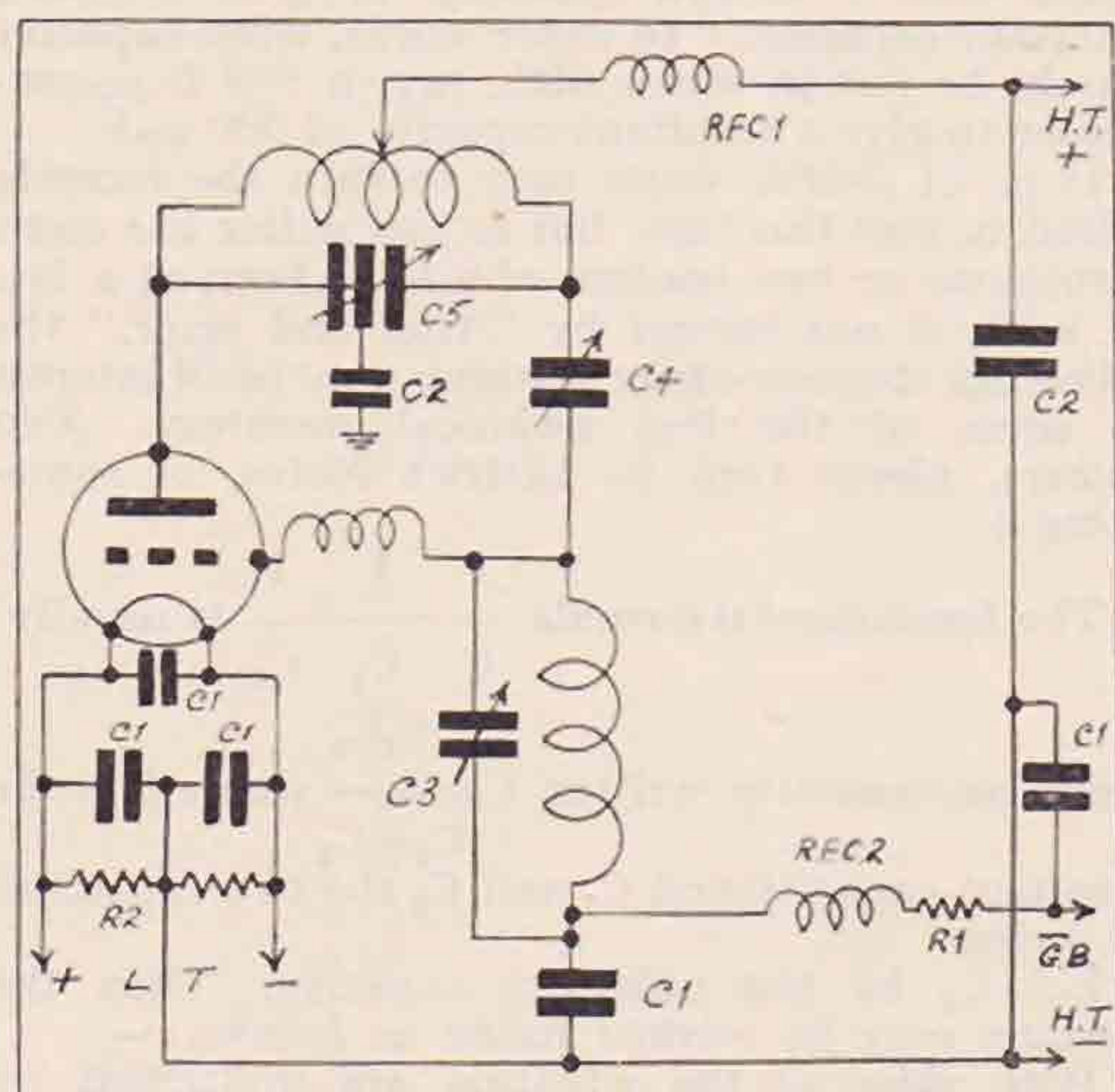
The tank circuit is simple, consisting of the J.B. Midget 45 $\mu\mu\text{F}$ twin gang condenser, the rotor of which is connected to chassis via a .0005 μF T.C.C. condenser, whilst the two stators connect each to a stand-off insulator, using strips of copper foil for wiring. For 28 Mc. operation, the tank coil is 4 turns $\frac{1}{4}$ in. copper tubing, 2 in. in diameter, and for 56 Mc. 3 turns $\frac{3}{16}$ in. tubing, $1\frac{1}{2}$ in. in diameter.

In between the two screens is mounted the valve-holder and neutralising condenser which is a J.B. Midget .0001 μF double-spaced, with four fixed and three moving vanes. The connection between the grid terminal and the grid side of the neutralising condenser is made by means of a small "squiggle" coil consisting of 10 turns 18 S.W.G. enamelled wire wound on a pencil. This is of great help in preventing parasitic oscillations.

With the exception of the Humdinger, all the small components are self-supporting, the sketch showing how these are arranged. All zero potential points are taken to a single point, this being a bolt coming through from the copper top plate. The copper screens should be bolted in place, after which the unit is ready for use.

28 Mc Operation.

The final stage of the usual 14 Mc. transmitter should be converted into a 28 Mc. doubler and the link coupled fairly loosely to its tank coil. The grid circuit of the unit is then tuned to resonance,



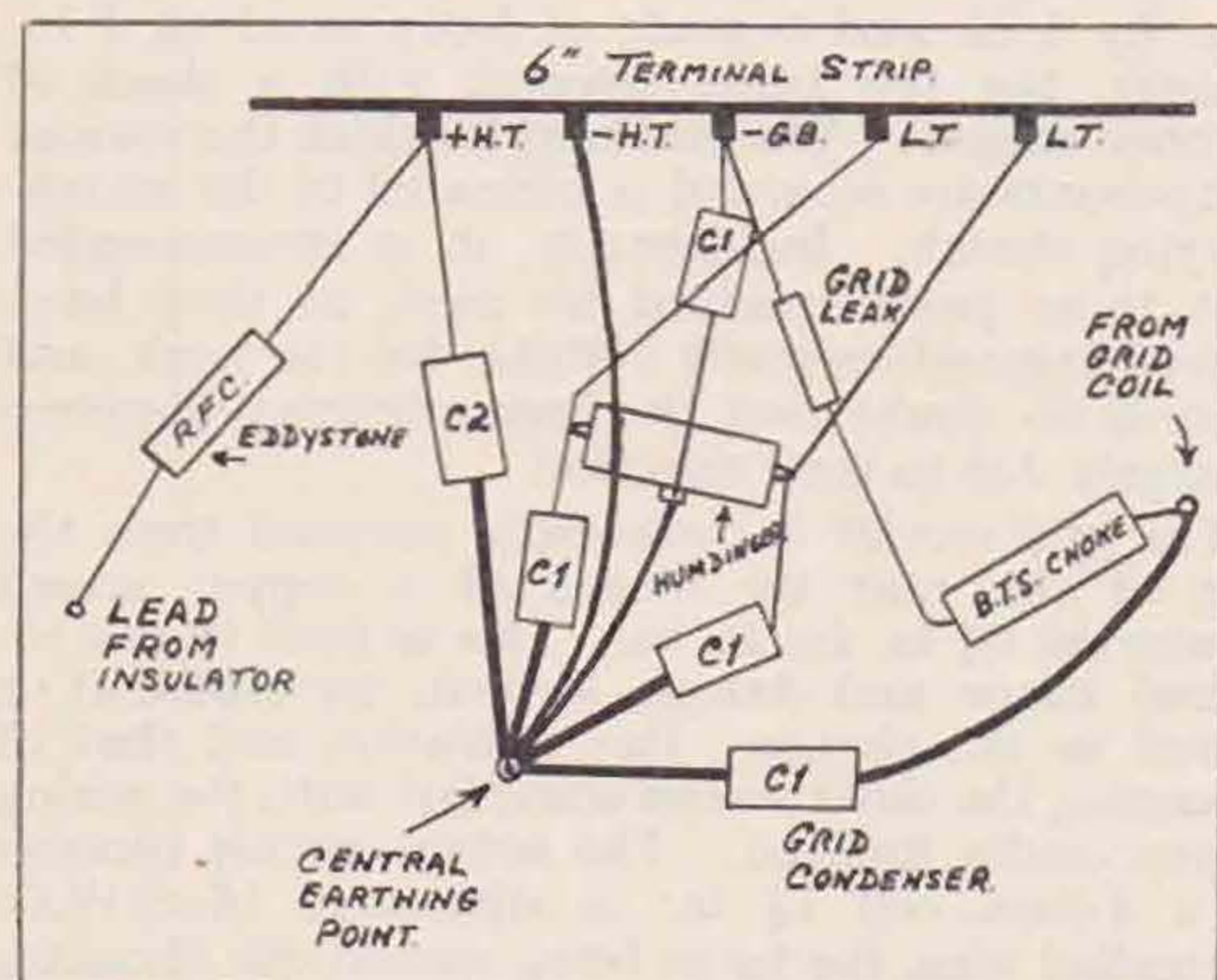
Circuit of 28-56 Mc. Power Amplifier.

- C1. 500 $\mu\mu\text{F}$, tag end, type 665, Dubilier.
- C2. 500 $\mu\mu\text{F}$, tag end, type M, 1000 v. test, T.C.C.
- C3. 40 $\mu\mu\text{F}$, microdenser, type 900, Eddystone.
- C4. .0001 μF , midget single, Jackson Bros.
- C5. 45 $\mu\mu\text{F}$, midget twin, Jackson Bros.
- R1. 1 watt, 10,000 ohms, tag end, type 665, Dubilier.
- R2. 30 ohms Humdinger, Claude Lyons.
- RFC1. H.F. Choke, type 1001, Eddystone.
- RFC2. H.F. Choke, B.T.S., type 1, U.H.F.

Other Components.

- 1. Bracket, type 1007, Eddystone.
- 2. Mounting brackets, type U.B., B.T.S.
- 1. Valve holder, 4 pin, type 949, Eddystone.
- 2. Stand-off insulators, type 916, Eddystone.
- 1. Stand-off insulator, type 1019, Eddystone.
- 1. Extension handle, type 1008, Eddystone.
- 2. 2 in. knobs, Bulgin.
- 5. Terminals, 2 LT, 2 HT, 1 GB-, Belling Lee.

indicated by the milliamperes rising, and neutralised in the usual manner. The value of the grid bias which should be applied depends on the valve, anode voltage, and amount of drive available. Using a Mullard T25D at 350/400 volts, between 24 and 36 volts will be found a good value. A sharp dip on tuning the tank circuit to resonance should be observed.



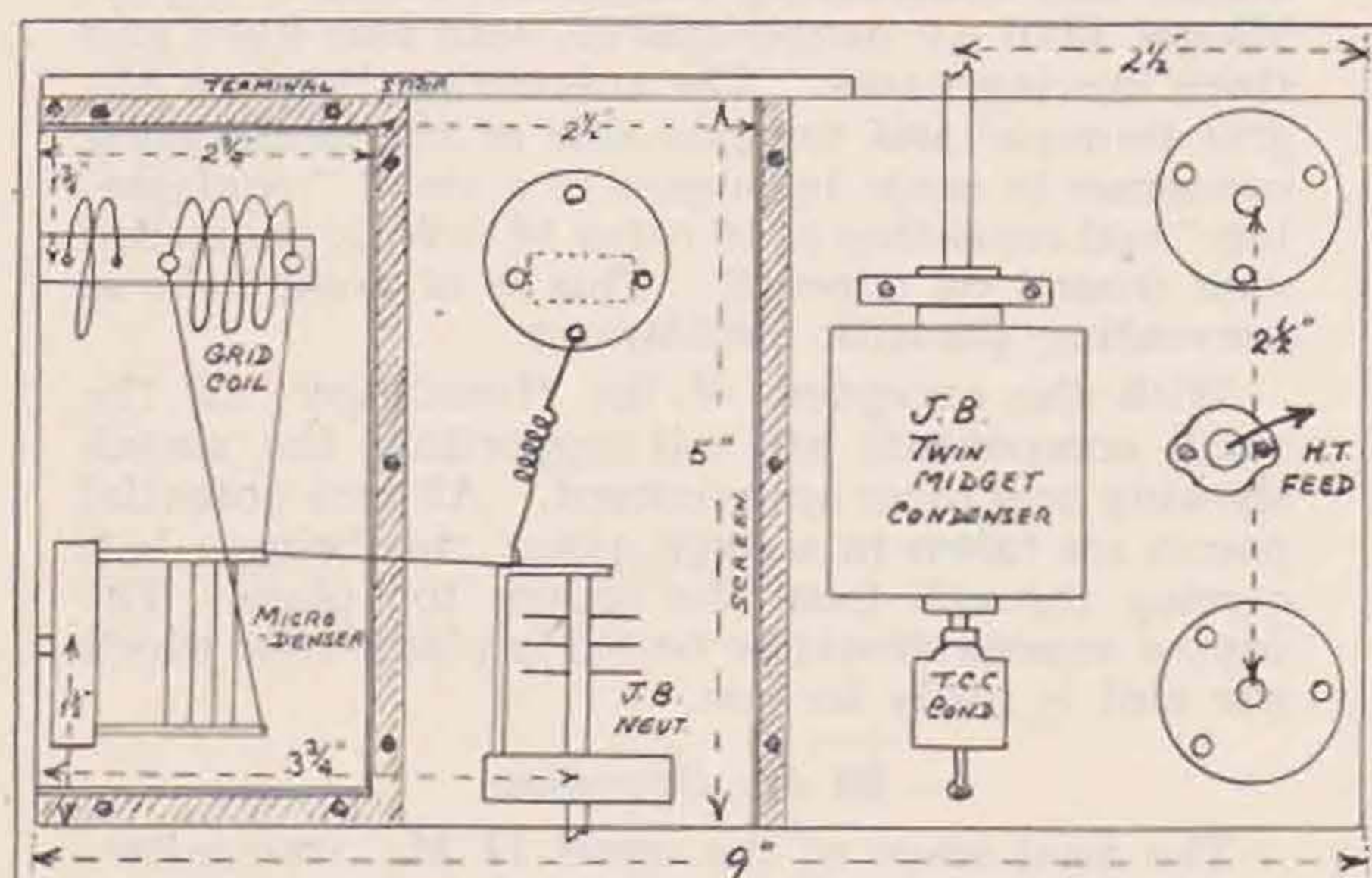
Arrangement of components and wiring on under side of chassis.

56 Mc. Operation.

On 56 Mc. the unit itself becomes a doubler and works surprisingly well. The neutralising condenser is set at zero capacity, since the slight regenerative effect of the valve's internal capacity increases the efficiency. The bias should be increased to about 72 volts, tuning being effected as before. The output will not be so great as on 28 Mc. but will compare favourably with a self-excited transmitter. It should be possible to light a 6-volt lamp in loop to full brilliancy.

Aerial Coupling.

It will be wise when testing the unit without the aerial load coupled, to avoid allowing the valve input to exceed 7 or 8 watts, but when the aerial is taking a load the input can be considerably increased. A separately tuned, loose-coupled aerial circuit is recommended, as this permits easier adjustment and prevents the neutralisation from being disturbed. The coil and condenser values



Sketch showing position of components on top side of chassis.

may be the same as for the tank circuit, although if low impedance feeders are used it will be better to increase the number of turns in the coil and reduce the diameter in order to obtain better matching. On 56 Mc. a coil of 5 turns, 1 in. diameter, is used, tuned by an Ormond split stator condenser of 50 $\mu\mu\text{F}$ each section. With the feeders to the dipole aerial connected across the centre turn, up to 0.1 amp. can be obtained in them. On 28 Mc. an end-on aerial is used, this being tapped on to a 4-turn coil, one end of which is held down to ground potential by connecting it to the filament centre tap.

The unit used as described forms a very convenient outfit for 28 and 56 Mc. working with crystal-controlled C.W. With slight alteration, one of the new R.F. pentodes, such as the R.F.P. 15, could be used in the circuit, the neutralising condenser dispensed with, and still better results obtained, especially where only a small amount of drive is available.

CAPACITIES IN SERIES

By C. S. POLLARD (G2GB).

EVERYONE knows, or should know, the formula for finding the resultant capacity of two condensers in series. A problem which presents itself quite as frequently, however, is to find what capacity it is necessary to put in series with a known capacity to give a desired resultant capacity. In other words, what capacity should be put in series with, say, a 500 F $\mu\mu\text{condenser}$ to give a resultant capacity of 300 $\mu\mu\text{F}$?

It is, of course, quite easy to turn the formula round to suit this case, but as the writer has come across one or two readers who have been at a loss to work it out except by "trial and error," the following stage-by-stage working may be of interest to some of the less technical members. (Old Timers, please turn to District Notes, or something!)

The fundamental formula $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2}$ is usually more conveniently written $C = \frac{C_1 C_2}{C_1 + C_2}$ where C is the

resultant capacity and C_1 and C_2 the two capacities in series.

Let C_2 be the unknown capacity. Then the formula may be worked round as follows:—

Both sides of the equation are multiplied by $C_1 + C_2$ to get rid of the fraction, giving

$$\begin{aligned} CC_1 + CC_2 &= C_1 C_2, \\ \text{therefore } CC_1 &= C_1 C_2 - CC_2, \text{ which is the same as} \\ C_1 C_2 - CC_2 &= CC_1 \\ \text{i.e., } C_2(C_1 - C) &= CC_1, \\ \text{therefore } C_2 &= \frac{CC_1}{C_1 - C} \end{aligned}$$

By substituting the known capacities mentioned above— $C_1 = 500 \mu\mu\text{F}$, and $C = 300 \mu\mu\text{F}$ —it will be found that C_2 (the unknown capacity to be put in series with the 500 $\mu\mu\text{F}$ condenser) is 750 $\mu\mu\text{F}$. It is always advisable to work in micro-microfarads in order to avoid the decimal point, which has a habit of slipping in the wrong place.

FADE-OUT OBSERVATIONS AT RIVERHEAD, N.Y.

By A. M. BRAATEN (W2BSR).

IN connection with the fade out of April 8, 1936, the following information is of interest.

Mount Wilson Observatory, at Pasadena, California, reported that one of the most brilliant hydrogen eruptions yet observed was photographed on April 8, at 16.47 G.M.T. The eruption took place over a large spot-group. From the appearance of the bright flocculi and from other observations it was concluded that the eruption had just started. The magnetometer record at Mount Wilson showed a sharp break at 16.45 G.M.T.

There can be no doubt that there is some direct relationship between the fade-out and this eruption, because of the unusual character of the two phenomena and their simultaneous occurrence.

Continuous recordings of GLH, 13,525 kc. signal strength were being made at the time at the Receiving Centre of R.C.A. Communications, Inc., at Riverhead, N.Y. At exactly 16.45 G.M.T. the signal dropped abruptly out. Fifteen minutes later it started coming back, climbing slowly until 17.25, when it reached its normal level. All signals from all directions were similarly affected. The first signal to recover was Moscow, 15,625 kc.; and the last Boston, 2,850 kc.

Conditions during the following night and early morning were extremely erratic. Later, at 13.20, on April 9, a general drop-out of signals took place. This lasted for an hour and ten minutes, but was not quite as sudden or complete as the one of the preceding day.

A severe fade-out occurred at 13.53 G.M.T. on April 6. This lasted for twenty minutes.

Starting May 25, 1936, a series of fade-outs of varying severity have been observed at Riverhead. These have occurred at the following times:—

	G.M.T.
May 25	12.32
May 26	11.30
May 28	14.00
May 28	17.57
May 29	10.20
June 3	16.32
June 4	11.51
June 9	14.22
June 10	20.51
June 11	12.28
June 16	13.30
June 16	17.15
June 17	12.46

At this writing, June 25, 28 days have elapsed since the bad fade-out of May 28.

Several of the foregoing fade-outs have been quite severe, but the most definite and complete one was that at 17.57 G.M.T., on May 28. All signals from all directions were completely wiped out. This particular fade-out was similar to that of April 8, which it followed by 50 days.

The May 28 fade-out was reported from Holland as beginning at 17.58 G.M.T. There, also, all signals from all directions were wiped out. Signals were ZAN (absolutely nothing heard) until 18.10 G.M.T., when recovery began. Signals were up to normal again at 18.25 G.M.T. Holland also reported sudden and very deep fading of all signals at 10.20 G.M.T. on May 29, with recovery starting at 10.30.

A fade-out of all signals observed in Holland on May 27, at 04.00 to 04.25 G.M.T., was not observed at Riverhead.

The May 25 fade-out was observed in Holland as starting at 12.35 G.M.T.

It is noteworthy that various portions of the frequency spectrum are sometimes differently affected during these fade-out periods. The most remarkable disturbances are of course those which completely wipe out all signals from all directions. The experience at Riverhead has been that in the majority of cases signals from the East are most affected, signals from the South being affected in varying degree, from no effect to ZAN. In some cases only the signals from the South are seriously affected. In general, recovery of the signals on higher frequencies and those coming from the greater distances begins first, but this is not always true. Signals from the darkened side of the earth, or West, are generally affected only during the complete fade-outs. At these times the signal from Boston, which is 150 miles away, is always the last to recover. Contrary to the observations recorded in the article "Dellinger Again," in the May, 1936, issue of THE T. & R. BULLETIN, the experience at Riverhead is that signals in the region 16 to 22 Mc. are affected to a less extent than those below 16 Mc. Also, during fade-outs the noise level is always lowered.

An unusual example of frequency discrimination during a fade-out took place on June 9. European 13.5 Mc. signals went out, while those on 14.5 Mc. were little affected. 18 Mc. signals were good, but those on 19 Mc. were bad. 19 Mc. signals from South America were inappreciably affected.

Up to December 17, 1935, fade-outs had been occurring regularly at about 54-day periods since March 20, 1935. There were observed at Riverhead two fade-out periods which came at 27-day intervals. These were on September 27 and November 20. While only of moderate intensity, these fade-outs are nevertheless of importance in that they serve to indicate the probable occurrence of such disturbances at the rotational period of the sun.

Since December 17 fade-out periods have been occurring in groups, rather than singly, some of the most severe ones deviating from the 54-day cycle by as much as five days. It will be interesting to note whether the epidemic of fade-outs which began on May 25 has now come to an end, or if it will continue and blend into another series centring about the next 54-day period.

At the time of most of the fade-outs the RCA's earth-current recorder at Riverhead has shown nothing unusual. Coincident with a few of the most serious fade-outs the records have shown a single, abrupt deflection. These have in general been quite small, and in no way compare in magnitude with the deflections recorded during magnetic storms.

It has been generally accepted that sudden radio fade-outs are caused by some sort of violent solar disturbance which affects the ionosphere. The hydrogen eruption and fade-out of April 8 will undoubtedly furnish valuable information to science in correlating these phenomena.

IMPRESSIONS OF OLYMPIA 1936

"A Guide to Amateur Radio, one hundred and twenty-eight pages for sixpence. Take a look at the Guide before you pass the stand. . . . Thank you, sir, sixpence change, thank you. Amateur Radio, the finest hobby in the world. . . . How to build your own transmitter; how to set about obtaining your licence. (Lord preserve us!)"

Take a look at the Guide, see what you are buying, we don't do this for a living (I'm thankful to say). 128 pages for 6d.; why on earth didn't we make it 130 pages?—saves breath. "Very full and complete Guide to the short waves." "No, sir, I am afraid I can't tell you where you can get a cat's whisker. A.R.R.L. Handbook too elementary, sir? Ye gods, Uncle Tom and little fishes, what next!" "Looks the

same stuff as last year, sir? Well, they haven't changed Ohm's Law since last Radiolympia! Members of the Society, please sign the Visitors' Book! Have you put your card up? Where's your coat badge, O.M.?"—one and six, tnx.

Sure, you can pay your subscription. Walk right in!"

Guide to Amateur Radio, six pence only. Now then, girls. How to keep your boy friend home nights. Who wants a Y.L. in U.S.A.? Only 6d. Guide to Amateur Radio. . . . "Yes, Ai was partly responsible for the de-saigne." . . . "Have you seen the television?"

Ices!! "Heaven be praised! Boy, you have saved my life! Guide (suck) to (lap gurgle) Amateur (suck splosh) Radio only shishpensch." . . . The music goes round and round. . . . Ices. . . . Guide to Amateur Radio.

"Well, madam, a crystal controls the frequency of the master oscillator and er—." Is it true what they say about Dixie? . . . "Guide to Amateur Radio, a comprehensive technical work for 6d. Take a look at a copy before you pass by . . . before I pass out. Who in heck switched that fan off?"

"Change please, one Bull, one handbook. . . . Did I hear someone say 'Come and have one?'"

"A Guide? Thank you, sir." "A Guide to—Hello, O.M., pleased to see you again, don't forget to sign the book." "A Guide to Amateur Radio. No, lady, sorry, we don't sell L.M.S. timetables."

"Guide to Amateur Radio. 128 pages for 6d. Guide to Amateur Radio, 128 pages for 6d. . . . Who has turned that fan off again? Gaide to Amater Redio. Ride to Gamateur Adio, hundred and twenty-six pages for eightpence, hundred and ninety-five pages for fourpence. 206 pages for 4½d." "56 megacycle crystal-controlled trans-

mitter." "Guide to Amateur Radio, four hundred pages for fourpence farthing. Television—"

"Look dear, there's one of them, he's got his ticket on him, G two M one." My Cracky! Guide—Dinner tickets—Thank you, sir, Guide to Amateur—"wooded her and wooded her again"—Guide, Guide, Guide. . . . Sixpence, sixpence. Guide, Gaide, Goide, Ices—sixpence—five and six. Thank you sir. Guide, Guide, sixpence—one and six. Thank you. Yes, sir; no, sir. Guide, Ices, Drink, Drink, my 100-watter for a drink! What have I done to deserve this? Guide, Guide, Guide, Guide! GUIDE! Guiiiiide, SIXPENCE. Help! Keep it away!! Oh! Oh! Where's Clarry?

Reprinting Saturday, 2,000 copies sold last

Saturday—get yours to-day—yes, Sir, sixteen chapters of up-to-date information—best sixpenny-worth in Olympia—"Society on which sun never sets"—another coloured pin, please—car plaques, yes, lady—who for? "Got a pass?" 128 pages, fully illustrated—see you at the Florence—Decca visit fb—good old UJ—thanks—who wants a Guide—"Where's your badge?"—left it at home—drinks all round—Morse code—international abbreviations—Yes, Dud wrote the aeralis dope—latest on valves—buy a copy 'fore you pass the stand. Change for a pound note—Hinks and Kinks—

Although it has not been found possible to include in this issue a full account of the work carried out on our stand at Olympia, we feel sure the Impressions which have been sent us by a member who was in constant attendance will amuse and interest our readers, especially those who were present.

In our next issue we hope to publish a full account of our 11th Convention, together with photographs of the stand and the Convention Group.

We take this, the earliest opportunity, of thanking everyone who assisted us in making Olympia and the Exhibition go with a swing.

sorry, out of stock.

No! No! Spare me! Help! Guide, Guide! Clarry! Ham! Guide! CRASH. . . .

"Here's your tea, dear. I think you must have been dreaming. Hurry up and dress or you will be late for stand duty at Olympia."

The Guide

We apologise to those members who were kept waiting a few days for their copy of the new Guide. No one foresaw that our very large initial printing order, amounting to 10,000 copies, would be sold before the ten days' Exhibition at Olympia closed its doors, but the seemingly impossible happened and a reprint had to be ordered.

Headquarters are now in a position to meet all orders and will be pleased to quote special terms to the trade.

THE 56 Mc. BAND

By L. G. BLUNDELL (G5LB).

Apropos the matter of false harmonics mentioned in last month's notes, G6DH furnishes an example of how this kind of effect can occur on receivers using an aperiodic H.F. stage.

The fault in question was noticed on a 28 Mc. receiver, and 6DH's reasoning is this: "Apparently two lower frequency commercials say, between 25 and 7 Mc., are mixed in the grid circuit of the H.F. stage producing a beat frequency which is the *sum* of the two frequencies." He suggests that some of the harmonics heard with this type of receiver on 56 Mc. are probably due to the second harmonic of this beat frequency, as there are no commercials whose "sum" frequencies would be in the 56 Mc. band. As a means of overcoming this effect, 6DH has found that by using a single tuned grid circuit to the H.F. stage, signals of this character are completely eliminated.

It is hoped that the above will be of assistance to those using or contemplating using this type of receiver on 56 Mc.

This need for caution may, to some, seem over estimated, but it is surely worth anybody's while to check points until one is positive of getting the "goods," and in consequence, being able to make "cast-iron" reports. The scarcity of reports this month is probably due more to "doubtful" receivers than to a further decline in conditions.

However, that the band still shows signs of life is confirmed by the following log extracts, and it is a great pity that there is no foreign or Empire C.W. activity during these periods. If things were otherwise—who knows?

The following harmonics were heard in August:—

August 13 at G6DH	0930/1215	IRU	R6/7
	57 Mc.		
"	1000	onwards,	HAT2
"		R6/3	55.6 Mc.
"	1400/15	HBH	R7 56 Mc.
August 14 at G5LB	1840/1911.	Strong modulated transmission as follows:—	
	1840	fading and badly distorted music on about	
	58 Mc.		
	1847	changed frequency to approx. 59 Mc., QRK up to R6 with "pdc" and perfectly stable carrier of R7. Quality of modulation (solo accordion) very good.	
	1855	QRK up to R7, although with frequent QSB to zero.	
	1857/1900	silent carrier.	
	1901	Tone modulation (about 500 cycles).	
	1905/9	Tone code, followed at 1910 with plain C.W.	
	1911	QRT. Signals peaked to R9 between 1902 and 1910, but the code was uncopyable, although	

slow, owing to the auto-sender having apparently gone "all haywire." Fading was bad throughout the transmission.

August 18 at G5LB 1844/1910. DOC R4/0
ICW 57.8 Mc.

August 18 at G2HG 1920. IRU (?) R4/2 T4.

* * *

There are no additions or alterations to the list of scheduled transmission as given last month, so it is unnecessary to give them again.

It is hoped that with the close of the holiday season activity will reach useful proportions.

This, with corresponding co-operation from Empire and foreign stations, will find us ready for the improvement in conditions which is forecast to occur in the autumn and early winter months.

In a report from VK3EG there is news of tests between VK3 and eastern U.S.A. stations held on June 29. Numerous fading carriers were heard, but none identified. 3BD heard what was thought to be the harmonic of K6MVV ('phone) on 28 Mc., but not positively identified owing to low QRK. However, 3BQ logged the harmonic of W4AJY who, it is understood, was working C.W. on 28 Mc.

VK3EG says: "This leads us to suppose that there is a good chance of 56 Mc.DX work provided more C.W. activity is shown."

Tests are continuing and many stations are working to regular times.

In connection with the above (providing sufficient information is available), it is seriously suggested that British 56 Mc. stations should go on the air at times coincident with those of the VK and W tests.

With the passing of another great Convention, doubtless many and varied bones of contention have broken into possibly more than one "sliver" and no doubt the one on "matters 56" was possibly the toughest!! However, whatever has been said or avowed, results will surely be seen and heard!

In conclusion (and without apology), it is again requested that all interested in this question of C.W. DX work should increase their efforts to get early results.

ON4AU on 56 Mc.

Mr. J. Mahieu informs us that he is now operating a crystal-controlled 225-watt transmitter on a frequency of 57520 kc. He will keep the following schedules during October and November:

Saturdays	1830 to 1845 G.M.T.
Sundays	0900 to 0915 "
	1100 to 1115 "
	1600 to 1615 "
	1800 to 1815 "

He will call "CQ 56 Mc. de ON4AU" and will listen for 15 minutes after each period.

A pair of W.E.Co. 304 B's are being used in the final.

SOLILOQUIES FROM THE SHACK

BY UNCLE TOM.

("After the ball is over, call me early, mother dear"—and there are some who won't get up at all the day after Convention.)

TWO large aspirins, please—double strength; yes, and don't you look at that menu card—I'm not sure whether it's the right one. And I just don't care two hoots, squeaks or chirps if the VK's were good at six o'clock this morning. That just didn't concern me in the slightest.

All this, you'll understand, has nothing to do with my blameless life whatever. It's merely a suggestion as to what's going on in many parts of the country to-day, the sixth of September as is.

The Eleventh Convention being over, I am forcefully commanded by the Editor (bless his little trouser turn-ups) to write my impressions. It is strictly understood, however, that I am to mention no names and to be rude to no one—so what's the use of it all I can't imagine.

Anyway, I've seen you all again, from behind my snow-white beard and beer-stained whiskers, and the more I see of you the more I like some of you. Looking round the Florence at 8 p.m. on the Saturday, I remarked to a neighbour that hams were, on the whole, a singularly handsome lot. There were, of course, the usual glaring exceptions to that rule.

Looking round again at about 9.30, I thought perhaps I'd made a mistake after all. For one thing, the Vibroplex and the bottles had gone from the table. Our QSL Manager had his cards; Ham Whyte had his single-signal receiver; and our Norman (nearly) had his long-lost pyjamas returned. Those who had been in the habit of keeping their logs on "scrubby bits of paper" (old saw) had been presented with log-books. One or two stations will now be able to switch themselves off as well as on, since their operators have acquired dinky little sets of toggle switches.

Personally, I could improve on that swindle no end. For one thing, I'd wangle the draw (even more than it's done at present) and give my dear old friend G5—a rubber-contact key. G6!! would get a canary, which could do his chirping for him and save a lot of trouble.

G2;; would be presented with that particular type of microphone known as "the crooner's slop-basin," so that his recent course of lessons in elocution would be more obvious to the listening world. G6?? would get a bug with no weights on—nobody can tell what he's sending now, anyway, so he might as well speed up a bit.

After that I would be content with being merely malicious, and give G5££ a neat printed copy of the Morse Code, G6&& a magnifying glass and a facsimile of the licence form, and G2@@ a good strong dose of gin-and-arsenic.

But I don't agree with this all-give-and-no-take arrangement, so I should arrange to go round doing a little subtraction to compensate for the additions. G—— would lose his HRO, because he doesn't know how to use it, anyway; I would

get quite a nice collection of bug keys for the same reason; and a few RK20's and 250-watt power packs would also be found in the ante.

And then he woke up. . . .

Two people have written to me, pointing out that last month's Q, R and T codes do not agree with those published in the Guide. Believe it or not. . . .

Looking through the said Guide at the list of Q signals, I have been a little mystified by one or two things heard on the air. The following, for instance, is a literal translation of what G2:: said to a Yank the other night: "Good evening good evening old boy old boy. Your sigs I receive you well R7 T9 QSA5. My the name of my station is . . . Here I am being interfered with is very bad to-night so hope see you again when conditions better. Many thanks for I can communicate with . . . direct and please I give you acknowledgment of receipt. 73 I have nothing for you cheerio diddledy-dah-di-dah. Who is calling me? who is calling me? who is calling me? de G2::"

Doesn't seem quite sense, does it? This is what he sent: "ge ge ob ob. Ur sigs QRK R7 T9 QSA 5. My QRA is . . . Here QRM is vy bd tonite so hpe cuagn when condx btr. Mni tnx fr QSO and pse QSL. 73 QRU cheerio va QRZ? QRZ? QRZ? de G2::"

I hear from my old friend URIBF that he intends to use the Q signals only with their literal meaning in future, so look out for some queer stuff on the air from that quarter.

Convention Query: What is a twiddle-twit? Because a lot of people have been heard sending "Twah, twit, twiddle-twit, twah."

Convention's Tall Story: Somewhere there is a man who once had an FBXA. Got fed up with it, bought an HRO, and now uses the FBXA as a monitor. (Ripley.)

Convention Aftermath: Somewhere in Surrey (no, skip it—the subject's too painful).

Heard on the Stand: B.C.L. (pointing to five-metre crystal-controlled job): "I thought crystals were out of date long ago." Ham in charge: "Oh no, this is a quartz crystal that oscillates." B.C.L.: "Oscillates, does it. Well, what are you going to do about it?"

Next day: B.C.L. (apparent) heard questioning a learned member about Mac's transmitter. Said transmitter explained from top to bottom, including the terms "modulation," "monitor," "drive," etc. B.C.L. (apparent): "Can you transmit?" Member: "Yes, certainly." B.C.L.: "What's your number?" Member: "I'm G2%/%." B.C.L.: "Glad to meet you, o.m. I'm G2!!"

And that's all for now, kiddies. Next month I'll have some more nice bricks for you to play with.

BOOK REVIEWS



RADIO RECEIVING AND TELEVISION TUBES. (Third Edition.) By James A. Moyer, S.B., A.M., and John F. Wostrel. 635 pages, 487 illustrations and many tables. Published by McGraw-Hill Publishing Co., Ltd., London. Price 24s.

When valves and their applications are considered in the ordinary radio engineering text-book, they must of necessity receive rather scant treatment. After reading this large book concerned only with valves, I feel that even here there has hardly been space to go into sufficient detail, though the book is very comprehensive. The valve is the hub of the radio wheel, and with the complexity of modern types and applications one requires more than a few chapters in a book dealing with the whole art.

The title announces the nationality of the book, but that is rather a commendation where radio texts are concerned.

The first three chapters are of the introductory type, dealing with the construction of valves, and with fundamental circuits and phenomena. The remaining ten chapters appear to deal with almost every use to which a valve has been put. In addition, there is a chapter on special instruments such as iconoscopes, image dissectors, cathode-ray tubes, and the various requirements and practices of television. The photo-electric cell is treated as one type of "tube."

The principles of operation of valves in the various circuits are explained in a very practical manner which must enable the reader to appreciate what is happening and how to get the best results. This information is not only of a general nature, but deals with specific types of valves about which much data are given.

The last chapter, on industrial applications, makes fascinating reading; egg-candling machines, timers for spot and seam welding, radio surgery, noise measurements, delicate control operations, colour matching, concentration control, and a host of other applications are described.

I mean this review to be a substantial bunch of flowers, but, unfortunately, I have been unable to prevent a very tiny brick being concealed therein. For all but the first three chapters I have unstinted praise; but these three irritated me with many unhappy statements, and that is rounding the edges of the brick. More than a dozen points of criticism were noted in these chapters and none in the remaining ten.

One or two examples will perhaps explain my criticism. On page 57, when reading about mutual induction, a current is described as "flowing at the rate of 1 ampere per second." Just below this we read that "if the duration of a current is t in seconds, it is clear that the rate at which the primary circuit is changed is $I_m \div t$." In a footnote on page 1 there is a statement that "Negatively charged ions of electricity are called *electrons*."

Despite these points of criticism, the first three chapters are in the main very good, but below the standard of the remainder of the book, which is excellent.

The book is good value, and ought to prove really useful in a practical way to all amateurs, and professional men, too.

T. P. A.

RADIO OPERATING. Questions and Answers. (Sixth Edition.) By A. R. Nilson and J. L. Hornung. 427 pages, 104 illustrations, and many tables. Published by McGraw-Hill Publishing Co., Ltd., London. Price 15s.

This book is American in origin and caters especially for students and operators who intend to take the Government examinations for a radio operator's licence. It consists of 639 questions with what the authors think the best and most expedient answers, considering the purpose of the book. The preface points out that the reader is expected to understand "radio operating and theory completely," and that the book is intended to emphasise salient points and "show the general form of answering questions."

A study of the questions and answers produces a definite impression that it will serve very well as a text for students who are not so advanced as the authors imply. The answers are rarely brief and they are very clearly worded; the diagrams, also, are clear and helpful.

The book was first produced in 1921, and the present edition is the latest necessitated by the rapid progress of radio technique. It is divided into 13 parts. The first three deal with Valve, Arc and Spark Transmitters, respectively. The next part deals with Receiving Apparatus and Radio-compass. Then two parts are devoted to Power Apparatus, Storage Batteries and Motors and Generators. Radio Laws and Traffic Regulations come next, followed by a very useful section on General and Theoretical Questions. A section on Broadcasting Transmitters precedes a short consideration of Amateur-Station Operation and Amateur Radio Laws and Regulations. A few pages are given to Amateur Radiophone Operation.

The final part deals with Aeronautical and Police Radio, Beacons, Airways, Meteorology, and Teletype, but a large number of questions and answers prepared too late for classification are given in "Addenda."

Two appendices supply information on licence regulations, "Q" code, radio symbols, wavelength allocations, etc.

Although some of the questions and answers have little interest to others than Americans, dealing as they do with national requirements, the remainder are concerned with either international regulations or technical matters which know no boundary.

The book will be extremely useful to those preparing for the examinations in view, but amateurs, and students of radio engineering generally, should find in the book a deal of information given in a pleasant way, even though some of it may not concern them directly.

For the purpose for which it was produced it is recommended very confidently, and the style and production has made it a pleasure to read.

T. P. A.

To The Editor

THEORETICAL ARTICLES

The Editor, T. & R. BULLETIN.

DEAR SIR,—The new volume of the BULLETIN bears on its cover the words "for Radio Experimenters," I may therefore be excused for suggesting that articles of a more theoretical nature might be acceptable to many readers.

While I do not wish to disparage articles on transmitter design, as a prospective A.A. man, I should like to see articles dealing with the calculation and measurements involved in transmitter design.

On the whole, receiver design is dealt with fairly well in books, such as Oatley's Monograph, but outside the *Journal of the I.R.E.*, and similar publications, which are rather too technical, transmitter design is rather neglected.

Perhaps some member who is theoretically inclined and has the necessary knowledge, could write such an article, or series of articles.

Yours faithfully,

L. BEEBY (BRS2367).

THE RFP60 VALVE

The Editor, T. & R. BULLETIN.

DEAR SIR,—With reference to the letter from Mr. L. O. Rogers, G2HX, in the August BULLETIN, I do not think his trouble with oscillation using 362 RFP60 valves is surprising, in view of their grid-anode capacity, which on a sample measured was $0.126 \mu\text{F}$. This value represents a reactance of about 90,000 ohms at 14 Mc., which is low enough to cause oscillation if High Q Tank and grid circuits are used, as for 1.7 Mc. complete stability necessitates a capacity as low as about $0.01 \mu\text{F}$, with efficient coils unless the aerial load is made very heavy.—Yours faithfully,

D. N. CORFIELD (G5CD).

R.E.S. (S.M. No. 5).

56 Mc. OPERATION

DEAR SIR,—During the tests on Sunday, August 23, I took my transmitter and receiver to the top of Grants Tower, near Bury, accompanied by G5YD and 2ARC.

Contact was established first with G6GL at Hoylake and later with G6YQ on Snowdon.

The log follows: 1430 G2OI calling test, using fone, replied to by G6GL, using ICW. G2OI received by G6GL at QSA3. R3. G6GL received by G2OI QSA2 R2.

1455, G2OI received G6GL at R4. QSA4.

1645, G6YQ calling test, using ICW, replied to by G2OI using fone. G6YQ received by G2OI QSA4. R3-4. G2OI received by G6YQ fone QSA3, R3.

1700, G6YQ received by G2OI, QSA4, R4, ICW. G2OI received by G6YQ QSA5, R5, ICW.

1805, G6GL calling test, using ICW, replied to by G2OI using ICW reports W4 R4, our report W5, R5.

The transmitter in use at Grants Tower was an

Ultra Audion, using about 5 watts to oscillator, and a high slope pentode as modulator.

The aerial system was a half-wave beam directed to Snowdon.

The height of the tower at the top is about 90 ft. above sea-level, but surrounded by hills to west, north, and east, with low-lying hills to south.

The receiver in use employed an Ultra Audion circuit, modified as the transmitter, using detector, separate quench and pentode output, about 25 ft. of wire dropped down the side of the tower was used for an aerial.

Check was made for output from the transmitter with a field strength meter, using a pentode valve as a diode, with plate and grid strapped, and a micro-ammeter across electrodes.

I should like to know if this work constitutes a British record for two-way operation on 56 Mc.

Yours sincerely,

W. LUCAS (G2OI).

Trade Notes

Messrs. Standard Telephones & Cables, Ltd., have sent us for test and review samples of their new 4304A valve, which has been especially produced for ultra high-frequency work.

As a radio-frequency oscillator or power amplifier it may be used at full rating at frequencies up to 100 Mc. and at reduced rating up to 300 Mc. It is also very suitable for use at audio-frequencies, particularly in Class B amplifiers or modulators.

Characteristics.

Filament volts ... 7.5 v.

" current ... 3.25 A.

At 1,000 volts D.C. and plate current of 50 mA. :—

Amplification factor ... 11

Grid plate trans-conductance 2,300 micro-ohms

Plate resistance ... 4,800 ohms

Average values of the direct capacities between electrodes are :—

Grid to plate ... $2.5 \mu\text{F}$.

Grid to filament ... $2.0 \mu\text{F}$.

Plate to filament ... $0.7 \mu\text{F}$.

Maximum ratings and average characteristics for frequency below 100 Mc. :—

Max. D.C. plate voltage ... 1,250 v.

" plate current ... 100 mA.

" continuous plate dissipation ... 50 watts.

" R.F. grid current ... 5 A.

" D.C. grid current ... 20 mA.

An information booklet will be sent on application to the makers.

We hope at an early date to publish a technical review dealing with this valve, which is listed at £5.

RESEARCH AND EXPERIMENTAL SECTIONS

MANAGER :

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

ASSISTANT MANAGER :

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

SECTIONS :

No. 1 : TRANSMITTER DESIGN

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

G.M. : 7 and 14 Mc.

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

G.M. : 28 Mc.

G. McLEAN WILFORD (G2WD).

G.M. : 56 Mc.

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

G.M. : Artificial Aerials

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

No. 2 : RECEIVER DESIGN

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

G.M. : General

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

G.M. : 56 Mc.

J. N. WALKER (G5JU)

G.M. : Superhets

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

No. 3 : AERIAL DESIGN

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

G.M. : General

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

G.M. : 28 Mc.

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

G.M. : Joint Group with Propagation

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

No. 4 : PROPAGATION

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

G.M. : 28 Mc.

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

G.M. : Conditions

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

G.M. : Literature

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

G.M. : Joint Group with Aerial Design

G. A. H. ECKLES (G5GC).

No. 5 : VALVES AND INSTRUMENTS

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

No. 6 : AUXILIARY APPARATUS

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

G.M. :

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

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

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

No. 8 : CONTEMPORARY LITERATURE

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

NEWS OF THE MONTH

Since the publication of last month's notes, a few letters have been received offering suggestions for effecting a benefit to R.E.S., but in view of the fact that, at the time of writing, Convention is still in the future, whereas when these notes are read it will be in the past, we will refrain from any comments on the subject this month. We hope that Convention will have produced much constructive criticism, and that in the October issue of the BULLETIN we shall be able to publish the future policy of R.E.S., at any rate, for the coming year.

Meanwhile, the "silly season" appears to be holding everybody firmly in its grips with the result that but one report has come to hand, this relating to the latest Dellinger Fade-out, details of which are given below.

This occurred on August 25, 1840 to 1855 G.M.T., and affected all transmissions westwards across the daylight path, wavelengths of 22 metres being the first to go, while the first to resume were from 15 metres upwards. New York long-wave station on 16,000 metres went very weak as well.

At the moment we have no information concerning the longer short waves, 30 to 80 metres; therefore members who noticed the phenomenon at the same time on these waves are asked to drop a line to the S.M. Propagation. It will be interesting to see now whether the "fade-out" will recur with the revolution on the sun. Twenty-seven days brings us to September 21, and 54 days to October 18.

INDIVIDUAL MEMBERS.

The following have enrolled as "Individual Members since July 28, 1936 :

No. 1 Section : W3ENZ.

No. 2 Section : W3ENZ, BRS2369.

No. 3 Section : W3ENZ.

G2GD.

Coil Data for Single Signal Super-Heterodyne

Due to an oversight the following details of the H.F. Oscillator (L7) Coil design were omitted from the article on the Single Signal Superhet by G5ZZ in the April Bulletin.

Approx. Band	L7	Tap on L7	Wire Gauge
9.4-11 M.	5	1½	24 D.C.C.
19-23 M.	12	2½	do.
28-34 M.	16	3½	do.
38-44 M.	30	4½	do.
74-86 M.	61	6½	36 D.S.C.
150-170 M.	72	6½	do.

In all cases, except 1.7 Mc., the H.F. Oscillator works at half the frequency, the first harmonic being fed to the first Detector (V.2). The above windings are wound on standard Mullard valve bases, but these can be substituted for ribbed or plain formers of suitable design and same diameter. G6WY.

BRIGHT IDEAS.—No. 7.

An old TRF BCL receiver may quickly and easily be made into a two-stage exciter unit with the addition of a few minor components. First, a white pine baseboard is fastened to the top side of the long welded sub-base bracket, which leaves sufficient room underneath for the small parts. The first tuning condenser is left as it is; this is the cathode tuning of the tritet, or grid-cathode of the E.C. The second condenser has its rotor vanes removed with the exception of two, and the third condenser all but one. Fixed or plug-in coils may be mounted.

In the original unit the stages tuned to 3.5, 7 and 14 Mc., respectively. The coils are rewound with No. 22 wire (space wound) to suit the band required. The coil tubing is natural bakelite 2 ins. in diameter, mounted with metal brackets on the condensers at right-angles to each other. This, along with the considerable spacing between units, allows sufficient isolation.

The three-point aerial tapping switch is removed from the panel and mounted on spacers near the oscillator valve for crystal-E.C. changeover. A crystal holder is mounted in its place and is shorted with a horseshoe of No. 12 wire when E.C. is used.

A calibration chart frame is mounted in the space to the right of the panel in place of the L.F. control unit; this is useful with the electron-coupled oscillator. If the exciter is to be used as a portable, however, an aerial condenser may be placed here instead.

VP1AA.

* * *

In low-powered transmitters using a full-wave valve rectifier and not more than 150 milliamps there are several advantages in using flashlamp bulbs as rectifier plate fuses. A flashlamp bulb is inserted in each of the two plate circuits. In addition to being cheap and easily replaceable they give a visual indication of the balance of the rectifier circuit. When the rectifier is on full load it will generally be found that one bulb is glowing more brightly than the other. A "hum-dinger" placed across the filament will balance up the two plates and is adjusted until the two bulbs glow equally. Another useful point is that unscrewing one of the bulbs from its socket will effectively reduce the power of the set for such purposes as neutralising. Fuses of some such type are necessary, of course, to protect both the rectifier and the transformer.

G2RO.

* * *

How to display QSL cards without spoiling the wallpaper is a problem which has worried many of us. Here is a solution: use window-ticket clips, obtainable at 1s. 3d. per half-gross from *Messrs. Strakers*. They are very small powerful spring clips and will bear the weight of a large number of cards. The top clip may be hooked to the picture rail. The overall length of each clip is 1 in. and the space between each card would be only $\frac{1}{8}$ in.

* * *

The following idea was brought to the notice of the writer by G2SN, who appears to be too modest

to put it into print, but it is one which is worth passing on to other members.

Instead of using ordinary solid wire in receiving coils for the 1.7 and 3.5 Mc. bands, use Litz wire, having as many strands as possible. Usually old Lewcos or other coils can be picked up cheaply and the wire off these used. Care must be taken to see that each strand is securely soldered to the tag ending the winding.

The chief improvement will be found in increased selectivity, though QRK will increase slightly.

This idea has not been tried out at higher frequencies, but it should also show some improvement, providing first-class Litz is used.

G5JU.

* * *

The local sixpenny stores should have in stock small bakelite funnels selling at 1d. each. If these are threaded on to the aerial, feeder or counterpoise lead-in wires and fixed in position just outside the actual lead in tube, water running down the wire will run off and the lead is kept dry, with the insulation resistance maintained at a much higher value in wet weather.

G5JU.

EMPIRE CALLS HEARD.

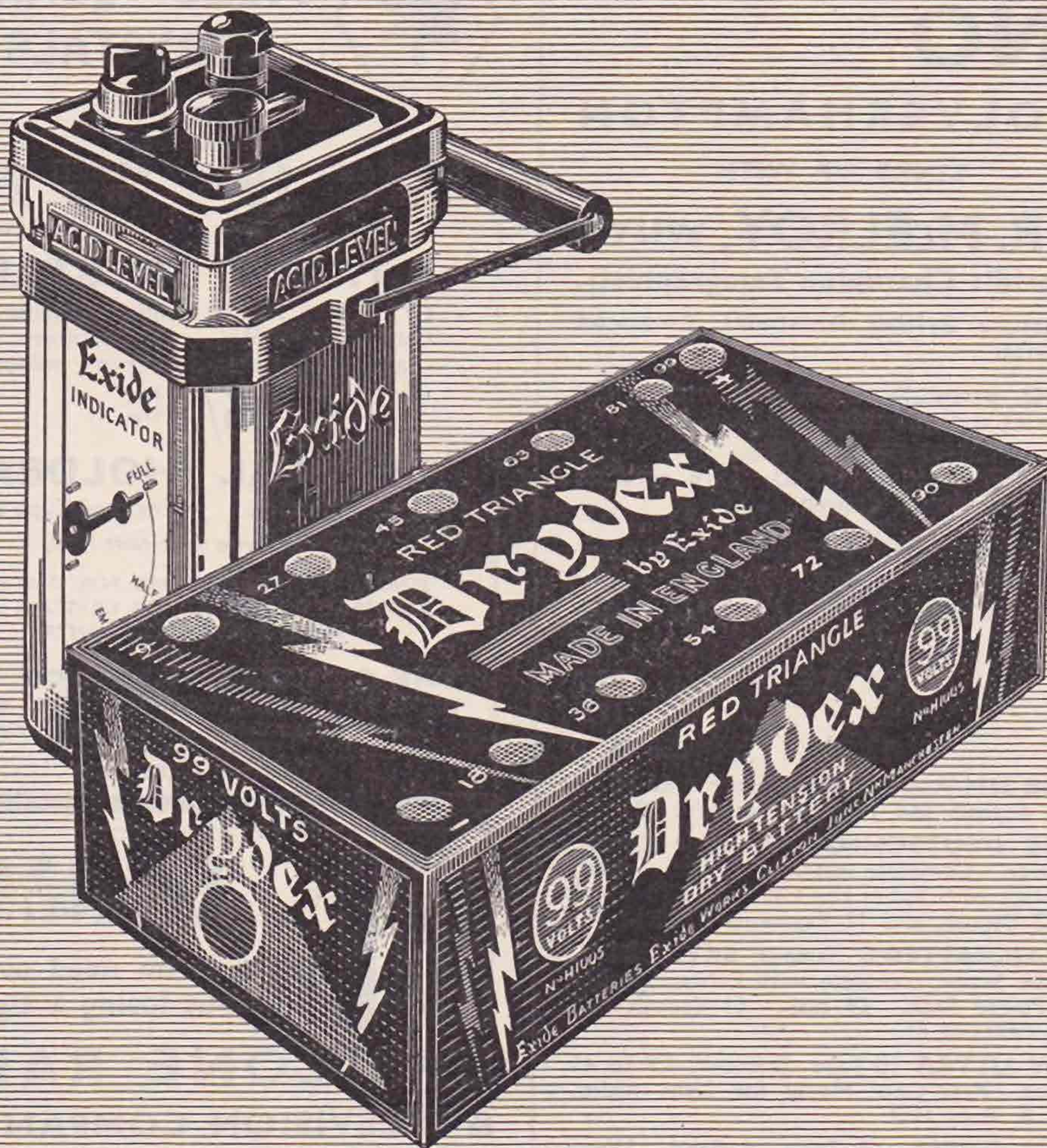
Eric W. Trebilcock (BERS 195), Telegraph Station, Tennant Creek, North Australia. June 2 to July 5, 1936. 7 Mc. CW: ei2l qsa5r6, 8j44, g2kw55, 2na55, 2nj44, 2lc34, 2th35, 5ha54, 5jh44, 5mw34, 5my45, 5ui55, 5nx55, 6gk55, 6my44, 6ox34, 6pd55, 6pw55, 6ui44, ve4qx44, 5ir55, vp6my55, vr4jd57, vu2em44, zs5z55, 6am55.

14 Mc. fone: ve5ef46, 5hi57, 5hu56, 5ot55.

14 Mc. CW: ei8b54, g2zq54, 5ms55, 5rv55, 6dl55, 6nj55, sulch55, ve2aa55, 2bu55, 2ca56, 2jk54, 3adk56, 3ahn44, 3ea55, 3go56, 3ht45, 3po23, 3qd55, 3ig34, 3ug36, 3xq54, 4ae54, 4fw44, 4ig55, 4kf55, 4lx55, 4og55, 4ph45, 4ro55, 5bi56, 5kc55, vp2df55, 5aa55, vq8aa46, vr2ff56, 4ba55, vslaa56, 1af56, 2ae55, 2ag56, 6ah56, 6bd55, 7gj44, 7rf56, vu2bt55, 2jb55, 2lz55, 7fy45, zb1h45.

2AOU, Samares, Jersey, Channel Islands, August. 14 Mc. C.W.: vk2cc (549), da (579), dr (549), jx (559), lw (539), ny (539), px (558), qe (547), rb (539), va (549), vq (539), vv (539), xc (549), xj (539), vk3cz (549), dp (549), dq (559), fz (549), ow (559), wf (547), xf (559), xp (559), vk4gk (569), vk5cm (539), hw (539), wr (549), vk6fo (539), vk7nc (549), zl2oq (549), 3dj (569), fz (549), ja (539), kg (559), vq3far (549), vq4ksl (589), zslal (539), vu2tm (538), 2ba (439), sulap (557), sg (579), tm (569), aa (577), db (457), kg (579), rh (547), vp2cd (579). 14 Mc. phone: sulkg (58), sg (58), ch (59), vp6yb (57), vp9r (54), vk2abd (59), 2ac (55), 2ap (55), 4bb (43).

F. A. Robb (GI6TK), 47, Victoria Avenue, Sydenham, Belfast, North Ireland. From August 4 to August 25. 14 Mc. fone: velam, velcr, velci. 14 Mc. C.W.: sultm, sulsg, sulch, velhk, velae, velet, velcn, ve2cr, ve2il, ve2ee, ve2jk, ve2ca, ve2go, ve3au, ve3yx, ve3qd, ve4wr, ve5gi, vk2lz, vk2xl, vk3gk, vk3mr, vk4gk, vk5cm, vp2at, vq3far, vq4crq, zb1h, zl4ao.



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BETWEEN



OURSELVES

New Amateur Frequency Bands

The following statement was read by our President, Mr. Arthur Watts, to the members present at our Annual Convention:—

"I am going to ask you to pay very careful attention to what I have to say, because the G.P.O. have left it to me to explain this matter and will not be advising members individually.

"We have felt for some time past that the regulations governing British Amateur Frequency Allocations could be improved upon in view of the progress that has been made in the calibration accuracy of crystals and frequency measuring apparatus.

As the result of negotiations concluded only within the last few days, I am pleased to be able to announce that the G.P.O. have agreed to cancel entirely the present Table B as it appears in the regulations—this table (to quote one frequency band only) requires us to select the transmitting frequency in the 7 Mc. band between 7,012 kc. and 7,288 kc. From now onwards the bands of frequencies will be as follows:—

1,720—1,995	kilocycles.
3,505—3,730	"
7,005—7,295	"
14,005—14,395	"
28,010—29,990	"
56,020—59,980	"

"Under the new arrangement, the licensee will be required to select the transmitting frequency sufficiently within the limits of this table as to prevent the frequency falling outside due to crystal variation or transmitter instability.

"This new concession gives us a few extra kilocycles at both ends, on the bands which are used the most.

"It will be apparent from the remarks I have made that the British amateur whose carrier frequency is heard, say, between 7,005 kc. and 7,000 kc. will be contravening the terms of his licence, and the G.P.O. will insist on his moving to a point higher in frequency than 7,005 kc. The tolerance of 5 kc. at each end of the bands is to ensure that the fringes of a modulated transmission on a carrier frequency close to, say, 7,005 kc. will not go beyond (for the example quoted) the limits of the International Band, that is to say, 7,000 kc.

"The G.P.O. have thus recognised that we can now work to closer limits; henceforward they place the onus of keeping within these bands upon the transmitting amateur.

"I feel sure that everyone will appreciate the value of this concession and will take steps to keep within the new limits. The G.P.O. have only granted this concession because they have confidence in our ability to work to the new limits.

"Members will appreciate that this does not give permission to operate in a band unless they are already authorised to do so by the G.P.O.

"In conclusion, I should like to mention the very valuable assistance rendered to the Society by the Band Monitoring Group."

G.P.O. Morse Test

We have been informed officially by the G.P.O. that there is no foundation whatever for the suggestion published elsewhere that a change in the requirements of the morse test is under consideration.

London Meetings

The following dates have been fixed for meetings at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, S.W.1:—

1936.—September 25, October 30, November 27, December 18.

1937.—January 29, February 26, March 31, April 30.

The September meeting will commence at 6.15 p.m., when Mr. R. G. Clark, of the Mullard Wireless Service Co., will lecture on the Development of the All-wave Receiver."

As in previous years, tea will be served free of charge from 5.30 p.m.

New members living within easy reach of London are especially invited to take part in these meetings. They are requested to make themselves known to the Secretary, who will endeavour to introduce them to local members.

The October meeting will, it is anticipated, be an open meeting during which the N.F.D. and other films will be shown, especially for the benefit of the wives and lady friends of members.

Book the date now—October 30.

Calibration Section

Manager: A. D. GAY (G6NF).

The Calibration Service for members' crystals and frequency meters will again be available from October 1, 1936. As we anticipate a somewhat busy time, will members who wish for an early return of their apparatus kindly read carefully the Section Rules and remember to enclose return postage as a separate amount? For the time being crystals *only* can be accepted for calibration, and these should be addressed to the Section Manager, at 49, Thornlaw Road, S. Norwood, London, S.E.27.

The Month on the Air

The Editor is considering introducing a new monthly feature which will contain interesting news items mainly concerned with DX operation.

Such a feature can only be prepared by a member who is regularly on the air. Preferably the writer should have a journalistic flair beside possessing a typewriter.

We shall be pleased to hear from anyone who would care to try his hand in this direction.

A Good Cause

We understand from the Secretary of the I.E.E. that one of their members has donated the following books for sale:—

Nine volumes T. & R. BULLETIN, Vol. 3 (July, 1927) to Vol. 11 (June 1936).

Five volumes of the Journal of the Wireless Society of London, Vol. 2 (March, 1921) to Vol. 4 (May, 1925).

The proceeds will be handed to the I.E.E. Benevolent Fund.

Members are invited to make an offer to the Secretary, Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, not later than September 30. The highest bid will succeed.

Mr. Cecil Goyder

Belated congratulations are offered to Mr. Cecil Goyder who has been appointed Chief Engineer of India Broadcasting. Mr. Goyder's name will for ever be associated with the amateur movement, first by his pioneer work in establishing the first England—Australia contact on short waves, and second for his work in developing the method of transmission known as Goyder Lock.

At the time of his important amateur work Mr. Goyder was still at Mill Hill School and during this period his activities were brought to the attention of our present King on his visit to the School in 1925.

Mr. Goyder was, until his departure for India, on the staff of the B.B.C. and prior to this time he was engaged on research work at Messrs. Standard Telephones & Cables, Ltd.

For some years Mr. Goyder was a member of the T. & R. Committee and was especially interested in the tests organised by the Society during the years 1925 to 1930.

Good luck o.m. in your new sphere of activity.

Conversion Tables

Metres to Kilocycles

We are pleased to announce that we are now in a position to supply from stock a most useful Metres to Kilocycles booklet. This is vest pocket size, and covers the range from 1 metre or 1 kilocycle to 30,000 metres or kilocycles. Bound in a stiff cover, this compendium should prove invaluable to all members. The price is 9d., *post free*, or 7½d. if obtained from Headquarters.

German Contest

We understand from Mr. J. N. Roe G2VV that a mistake occurred in the printing of the sample log sheet for the recent DASD Jubilee Contest.

In the example shown on the entry form the score should read 12 points for each report and not 36 points. 36 points would be the total for all three contacts.

N.R.A.U.

The Nordisk Amateur Radio Union was formed at the instance of B. Th. Field (LA1Y), at Gothenburg, Sweden, last year, and is an organisation of the four Scandinavian countries, Denmark, Finland, Norway and Sweden.

The objects of the organisation are to support the I.A.R.U., to act as liason between the four countries, to deal with pirate stations, and to handle QSL cards.

In December the N.R.A.U. held a test, SM3XJ, OH7NJ, LA3B and OZ7RU being the successful stations in their respective countries. A convention

was held this year at Oslo, and the following executive was elected: B. Th. Field (LA1Y), President; John Fr. Karlson (SM6UA), Vice-President; K. S. Saimo (OH2NM), Vice-President; O. G. Larsson (LA1V), Secretary.

SM5ZX and SM5RH, of the Swedish competition board, have been asked to act in that capacity for the N.R.A.U. and to arrange all tests. The 1st of each month is to be regarded as Northern Day, when all N.R.A.U. amateurs will call CQ-NR. Two cups have been offered for 56 Mc. work of over 100 km.

The 1937 convention will be held either in Copenhagen or Ringsted, Denmark.

Kingston and District Amateur Radio Society

We have been informed by Mr. R. Sheargold (G6RS), the secretary of the Kingston and District A.R.S., that a Conventionette is being held by his society, in Brighton, on Sunday, September 27. Full details can be obtained from G6RS, whose address is "Reculver," Manor Lane, Sunbury-on-Thames.

QRA Section.

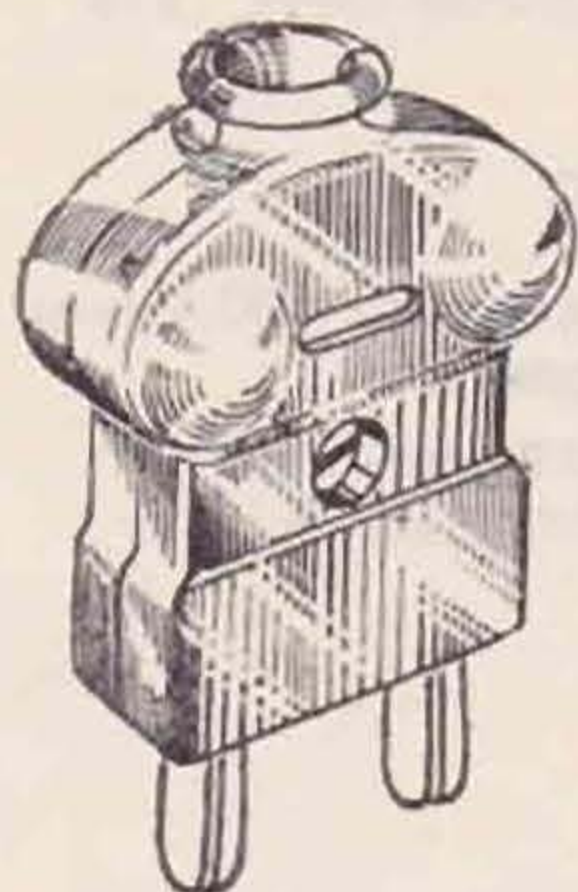
Manager: M. WILLIAMS (G6PP).

NEW QRA'S.

- G2IY.—A. C. WILBERFORCE, 112, The Grove, Ealing, London, W.5.
- G2KQ.—R. CAVE, 10, Melbourne Court, Welwyn Garden City, Herts.
- G2OB.—J. BALDERSTON, 6, Clough Terrace, Barnoldswick, Yorks.
- G2VZ.—H. W. DALY, 2, Temple Terrace, Watchet, Somerset. (Temporary address).
- G2XS.—H. W. SADLER, The Warren Farm, South Wootton, Kings Lynn, Norfolk.
- G5AQ.—L. A. CARTER, 8, Godolphin Terrace, Stoke, Plymouth, Devon.
- G15HV.—W. H. MARTIN, Knockinagh, Cloughfern, Whiteabbey, N. Ireland.
- G5QN.—N. BEST, c/o Mrs. WATTS, 94, Harefield Road, Stoke, Coventry, Warks.
- G5UM.—J. HUM, "Byeways," The Drive, Welwyn, Herts.
- G5XS.—L. E. PULFORD, "Surrey House," Surrey Road, Felixstowe, Suffolk.
- G8BA.—J. R. BARNARD, 53, Woodhouse Road, Doncaster, Yorks.
- G8BQ.—A. OUGHTON, 51, Fyde Street, Boston, Lincs.
- G8BV.—B. N. CLEMENTS, 10, Frederick Road, Northgate Street, Gt. Yarmouth.
- G8CD.—S. THAW, 6, Highcroft Crescent, Almondbury, Huddersfield, Yorks.
- G8CF.—J. G. HALLEY, 180, Locher Road, Dundee, Scotland.
- G8CH.—G. M. RESTON, Woodlands, Airdrie, Scotland.
- G8CI.—E. R. WARD, 54, Bentley Street, Cleethorpes, Lincs.
- G8CK.—W. E. BARTHOLOMEW, 102, Sidney Road, Watford, Herts.
- G8CL.—G. A. PATRICK, 4, Stokesley Crescent, Billingham, Co. Durham.
- G8CN.—J. D. CAMERON, Jr., Balgonie, West Linton, Peebleshire, Scotland.
- G8CO.—F. J. BARRETT, 6, St. Thomas' Place, Grays, Essex.
- G8CP.—Rev. S. NEWBY, 19, Clarence Road, Moseley, Birmingham, 13.
- G8CR.—R. WEBSTER, Launt House, Carlton Road, Worksop, Notts.
- G8CV.—H. ATTHILL, The Three Gables, Alma Lane, Heath End, Farnham, Surrey.
- G8CZ.—S. CLARK, 8, Clumber Street, Melton Mowbray, Leics.
- G8DA.—P. MALVERN, Boldre Villa, Selkirk Street, Cheltenham, Glos.
- G8DC.—H. M. TEE, 104, Rectory Road, Burnley, Lancs.
- G8DG.—K. HOWELL, 148, Gunnersbury Lane, Acton, London, W.3.
- G8DJ.—J. T. WIMBUSH, "Clonsilla," Whitworth Old Road, Broadley, near Rochdale, Lancs.
- 2AVS.—A. S. TRIPP, 1, Broxtowe Drive, Mansfield, Notts.
- 2AZF.—P. FRAZER, 7, De Freville Avenue, Cambridge.
- 2AZL.—P. H. SALMON, "Lydbrook," Hampstead Lane, Highgate, London, N.6.
- 2BGO.—G. D. WRAY, 68, N. Marine Road, Scarborough, Yorks.
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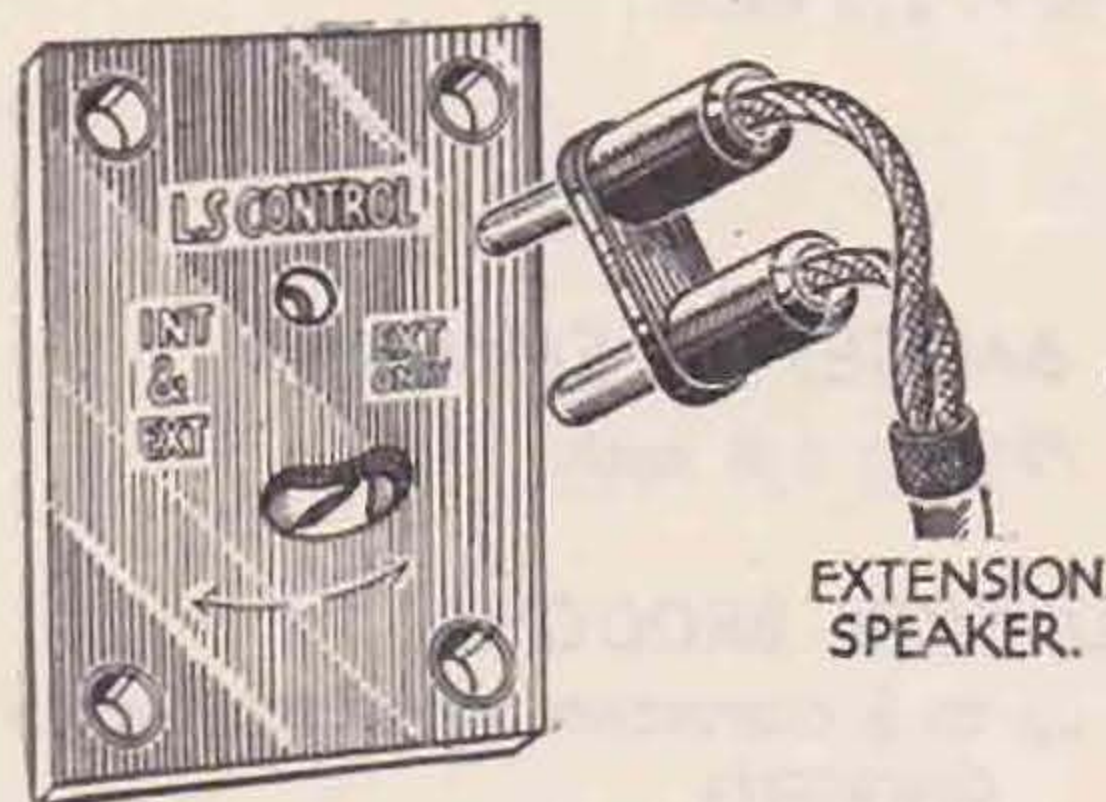
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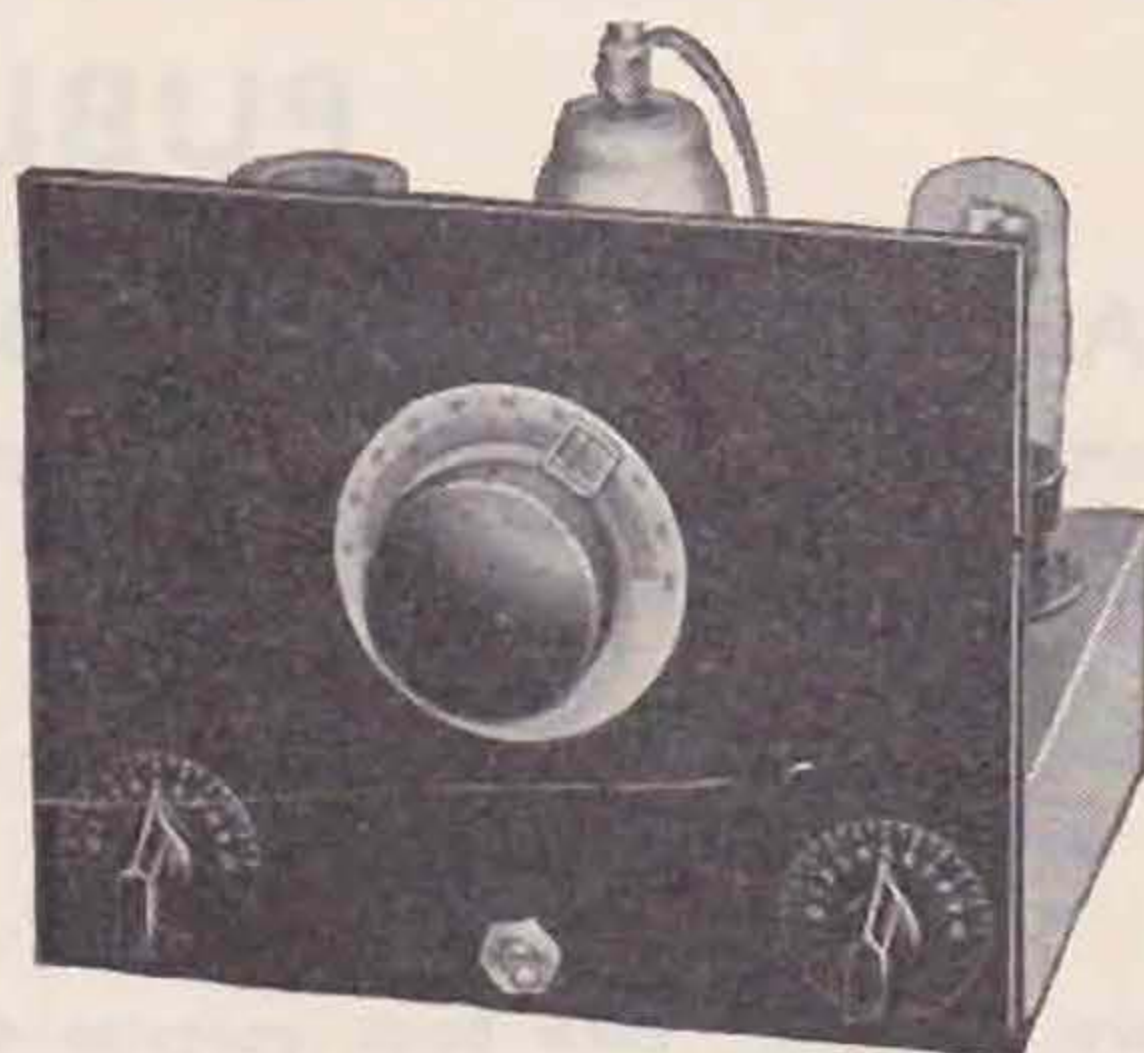
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W. W. FIELD (G2GC), 12, Wilson Street, Dunston, Co. Durham.
 F. SARGENT (G2HU), 391, Wellington Street, Grimsby, Lincs.
 H. B. BURTON (G2JR), 215, Ansty Road, Wyken, Coventry.
 J. G. LE CORNU (G2UR), 1, Les Vaux Villas, Valley Road, St. Helier, Jersey, C.I.
 L. S. GARLEY (G5ZL), Seacroft, Coed Celyn Road, Derwen Fawr, Swansea, Glam.
 H. PUNCH (G6UR), Chapel Cottage, Merstone, Newport, I.W.
 E. E. ELLIS (G8AR), 3, Felstead Crescent, Sunderland.
 F. C. FREAKLEY (G8BH), 25, Sweetman Street, Wolverhampton.
 T. L. HAIGH (G8BT), Daneway, Parish Ghyll Drive, Ilkley, Yorks.
 R. H. FARR (2AOF), 4, Strafford Avenue, Elsecar, N. Barnsley, Yorks.
 A. BELL (2ARB), 663, Anlaby Road, Hull, E. Yorks.
 S. PALMER (2ASP), 21, Picton Avenue, Runcorn, Ches.
 W. V. LEYLAND (2AVL), Radio Service Depot, Morecambe Street, Morecambe, Lancs.
 G. B. BOOTHROYD (2BBX), Kineholme, 21, Longley Road, Huddersfield, Yorks.
 R. F. WESTON (2BVW), 1, Earl Russell Street, Aylestone, Leicester.
 J. CLEGHORN (BRS2505), 37, Dundee Terrace, Edinburgh, Scotland.
 R. L. SHEARER (BRS2506), Hillhead Park, Bonnyrigg, Midlothian.
 J. J. ALLAN (BRS2507), 1, Lightlands Avenue, Wigtown, Wigtownshire.
 T. L. KIRK (BRS2508), Chapel View, Ann Street, Newtownards, Co. Down, Ulster, N. Ireland.
 J. G. PULLAN (BRS2509), 1, Roseville Avenue, Harrogate.
 E. W. PRICE (BRS2510), 101, Old Farm Road, Stechford, Birmingham.
 G. A. PARRIS (BRS2511), "South Lodge," Harley Lane, Heathfield, Sussex.
 S. LEVINGS (BRS2512), 55, Derbyshire Road, South Sale, Manchester.
 D. H. KENTFIELD (BRS2513), The Street, Albury, Nr. Guildford, Surrey.
 C. E. BEYTS (BRS2514), Little Orchard, Normandy, Nr. Guildford, Surrey.
 H. J. FENN, M.R.C.S. (BRS2515), BM/CLMH, London, W.C.2.
 W. L. DERBYSHIRE (BRS2516), 45, Westcombe Avenue, Street Lane, Leeds, 8.
 O. McCUSKER (BRS2517), 23, Wardlaw Place, Edinburgh, 11, Scotland.
 (Miss) P. E. M. BRYAN (BRS2518), 43, Exeter Road, Exmouth, Devon.
 S. CATTELL (BRS2519), 33, High Street, Ogmere Vale, Glamorgan.
 S. HALL (BRS2520), 20, Hinckley Road, Leicester.
 A. Q. MORTON (BRS2521), 23, Braidfauld Street, Tollcross, Glasgow, E.2, Scotland.
 H. N. TWEDDELL (BRS2522), "Beltana," Chelmsford Road, Shenfield, Essex.
 R. H. DRAPER (BRS2523), 4, Cliff Cottages, Bracebridge, Heath, Lincoln.
 G. SAUNDERS (BRS2524), 209, Nags Head Road, Ponders End, Middlesex.
 S. C. BLACK (BRS2525), "Avondale," Antrim Road, Glen Gormley, Belfast, N. Ireland.
 H. H. G. NICOLE (BRS2526), 54, East Walk, East Barnet, Herts.
 H. E. EDINBORO (BRS2527), 22, Grantham Road, Bracebridge Heath, Lincoln.
 D. A. SAWYER (BRS2528), 55, Sefton Road, Croydon, Surrey.
 T. E. COX (BRS2529), 13, Worth Crescent, Stourport-on-Severn, Worcestershire.
 F. HOWARD (BRS2530), 24, Brookleigh Road, Withington, Manchester.
 A. C. PARISH (BRS2531), 15, George Lane, Folkestone.
 MRS. SHELTON-WILKINSON (A.), 41, The Highway, Sutton, Surrey.

DOMINION AND FOREIGN.

RENE FRITSCH (AR8VP), i/c Communications, T-4 Station, Post Office, Box 107, via HOMS, Syria.
 LUIS DE LA TAPIA PASTOR (EA3AX), Apartado 192, Barcelona, Spain.
 A. E. HOCHSTEIN (SU1AX), 16, Rue Djabarti, Alexandria, Egypt.
 H. SCHOLZ (VK4HR), Jellicoe Street, Coopawo, Brisbane, Queensland, Australia.
 G. EATON (VQ4CRG), P.O. Box 1071, Nairobi, Kenya Colony, East Africa.
 C. W. NICHOLSON (W1BAU), South Main Street, Holden, Mass, U.S.A.

S. C. PLEASS (ZT6K), "Pinecote," Bramley, Johannesburg, South Africa.
 L. M. YOUNG (BERS367), 193, Venice Road, Durban, Natal, South Africa.

R.S.G.B. Slow Morse Practices

Arrangements will be found below for the resumption of 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 transmissions and numbers utilising the service. If, however, a reply is desired, a stamp should be sent. Will any station in any area at present not served offer their services to Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4 (Telephone Silverthorn 2285).

SCHEDULE OF SLOW MORSE TRANSMISSIONS.

		B.S.T.	Kc.	Stations
Sept. (20	Sunday	0930	1852.5	G5DY
20	Sunday	1000	7260	G5JL
25	Friday	2300	1785	G6QI
27	Sunday	0915	1775	G6ZQ
27	Sunday	0930	1852.5	G5DY
27	Sunday	1000	7260	G5JL
30	Wednesday	2300	1775	G6ZQ
Oct. 2	Friday	2300	1785	G6QI
G.M.T.				
Oct. 4	Sunday	0915	1775	G6ZQ
4	Sunday	0930	1852.5	G5DY
4	Sunday	1000	7260	G5JL
7	Wednesday	2300	1775	G6ZQ
9	Friday	2300	1785	G6QI
11	Sunday	0915	1775	G6ZQ
11	Sunday	0930	1852.5	G5DY
11	Sunday	1000	7260	G5JL
14	Wednesday	2300	1775	G6ZQ
16	Friday	2300	1785	G6QI
18	Sunday	0915	1775	G6ZQ
18	Sunday	0930	1852.5	G5DY
18	Sunday	1000	7260	G5JL
21	Wednesday	2300	1775	G6ZQ
23	Friday	2300	1785	G6QI

EMPIRE CALLS HEARD.

By J. R. Cragg (BERS273), P.O. Box 391, Hong Kong.

From July 15 to August 15.

7 mc.: vk2as (4.5), vk2dg (4.4), vk2ed (4.5), vk2fn (4.4), vk2la (5.6), vk2np (4.5), vk2qp (5.5), vk2tf (4.5), vk2zg (3.3), vk3eg (4.5), vk3ml (4.5), vk4ap (5.8), vk4ei (5.6), vk5fm (4.5), vk5gf (5.8), vk5mc (3.4), vk5lb (4.4), vk5yk (5.7), vs1aj (5.7), vs2ag (5.5), vu2by (4.4), vu7fy (4.5), zl2ci (4.5), zl3bj (4.5).

BERS195 (S. Australia) during July.

14 mc.: ve4gq (9.4.5), vs6aq (8.5.6). 7 mc.: g2dl (9.5.5), 2nn (9.5.5), 2oo (9.2.4), 5mu (9.4.4), 5no (9.4.3), 6dl (8.5.5), 6gd (8.2.4), 6hj (8.4.5), 6iy (9.5.5), 6ko (9.4.4), 6qp (9.4.5), 6tr (8.4.4), 6uj (9.4.3), ve2qs (9.5.7), vp4tc (5.4), vs2ag (8.5.4).

NOTES and NEWS



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), Durham,
and Northumberland (Middlesbrough is in this district.)
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. R. A. BARTLETT (G6RB), 31, King's Drive, Bishopston, Bristol,
Glos.

DISTRICT 6 (South-Western).

(Cornwall, Devon, Dorset, Somerset.)
Mr. W. B. SYDENHAM (G5SY), "Sherrington," Cleveland Road,
Torquay.

DISTRICT 7 (Southern).

(Berkshire, Hampshire, Surrey.)
Mr. E. A. DEDMAN (G2NH), 75, Woodlands Avenue, Coombe,
New Malden, Surrey.

DISTRICT 8 (Home Counties).

(Beds., Cambs., Hunts., Rutland and the town of Peterborough.)
Mr. G. JEAPE (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), 9, 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. A. O. MILNE (G2MI), "Twemigh," Kechill Gardens, Hayes
Kent.

DISTRICT 17 (Mid-East).

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

DISTRICT 18 (East Yorkshire).

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

SCOTLAND.

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

NORTHERN IRELAND.

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

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

DISTRICT 1 (North-Western)

LIVERPOOL.—No meeting was held during August, but members are reminded that they start again on Wednesday, September 16.

Manchester.—In spite of the holiday season an attendance of nine was recorded at the August meeting.

We have to congratulate BRS2051, who is now 2ARC, also BRS2388, who is now 2BCL, and we wish 2AVW the best of luck in his application for a full ticket. Other stations reporting activity are G5YD, 6KS, 2HW, 5CH, 2AYV, 2ATZ, 5OL, 2OI.

Much activity is being shown in this district on the 56 Mc. band and a number of members are building transmitters and receivers for this frequency.

The outstanding feature this month was a two-way QSO from Grants Tower, Bury, with G6YQ at the top of Snowdon. 2OI, accompanied by 5YD and 2ARC, took a transmitter and receiver to the top of Grants Tower and used a half-wave vertical aerial with a half-wave reflector spaced quarter-wave behind so that the reflected beam was directional

with Snowdon. The transmitter was a modified Ultra Audion, with an input to the oscillator of about 5 watts, and a high slope pentode was used as modulator without speech amplifiers. Ordinary two-volt valves were used throughout the tests. Contact was established first with 6GL at Hoylake, near Liverpool, who reported the fone R3; then the thrill came at 16.45, when I.C.W. was heard from 6YQ, Snowdon. Fone was used to reply and contact established, Snowdon reporting the fone R3. A test on I.C.W. brought back the report R5. It is thought that this is a British record for a two-way QSO, as the distance is over 90 miles as the crow flies.

Don't forget to listen for G2OI and 5YD after zero hour. Saturday night schedules are wanted, also reporting stations. Please write 2OI. Both stations will be working on the 56 Mc. band.

Whitehaven. The meeting held on August 6 was attended by G6JZ, 6WR, 2HT, 6SD, 2AON. This is decidedly poor and the T.R. appeals for better support. However a very pleasant evening was spent, and Mrs. G6SD once again rendered assistance.

6SD on 14 Mc. using fone with 4 watts input was called by a W station, but unfortunately 6SD did not hear the call although it was logged by 2AON.

Will members please note that meetings are held on the first Thursday in the month at G6SD 38, Main Street, Keswick.

Hoylelake. Reports are very scarce and the T.R. would be glad to receive more. G2FZ entered for DJDC contest, 6GL is active on 56 Mc. and other bands.

A meeting of the Wirral Amateur Transmitters and Short Wave Club was held on July 29 when a good attendance was recorded. 2BDT gave an interesting talk about the recent visit to GLV. Meetings are held on the last Wednesday in each month at the Kings Square Café, Birkenhead, at 8 p.m. and the Hon. Secretary, 2BON, will be very glad to welcome prospective members.

Blackpool.—The usual weekly meetings have been held and several holidaymaking visitors welcomed.

NORTH WESTERN PROVINCIAL DISTRICT MEETING

SUNDAY, OCTOBER 11th, 1936, at

**THE ANGEL HOTEL, DALE STREET
LIVERPOOL**

Assemble	...	...	12 noon
Lunch	...	...	1 p.m.
Business Meeting	...	...	2.30 p.m.
Tea	...	...	4.30 p.m.

Followed by station visits

Inclusive charge 5/-

Reservations to: G2RF, 53 Druids Cross Gardens, Liverpool, 18, by October 7th.

BRS 2269 gave a very interesting description of a transatlantic trip with his "Kilodyne"!

Individual reports are too numerous to report in full, but G5TH is back from tour of SM, BRS2269 is back from trip to VO, VE and W. SUIWM is over from Alexandria visiting local stations and fixing schedules for his return.

2BVA from Stoke on Trent visited several locals and attended club meeting.

Rochdale. Stations reporting active are BRS 1152, G6AX, 6QA and BRS1690 who is now G8DJ.

DISTRICT 2 (North-Eastern)

Stockton-on-Tees.—Activity somewhat lower than usual owing to holidays, but 56 Mc. claiming most attention. G2FO and 2BQO tried to receive the Snowdon transmissions at the top of the Cleveland hills, but only heard SAQ. G2FO, 2BQO and 2BHF are effecting improvements in their 56 Mc. receivers. G6VC is trying to work VS1AF on 14 Mc. Congrats to 2BPT, now G8CL, who is having success with 7 Mc. fone, using series modulation on the buffer stage.

Huddersfield.—The last meeting was at G6RO. Congrats to G5QN, who has taken honours in his B.Sc. exam. We regret he is leaving us for Coventry. G6KY is welcomed as a new member, and 2BBX reports active.

Leeds.—Most members are active, and, commencing September 7, meetings will be held each Monday

evening at Oxford Chambers, Oxford Place, near the Town Hall, Leeds. A special effort at attendance is requested of all members. Meetings have been held at 2AHM and BRS2317, and the gear at the latter station was the subject of much appreciation. Several stations are anxious to qualify for the HBE certificate, but are having some difficulty in getting QSL's from Empire stations.

Bradford.—There is a considerable amount of activity, particularly amongst the newer members, and we welcome G8CA and G8CB on the 1.7 Mc. band. The Radio Society will be starting the

FORTHCOMING EVENTS

SEPT. 22.—District 14 (East London), 7.30 p.m., at G6UT, 28, Douglas Road, Chingford, E.4.

SEPT. 23.—District 14 (East Essex), 8 p.m., at G2LC, 24, Percy Road, Leigh-on-Sea.

SEPT. 23.—Scotland "H" District, at 7.30 p.m., at 2ANL, "Makora," Kinghorn.

SEPT. 23.—District 15 at 2BCN, 167, Botwell Lane, Hayes, at 7.30 p.m.

SEPT. 24.—District 13, 8 p.m., at Brotherhood Hall, West Norwood.

SEPT. 25.—London Meeting at I.E.E., 6.15 p.m., Lecture by Mullard Co. Tea from 5.30 p.m.

SEPT. 30.—Scotland "A" and "E" Districts, at 7.30 p.m., in "Room A," Institute of Shipbuilders and Engineers, 39, Elmbank Crescent, Glasgow.

OCT. 7.—S.L.D.R.T.S., 8 p.m., at Brotherhood Hall, West Norwood.

OCT. 7.—District 1 (Manchester Section) 7.30 p.m., at Brooks Café, 1, Hilton Street, Manchester. 56 Mc. Night. Bring your 5 metre receivers and transmitters for test and your wavemeters for calibration.

OCT. 22.—District 13, 8 p.m., at Brotherhood Hall, West Norwood. Junk Sale.

winter session early in October, and invite all to attend. BRS2390 is willing to stand by for 56 Mc. fone on Wednesday afternoons or Sundays. 2BRA reports active.

DISTRICT 6 (South-Western)

As the D.R. was attending Convention, District Notes were written rather earlier than usual. This may mean that some reports arrived too late for inclusion, and in any such case he would like to apologise! The 56 Mc. Field Day on August 9 was a great success, although for various reasons there were not so many stations out as was hoped. Some of these, however, though unable to do any transmitting, did what they could by working their receivers and sending in reports.

The addition to the competition of the "G2CI" Challenge Cup increased interest enormously. We are pleased to be able to announce that the cup

was won by Mr. D. G. Sainsbury (G5GD), of Teignmouth, and we offer him our sincere congratulations on a fine piece of work. 5GD, in common with all those taking part, used an input of only two or three watts; in fact, the maximum allowed was only five watts. The method of scoring may be of interest to other districts, and is therefore briefly explained. Each station had a six-figure code number, made up and sealed by an independent person, and sent to the station a couple of days before the event. Claim of contact or reception could only be made if the code number had been heard correctly. In the event of a contact, each station was credited with two points for each mile between the two stations. If a station heard another, but was unable to make contact, *each* was then credited with *one* point per mile. This was done in order to reward those who had well-designed receivers as well as those with good transmitters. 5GD's total score of 204 (with seven stations worked) shows the standard of work done. Other results were:—2nd, 5SY (Haldon), 195; 3rd, 2CI (Ottery St. Mary), 163; 6WT (Haytor), 142; 5AK (Wellington), 106; 6LQ (Wellington), 36; 5ZV (Sidmouth), 19.

The greatest distance covered was about 45 miles. From the experience gained from these and other tests it was established that a well-designed QRP outfit could expect an R8 to 9 contact between the Quantocks and Haytor, a distance of nearly 45 miles. On account of this, 2CI, on the occasion of the Snowdon Tests, took his gear to the Quantocks and established easy contact with 6WT at Haytor. 2CI's signals were audible some yards from the loudspeaker. 2CI also heard 5JU on Dundry Hill, near Bristol. It happens that the distance from 2CI to 5JU was almost exactly the same as from 2CI to 6WT, but although 2CI called 5JU repeatedly, there was no reply. We should very much like to know whether 5JU heard 2CI.

Penryn.—The following stations report active: 5VL, 6BC, 6LV, 8AW, 2AHU, 2AMK, 2BXT, BRS2048, and BRS2252.

It has been decided to hold another District 6 56 Mc. Field Day on Sunday, September 27, commencing at 2 p.m., and ending at 7 p.m. This will be a more informal affair than the last, and members who would like to put a station on the air on that day are asked to write to the D.R. immediately.

DISTRICT 7 (Southern).

Amplifying last month's announcement the next meeting will be held on Sunday, October 4, at the Tumble Down Dick Hotel, Farnborough, Hants., commencing at 2.30 p.m. as usual.

The only district reports this month are from Reading. At the August local meeting the following attended:—G2IT, 2YB, 5AO, 5HH, 5HN, 2WK, 6WO, 2AIW, and 2BIS. After general discussion, G2WK gave a most interesting talk on pre- and post-war amateur radio experiences.

Congratulations to 2BVN, of Didcot, and G8BK, of Bracknell, on obtaining their licences. No reports to hand from the outlying districts. The next local meeting will be on September 16, at G5AO.

The meeting held at Wittering was well attended, and we were pleased to welcome our late D.R., G2DC, who was down south on holiday. We had

a glorious day, and bathing was the chief item on the agenda. Please make a special effort to make the October meeting a record one as far as attendance is concerned.

DISTRICT 8 (Home Counties)

A district meeting was held at the Fitzroy Arms, Fitzroy Street, Cambridge (which will be the future meeting-place until further notice), on August 14, at which eleven members were present in spite of holidays.

Various matters of district interest were discussed, and several useful suggestions considered, one being the suggestion of a really "pukka" frequency monitor being constructed and subscribed for by the district members for their use.

It is noticed that these meetings nearly always consist of the same members and it will be pleasing to see the appearance of others in the district at some of the future gatherings.

The monthly reports still continue to "fade out" and it is requested that members should please drop a card to the D.R. by the 23rd of each month, giving a brief report of their most interesting work during the preceding weeks of the month.

G5JO appears to have deserted the 14 Mc. fone band of late, but is known to be active somewhere in the spectrum.

5DR has been on holidays but has managed to maintain his good 14 Mc. work, having worked ZL, amongst other interesting DX. 2XV has had over 50,100 per cent. contacts with U.S.A. on 14 Mc. fone, also ten or more with VK; reports are also received of R7 fone in ZL, all with about 85-90 watts input.

Peterborough.—G2UQ has been doing some tests with aerials and finds the half-wave "Windom" best for 14 Mc. 2NJ now alternates between Peterborough and Heacham (Norfolk), at the latter QRA he uses the pentode portable described in the "BULL" by G6FY, and finds it very good. 5NX is busy on 7 Mc. 2075 is practising code as is 2171. 6PD reports good DX on 14 Mc.

DISTRICT 9 (East Anglia)

Reports this month amount to exactly one postcard, and what the scribes have been able to pick up while roaming around the District disguised as a bit of R.F.!

King's Lynn.—2XS is sorting out his TX after the move, but hopes to be on the air after the holidays. 6FB, who is home on leave, is busy with 56 Mc.

Lowestoft.—5QO is trying out a W3EDP aerial, and is proposing to build a 60-ft. mast during the winter. He and 2ABU, now 8DD, have been on 7 Mc. phone.

Norwich.—We are sorry to hear 2MN is on the sick list, and hope he will be fit by the time these notes appear. 2UT has been working DX on phone. 5IX is on 14 and 7 Mc., and is testing microphones. 6QZ has built a frequency monitor, as conditions on 28 Mc. have been very flat. 6UA is also a 7 Mc. phone station.

Swaffham.—5UD has been off the air for some time rebuilding his receiver.

DISTRICT 10 (South Wales and Monmouth)

Although the weather has been very good this month, reports have been more numerous, and a report was even received from the Newport T.R. (2JL). He has a very ambitious programme set out for himself, including the building of a six-valve

single signal super with a 56 Mc. triode hexode convertor, also a new C.C. TX, which will be used on 56 Mc., as well as the other bands. He has been carrying out some extensive 56 Mc. tests with BRS1943, of Caerleon, using a portable transceiver in conjunction with a pushbike, and has had some very satisfactory results, including the buckling of the back wheel by the 4-ft. aerial. BRS1943 has applied for a 56 Mc. radiating permit. 6BK is still putting out a very hefty signal on the 7 Mc. band. He is to rebuild to CO-BA-PA, using a '42-PX25-'210.

Congrats. to 2BIJ, now G8CT, who is already hunting DX on 14 Mc., using ECO-PA. Mr. Beard, of the Blackwood Club, is 2BXD, and is swotting Morse, as is 2BAQ.

BRS1490, of Bargoed, has started a Club in that town, and is getting in some Morse practice in his spare time.

2NG and 5BI are rebuilding, while the latter hopes to start up on 56 Mc. in Cardiff.

2XM will be back on the air during September prior to taking up his new position in Rugby with B.T.H. He has spanned the "pond" at last, after a lot of bad luck on 14 Mc., and is putting an R7 signal over to W1.

The Cardiff Club held a very interesting lecture and practical demonstration on 56 Mc. work on August 20, kindly and very ably given by 2BPG, who is undoubtedly one of the leading lights in South Wales on this subject, having spent a great deal of time during the past ten years in U.H.F. research.

2BSN, 2BHZ and 2BQB are active in Cardiff, while in Penarth 5XN is still doing well on phone on 7 Mc., though he was heard quite recently using the key! 8AM is also making some good phone contacts on that band, but is handicapped with very poor aerial facilities. Another transmitter has been unearthed in Penarth recently, call sign 6ON, late of London, who has been laying dormant for about a year. Welcome to District 10, OM, if it is not too late.

5VX is very active, installing 1,000-volt pack, and working QRP. He wishes to thank all those who made him welcome when he visited the Midlands recently. 2BSI, who has been on holiday in Brighton, wishes to thank, in particular, 5AO, 5HH, 2IT, and 2BIS for their hospitality during his visit.

6JW is active on 7 Mc. phone, using an RFP60 as PA.

In Swansea, 5TW reports very satisfactory results with his new rig. 2WO and 2SN are concentrating on 56 Mc. 5FK only wants VK for WAC. 5KJ is very active on all bands. 2BVV is patiently awaiting the arrival of his new TX from the States. Mr. Bailey has applied for his three-letter call.

The D.S. unfortunately was unable to attend Convention this year owing to business. He would like the owner of the FB Zepp. aerial in Porthcawl to drop him a report occasionally.

DISTRICT 12 (London North and Hertford)

The D.R. wishes to apologise for the error in last month's notes with regard to the 56 Mc. Field Day. This should have read August and not September.

Two portable stations "took the air." N.W. London chose Potters Bar as their venue, the call

being G6NR. Contacts were made up to 20 miles, and everyone had an enjoyable day. North London had their station in the tower of Christ College, Church End, Finchley. The transmitter consisted of a push-pull oscillator connected by 30-foot lines to a matched impedance aerial at the summit of the tower. QSO's were few owing to some trouble with the gear, but a very interesting day was spent by the operators. The latter part of the tests were concluded by using a midget single-valve oscillator. The station was operated by G5WW.

Congratulations to 2AOQ and 2AXB on becoming G8DR and 8CY. The October district meeting will be announced in the notes for that month as the date is being altered to the third Tuesday.

DISTRICT 12 CONVENTIONETTE

SUNDAY, OCTOBER 4, 1936

at

SALISBURY HOTEL, HIGH STREET,
BARNET

Assemble	...	...	2 p.m.
Business Meeting	...	...	2.45 p.m.
High Tea	...	...	4.30 p.m.

Inclusive charge 3/- per head. Reservations to G5QF not later than October 1st.

DISTRICT 13 (London South).

It was finally decided at the August meeting that the South London Trophy should be awarded to the member of District 13 scoring the highest number of points in the Junior B.E.R.U. Contest. The D.R. is in course of obtaining the Trophy, and it is hoped to exhibit this at the October meeting. The appointment of Town Representatives in South London is now practically complete. The following members have so far accepted positions:—G2GZ, 2JB, 2LW, 2TH and 2AZP. The only area not yet covered is that included in the postal districts S.W. 12, 17 and 19, and if there is any member who is willing to become a T.R. for this portion of South London he should communicate at once with the D.R. It seems hardly necessary to detail here the duties of a T.R., but it may be well to mention that two of the most important functions are the calling on all new members and the collecting of reports and items of news for the D.R. The D.R. will of course continue his personal visits to members within the District.

Turning through the pages of past BULLETINS, we notice that it is exactly 12 months since it was announced in these columns that South London had inaugurated a "Who's Who on 56 Mc." The list was produced and later circulated to all contributors, but with what result? Complete lack of support! Details of times of regular transmissions were very vague and due to some mysterious coincidence, interest in the 56 Mc. appeared to die with the publication of the "Who's Who." It has been stressed so many times that little can be achieved

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PATTERSON PRI6 16 valves, crystal filter, band-spread, pre-selector, high fidelity, R. meter, noise suppressor, beat oscillator, 8 to 550 metres, 18 watts output. Complete in metal crackle finish cabinet, with valves, 12-in. speaker and power pack for 200/40v. A.C.... £40

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- RADIO RECEIVER ENGINEERS**, with up-to-date knowledge of radio application. First-class theoretical and practical experience. A knowledge of modern Ultra-short-wave practice and cathode-ray technique would be advantageous.

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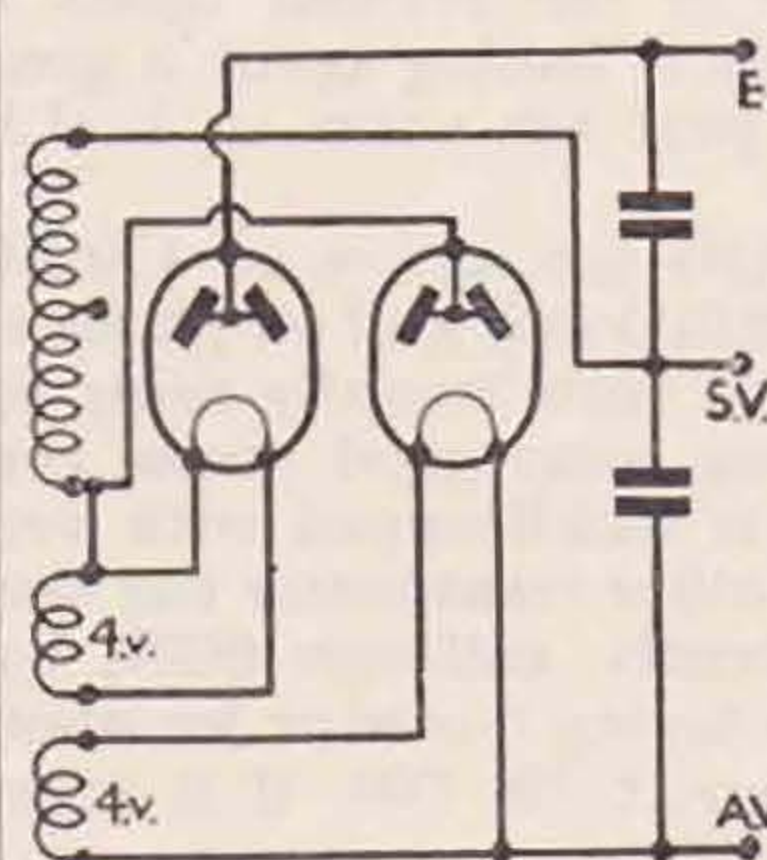
362

IMPORTANT ANNOUNCEMENT RE RECTIFIERS

IN view of the numerous enquiries at Radiolympia as to whether we intended to produce any larger rectifiers, we feel it desirable to point out a method of using our existing rectifiers which has apparently been overlooked.

The use of two RB500/120s or two RB650/250s in the circuit herewith will give the following outputs.

Rectifiers	Transformer	Conds.	Output
RB500/120	250-0-250	4 μ F	1000v. 120mA
RB650/250	250-0-250	8 μ F	1000v. 200mA
RB650/250	350-0-350	8 μ F	1400v. 250mA



The anode voltage is biphasic rectified and the condenser centre-tap provides half voltage at single phase suitable for a screen feed.

An ordinary mains set transformer is suitable but should be large enough to carry the current and should be tested for insulation.

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CRYSTAL CONTROL FOR ALL—

BAND.	ACCURACY.
(a) 1.75 Mc. ...	± 1 kc.
„ 3.5 and 7 Mc. ...	± 2 kc.
„ 14 Mc. ...	± 5 „
(b) 100 kc. ...	± 0.1 kc.
Temp. Coeff. (a)—(23 × 10 ⁶)	
(b)—(5 × 10 ⁶)	

Enclosed Holders, plug-in type, suitable all bands 12/6
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Tel.: Greenwich 1828

without co-operation, and yet here is one of the best means of co-operation deliberately neglected. Most members will have noticed Mr. Blundell's (G5LB) articles in the BULLETIN under the heading, "The 56 Mc Band," which include a detailed list of Schedules. We are glad that G2HG appears in the list, but surely there are some more of the 56 Mc. enthusiasts still left in District 13?

Why not let us reorganise our "Who's Who" and see if we cannot achieve some definite results? We feel sure that G5LB would be only too glad of further assistance.

We are pleased to include in this month's reports one from G2ZQ, who has been awarded the first D.S.M. to come to England. He is preparing for the W.I.A. Contest in October and is also building a 1.7 Mc. transmitter in anticipation of some QSO's with VK during the Winter. ZQ wishes to record his thanks to the D.A.S.D. for their hospitality during his recent visit to Berlin. 5PY has been away on holiday together with his receiver! He reports that PY5AF is very anxious to contact British amateurs on C.W. 5RB is rebuilding. The report of BRS2015 comes this month from Germany and announces that he is now 2ADY. We regret that 2JB has had a long spell of illness, but are glad to hear that he is now recovering and hopes to be at the District meetings again in the near future.

2GZ is engaged in trying out a low angle radiation aerial and has erected a new mast. Incidentally, he has been doing a great deal of work in connection with the T.R. scheme, for which he has our sincere thanks.

2WV has been troubled lately by several bad breakdowns, but hopes to be heard again in a few weeks' time. The following stations are known to be active:—6CB, 5HF, 5OX, 2LW, 2ZL, BRS1357.

The next District Meeting will be held on September 24. As the D.R. will be away on holiday, the chair will be taken by G5OX. We would remind all members that the first Junk Sale of the season will take place at the October Meeting, and it is hoped that it will be an even greater success than either of those held last year. In conclusion, we should like to say how pleased we were to see many old friends at Convention again this year. We only hope you enjoyed it all as much as did the D.R.

DISTRICT 14 (Eastern)

East London.—The attendance at the August meeting held at G6AH, Seven Kings, was 10, including 2ALX and 2BJV from Brentwood. Arrangements are in hand for a Sunday afternoon meeting at Brentwood in October, and possibly an interesting visit to a commercial station; watch October BULLETIN for details. Offers are requested for meeting places for October and November.

East Essex.—The chief event in this area during August was the Field Day organised by the South-end and District Radio Society under the leadership of G6CT; it was well supported, and some twenty partook of tea afterwards on the Belfairs golf course. A hidden transmitter using the 1.7 Mc. band was operated by G2WG. The winners were G5XI and party. Active stations include G2LC, 2SO, 5QK, 5XI, 6CD, 6IF, 6KV, 2KT, 5UK, and 5VQ. The latter three have been doing very well on the 14 Mc. band.

DISTRICT 15 (London West, Middlesex and Buckinghamshire)

Now that the holiday season is practically at a close it is to be anticipated that members will shortly

resume activities with renewed vigour, which will reflect further credit on the area. Reports are already on the increase.

The first meeting is to be held on September 23 and details will be found under the calendar. Those in a position to accommodate future meetings are asked to notify the D.R. so that a calendar can be prepared.

If you are not seeing the District Magazine you are missing something. The subscription is three shillings for twelve issues, and if you are interested you should write for a specimen copy.

Hayes.—G5JL has RFP15 going. *Twickenham.*—G2KI, 2LA, 2NN, 2VV, 2ZY, 5VB and 6GB are all active. We are sorry to lose G5XY, who has left us for Portsmouth, but we wish him luck in his new surroundings. 2BAI is now G8DG, 2AUB has been refused a full licence on account of age, BRS2469 awaits three-letter call. G6WN and BRS2239 are active.

DISTRICT 16 (South-Eastern).

The chief thing this month is to remind everyone who can to turn up at the District Conventionette at the Valiant Sailor, Folkestone, on September 20. To get there by car, drive straight through Folkestone on to the Dover road, and at the top of Dover Hill the QRA will be found on the right. Those on foot should board a Dover bus and book to the Valiant Sailor.

Medway Towns report that most members are active on 7 and 14 Mc. The Gillingham Conventionette and presentation of the Captain Plugge Trophy to G6BQ was a success and the area's thanks are extended to those members from Folkestone and Gravesend who attended. Please note, the new T.R. is 6QC, to whom any outstanding achievement in the area should be reported.

Brighton and Hove group report active.

Bromley and District were very pleased to see their D.R. at the last meeting and welcome him into the area.

Eastbourne is active; G2AO received a visit from 6CL and a QSL from F8AA on 56 Mc. Congratulations, OM.

Heathfield is active and welcomes a new member, BRS2511.

Tunbridge Wells and District are also pulling their weight.

Folkestone are busy practising darts and getting 2FA as near neat and tidy as possible for the 20th. Arrangements have been made to instal 6PA's 56 Mc. C.C. outfit, and this should be operating in time for the "Do."

DISTRICT 17 (Mid-East).

Cranwell.—At the time of writing these notes it seems almost certain that the District is going to lose for two years one of its most popular and valued members—G2LR, the T.R. for Cranwell. Everyone will join with the D.R. in giving him our very sincere good wishes for his stay in Khartoum, and all will look forward to seeing him home again. G2LR hopes to get on the air as ST2LR and will be looking out for his old friends in the District.

Grimsby.—The Grimsby and District Short Wave Club continues its excellent progress. The membership is now 30 and numbers are still growing rapidly. They have now acquired a full-time club-room complete with library and bench, a transmitter is in the course of construction under the supervision of G5GS. We extend our congratulations to 2BWV, who is now G8CI. G6AK has had another rebuild and is now using a National 6A6 as CO/FD,

which gives 10 watts R.F. output; this being link-coupled to a T.P.T.G. using a 210. This outfit has given excellent DX results.

Brigg.—G8AP has built a Tobe superhet. He reports that he finds it difficult to get out of Europe using the W3EDP aerial.

Boston.—G6GH still continues to add to his list of DX—this month it is FB and ON4CJJ. G6LH has worked K4. G8BQ is getting out well on dry batteries and a new aerial is now erected which will, no doubt, be a considerable improvement.

DISTRICT 18 (East Yorkshire)

Hull.—Only two reports have been received from Hull and immediate district for this month, and we come to the conclusion that most of the Group are away on holiday.

2AGK has been experimenting with various R.F. stages in his receiver, and the circuit at present is TRF.1-V-1, using a "Lissen" AVC2 H.F. pentode. Results are good, J, VK, VU, CR9, FB8, VS2 and ON4CJJ having been heard on 14 Mc. The receiver also works on 28 Mc., but the only signals heard on that band are a harmonic of G5BP and an unidentified commercial.

BRS1948 has his new receiver completely "run in" and it is surpassing all expectations. Has heard many new countries and DX stations. Got down to 28 Mc., but so far only heard a D4 and harmonics. He finds conditions very fine at the moment and has heard nine J's, three VU's, two XU's and many more.

Bridlington.—G6UJ has worked PY and VK on 14 Mc. Has now erected a "Windom" aerial and finds it very satisfactory. G5VO is now using a RFP15 and is getting very good results on 3.5 Mc., although the valve was a bit obstinate at first. He has permission to work his transmitter at Driffild, E. Yorks., and is doing a great deal of work there.

No reports from Scarborough.

Scotland.

Activity should be reaching a high level, if present indications are any guide, by the time these notes appear in print. The coming season promises to be the best yet. District meetings will be resuming shortly, although details are limited at time of writing.

"A" District.—Members will be grieved to hear of the untimely death of one of our most recent recruits, Mr. A. C. Dickson (G5QQ), as the result of a motor accident. The work of the Band Occupancy Check Group is a little known, but most important, item of the work of the R.S.G.B. The work of the Group is to collect statistics regarding amateur activity on various bands. The last check took place during April, and we must congratulate G2LQ, G5ZX, G6JD and BRS 1295 of "E" District on the fine work which resulted in their occupying second place as regards number of stations logged. Returns for 3.5 Mc. and 28 Mc. were very disappointing, and the Group intend to concentrate on these bands during the next check, which will take place during November instead of September, as usual, owing to the VK-ZL DX Contest. The monthly meetings will be resumed on September 30, at 7.30 p.m., and will take place in the same place as last season, namely, Room "A" in the Institute of Shipbuilders and Engineers, 39, Elmbank Crescent, Glasgow. These meetings will be held jointly by

"A" and "E" Districts. It is hoped that a very good attendance of members will be present at the first meeting, as there are a number of very important points to be discussed. Mr. Gibson (BRS1601) has been granted the artificial aerial call 2BGZ.

"B" and "C" Districts.—No news has been received from these Districts.

"D" District.—Activity in this District is maintained, despite holidays, etc. G6SR and G5YX are both testing new antenna. G6XI has completed a new transmitter, using Tritet C.O. and RFP60 P.A., and has already made W.A.C. Other stations active include G5HL, G6HZ, G6FN and G2BD. Mr. Borthwick (BRS2028) is now 2AZB.

"E" District.—G6KH is now W.A.C. and W.B.E. and awaits the necessary QSL cards to lodge claims. G8CH, although only on the air for a month, is doing very fine QRP work on 6 watts input from dry batteries, and has four continents to his credit already. Mr. Duthie (BRS1592) now holds the call 2BQL. G2DI and G5KF also report active. 2AJG, of Garlieston, reports experimenting on very QRP rig.

"F" District.—Little news from this district. G6NX reports that he has now worked 60 countries.

"G" District.—G5FT and G8CN are active.

"H" District.—This District has a new full licence, 2BSO being reported as having been issued the call G8FB. BRS1925, Cpl. E. Hollidge, R.A.F., Leuchars, has arrived in the District, and is interested in 56 Mc. work. The first official meeting of "H" District has been fixed for September 23, at 7.30 p.m., at the QRA of 2ANL. It is hoped that all members able to attend will do so.

Northern Ireland

GI5HV has changed QRA, his new postal address being Knockinagh, Cloughfern, Whiteabbey, Belfast.

We are glad to learn that GI6TK is on the road to recovery after his recent illness, and is again active. He has worked VE1 and 2, U2, FA8 and W8. By the way, he is now a married man.

Congratulations to 2BNL (J. L. Pinkerton) who is now GI8DB.

GI5UR sends a long list of DX including HS4T (Siam) a new country. He and GI5JN were on holiday in Scotland during July and record their appreciation of a very pleasant time had with G2YY, G5BA, 2ATJ and G5QY who was also on holiday. They hope to reciprocate at an early date.

GI5TK is using the W3EDP aerial with good results on 7 Mc.

GI6YW had a number of contacts using five watts into a crystal oscillator. His transmitter proper is in course of reconstruction.

We listened on the 7 Mc. band to a British station the other Sunday. For three quarters of an hour he ground out gramophone record after gramophone record, his "announcements" being such as "any requests," "anything else you would like." Apparently he was transmitting incognito as his call sign was not disclosed during the transmission.

We have to report that GI2CN has dropped the "I" from his call sign on removing to England to take up an appointment. For the past two years he has organised the "B" N.F.D. station, and on his going the R.T.U. loses an able Committee member. We wish him every success in his new surroundings.

All good wishes to GI5SJ and Mrs. Johnston who are at present celebrating their nuptials.

Empire



News.

B.E.R.U. REPRESENTATIVES.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Australia

By VK3EG via G6CJ.

Conditions for Europe are getting better on 14 Mc. from 14.00 local time onwards. Local contests are taking place on 3.5 Mc. The Fisk Trophy Contest will be followed by the VK ZL tests in October.

Activity is good on all bands, though 7 Mc. is poor for DX as yet. 28 Mc. is quiet, with only a few W's audible. Phone from G6XR, G6GO and G5VL reaches R8 at peaks during the early morning here. VS6AQ is now audible on phone but very weak. We shall all miss him when he shuts down in October.

Many VK4 BERU members are building S.S.S. VK4GK has been on sked with G6CJ and 6CL, his signals reaching R8 most mornings in England. 4YL has been heard over 4GK. 4KH is on a rebuild using glass base and panels. 4AP is running 56 Mc. skeds. 4EI continues to plug away on 28 Mc., he is also keen on 1.7 Mc. work. 4EL gave G6CL his first VK4 contact.

New VK regulations forbid canned "muspitch" on 7 and 14 Mc. between 5 p.m. and 8 a.m. local time.

New VK4 members welcomed include 4UR, 4HR and 4ER. The first mentioned is anxious

for a G contact. The VK4 BERU membership is now over 20.

Channel Isles.

Congratulations to G8DO ex 2AJD, of Guernsey, and to 2AOG, ex BRS2150, of Jersey. G2UR is rebuilding for 14 Mc. 2AOU intends to enter VK-ZL contest. BRS2066 is active. 2AOG has rebuilt RX and has been assisting G2UR.

India

By VU2LJ, via VS2AG, VS1AA and G6NJ.

The most important item of news is that the D.G. of Wireless has decided to clean up the amateur bands in India. Examination centres are being fixed, and as the morse speed will be sixteen words per minute, the test will be stiff. The examination fee is to be five rupees. All present licensed transmitters will have to undergo the examination at the end of the year. Full details have not yet been received from New Delhi.

The 28 Mc. band is starting to brighten up again. At 2LJ, VK4EI has been heard for short periods during August and G5FV came in R6 on August 16. VU2BU has rebuilt to MO.PA. but is having trouble with neutralising and modulation.

Irish Free State

By EI9D.

The outstanding news this month comes from the 56 Mc. group consisting of EI5F, EI6F and EI8G. They report having made a 56 Mc. contact with G6YQP operating from Snowdon at 1540 BST on August 23rd. Operating from the QRA of EI5F at Mount Merrion, Co. Dublin, EI8G established contact using a input of 25 watts to type '10's in push pull, modulated by Class B 46's. The combined call EI8G/EI5F was used and signals were reported QSA3 R4 both ways. Contact was maintained for 15 minutes when signals began to fade out.

This is the first amateur EI/G contact on this band and, in view of the distance, approximately 95 miles between stations, it also probably constitutes a record under this heading. The group is to be congratulated on a very fine piece of work.

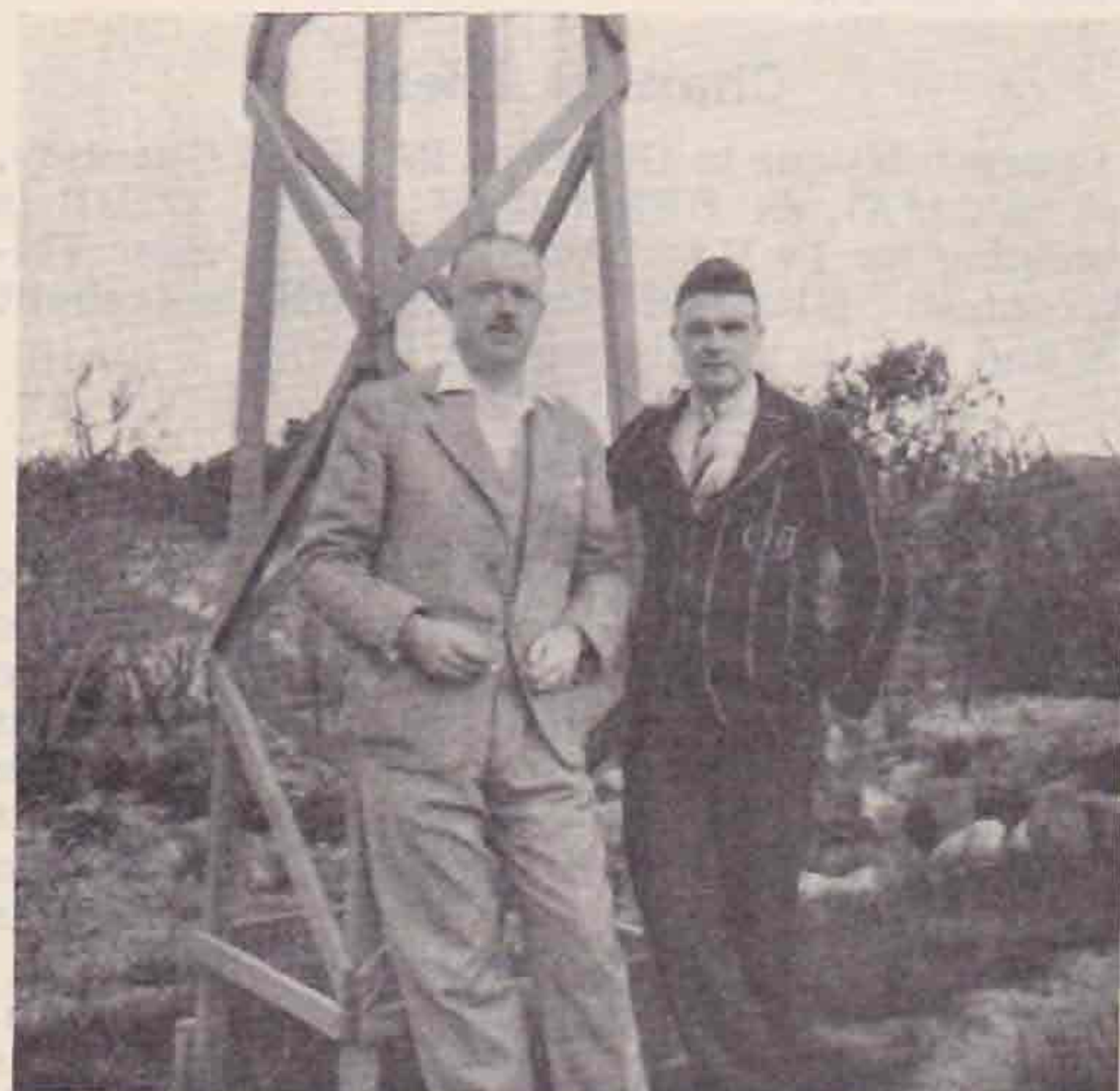
The usual stations report activity on 7 and 14 Mc. DX conditions continue good and many contacts with VK and ZL have been made with moderate power.

Malaya and Borneo

By VS1AA via G6NJ.

VS4CS—British North Borneo—has returned from a fine leave in Australia. He hopes to be on the air again soon. VS1AJ has closed down and in his place BERS293 expects to start up with a new call. VS1AF has little to report. VS1AA has qualified for his W.B.E. Some interesting DX was worked on August 16, including VE5, W2, W3, W8, and K5. VS2AG worked G2PL for W.B.E. telephony.

The QRN level has been very high indeed on 14 Mc. and the D.A.S.D. Contest has created alarming QRM! Phone is still a curse on the edges of the 14 Mc. band. Why cannot these stations get into the phone band? (What is the 'phone band?—Ed.) The letter budget is still missing.



Two well-known South African amateurs. On the left ZS1AH, on the right ZS1H of 28 Mc. fame.

South Africa

Division 1.—At the last meeting of the Cape Division an interesting lecture was given by ZS1R on the design of high-voltage transformers. At the previous meeting ZS1H gave a talk on his experiments on 28 Mc.; his lecture was an eye-opener to many, and proved very interesting.

DX conditions are fair on 14 Mc., the most consistent stations being the W's, who, during the late afternoons, come in at good strength. 7 Mc. is best during the early mornings between 0400 and 0600 G.M.T.

56 Mc. activity has again commenced. ZS1B and ZS1AN have been experimenting on this band with a fair amount of success, duplex working between their respective QRA's (about 4 miles apart) being done with ease. 1AN uses a single-type 10-valve in a modified T.P.F.G., while 1B is using the short line with two 45's in push-pull. They are hoping to carry out tests between a yacht and shore in the near future.

ZS1H, our star station, is still very active on 28 Mc., and rumour has it he intends to try 56 Mc. using crystal control. Good luck, OM!

ZS1AH has been very busy testing his portable transmitter for use on fire engines, and has had excellent results. On one test the signals transmitted from the moving van were picked up 1,000 miles away. The power used was 16 watts. So far only CW has been used, but it is hoped to try telephony in the near future.

ZS1A has just completed a very fine transmitter and puts out some very good phone on 7 Mc., using class "B."

ZS1B has now his phone W.A.C., after a year of chasing the elusive W6.

ZS1B.

Division 6.—The following B.E.R.U. members are active: ZS1B, ZS1H, ZT1E, ZT1H, ZU1D, ZU1T, ZS2D, ZT5V, ZU5V, ZS6C, ZS6Q, ZS6AN, ZT6Y, ZT6X, ZU6P and ZU6V.

ZT6AQ is active on 14 Mc. and has worked a fair amount of DX.

ZS6T is on 28 Mc. and is keen on obtaining his W.A.C. certificate.

The South African Radio Relay League has organised its first international DX contact competition for amateurs. It will coincide with the Empire Exhibition and Golden Jubilee period, and will help to focus attention on Johannesburg at this time, for all the contact cards will bear an inscription dealing with these significant events.

The contest, which will be held during the four week-ends of November, has received the support of the *Rand Daily Mail*, which is presenting a handsome trophy, designed in a form which will be representative of South Africa. The trophy will be competed for by all radio amateurs outside a restricted area, and can be won only by an amateur outside this area. The restricted zone includes: ON4,* CR6, CR7, ZE1, VQ2, FB8, VQ3, FR8, VQ8, ZS1 to ZS6, ZT1 to ZT6, and ZU1 to ZU6.

Overseas amateurs are advised to call individual African amateur stations rather than CQ blindly. The "three times three" system of calling should be used.

Six-figure serial numbers must be exchanged. The

* (Belgian Congo ? Ed.)

first three digits of such serial number represents a signal report based on the RST system. The last three numbers are a self-assigned identification number. Each competitor must select a three-figure group for himself, and must use this as the final three figures of his six-figure serial number exchange throughout the contest. Only one point is awarded if a six-figure serial number is sent out and acknowledged, but two points are awarded if both of the operators exchange complete six-figure serial numbers.

To encourage exploitation of the ten-metre band,

however, four points will be awarded to amateurs who are successful in making a two-way exchange on this band, and two points for a one-way contact.

The trophy will be presented to the competitor outside the restricted area who gains the highest score in the competition. A special certificate will be awarded to the highest scorer in the restricted area. No entry forms are required, but each competitor must submit a log at the conclusion of the competition to the S.A.R.R.L., P.O. Box 7028, Johannesburg, not later than January 31, 1937.

ZU6V.

AROUND THE EMPIRE No. 2

DON. B. KNOCK (VK2NO) is one of amateur radio's old-timers, for he was active in this country as early as 1911. The War, in which he served, caused a temporary interruption, but by 1923 he was licensed as G6XG. In the following year Mr. Knock was the first G station to work U.S.A. with low power on 90 metres. After two years afloat he left Europe and started up in Australia early in 1926 as A2NO on 32 and 23 metres with two *Marconi* T250's in parallel. That he radiated no mean signal may be gauged from the fact that he could draw a reading of 200 m.A. from the neighbour's fowl fence!

During 1930 he went up to North-West Australia, and kept on the air as VK6NK. There the station was responsible for the rescue of two aviators *en route* to England who were forced down in the bush. After returning to New South Wales, VK2NO designed and built the country broadcasting station 2MO in 1931.



The present transmitter consists of a Jones' exciter, using a 53 and 2A3 from a 40-metre crystal, linked to a push-pull 801 buffer stage, which in turn is linked to an *Eimac* 50T as final. Both C.W. and 'phone are used, and some good two-way DX 'phone has been achieved. Input is usually 150 watts, though it can be increased to 250 watts if necessary.

Considerable success was had with a link-coupled 40-metre half-wave Zeppelin aerial. Recently, however, twisted pair doublets have been re-installed on 40 and 20 metres, using a special 72 ohm. line, which gives excellent results.

Of the various receivers used, the most popular is a little two-valve autodyne using a 77 electron-coupled detector and a 38 L.F. amplifier.

Much ultra-short-wave work has been done at VK2NO, and distances up to 130 miles have been covered. A new long-lines M.O.-P.A. high-power transmitter is being constructed, and with the aid of a superhet receiver it is hoped that communication with New Zealand will be possible on 56 Mc.

The station is situated in Waverley on a good elevation overlooking the Pacific. Mr. Knock has many activities, and part of his time is taken up in his duties as Signals Lieutenant in the 1st Division Cavalry Signals of the Australian Military Forces.

* * *

Temporarily away up in the North of Queensland, 800 miles from Brisbane, VK4EL has no AC or DC supply for his transmitter. He is therefore forced to use 100 volt batteries. But this in no way impairs the efficiency of his station, for with an input of only 1.1 watt he has worked all VK and ZL districts, OA4, VS6 and ZT5.

A TNT transmitter is used with a *Philips* B406 (equivalent to the PM4), and the aerial is a 66 ft. flat top Zepp with 15 ft. feeders spaced 4 inches apart. The operator, Eric J. Lake, describes his aerial as the "worst possibly imaginable" since it is strung on to a 25 ft. steel windmill tower at the free end, and is tied on to the house at the feeder end 15 ft. from the ground. The feeders are not insulated at the lead-in, and they are just clamped down by shutting the window on them. But it is the signal which is the ultimate index of station efficiency, and VK4EL's QSO with ZT5Y for one hour and 20 minutes at R5, and a 20 minute QSO with OA4J at R4 speak for themselves.

VK4EL suggests that the OA4 contact must nearly constitute a QRP record. He rightly points out that while a station might work, say, 1,000 miles with point one of a watt, it does not follow that the range would be 10,000 miles with an input of one watt, and he recommends that all records should be based on one watt and over.

TRADE NOTICE

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The Ten-Metre Band

The band opened up quite considerably during August and everyone interested is very hopeful about the prospects for September. G6DH was QSO ZS1H five times between August 5th and 26th and heard him on several other days. On August 19th between 08.30 and 09.00 G.M.T. he heard VK4EI, but could not raise him, which looks as if the VK-Europe season is on its way once more. G6DH has worked and heard various Europeans and SU1KG, and reports only two blank days. He has also worked CN8MQ, who told him that he heard PY2CJ on August 16th, W4AJY on 20th and W1AVV and VK3JB on 22nd.

European signals have been coming in until 22.00 G.M.T. again but activity is very low, probably due to the belated appearance of real summer weather. ZS1H has contacted U.S.A. once again and works VK nearly every day as well as South America. G2XC, having returned from his holiday, was active during the latter half of August. He has contacted I1KN, D4MDN, OK2KX and F8HI and has heard several other Europeans. On August 22nd the European harmonics were the loudest he has ever heard, but he also bemoans the lack of amateur activity when conditions appear to be good. He also finds the band good about 22.00 G.M.T. and from 07.00 to 11.00 G.M.T. On August 16th W9FM heard NY2AE, XE1AY and W's working VK4BB and talking about QSO's with VK3BD. He says that winter conditions in the southern hemisphere permit fine east-west work on ten. The VK's find that W signals are weaker and that those stations using beams are the most successful, even although low power is used in some cases. The VK's also find that the equinox periods—roughly March, April, September and October—are the best. NY2AE, whose input is 500 watts, will be on ten during week-ends, mostly on a frequency of 28172 kc. He reports that the band opened up for DX on August 16th and, amongst others, he had a 'phone contact with a W6.

Although hardly within the province of these notes it may be of interest to record that G6DH heard the B.B.C. television transmission from Alexandra Palace on August 26th, both sound and vision being R8.

MYCALEX.—(Continued from page 106.)

Being entirely inorganic Mycalex is not subject to effects such as burning, shrinking, warping, carbonisation, and similar deteriorations due to over-heating. Typical uses of Mycalex are high frequency insulation, condenser dielectric, X-ray and high voltage medical equipment.

The writer hopes that the serious experimenter will find some useful information in the above article and wishes to tender thanks to Messrs. Mycalex (Parent) Co., Ltd., of London, for placing technical information at his disposal.

2BWF.

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