

THE T. & R. BULLETIN

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Honorary Editor:—

H. Bevan Swift (G2TI)

Vol. 10

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No. 5

DIRECTIONAL AERIALS

THE interest evinced at a recent meeting of the Society and in technical articles appearing in the radio press on the subject of directional working is one of the best signs we have seen for some time. Here is a field which will bear every investigation and one which will lead us into new lines of thought and interest.

For years the amateur transmitter has pushed his short-wave signals into the ether with the hope that they will fall to earth somewhere and bear fruit in the shape of QSL cards and possibly a stray QSO. We have patiently borne the insidious trouble of fading as something which cannot be cured and therefore must be endured. The day of certainty in short-wave working appears as far off as ever, and we are still wallowing in the same slough of chance we occupied in 1924. It is high time we did something about it.

The commercial companies working on the higher frequencies were not slow to discern the shortcomings, and by applications of the beam principle have achieved a good degree of success in the desired direction. Why cannot we as amateurs branch out in the same field and secure that certainty which is badly wanted to make our transmissions effective?

We have received innumerable and lengthy articles, deserving of all praise, from those who have applied themselves to the special study of fading, but it is time we all learnt something about overcoming the troubles which beset us.

Quite a number of our members have been experimenting with aerials of various kinds, and we remember that years ago our vice-president, Mr. E. J. Simmonds (G2OD) read an excellent paper before the Society describing some experiments he had carried out in directional working. We feel sure that a vast field of success lies before us if we can only develop the idea and endeavour to prevent our unguided signals just shooting off into the ether. It is rather like firing a gun aimed at a given mark and shooting it against a brick wall, hoping that the bullet will bounce back somewhere near the mark. We wish to see some of the "hay-wire" aerials in which we have placed our trust for so long removed and experimental directional aerials taking their place. We then hope to hear that their owners are able to work a given distant overseas station at any time, day or night, under all conditions. It can be done and will be done. Who will be the first amateur to do it?

There is one feature, however, which must not be forgotten, for whereas the commercial transmitter deflects its beam upon a given receiving station the amateur must of necessity be able to work in all directions. We all enjoyed *Little Willie's* humorous effort last month, but it may not be long before we are all attempting something similar, who knows?

(Continued on page 198.)

A TRI-TET, LINK-COUPLED, PUSH-PULL TRANSMITTER.

By G. McLEAN WILFORD (G2WD).

The tri-tet circuit forms the basis of this very modern transmitter, and by a novel arrangement either crystal or master oscillator control may be used. It is thereby possible to operate on a fixed crystal frequency in four amateur bands, or on any predetermined frequency in five bands.

Link coupling between stages, and a push-pull final amplifier contribute towards making this one of the most efficient transmitters yet described in this Journal.

This equipment was an outstanding exhibit on the Society's stand at Olympia last August.

THE ideal amateur transmitter where outputs of over 10 watts are sanctioned by the G.P.O., is one which can be used in all the amateur bands. While not everyone is interested in the 28 mc. band (3.5, 7 and 14 being the most popular), it is convenient to be able to work on this frequency without having to build special gear for that band alone.

Having had this idea in mind for a long time, the writer's problem was to decide upon a circuit which would do this work with a minimum number of valves. With the October, 1933, issue of *Q.S.T.* came the tri-tet circuit and it seemed that as the basic unit for such a transmitter it was the ideal which had long been looked for.

Disregarding the 1.7 mc. band this unit could give, with crystal control, fixed frequencies in four bands, namely, 3.5, 7, 14, and 28 mc. and, using the electron coupling feature any frequency in any of the above-mentioned bands.

Accordingly, experimental work was started, using an English valve with a 7-pin base, but results were not very promising, consequently, a pair of Type 59's were obtained, and results improved considerably. For the benefit of those who are unfamiliar with the Type 59 a few particulars may be useful. This valve is officially described as a triple grid power amplifier, having a 2.5 volt, 2 amp. filament, and is designed to operate with plate voltages up to 500 volts or even higher. Each element of the valve is brought out to a separate pin.

For the guidance of those who are unfamiliar with the American 7 pin base, the connections for the Type 59 are as shown in the sketch.

It was then decided to build the basic exciter unit bread-board fashion, using English components except for the valves, taking the unit described in *Q.S.T.* as a pattern. This was completed and the results obtained, after a lot of experimenting, bore out all that was claimed for the circuit.

THE TRI-TET EXCITER UNIT.

By referring to the circuit diagram it will be seen that the oscillator valve has two tuned circuits, one (the crystal oscillator) in the cathode grid circuit, and the other in the plate circuit; the latter is conventional except that it is shunt-fed. It will be seen that the crystal circuit will oscillate at the crystal frequency and the plate circuit can then be tuned to a harmonic of the crystal fundamental frequency, so that in one unit doubling or even quadrupling can be effected in one stage.

If it is required to work at the fundamental frequency of the crystal the cathode circuit is shorted out by the simple expedient of bending over one vane of the cathode condenser (note all condenser rotors are connected to ground) and inserting the coil that tunes to the crystal frequency in the plate circuit. The circuit is now an ordinary pentode oscillator.

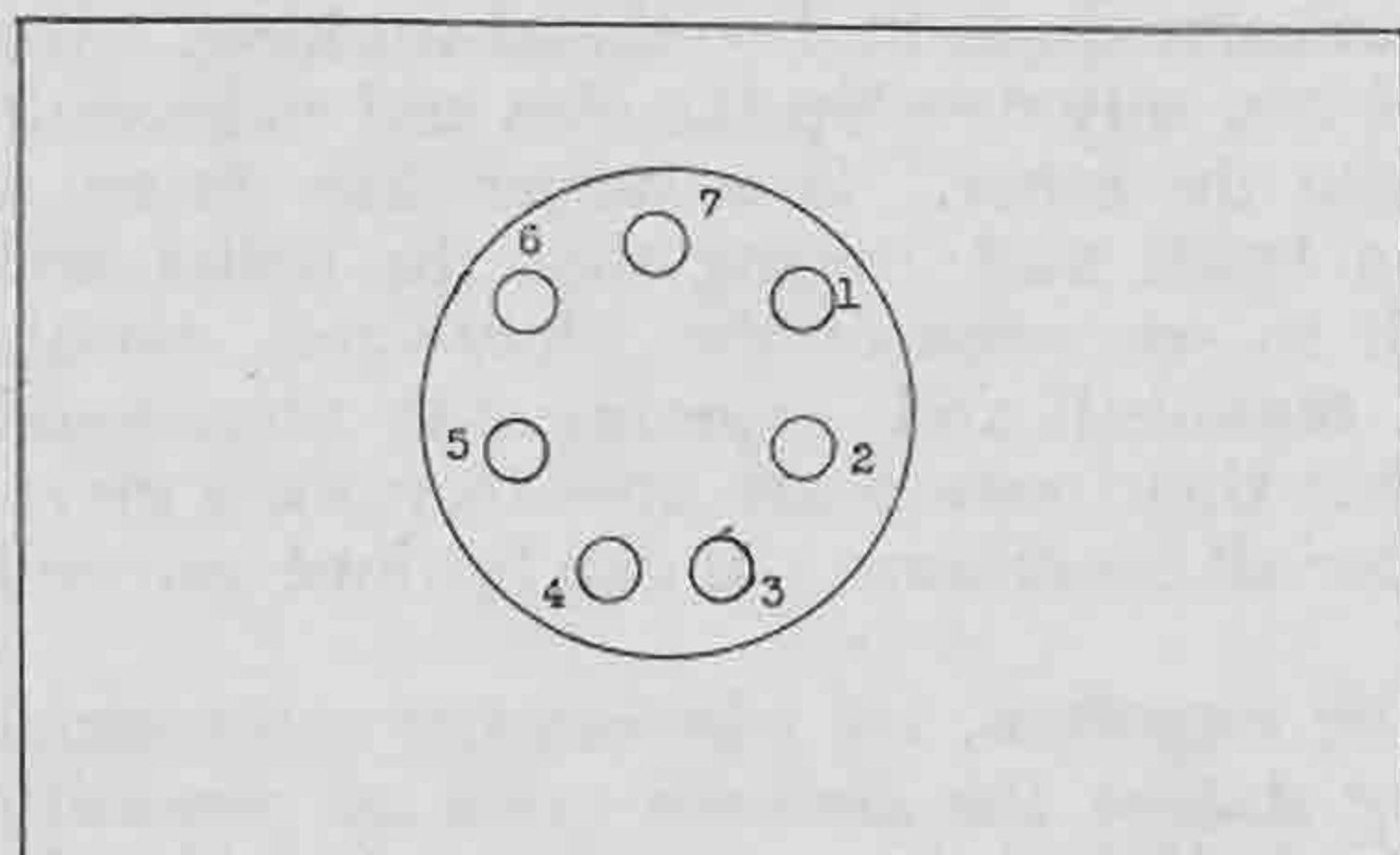
The Nos. 2 and 3 grids are strapped together to form a screen grid, and voltage for this is obtained from a voltage divider as shown in the diagram.

It is also possible to move the fundamental coil to the amplifier; using a non-resonant choke to replace the tuned circuit of the oscillator; and then tune the output of the amplifier to the fundamental of the crystal. This obviates the necessity of neutralising the amplifier valve.

To obtain best results the cathode grid circuit must be capable of being tuned to a much higher frequency than that of the crystal, e.g., for a 3.5 mc. crystal the cathode grid circuit should be resonant at about 6 mc.

When working on 28 mc. the valve is an oscillator and quadrupler in one operation (with a 3.5 crystal), and has quite enough output to drive the amplifier for further doubling from 14 to 28 mc.

The second 59 valve is really a regenerative doubler by virtue of the cathode resistance and its



View Looking on Top of Socket.

1.—Grid No. 2. 3 and 4.—Filament. 6.—Grid No. 3.
2.—Plate. 5.—Cathode. 7.—Grid No. 1
(control grid).

by-pass condenser which is 100 mmf. and this value should not be departed from. For a fuller explanation of this regenerative feature Q.S.T. should be consulted, as the explanation is far too long to be given here, but suffice it to say that the amplifier valve does give a regenerative effect which is particularly good at 28 mc.

Having progressed thus far the next operation was to discover what output could be obtained from the exciter unit alone. A neon lamp and the usual loop and lamp were both used, but after trying both devices a spare 6-volt car lamp was brought into use and it was found that this could be lighted to full brilliancy on the various bands tested.

The plate current in each valve was then measured, the oscillator gave 20 to 30 ma. and the amplifier 40 to 50 ma., the plate voltage being 350 and 400 respectively.

The next point was to decide upon the best line up to achieve the ultimate end, *i.e.*, to put the best signal the greatest possible distance. It was decided that a type 210 valve in a neutralised circuit should be used as a sub-amplifier operating on the same frequency as the Tri-tet amplifier, so that plenty of drive could be put into the final P.A. circuit. This again presented a problem but as the Tri-tet unit was designed for link coupling it was decided to use the circuit shown, using the split stator condenser in the plate tank of the sub-amplifier valve.

This was tried out thoroughly and the results obtained were so good that it was decided the P.A. should be exactly the same except that two Type 210 valves in push-pull would be used in order to give a 50-watt output.

After the results had been carefully checked and various small defects eliminated the next procedure was to prepare a design which would incorporate the three units.

CONSTRUCTION.

The transmitter is constructed in three units, which are as follows:—

- (a) *Tri-tet oscillator amplifier unit* (bottom).
- (b) *Sub-amplifier unit* (middle.)
- (c) *Push-pull amplifier unit* (top.)

The P.A. can be given enough excitation for any power which the station is licensed, but while sufficient

excitation can be obtained from the Tri-tet oscillator amplifier unit alone, on the higher frequencies an additional stage is helpful to give greater stability. The middle or buffer amplifier unit was built with this object in mind and could be dispensed with by those who require a similar set but with a smaller number of stages.

The transmitter is built in an aluminium angle framework made of $\frac{3}{4}$ " by $\frac{3}{4}$ " by 16 s.w.g., and the overall dimensions are 20" wide, 14" deep and 29" high; the panel is aluminium 16 s.w.g., and the baseboards are $\frac{3}{4}$ " plywood. All condensers are fitted with Ormond insulated couplings simply as a matter of convenience in removing a unit for any repairs or examination, but as mentioned before, all condenser rotors being at earth potential they could just as well be attached direct to the front panel, although this would make the units a fixture. Speaking generally a transmitter does not "stay put" for any length of time, and having the baseboards removable enables new ideas to be tried. In other words, the set is elastic.

TRI-TET OSCILLATOR AMPLIFIER UNIT.

This unit is the bottom one in the diagram and comprises two

Type 59 valves, one, the Tri-tet oscillator, and the second the Regenerative Doubler Amplifier. The two switches for changing to electron coupling and high or low "C" doubler plate tank may be any type of D.P.D.T. switch but there must be an off or mid position. The dia-

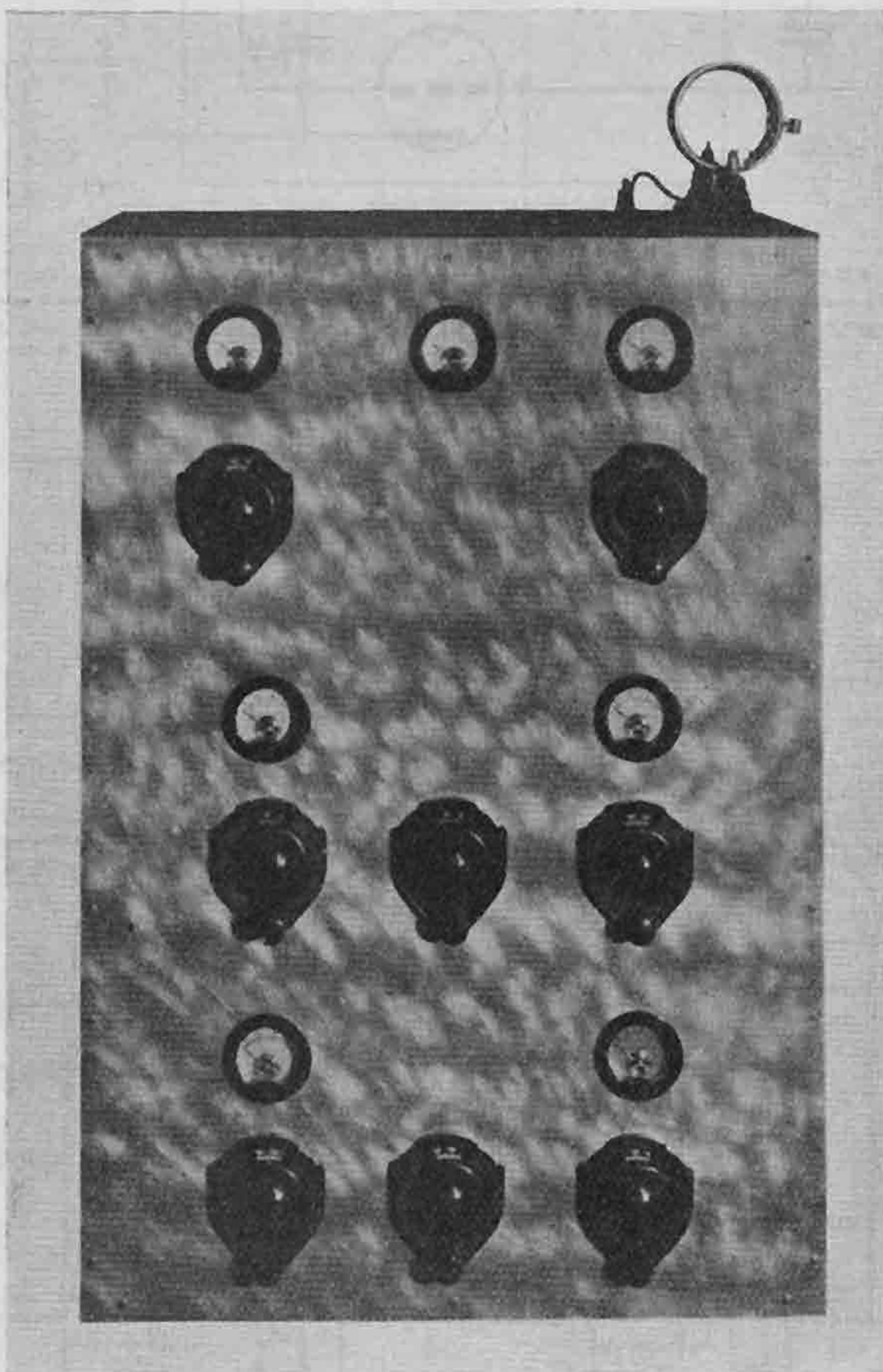


Fig. 1.

Front View of Transmitter.

Condenser Controls are as follow:—Top left, PA grid; top right, PA plate tank; middle left, sub-amplifier plate tank; middle right, sub-amplifier grid; centre, neutralising condenser; bottom left, tri-tet cathode grid condenser; bottom right, amplifier plate tank; centre, tri-tet plate tank. Meters are as follow:—Top left, PA grid; top right, PA plate; centre, not in use; middle left, sub-amplifier plate; middle right, sub-amplifier grid; bottom left, tri-tet plate and screen; bottom right, amplifier plate and screen.

gram is self-explanatory and the placing of the parts is left to the constructor's discretion, but as all condenser-rotors are at ground potential, an earth bus wire is used and all grounded parts are connected thereto.

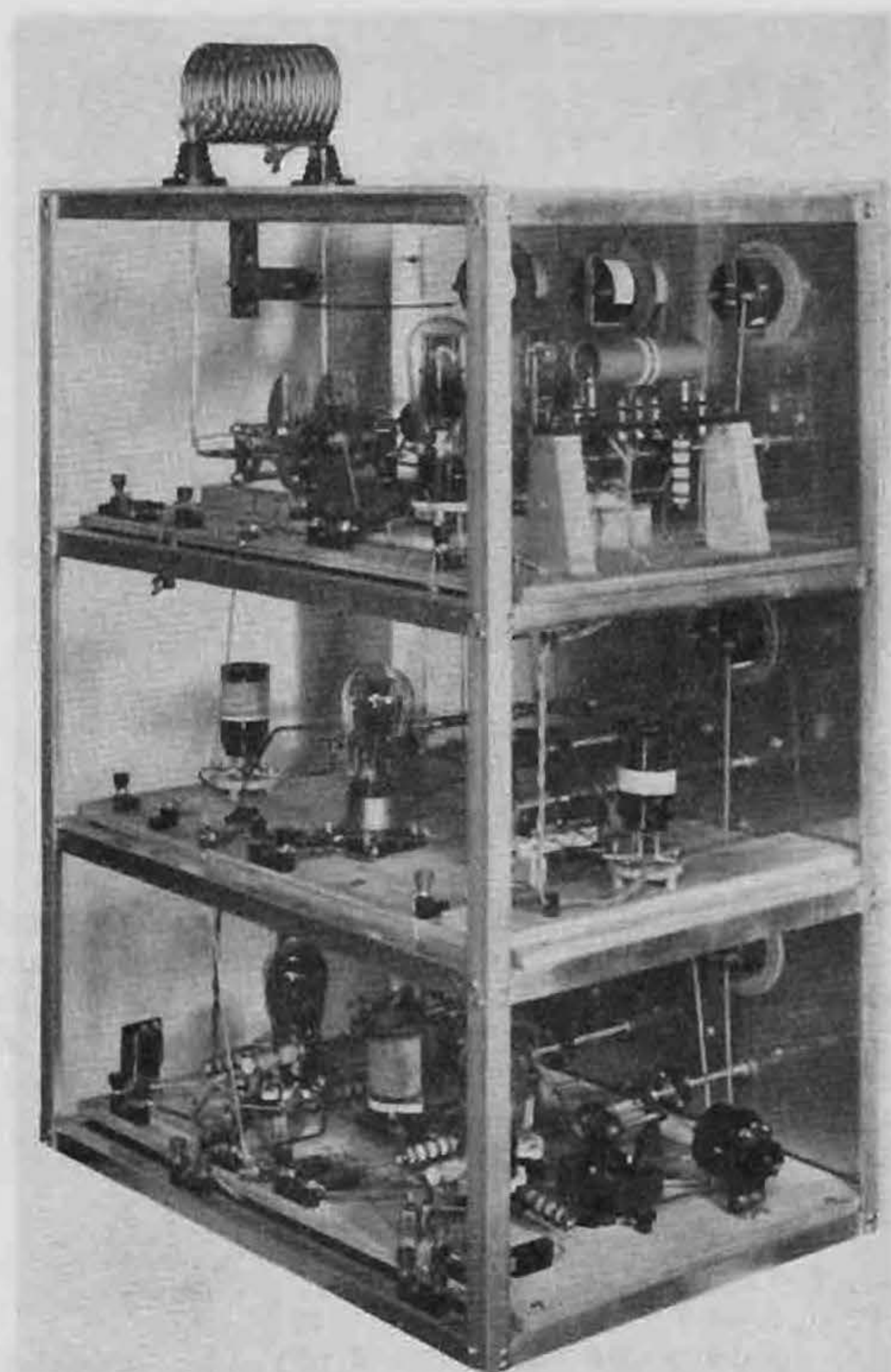


Fig. 2.

Rear View of Transmitter.

The switch for changing over from crystal to master oscillator appears at the right of the bottom compartment. The link coupling between the sub-amplifier and final amplifier can be seen as a twisted flex. Note the split stator condenser in the PA stage for both grid and plate tank circuits.

Operating the Tri-tet Unit.

A power supply giving 400 and 350 volts at a total current of about 100 m.a. is required. First insert the correct coils for the band to be worked and then with the cathode switch of the amplifier open, the Tritet oscillator should be first checked, a drop in plate current indicating oscillation. A similar drop should occur when the plate tank is tuned to a harmonic. This condition being reached the cathode amplifier switch is closed and this stage tested. The plate current should increase with drive from the oscillator and should be 40 to 50 m.a. when the oscillator plate circuit is tuned to a harmonic of the oscillator. The amplifier plate current should dip when the circuit is tuned to resonance.

Each circuit should then be tested for output frequency, as some harmonics are nearly equal from this unit. An ordinary absorption wave-meter will be the most suitable for this purpose.

When operating with crystal control it is important that the oscillator cathode circuit be adjusted for minimum crystal heating and maximum harmonic output. The best setting will be found with the lowest capacity at which the crystal will start up.

Link Coupling.

It will be noted that the output coil L.10 has an extra winding loosely coupled to its filament end. This is the link coupling coil and for those who have not yet tried this form of coupling the following information may be helpful.

Link coupling to the buffer or power amplifier stages enables us to use series feed to both grids and plates, with consequent avoidance of trouble from R.F. chokes. With series-fed circuits chokes may be omitted with consequent reduction in the chances of parasitic oscillation, providing that good by-pass condensers are used, but where the output is to the grid of a push-pull P.A. a choke is still necessary in the bias feed because no by-pass condenser is used. Link coupling also permits of the separation of exciter and output stages up to distances of several feet, the twisted pair connecting the driver and driven stages having small losses as the impedance of the line is low.

For the actual tuning up of link-coupled circuits the following is the procedure. L.10.C.20 is the plate tank of the driving or exciting stage and this is tuned in the usual manner, being Low C at the operating frequency. At the filament end of L.10 is wound a coil L.11, which varies from two turns at 14 mc. to four to five turns for 7 and 3.5 mc. These turns are close wound and coupled to the Coil L.10, the separation being $1/16"$ to $1/8"$. A similar number of turns, L.12, are wound close coupled to the filament end of the grid tank of the buffer L.6.C.8, and in the case of the push-pull P.A. to the centre of split grid tank L.3.C.1.

The method of adjusting the coupling is not difficult, although it calls for the use of an 0-50 type grid milliammeter in the bias lead. The driver stage is tuned to resonance by observing the current dip in the plate milliammeter of the stage in question, the plate voltage being removed from the driven stage.

The grid tuning condenser C.8 is then tuned to resonance as indicated by maximum grid current, and the amplifier must now be neutralised in the usual manner. The grid milliammeter gives the best indication of complete neutralisation. When the plate-tuning condenser is swung from maximum to minimum the grid meter should not flicker if the stage is neutralised; the same applies to the plate milliammeter of the preceding stage.

When neutralisation is complete apply plate voltage and tune to resonance. The final adjustments to the link coupling can now be made. Tune C.20 and C.8 for maximum grid current with plate voltage off the buffer (for the P.A. C.5 and C.1), and then note the plate current of the driving stage. If it is below rated current the number of turns on L.11 or L.12 and L.1 and L.2 can be increased by one or two. If above normal, reduce the number of turns on L.11 or L.12 and L.1 and L.2. Final readings should be made with all power supplies on. Tune finally for the greatest grid current in the output amplifier and the set is ready to be connected to the aerial.

BUFFER AMPLIFIER

This is quite straightforward, being a neutralised type with split stator plate tank tuning. This method of tuning was chosen because, once the amplifier is neutralised and provided that the plate tank hits resonance with the condenser more than half in, the neutralisation will "stay put" on all bands, thus saving time and trouble when changing bands. The values and coils are given in the figure and the coil table.

PUSH-PULL P.A. UNIT

This is also of the same type as the buffer stage, except that split stator tuning condensers are used in both grid and plate tanks. This unit could be a single valve unit, but as telephony was considered, the push-pull feature was employed.

It will be noticed that the two upper units are substantially the same, and the method of link

coupling tuning applies equally to these units. Whilst the coils given in the table were correct for the set described it may be found necessary to depart from them to some slight extent if different condensers are used.

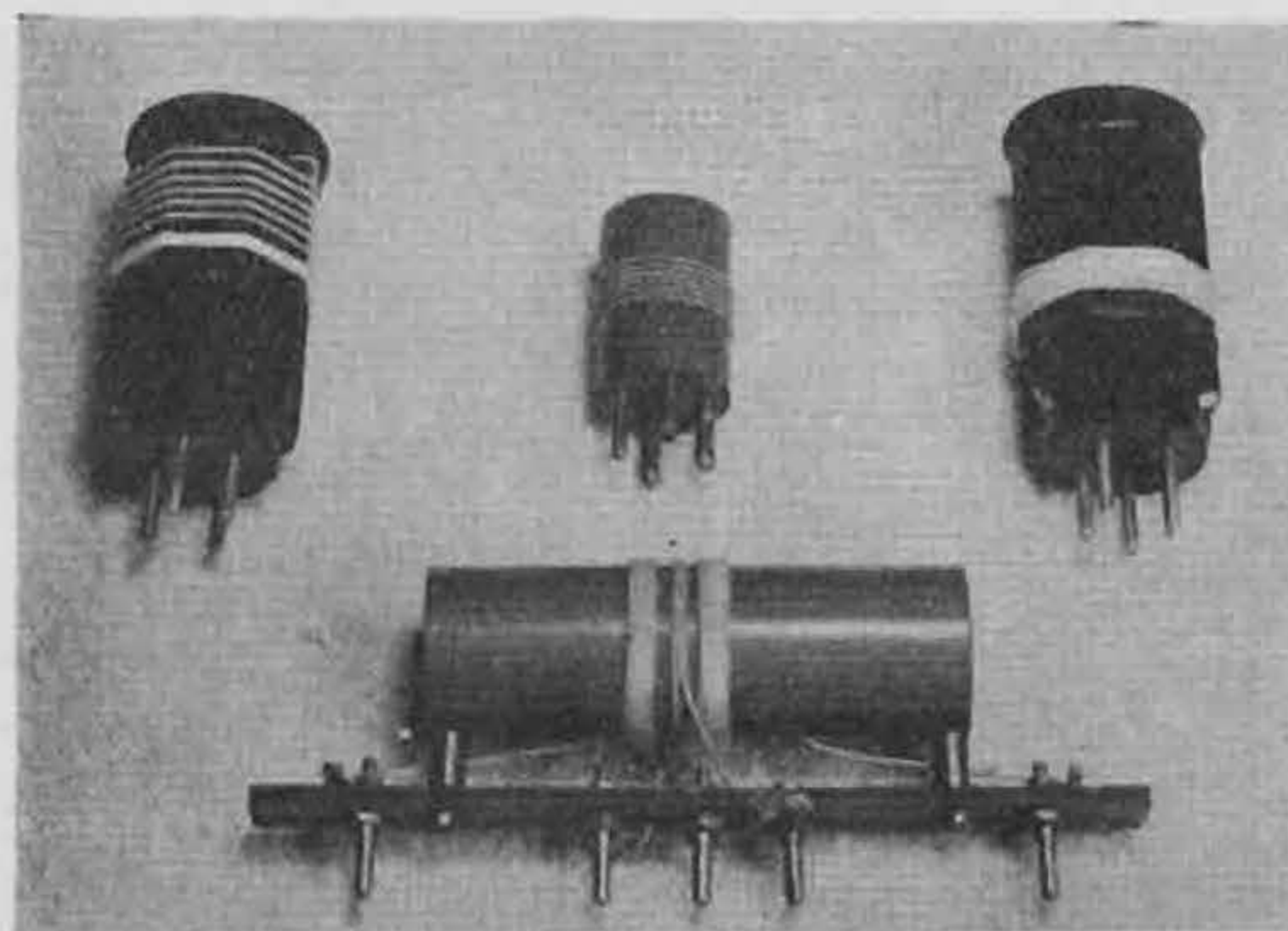


Fig. 4.
A View of the Coils for 14 mc. Operation.
Note the method of mounting the PA grid coupling coil

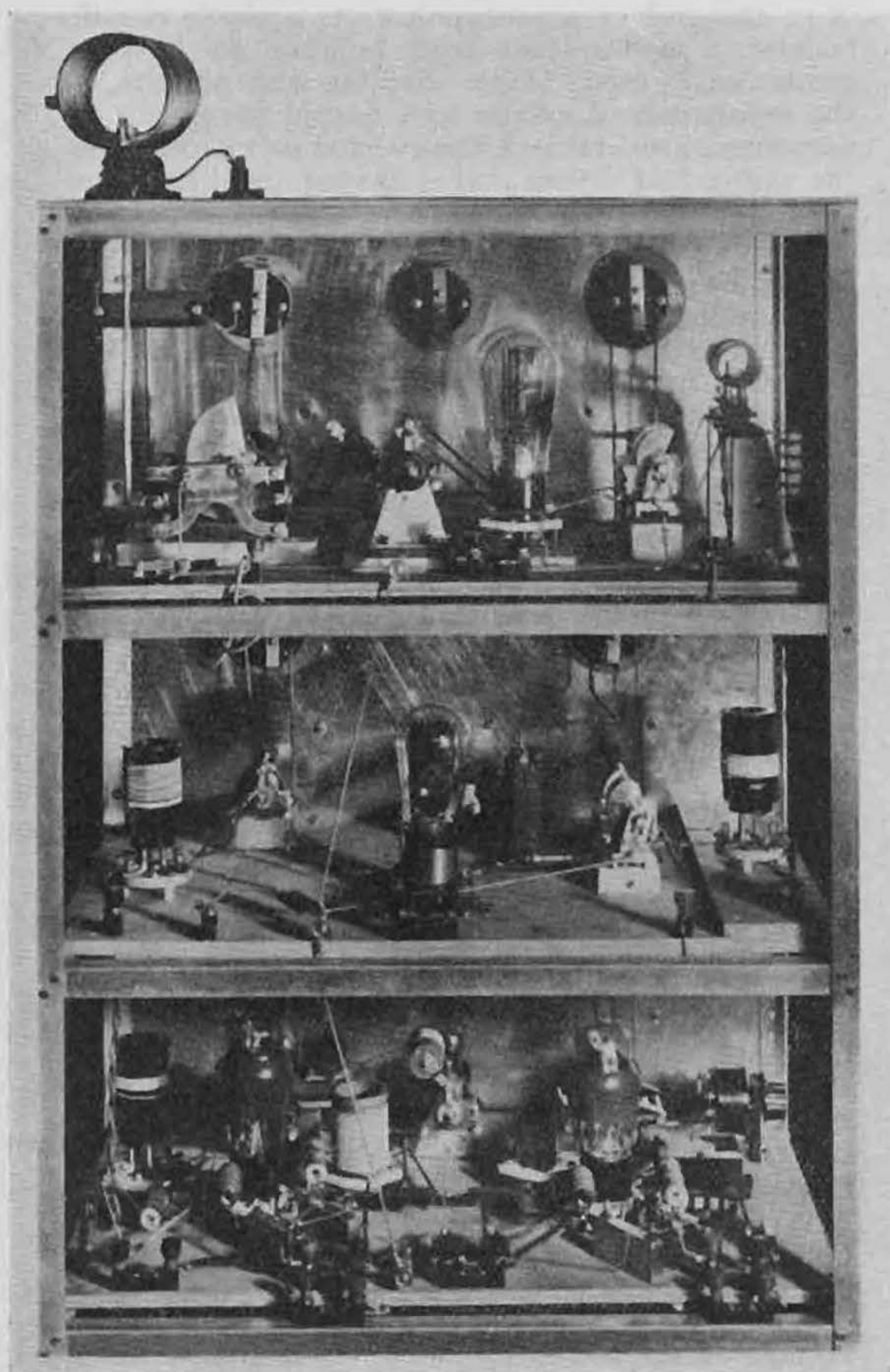


Fig. 3.

Another rear view showing clearly the method of assembly and layout of components. The link coupling between the tri-tet stage and the sub amplifier can be seen on the left of the bottom compartment. The neutralising condensers for the final push-pull stage are mounted to the left of the valves. The small S.P.S.T. switch is to cut off plate supply from PA when neutralising, as PA and sub-amplifier are on same H.T. supply

It is the writer's opinion that a transmitter such as this could be used to advantage in the average station either as a complete entity or with the Tri-tet unit and a P.A. only. Although Type 59 valves *must* be used in the exciter unit any types may be used in the buffer and P.A. units.

COIL DATA.

TRI-TET COILS.

Coil A. High C. 1500-4000 kc.

Low C. 3500 kc.

Eddystone standard 4-pin 1½" diameter, 34 turns 1½" long, E.C. Tap 11 turns from ground end.

Coil B. High C. 3000-7500 kc.

Low C. 7000 kc.

2 coils. One 1" dia. 4-pin; One without pins to attach to Condenser C15. 19 turns ¾" long, E.C. Tap, 5½ turns from ground end.

Coil C. High C for 7000 kc.

Low C for 14000 kc.

1" dia. 4-pin.

Eight turns ½" long EC Tap 2½ turns from ground end.

1" coils made on old valve base with 1" Paxolin tube.

OPERATING POSITIONS FOR COILS.

Band	Osc. operation.	Coil.L9	Coil L7 and 8.
L10.			
3.5 mc.	3.5 Xtal or EC.	B	Open
7 mc.	3.5 Xtal. 3.5 Xtal or EC.	Shorted. B	A.L7 Open.
14 mc.	3.5 Xtal or E.C	B	B. L8
28 mc.	3.5 Xtal or EC.	B	C. L7

AMPLIFIER OUTPUT COILS L.10

ALL WOUND ON EDDYSTONE STANDARD 4-PIN FORMERS $1\frac{1}{2}$ " DIAMETER.

Band.	Turns.	Wire.	Length of Winding.	Link Coil.
3500 kc.	30	24 D.S.C.	$\frac{3}{4}$ "	4 24 D.S.C.
7000 kc.	15	24 "	$\frac{3}{8}$ "	$2\frac{1}{2}$ "
14000 kc.	7	24 "	$9/32$ "	$2\frac{1}{2}$ "
28000 kc.	4	24 "	$\frac{3}{8}$ "	2 "

SUB AMPLIFIER COILS.

EDDYSTONE 4-PIN.

GRID L6.

PLATE L5.

Band.	L6.	Length.	Wire.	Link Turns.	L5.	Length.	Wire.	Link.
3500 kc.	34	Close	24 D.C.C.	4.24 S.W.G	28	Close wound	21 D.C.C.	4 24 enamel.
7000 kc.	17	$1\frac{1}{16}$ "	24 "	4.21 "	13	"	"	4 24 "
14000 kc.	7	$\frac{3}{4}$ "	23 "	3.23 "	8	"	"	3 24 "
28000 kc.	4	$\frac{3}{4}$ "	23 "	2.23 "	4	$\frac{3}{4}$ "	"	2 24 "

P.A. COILS.

GRID COILS WOUND ON $1\frac{1}{4}$ " PAXOLIN TUBE AS SHOWN IN FIG. 4. PLATE COILS $3/16$ " COPPER TUBE.

GRID L3.

PLATE L4.

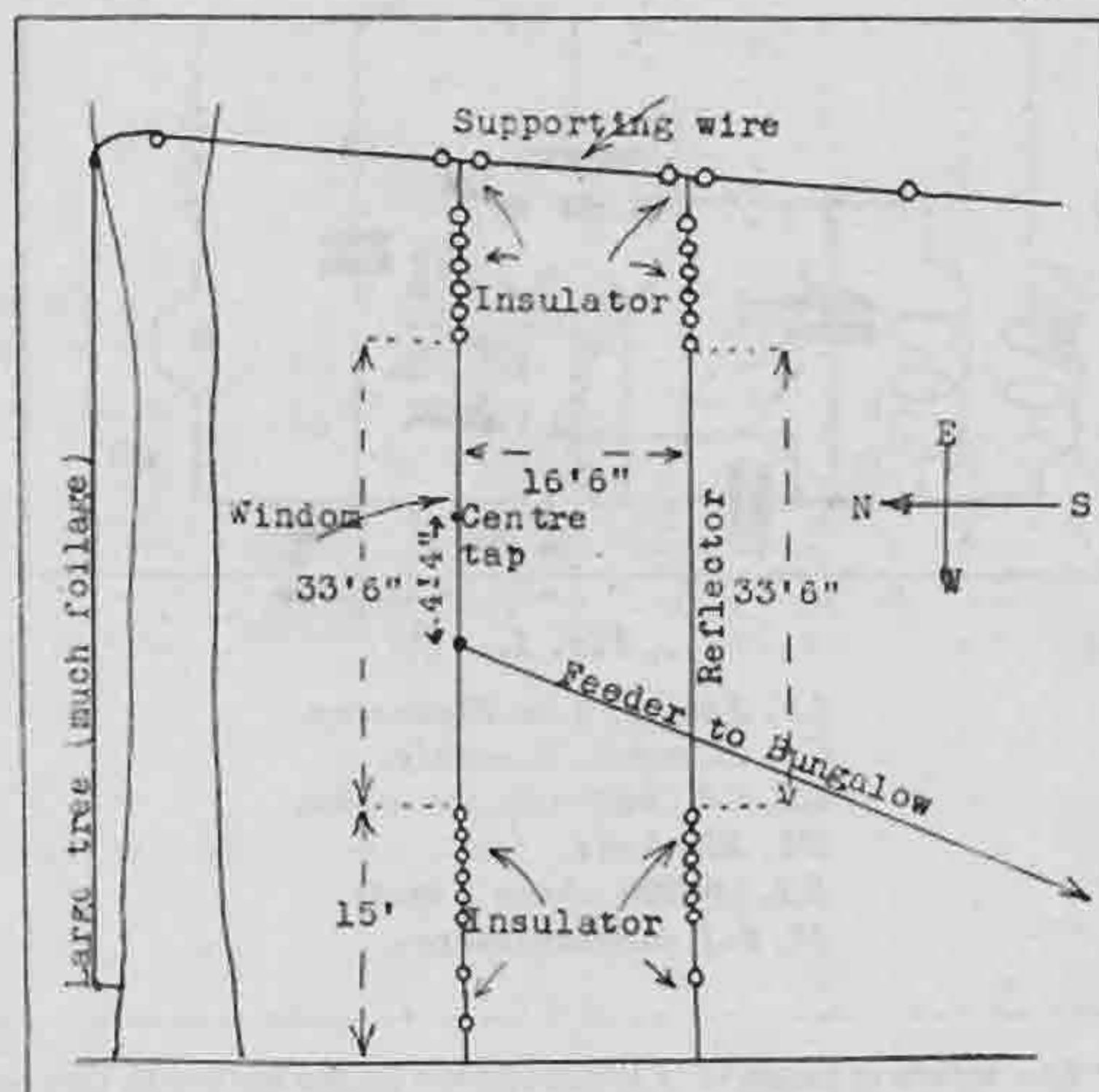
Band.	Turns per Section.	Total	Length.	Wire.	Link.	Dia.
3500 kc.	22	44	Close wound.	21 D.C.C.	2.21 D.C.C.	30T. 14 enamel spaced wire, dia. $2\frac{1}{4}$ "
7000 kc.	12	24	"	"	2. "	10T. $3/16$ " Copper Tube $\frac{3}{8}$ "
14000 kc.	5	10	"	"	2. "	4T. " $\frac{3}{8}$ "
28000 kc.	3	6	"	"	2. "	2T. " $2\frac{1}{2}$ "

The Antenna at VS2AF.

With reference to Mr. MacIntosh's article, which appeared in the September issue, we have now received details of the 14 mc. vertical Windom antenna he is using.

- (1) The top is 33 ft. 6 ins. long and is made of No. 6 S.W.G. copper wire.
- (2) The feeder is 63 ft. long, tapped on at 4 ft. 4 ins. down from centre point of top. Gauge is No. 12 S.W.G. The feeder lies approximately N.E./S.W., i.e., it runs in a S.W. direction to his bungalow.
- (3) The feeder is taken off at right angles to the top.
- (4) The reflector is 16 ft. 6 ins. due south of the vertical top and made of No. 10 S.W.G. It is the same length as aerial, viz., 33 ft. 6 ins.

To date the following countries have been worked, using 20 watts:—J2 (R7), J3 (R4), OH (R6), W6 (R5), W6 (R6), VK4 (R6-R4, with reflector in use), VS7 (R4), G (R5), and ON (R5).



DIRECTIONAL AERIAL SYSTEMS FOR 56 MC.

By E. A. DEDMAN (G2NH).*

PART I.

A VERY large proportion of the experimental work of the amateur transmitter in this country is devoted to radiating systems, but owing to the fact that directional aerial systems for use on the 14 mc., 7 mc. or lower frequency bands require quite an extensive piece of ground for their erection usually, he is forced to confine his experiments to modified forms of the simple Hertz and Marconi aerals.

The 56 mc. wave-band offers vast fields for experiment in this direction by virtue of the fact that relatively complicated arrays, that are quite out of the question on the lower frequencies, are easy to erect when we are dealing with such high frequencies. The present state of our knowledge limits us to the use of the direct ray on 56 mc., and, until we have any evidence to the contrary, it is advisable to assume that the 56 mc. band is part of the quasi-optical group of frequencies, and for the present, at least, we must ignore any possibility of the useful employment of any of the reflected rays. Average amateur powers and average amateur locations give us an approximate useful range of ten miles. This is a generalisation, of course, and is liable to modification in a number of cases, as ranges of up to 50 miles from hilltop to hilltop, or even from home stations on low ground to neighbouring hill-tops, using input powers of less than 5 watts, have been reported in the BULLETIN from time to time during the last three years.

This knowledge led the writer to carry out some experiments with simple forms of directional aerals, with a view to finding what practical gain could be expected from systems that were easy to construct and use.

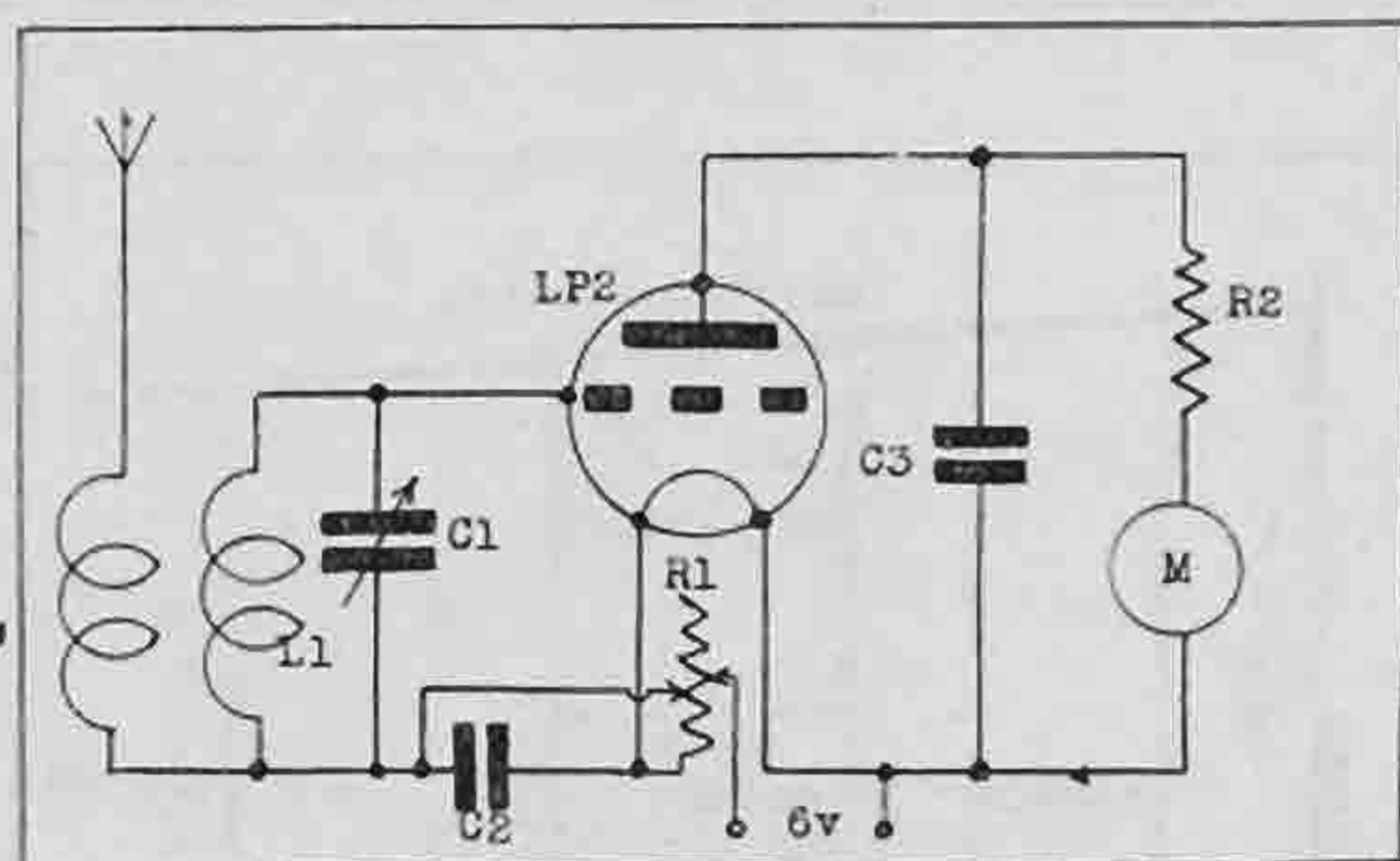


Fig. 1.

- L1*, 3 turns $\frac{1}{2}$ in. diameter.
- C1*, 15 mmf. Variable.
- C2*, *C3*, .002 mfd. by-pass.
- R1*, 20 ohms.
- R2*, 10,000 ohms 1 watt.
- M*, 0-1 milliammeter.

FIELD STRENGTH MEASUREMENT APPARATUS.

The first problem was the design and construction of a field strength meter, in order that reliable comparisons could be made. It was essential that the meter should be comparatively simple and compact, in view of the fact that the experiments were to be carried out on land that was used for grazing purposes, and it was necessary for the whole of the apparatus to be conveyed by car to the site and removed at the conclusion of each experiment. Several forms of meter were tried, but the ordinary Moullin valve voltmeter was selected in view of its simplicity. The Balanced Bridge type of meter was more sensitive, and would be preferable for use in cases where the apparatus could be left in position semi-permanently. This meter will be fully described in a future instalment of this article.

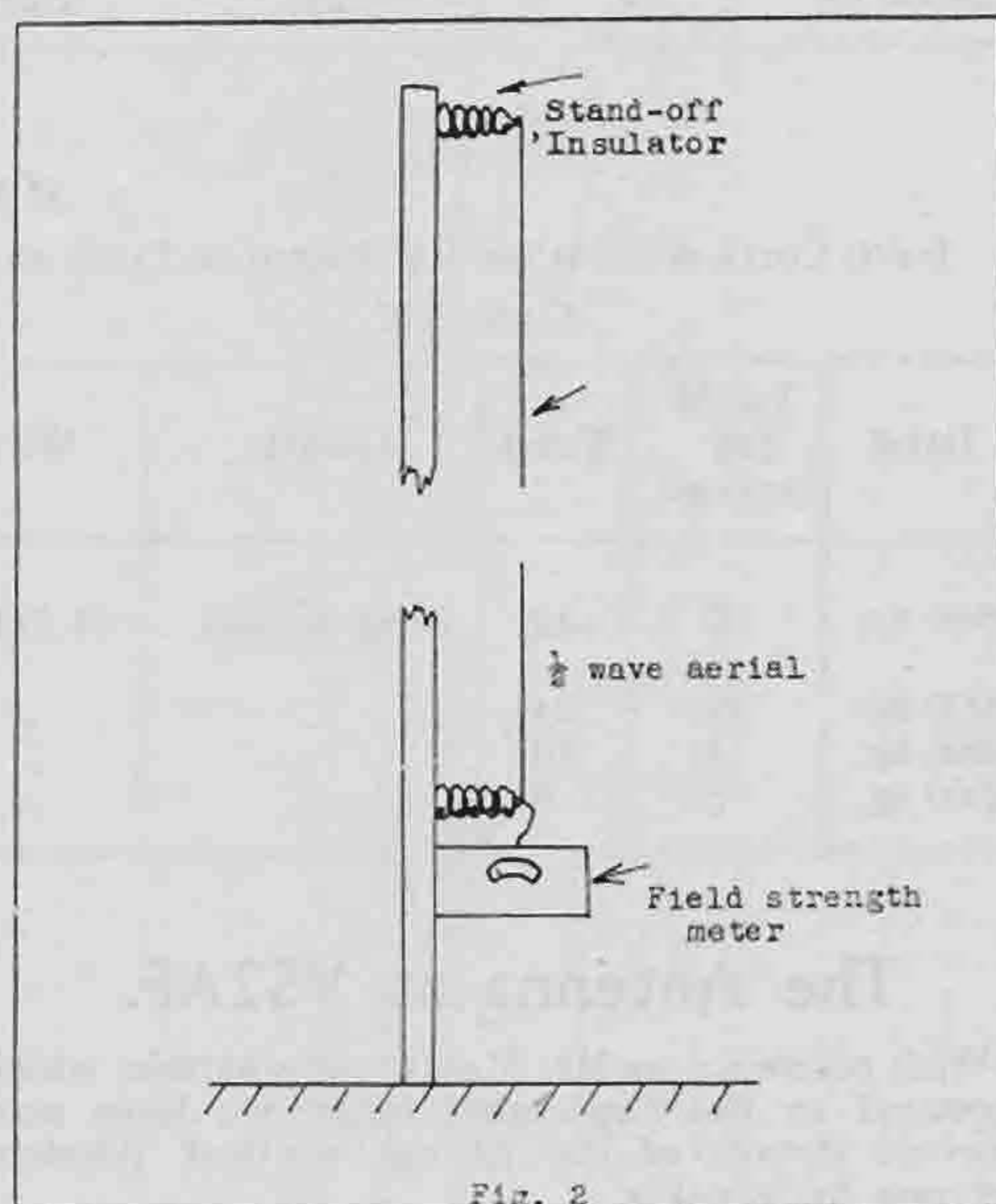


Fig. 2.

The circuit diagram of the Moullin meter is given in Fig. 1. It will be observed that the voltage drop across the filament resistance *R1* is used to supply both grid bias and anode potentials. The circuit *L1*, *C1*, is tuned to the operating frequency, and the aerial *Ae*, consisting of a nominal half-wave wire, is inductively coupled to the grid circuit by means of the coupling coil shown. This coil should consist of two turns of wire $\frac{1}{2}$ in. in diameter, and be spaced approximately one inch away from the grid coil. Alternatively the aerial could be capacity-coupled to the grid of the valve through a very small fixed condenser (about 5 mmfd.). The aerial length employed was 89 ins., and the whole arrangement was mounted on a piece of 2-in. by 1-in. wood, approximately 12 ft. long, as shown in Fig. 2.

*This article is based on a lecture given by the author to London members at the meeting held on September 28, 1934.

SINGLE WIRE REFLECTORS.

The first experiments were carried out with a half wave aerial, using a half wave reflector spaced approximately $\frac{1}{4}$ wave apart. Another 12 ft. pole was erected with a length of bamboo at the top, at right angles to the upright, forming a simple triatic. The aerial and reflector were suspended from the triatic, as shown in Fig. 3. The aerial was fed with a two-wire line, $\frac{1}{4}$ wave long, from a 3-watt push-pull oscillator of conventional design, employing two LP2 valves with 150 volts of high tension accumulators as anode supply, the input being maintained constant at 3 watts, and the frequency at 58 megacycles. A circle was pegged out on the ground at a radius of three full wavelengths from the aerial. In operation, the field strength meter was set up at marked points on the circumference of this circle, and readings taken at every 15 degrees, making 24 separate readings for each experiment. No attempt was made to calibrate the meter, as it was thought that comparative figures would be sufficiently accurate for the purpose in view. The preliminary measurements were taken with the reflector dismantled, and the resulting polar dia-

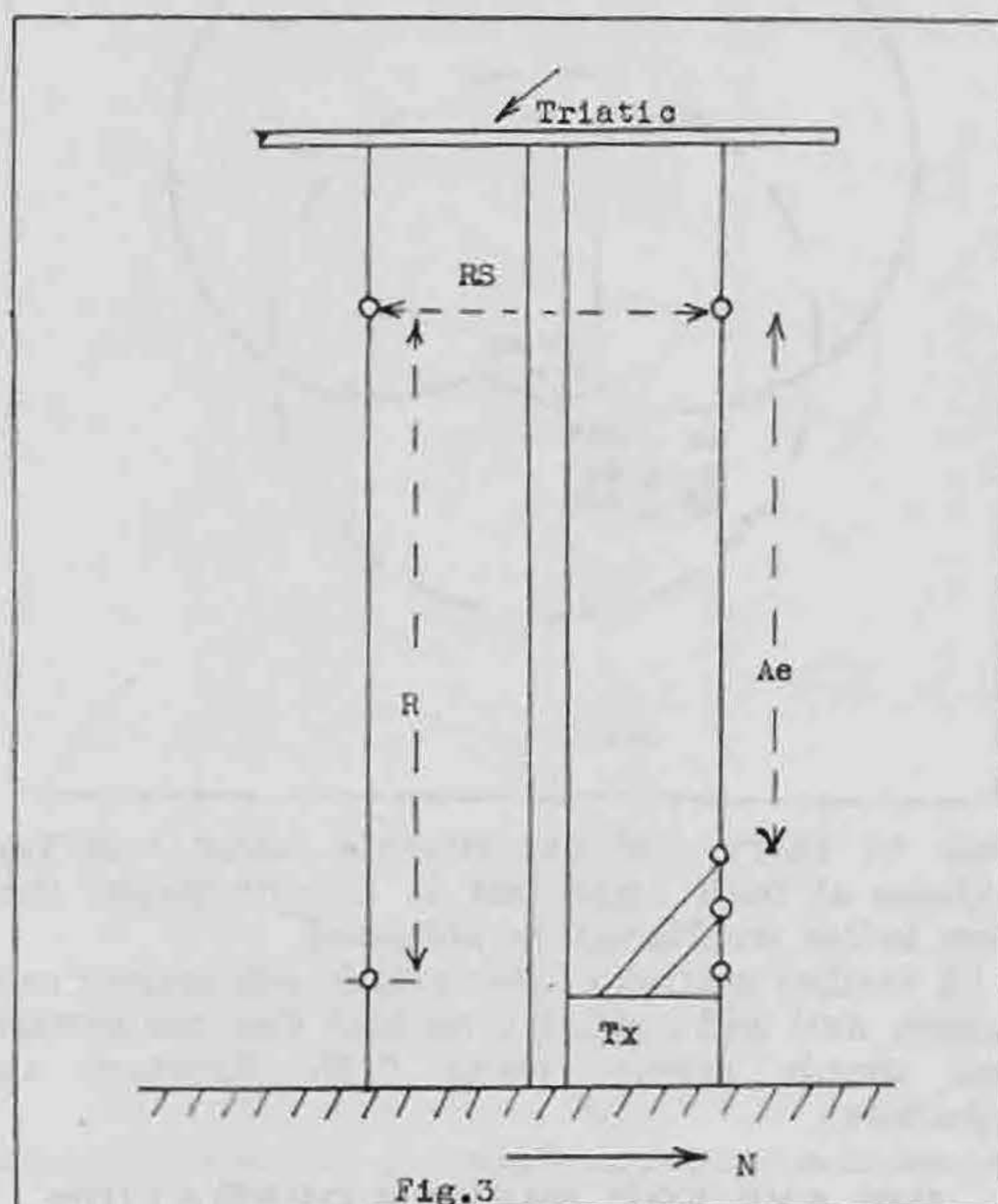


Fig. 3

gram was an almost perfect circle, showing that the arrangements for supporting the aerial were not materially distorting the field. This curve is shown as a dotted line in diagrams 4, 5, 6 and 7, and as all these diagrams are to the same scale it is easy to make comparisons as to the gain obtained.

The aerial was nominally $\frac{1}{2}$ wave long, the actual length of 89 ins. employed giving best results on the frequency used. The first reflector tried was a single wire, the same length as the aerial, and suspended 45 ins. behind the latter. The polar diagram obtained from this system is shown in Fig. 4, and it will be observed that there is an appreciable gain in a forward direction, with considerable cut-off at both sides, but with some radiation to the rear. This rearwards radiation is not so undesirable in amateur work as it would be in the case of a commercial service, but at the same

time it represents a considerable leakage and serves no useful purpose, unless there happens to

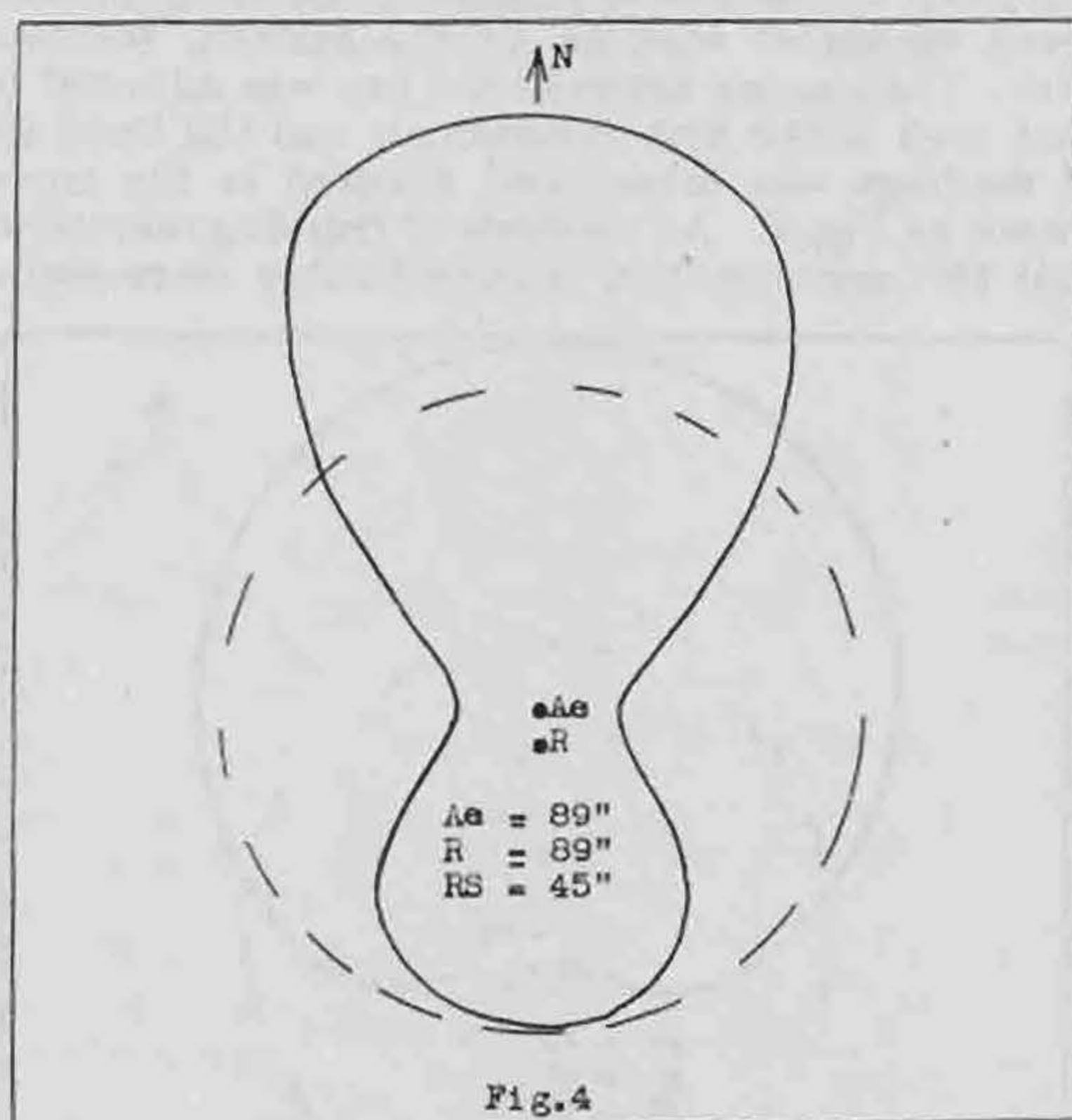


Fig. 4

be alternative stations to communicate with in that direction.

It was assumed that a greater spacing of the reflector and aerial wires would reduce this rearwards radiation, and this proved to work out in practice. The reflector was moved back another 6 ins., and the second curve taken, as shown in Fig. 5. It will be seen from this that the rear radiation is considerably reduced, and at the same

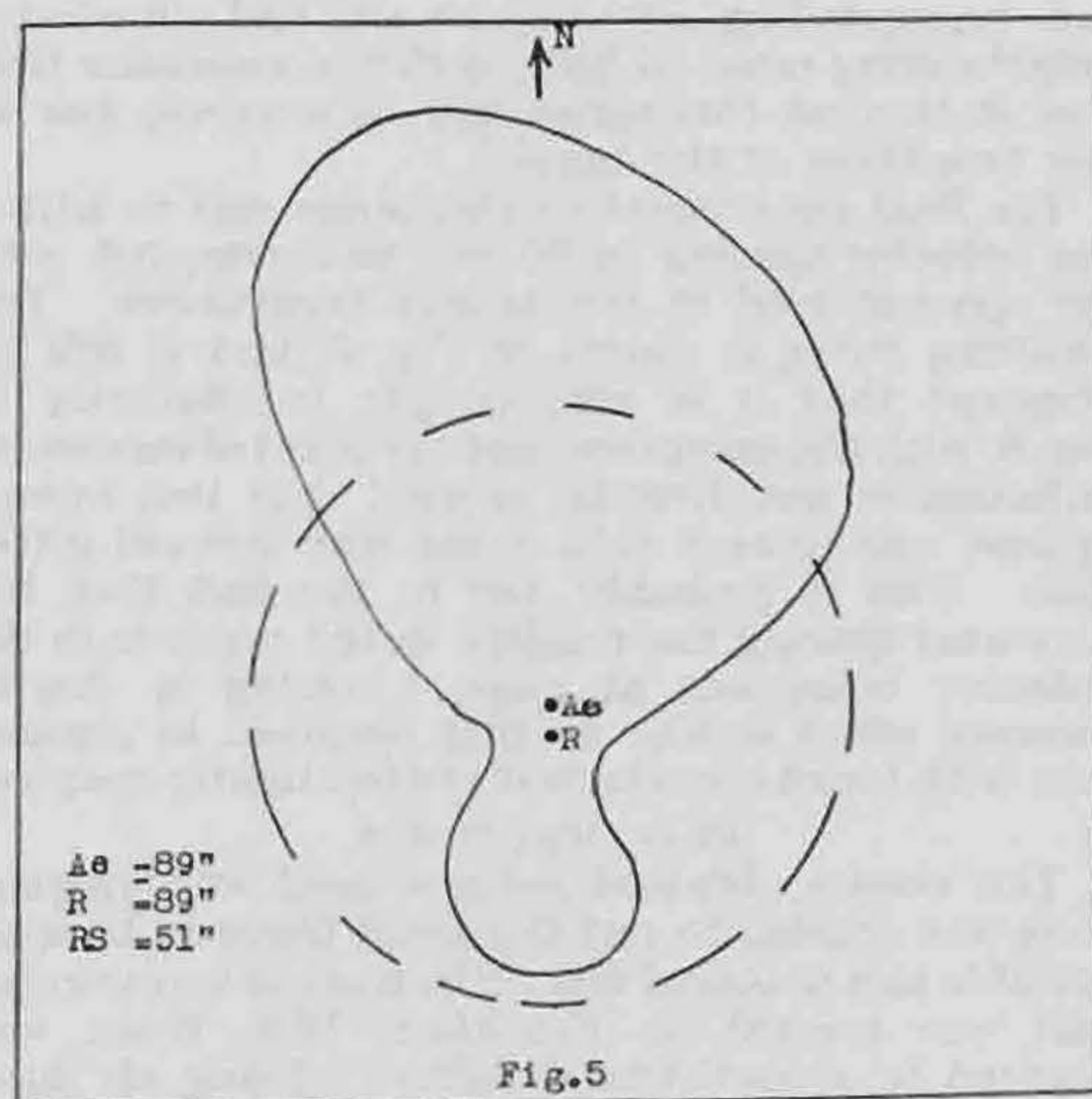
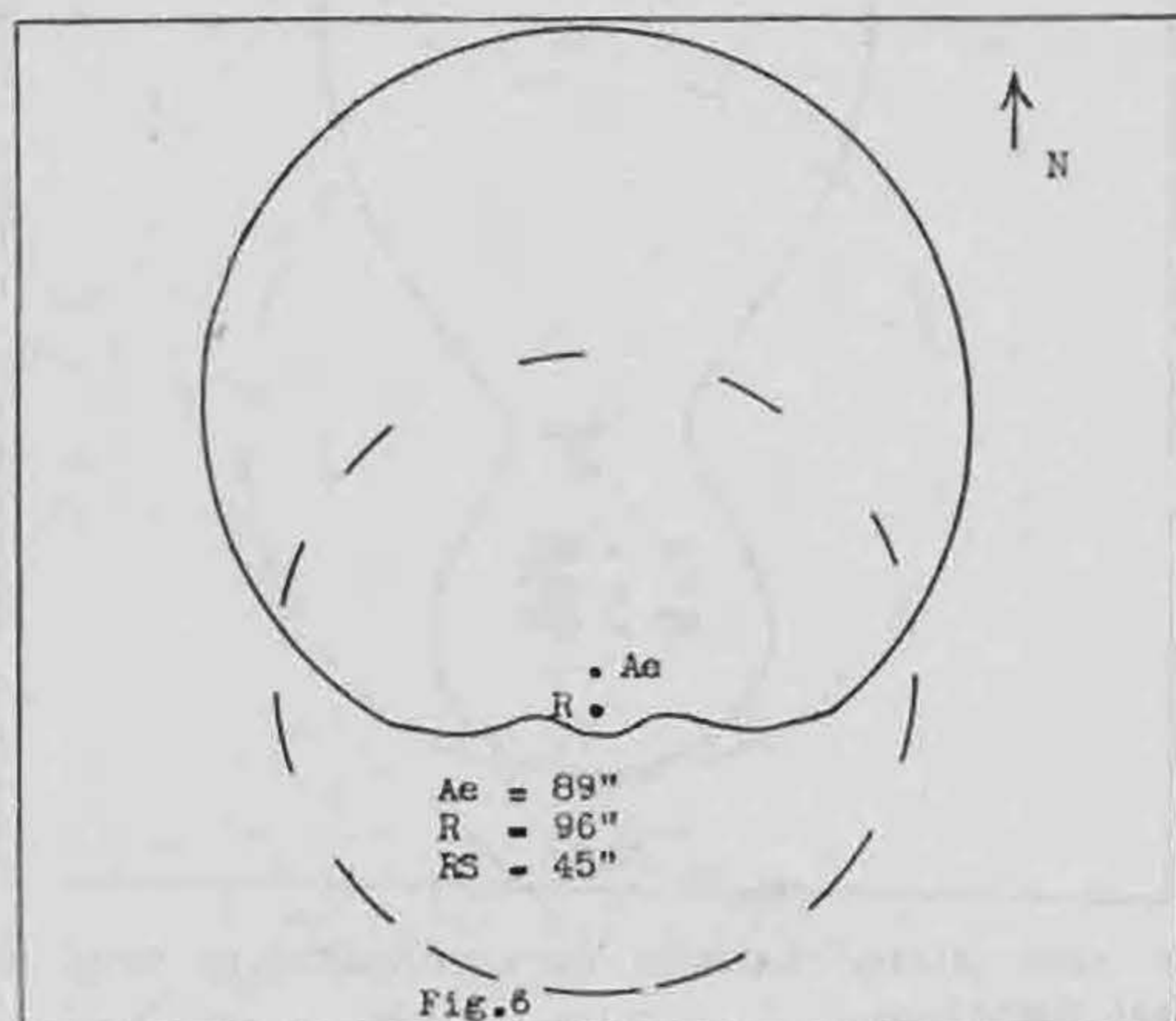


Fig. 5

time the gain in a forward direction over a simple half wave aerial is over a wider arc than for the first system tried.

The experiments were abandoned for a month at this point, due to pressure of work from Contests and N.F.D., but in the meantime, a study of the theoretical side of the problem seemed to suggest that it would be advisable to make the reflector wire have an inductive reactance, or, in other words,

to make it resonant at a lower frequency than the aerial. When the experiments were resumed, this was done by the simple process of soldering another seven inches of wire on to the existing reflector wire. The spacing between the two was adjusted to that used in the first experiment, and the third set of readings was taken, and resulted in the curve shown as Fig. 6. An analysis of this diagram shows that this aerial system is considerably more useful



for amateur communication purposes than either of the two previous types tested. There is a considerable gain in a forward direction over an arc of approximately 150 degrees, and the radiation to the rear is almost entirely suppressed.

These are most desirable features from our point of view as communicating amateurs, as the system can be erected on a favourable site and aimed at a neighbouring range of hills, with the assurance that any station on this range will be covered, due to the broadness of the beam.

The final experiment of this series was to adjust the reflector spacing to 60 ins. to correspond with the spacing used in the second experiment. The resulting curve is shown in Fig. 7, and it will be observed that it is very similar in character to Fig. 6, with the exception that the point of maximum radiation is not directly forward, but two humps appear, one to each side of the true forward direction. This is probably due to the fact that the increased spacing has resulted in the currents in the reflector being out of phase, causing a double humped effect similar to that obtained in connection with tuned circuits that are too tightly coupled.

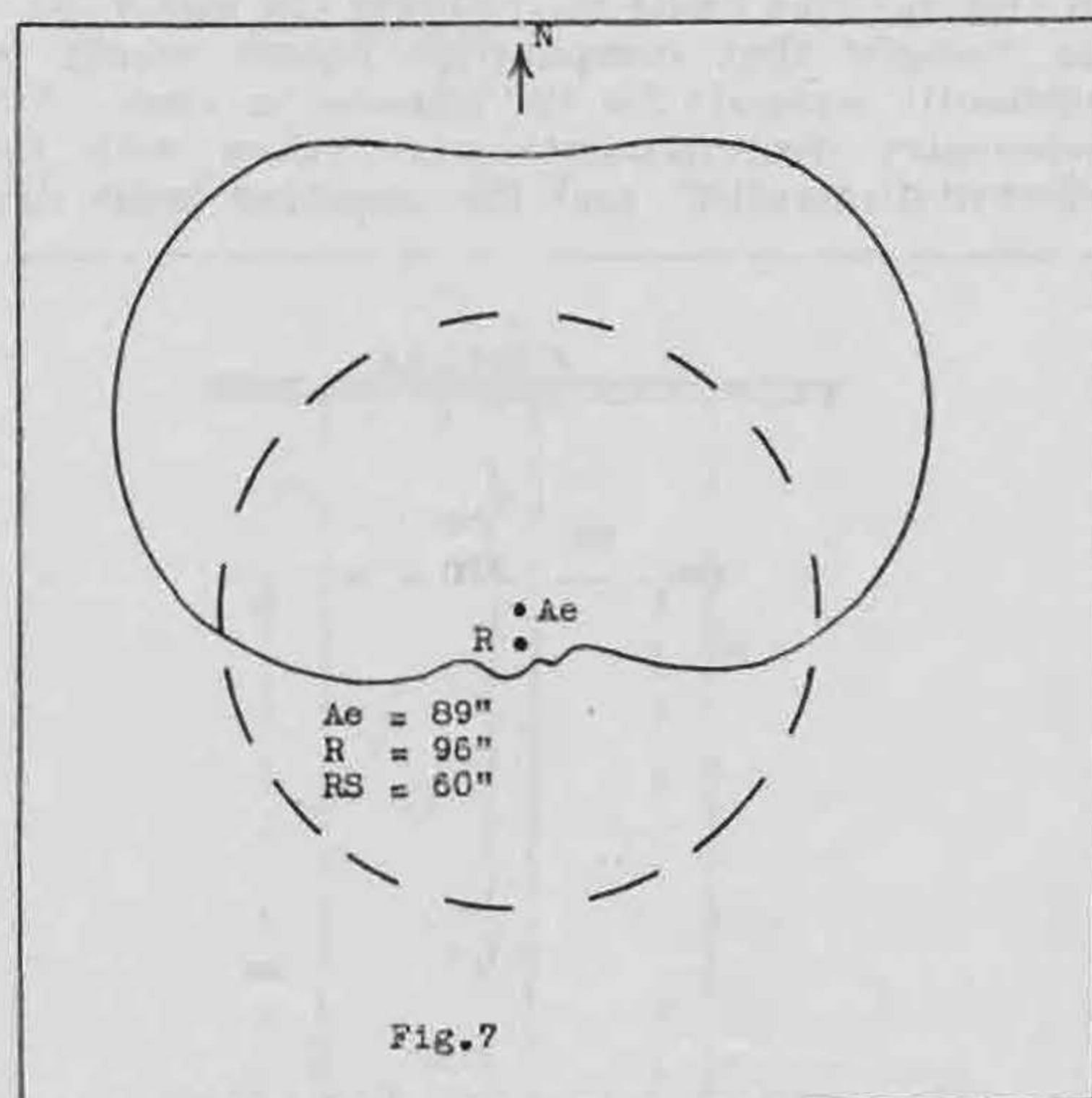
PRACTICAL TESTS.

The results obtained seemed most encouraging, so it was decided to put the aerial likely to be most suitable to a practical test. Fig. 6 aerial was selected and was erected on Crockham Hill, Kent, and pointed in a southerly direction. Using an input of 3 watts to a transceiver, communication was easily established with G2MR, G2YD, and G5MA, operating portable G5MA at Blackdown Hill, near Haslemere on the Surrey and Sussex borders. The distance between the stations was approximately 34 miles, and telephony was worked with a strength of R9 in each direction. Removal of the reflector at the Crockham end caused a drop in strength of the received signal at Blackdown to R4, and similarly the received signal at Crockham

was only R4. (It must be mentioned that the reflector was in use for both transmission and reception at the Crockham end, due to the fact that a transceiver was being used.)

The Crockham station was then moved to Detling Hill, on the North Downs, between Maidstone and Sittingbourne. With the reflector in use, the Blackdown station was heard, but removal of the reflector also removed the signal. Unfortunately G2NH was not heard at Blackdown, so it was impossible to carry out two-way tests on this occasion.

Tests were continued at a later date from G2NH at Truleigh Hill, on the South Downs near Brighton, and various co-operating South London stations working at different points on the North Downs in the neighbourhood of Tatsfield. It was proved again that the addition of the reflector improved the strength of the received or transmitted signal by several R strengths. It has not been possible to find



time to carry out experiments using reflecting systems at both ends, but it is anticipated that even better results will be obtained.

(A further section of this article will appear next month, and will contain details of director systems and simple arrays, using both directors and reflectors.)

RELAYS FOR SPEEDY OPERATION

(Continued from page 171)

The small brass pieces holding the fixed contacts should be bent very slightly if necessary, to ensure that a good contact is made with each, and the contacts themselves may be trued up with the aid of a magneto file or a small piece of fine emery paper.

The actual circuit arrangements of the relays need no explanation and they can be introduced into any part of the wiring where it is desired to do the switching.

The aerial change-over relay is made in a similar manner to the one described, except that there is only one set of contacts, which are made very robust and carefully trued up in order to carry the aerial current of the transmitter.

The use of relays in this manner will prove of value during a long period of operating, particularly during a contest.

RELAYS FOR SPEEDY OPERATING.

BY C. A. SHARP (G6KU).

WE have heard from "Uncle Tom" a good deal about "rotten operating" and "good operating," but so far little has been said about *comfortable* operating.

When visiting amateur stations, one often observes that much time and care have been spent in the individual design and assembly of transmitters, receivers, and other equipment, but that such apparatus is disposed about the room "wherever it will fit." A planned layout, rendering everything immediately accessible, is most unusual.

If one is listening on the receiver, and desires to call up a station, how much more pleasant it is to flick over a single switch to actuate simultaneously the transmitter H.T., filament current supplies, transmitter aerial and so on, instead of having to walk a couple of yards or more to change over a few switches! Yet a simple method of rapid change-over can be devised quite efficiently, easily, and cheaply by means of one or more multi-contact relays.

What the Relays Do.

Those in use at the writer's station were made from the magnets of old telephone bells rescued from the junk box. They are two in number, one being a multi-contact type which, in one position, switches on the filament current and H.T. for the transmitter, the H.T. for the speech-amplifier and the rectified A.C. bias used for all stages, at the same time switching off the L.T. to the battery-fed receiver. In the alternative position, all the transmitter stages are switched off except the A.C. heaters to the speech amplifier which are always left running, while the L.T. to the receiver is switched on, the station then being ready for reception immediately.

The second relay consists of a double-contact change-over only, and is used in the aerial circuit to switch the latter over to either the transmitter or receiver position. Both relay windings (which are in parallel) are fed from an old 6-volt battery which had fallen into disuse, and are controlled by a switch placed just in front of the operator, near the writing pad, and key. The receiver is placed a little to the left, and the microphone is directly in front of the operator, who can thus use the receiver or the transmitter for either C.W. or telephony with the greatest of ease, and can change over from one to the other in about two seconds, the time required for the filaments to heat up.

A telephony conversation with another station so equipped is very pleasing and is only excelled by true duplex working.

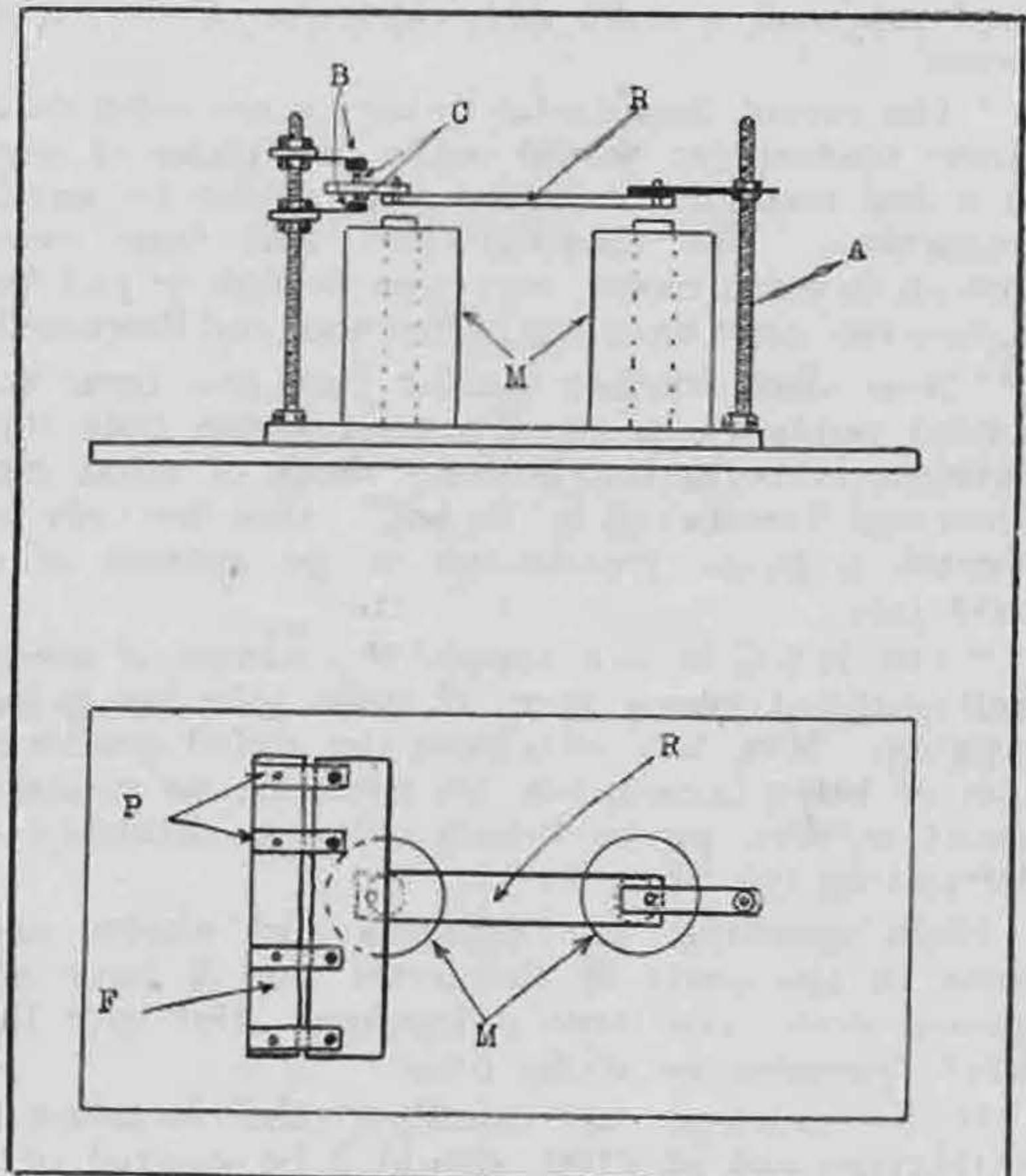
Construction.

The relay first mentioned utilises the two telephone bell magnets on an iron base. To the latter a short length of 2BA rod (A, Fig. 1) is bolted on each side of the magnets. These rods hold in one case the top and bottom contacts, and in the other case the moving contacts (B and C respectively). The latter are made from the shanks of 6BA screws about $\frac{1}{4}$ in. in length, to both ends of which are carefully soldered small silver contacts,

which could very well be made from an old piece of silver jewellery borrowed from the family! These are then fixed to a small piece of thin paxolin or fibre so that an equal amount projects on either side of it.

The centre of the fibre contact holder is bolted to the end of a thin piece of iron about 2 ins. by $\frac{1}{2}$ in., making a T shape. This forms the armature, to the other end of which is fixed a short length of springy brass or copper drilled to fit one of the 2BA rods to which it is held by nuts.

The fixed contacts are made from similar pieces of fibre, and to these are screwed small pieces of thin copper or brass sheet about 1 in. by $\frac{1}{2}$ in. To the end of each is then sweated a silver contact.



Constructional details of Multi-Contact Relay:
 A 2BA Rod. R Armature.
 B Fixed contact. M Magnets
 C Moving contacts. P Copper strips, holding contacts.
 F Fibre strip, holding contacts.

The contacts are so spaced on the fibre insulators that when the armature is in position the moving contacts on the latter make circuit with the upper set of fixed contacts, while when the armature is drawn down to the magnet by the polarising current in the coils, circuit is completed through the bottom set of fixed contacts.

The fibre pieces for the fixed contacts are mounted at suitable distances down the 2BA rod and are fixed by means of nuts. Thin flexible wires (not shown) are taken from each contact to small terminals on the ebonite base to which the relay is fastened.

(Continued on page 170).

SOLILOQUIES FROM THE SHACK.

By UNCLE TOM.

(This month the big, bad Unc. is really fed up about something or other, we forget what.)

LET'S be serious for a little while, nephews and nieces. I'm not employed merely as a professional funny man, and my ramblings are supposed to have a moral. Just at present I'm not even going to *try* to be funny. Headquarters have passed on to me a letter from a well-known member on the subject of "Lawbreakers," and I want to make several verbatim "quotes" from it.

Here is the start: "All decent-minded people will agree with us that individuals who break the law, especially when that law is just, should, when apprehended, pay the penalty. It would seem, however, that in radio, to break the law of England is to be lauded in the Press as a very fine fellow, and in fact to obtain so much free publicity that a good job with a radio firm ensues as a matter of course.

"The recent disgraceful publicity accorded to a pirate transmitter would make one think of him as a fine example of genius kept under by harsh regulations. The amateur who had been keen enough to learn morse, and man enough to pay his licence fee, must have felt rather sore and disgusted.

"Now that another similar case has been accorded publicity in the Press, it seems that this business is becoming nothing short of what our American friends call a 'racket.' One has only to operate a pirate transmitter to be assured of a good job.

"The R.S.G.B. can supply the names of many well-qualified young men, if these jobs are going begging. Men, too, who have the added qualification of being honest, for, let there be no mistake about it, this pirate broadcasting is dishonest—defrauding the State."

Plain speaking, my nephews and nieces, and some of the parts of the letter that I have *not* quoted were even more outspoken. But isn't the whole business the sticky limit?

If I confessed to swindling the income-tax authorities out of £100, should I be assured of a good job in the Treasury? If I drove a car without a licence, should I get a good job in the motor industry? If I kept a dog without a licence, should I be made a high official of the Tail-Waggers' Club?

And yet one has only to blurb away with gramophone records and a lot of childish talk on the air, and then get caught, to be made a national hero in certain sections of the Press. As if there weren't enough *licensed* stations on the air, too! And what publicity do *they* ever get?

Now, while we're serious, let me quote one or two things actually heard on the air this month. I give my solemn word of honour that they are absolutely true in every detail.

First, a QSO between a G station and a Yank. I won't give call-signs. "W— de G— GE OM. Ur sigs QSA5 R6 T9. Tku for call & vy glad to meet u agn. Ur sigs the best hv hrd fm USA for long time. Here using new antenna. Can u stand by for short test? W— de G— ar k."

Comes the reply: "G— de W— rr all OK.

Ur QSA5 R5 T9 vy fb vy fb. Well QRU hr 73 cuagn pse QSL ar G— de W— VA." Back comes the G: "W— de G— Will u pse stand by for short test. Vy anxious for report on two antennas. k."

Quoth the W: "G— de W— rr all OK. Will QSL. Hr QRU 73 ge ge ar VA." Back comes the G again (good luck to him!): "W— de G— sa what's the hurry om. Want short test on antenna. Pse stand by one min while I change over. (Changes over and calls again.) Pse hw sigs now? W— de G—. K."

Quoth the W: CQ CQ CQ CQ CQ CQ CQ DX de W—.

Isn't that a pretty story? Probably the W can't read a word of morse beyond the call-signs. And isn't that what one meets with over and over again?

Here's another, also heard on the air: "Test" (slowly) *seventy-six times* from a G station, who sends his call-sign once (darned badly) and then breaks down. Thank goodness I *did* get the blighter's call after nearly a quarter of an hour of "test" call! Next time I hear him I shall tell him just what I think of him.

And yet another. An unknown station, SX—, calling W2DTB. Sends "W2DTB" sixty-five times and then his own call *thirty-five* times, after which he starts all over again. By the time he changes over, W2DTB has just finished an entire QSO with a G and calls CQ again. Back goes this SX— and starts the whole performance again. Incidentally, all this with a spark note spreading over at least 100 kc.

Can we wonder if amateur radio is given the complete kibosh one of these days? And just listen on 40 any Sunday evening and ask yourself what the blazes all the racket's about. Nine-tenths of the band taken up with fiendish uncivilised noises that don't mean anything, don't do anything and don't care for anything.

Incidentally, I think it's about time G stations stopped using the 40-metre band for local 'phone QSO's. They could be done twice as well on 80 or 160 metres, and they wouldn't be getting in everyone's way. Local 'phone on 40, with an input sufficient to get it to the States, ought to be made a crime. I'm not grumbling about 'phone as such, but this abuse of a narrow waveband used for so many other purposes.

And now we must be facetious for a few lines. Did you notice those "Amateur Prefices" in last month's BULL? Somewhere down in Cornwall is a ham who objects to such pedantry, and writes as follows:—

"Our kitten is often in fices.

Her pedigree shows many mices.

And it's really too bad

We can't find if her Dad

Was Unk. Tom or some other felices."

And another one, from a certain BRS chappie who walks off with trophies now and again:—

(Continued on page 198)

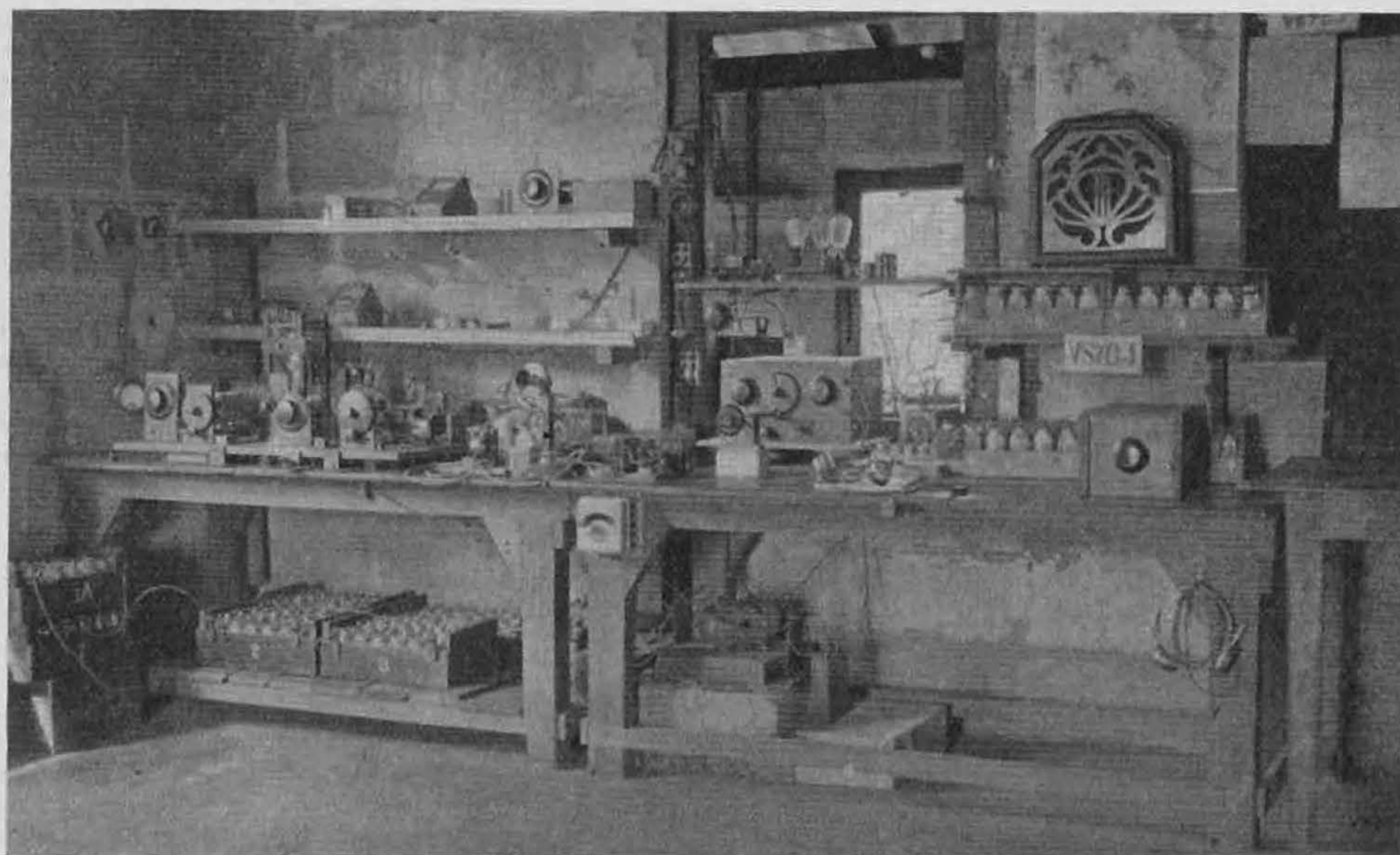
STATION DESCRIPTION No. 44.

VS7GJ

THE station is situated on a rubber estate in Ceylon, about 12 miles from the sea, and roughly 25 miles to the south of Colombo, the Clapham Junction of Marine traffic and chief port of the Island. The elevation is about 175 ft. above sea level, on a small hill with an unbroken view of 12 miles to the westward, overlooking jungles, estates and low-lying countries. To reach the station it is necessary to cross the river Kalu-ganga by means of a ferry-boat punted by scantily-clad Singalese. During the wet season floods are experienced which completely isolate the home of VS7GJ for days on end,

Components suitable for amateur transmitters are not procurable locally, consequently everything of importance has to be ordered from England; this fact, coupled with the depression in the rubber industry, has resulted in the VS7 group making as much as possible of their equipment on the spot, even to the elements for Leclanche batteries.

The heavy duty variable condensers in use in the transmitter are old Cyldons, which have been broken up and rebuilt to give double spacing, whilst most of the fixed condensers have been made up from old condenser plates mounted on strips of ebonite and spaced accordingly.



A General View of VS7GJ.

On the left the transmitter with Leclanche cells for C.O. Two-valve receiver in centre, and motor generator with starting gear under the table.

and during these periods many of the main roads are as much as 10 ft. under water. Incidentally, the annual rainfall is between 180 and 200 ins. !

The station, which is located in a bungalow, derives its power supply from a Kohler d.c. automatic plant. The operator is one of the pioneer radio amateurs in Ceylon, having first started some years ago with a single-valve transmitter driven from ordinary H.T. batteries. The present station consists of a conventional CO FD and PA with power obtained from a motor generator now eight years old. This machine gives a maximum output of 1,000 volts at .03 amps., which drives the p.a. and f.d. only, the c.o. obtaining its supply from batteries of the Leclanche type. The P.A. valve is a Mullard PA 50, now 5½ years old, the F.D. a Phillips TCO4/10, and the C.O. an LS5.

The present crystal controlled transmitter was built on the lines described in the June, 1933, T. & R. BULLETIN, and has given excellent results, practically every country having been worked. The Zepp. aerial, which is about 60 ft. high, has a top of 66 ft. 1 in., with feeders 51 ft. 7 ins. to the coil. Recently grid modulated telephony has been tested, using an ordinary telephone for the microphone and two receiving type power valves in the amplifier. Results have been extremely gratifying with VU2LJ, distance 1,800 miles, and VS7AF, over 1,000 miles, reporting speech 100 per cent.

Before concluding, mention must be made of the South-west monsoon, which prevails from May to October. During this period high winds and heavy rains are experienced, and everything becomes

(Continued on page 198.)

RESEARCH AND EXPERIMENTAL SECTION

MANAGER :

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

GROUP MANAGERS :

No. 1: 1.7 and 3.5 MC. WORK

J. H. HUM (G5UM), 68, Bridge Road East, Welwyn Garden City, Herts.

No. 2: 56 MC. WORK

E. A. DEDMAN (G2NH), 63a, Kingston Road, New Malden, Surrey.

No. 3: ARTIFICIAL AERIALS

J. K. TODD (G2KV), Orchard Place, Wannock, Polegate, Sussex.

No. 4: ATMOSPHERE AND FADING

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

No. 5: TELEVISION

C. W. SANDS (G5JZ), Springfield, Heathfield, Sussex.

No. 6: CONTEMPORARY LITERATURE

R. A. FEREDAY (PAOFY), Reinkenstr, 40, The Hague, Holland.

No. 7: RECEIVER DESIGN

E. N. ADCOCK (G2DV), 206, Atlantic Road, Kingstanding, Birmingham.

No. 8: TRANSMITTER DESIGN

A. E. LIVESEY (G6LI), Stourton Hall, Horncastle, Lincs.

No. 9: AERIAL DESIGN

F. CHARMAN (G6CJ), The Cottage, Park Way, Hillingdon, Middlesex.

No. 10: VALVE RESEARCH

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

No. 11: 28 MC. WORK

W. A. CLARK (G5FV), "Lynton," Hull Road, Keyingham, Hull.

No. 12: AUXILIARY EQUIPMENT

A. O. MILNE (G2MI), "Southcot," Larkfield, Kent.

THERE are no matters of outstanding interest to deal with this month, so I will not take up space unnecessarily.

I have had several reports from individual members, but would like to remind them that these should be sent to the Group Manager concerned, and not to me. Also I must stress the fact that the Group Managers will be pleased to hear from individual members, and put them in touch with other members studying the same subjects.

In conclusion, I must ask for forgiveness if I have been rather slow in replying to the letters some of you have written me lately. Unfortunately, I have not been able to devote much time to radio owing to stress of business.

G6PA.

1.75 and 3.5. MC. Group (No. 1).

Group 1A.—The return of winter conditions was very apparent on October 14, which was one of the best days for distance work on 1.7 mc. we have had since last "season." The G.C. had mid-day contacts with three stations over 100 miles away, and learned that G5BI (Monmouth) had worked the Channel Islands, also in daylight, while G6FA, of Liverpool, was coming in at R7. Rather remarkably, conditions slumped in the evening.

Group 1C.—The "overtone-harmonic" discussion has brought a crop of letters from many members. Among the cream of them is one from G6CY, who writes:—

"It seems to me that there is some doubt as to whether or not there is any such thing as an 'overtone,' using the expression in the sense in which it is used in the October Group 1C notes. I agree with G5WW that harmonics invariably have a higher frequency than the fundamental, and also agree with G5VT that a transmitter cannot radiate frequencies lower than the fundamental, but I do not concur in his opinion that 'harmonic' is synonymous with 'overtone,' assuming as suggested above, that 'overtone' means anything at all!

"2AZX reports reception of stations known to be on 3.5 mc. when his receiver is tuned to 1.7 mc., and in my opinion this is due to the first harmonic of the receiver (presumably oscillating) beating with the fundamental of the transmitter.

"Possibly the following method might be adopted to prove or disprove my theory experimentally, if an accurate frequency meter is available:—

"1. Measure the frequency of the transmitter by receiving the signal on a receiver tuned to zero beat on the 3.5 mc. band. Let the result be f kc. This is admittedly the correct frequency of the transmitter.

"2. Measure the frequency of the receiver when receiving the signal on a receiver tuned to zero beat on the 1.7 mc. band. Let the result be $f/2$ kc.

"3. Detune the receiver so as to produce a beat note of known frequency (this could be estimated accurately enough by comparing the beat note with a tuning fork of the same frequency, say 1,000 c.p.s.). Again measure the frequency of the receiver, and let the result be $f/3$ kc.

"If my theory is correct, the beat note of 1,000 c.p.s. (one kilocycle) is produced by the first harmonic of the receiver beating with the fundamental of the transmitter, whence—

$$\frac{f/3}{2} - f = 1$$

Then $f/3 = 2 + 2f$ (kc.).....(1)

"If, on the other hand, the 'overtone school' are correct, the beat note of 1,000 c.p.s. is produced by the fundamental of the receiver beating with a signal of twice the transmitter frequency, whence—

$$f/3 - 2f = 1.$$

Then $f/3 = 1 + 2f$ (kilocycles).....(2).

"That is to say, if (1) is correct, in order to produce a beat note of one kilocycle, the receiver must be detuned by 2 K.C., and if (2) is correct the receiver must be detuned by one kilocycle to produce a beat note of one kilocycle."

G5HF suggests the possibility of a 3.5 mc. fundamental aerial producing 1.7 mc. emissions by reason of leakage to earth, causing it to act as a Marconi, that is, to halve its frequency. He adds:—

"I do not see how the receiver could produce these overtones unless they are already in the aerial of the receiver. On N.F.D., when the phenomena was observed by 2AZX, the stations were not worked under perfect conditions, and a leak such as I have suggested is more likely to occur than with a fixed station."

G5WW says that the *Wireless World* Dictionary gives no definition of overtones, but states that

a harmonic is a component sine wave of an irregular wave-form, the frequency of which is some multiple of the main frequency. This definition appears to cover what amateurs call overtones.

BRS207 notes how local stations produce strong harmonics, but transmitters twice as far but using three times as much power produce none.

G.C. G5WW has completed tests with a V.F. aerial against a Marconi, and finds the latter definitely better. The aerial itself is 96 feet long, and a counterpoise is used which is 33 feet long, of which the first 15 feet run at right angles to the aerial and the remaining 18 feet in the same plane as the "top." The necessary earth connection to convert the system into a Marconi is tapped on to the tank coil, to the ends of which the aerial and counterpoise are connected.

Group 1E.—The receiving group reports a big improvement in conditions on the two low frequency bands. The consistent signal strength of G6KF is noted, and the wish expressed that the operator would write to the BULLETIN confirming that his QRA really is Reading!

G5UM.

56 MC. Group (No. 2)

This month we have to thank the Contemporary Literature group for an interesting article appearing in the October 15 issue of the German journal *Funk*. This article contains particulars of a low power 56 mc. transmitter using a single valve split Hartley circuit, with Heising modulation. A "straight" receiver of the usual type was employed, and the results obtained seem to check up very closely with the results we have obtained in this country. The G.M. has the article on file, and it is available to any member who would like to see it.

A letter to H.Q. from VU2LJ contains some details of experiments carried out between VU2BL (ex YI2DC) and VU2BN over a distance of twelve miles. Nightly skeds were held, using c.w. and straight-regenerative receivers, and also telephony and super-regen. receivers. Control of the quench was effected by adjustment of the filament voltage, and the correct amount of quench was found to have an amazing effect on signal strength. Using a half-wave dipole mounted on a tripod, VU2BN reported no change in signal strength between the aerial slung vertically or horizontally, yet at one mile distant, signals dropped from R8 to R4 when the aerial was changed from horizontal to vertical." This seems to bear out the theory that has already been put forward by Group 2 members, that the angle of polarisation is liable to considerable change, due to interference from objects in the path of the wave.

Only two budgets are to hand from the Home Groups, No. 2 G and 2B reporting, although the G.M. has received a letter from G5FI, who says that his Group's L.B. is completely lost.

G5YD gives some interesting information regarding his field strength measurement equipment, and full particulars of this will be included in the 56 mc. directional aerial article next month. G2RM gives details of some directional effects noticed when a V-shaped aerial was used, each leg consisting of a metal tripod arm 4 ft. 1 in. long. G6CY gives an account of his new modulating equipment. It is regrettable to note that G5MG has had to abandon

his aerial tests, due to the impossibility of obtaining co-operation from South London receiving stations. 2BIW reports rebuilding.

The 56 mc. Group are to be completely revised to ensure a more regular and quicker mailing list for each group. The G.M. and the R.E.S. manager have the work of revision in hand at the moment, and all members will hear from the G.M. direct as soon as this work is complete.

G2NH.

Atmosphere and Fading Group (No. 4).

4A.—The chief news from this group is the resignation of G6MB, which we are sorry to record. The task of extracting the essence from many past logs and maps will now fall upon the G.C., so it may be some time before any results can be published.

4B.—BRS209 has been away on holiday so there is no report from Malta this month.

4C.—This group reports active, and the usual list of thunderstorms for the month of September is recorded. Generally, it is found that the presence of a storm at a distance of about 100 miles will cause shortened skip.

4D.—Reports from the G.C., G5OQ, G6HA, 2AIG, BRS1503, all give good confirmation of the Isobar theory, especially on 7 mcs.

This group is also keeping an eye on the moon, but at present no secrets have been discovered! The G.C., however, quotes from Stetson's new book, "Earth, Radio and the Stars," which suggests that there may be a tidal effect on the earth's atmosphere amounting to ± 0.01 mm. of mercury. It is further suggested, based on the average result of many observations, that the HL may be raised when the moon is at an hour angle of 12 hours from the meridian of observation. The group is following up these points.

4E.—This group is now under way, but as yet have no news to report.

4F.—This group also has nothing to report.

Several reports have been received from R.E.S.I. members. BRS46 says: "My theory of full moon bringing best reception has been borne out during 10 years' reception on W2XAD."

BRS1325 writes from Farr, Inverness: "This part of the world is well known for its bad radio conditions, but as yet I cannot satisfactorily account for this. Where my receiver is located is outwardly no worse with regard to mountains, but an infinitely less strong signal is received on a much more sensitive receiver."

BRS1340 is also following the moon theories, and reports that ZL's come in better in early mornings in the last quarter.

G6YL writes with reference to ZT1Q's QSO with U9AF, reported in September BULLETIN: "What interests me is the fact that the two days he worked Siberia so unexpectedly were the days when earthquakes took place, as follows:—July 19, Vesuvius in eruption. Also an earthquake of considerable severity in British Solomon Isles, and tremors of less violence throughout the day. Also severe shocks in Panama, and severe shocks registered at Wellington (N.Z.) lasting for three hours, epicentre 2,100 miles away.

July 22.—Another quake in Panama. Two minor tremors in Simla, India. Shock of moderate

intensity recorded on Calcutta seismograph, epicentre in Southern Afghanistan. I have no records of quakes on July 23, when the QSO was unsatisfactory."

G2GB reports working UIBC and WIDHE within half-an-hour on October 6 on 14 mc. under conditions rather supporting the Isobar theory. The time was between 18.00 and 18.30 G.M.T.

G2GD.

Television Group (No. 5).

G5ZT reports this month that he is receiving excellent results from BBC, using a Ferranti Lancastria model driving a disc machine, which is entirely of his own construction, except for the neon, which is a Nu-glo lamp. He states that the method of coupling the neon, with this particular receiver, is to take the neon from the blue L.S. lead, with the other side to earth. With this system, it enables him to listen to the vision signals and then merely switch off the loudspeaker, so that any time he wishes to make adjustments, he can switch on the speaker, and, even then, see vision along with vision sound. G5ZT has tried many commercial types of receivers, but finds that the Ferranti brings in the best and steadiest signals.

2AUN reports very little work has been done during the summer, owing to QRN on the London National. He is at present rebuilding his disc receiver, using the new "TI" lamp, in order to carry out experiments with screen projection. The previous arrangement was an ordinary bee-hive type neon enclosed in a close-fitting circular tin, with an aperture cut in the side and lined with fine-grained tissue paper, which removed all traces of the bee-hive lines. 2AUN proposes to use a separate valve for synchronisation, with a 375 cycle-peaked transformer.

The receiver employed is a Phillips 636A, which is fitted with A.V.C., and can be relied upon to give a steady picture throughout the programme. 2AUN hopes to give a report on the new "TI" lamp next month. (Many thanks, OM, GM.)

BRS1482 is at present using a Baird disc with a flat plate neon; this is driven by a Ferranti super-het, and quite good pictures are received, the signal being strong enough to give good definition and to keep the pictures in synchronisation. A Mirror drum receiver is at present being constructed using a Mervyn drum driven by a Baird motor, the illumination being 12 volt 100 watt modulated by a Kerr cell. This gives a picture 9 in. by 4 in., but BRS1482 finds it advisable to use tissue paper for a screen in place of the usual glass type. The receiver for the Mirror drum outfit consists of 3 stages of H.F., a diode detector, the signal being fed into a 3-valve amplifier with a DO24 output valve, the signal also being taken through a 375-peaked transformer to another DO24 for synchronisation. BRS1482 reports that the mirror screw receiver is not very satisfactory and is giving up further experiments with this form of receiver.

G5JZ is still using the disc type of receiver, with excellent results, the extended shots having a wealth of detail, and almost as good as the close-ups, the outfit at G5JZ is entirely battery fed, using 240 volts of wet H.T. The receiver is H.F., anode-bend detector and 2 L.F., the last valve being a LS5; manual synchronisation is at

present used, but in the near future tests are being made with various makes of synchronizing gear.

G2AO has constructed a 10-metre transmitter for use of television, and tests will shortly be made between him and G5JZ on this new band; the transmitter is a CO FD FD PA, and uses choke modulation.

BRS1472 is now using an Eddystone Kilodyne 4 for reception and reports receiving excellent pictures using this receiver.

G5JZ.

28 MC. Group (No. 11).

I am afraid there is very little to report from the 28 mc. groups, as a little difficulty is being experienced in getting them working satisfactorily.

G6ZV has sent in a report which states that he proposes to use a T.P.T.G. neutralised PA, using a split-stator condenser in the plate tank circuit and to use link coupling between the grid tank and the previous stage. The valve is to be a Mullard T61D. Further details regarding results of tests will be published at a later date. He has been testing a S.G. valve as detector, but finds it rather noisy and microphonic on "ten," although the same valve is suitable using 14 mc. Further tests are to be made using different types of S.G. valves. G6ZV is trying to interest other Glasgow members in 28 mc. work. I am of the opinion that most local work could be accomplished on 28 mc., much of which is now being done on 56 mc.; this, besides giving satisfaction locally, would greatly increase the chances of discovering the possibilities of long-distance work. G5FV would be most pleased to hear from any group of amateurs who intend promoting 28 mc. local work.

In response to last month's notice regarding schedules, I have received a letter from G2YL stating she has a Sunday schedule starting on November 11, and is also willing to fix other schedules with interested amateurs in any part of the world; the times of the above schedule are given at the end of the notes. Miss Corry also gives details of her transmitter and receiver, which during the past season enabled 28 QSO's in six countries to be effected. G2YL states she is more interested in the propagation characteristics of the band than in transmitter and receiver design, and adds: "From my own experience I have found that almost any old 'hook-up' of receiver and transmitter will get you results under good conditions, whereas with bad conditions results will be nil, whatever you do to your gear." This statement seems to have been borne out in practice during the last two years, as the results obtained at the group Manager's station in 1934, using a 100 watt C.C. outfit, were much inferior to those obtained in 1933 with a low-powered self-excited transmitter. I am quite certain, however, that much design work can be done in the way of stability and coupling in a C.C. transmitter, and there are also a whole host of receiver troubles that can be investigated.

It was most pleasing to see the splendid article in the October BULLETIN by G2FN, describing his recent work on 28 mc. From the results he quotes and also those given by others in the South, conditions were much better there than those ex-

(Continued on page 198.)

REMOTE CONTROL.

By W. S. TURPIN (G6YT).

A FEW weeks ago the writer was led to investigate remote control because of the difficulty of working "break in" due to the proximity of the transmitter and receiver, and it was thought that readers of the BULLETIN might like to try out this system of control for themselves.

The most important items are the relays: one for keying and one for switching on the supply mains to the H.T. and L.T. transformers. If valve rectifiers are used for the plate supply it will be necessary to run their filaments from a separate transformer so that the filaments may be left alight throughout the QSO. The relays used at the writer's station are both made up from various odds and ends from the junk box at a cost of a few pence each. The construction of the relays is clear from the diagram. The magnets were taken off an old electric bell indicator board and were found to work very well when excited from a 2-volt accumulator. The armature consists of a 5-inch "Meccano" strip, fixed at one end and carrying a contact, which is merely a 4B.A. brass bolt secured by a nut to the

formers, and normally it breaks about 1-2 amp., the gap at its contacts being $\frac{1}{4}$ in.

At this station the three wires to the key and switch are about 50 ft. long and the cable was made from twin bell wire (18 SWG) with a single strand of 18 SWG DCC twisted round it for the third wire. Both relays are energised from a single 40 amp. hour accumulator, and this usually lasts about a month per charge.

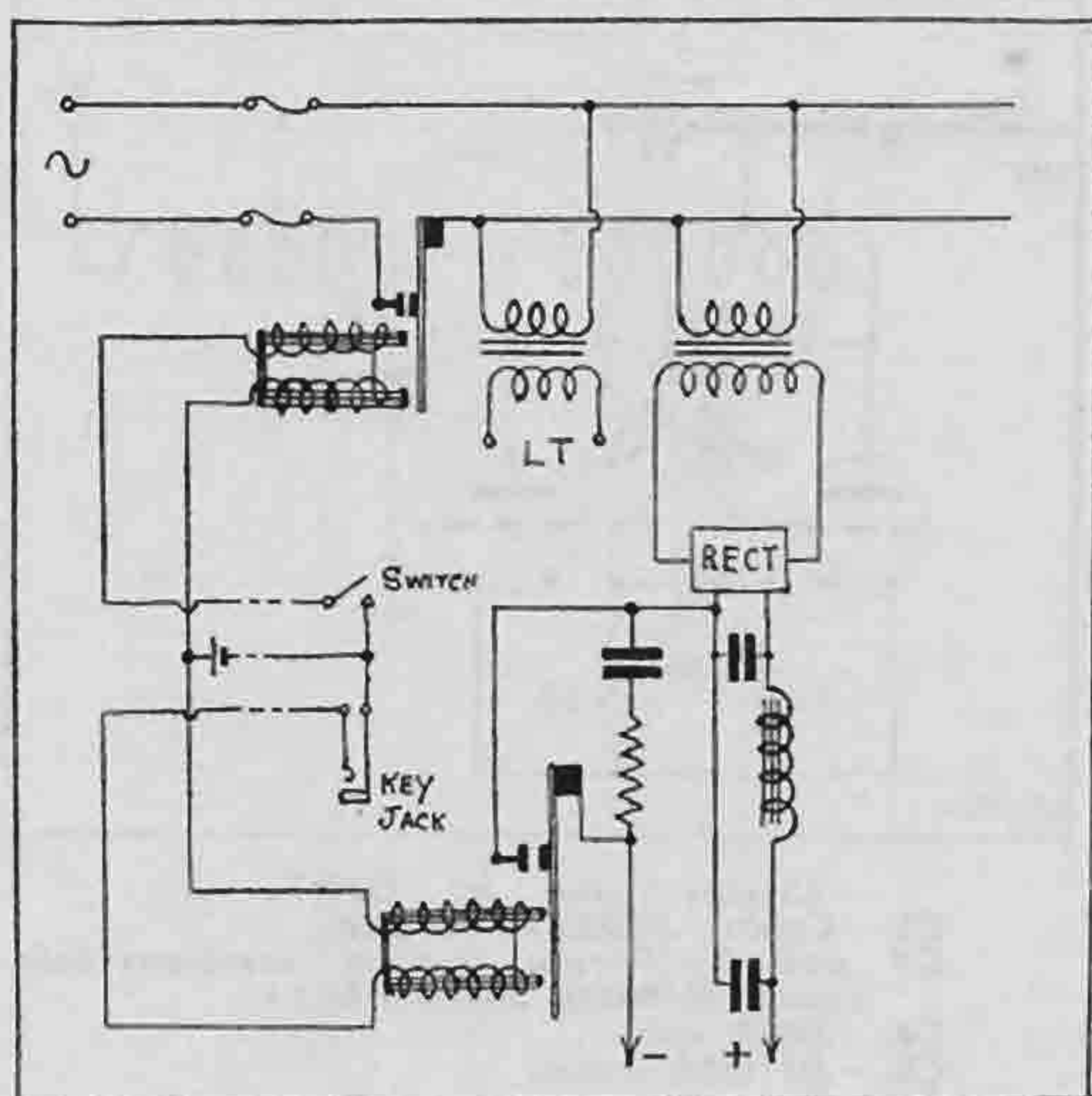
In operation the *rectifier* filaments are left switched on ready for instant operation, and the plate and filament supplies to the transmitter are switched on as required by closing the switch S, which in turn closes the mains relay. Keying is then carried out by connecting the key across the two leads from the keying relay.

In conclusion, it may be said that keying has been reported perfect at speeds up to 20 w.p.m. and that the ease and pleasure of "break in" working have amply justified the time spent in making and adjusting the relay system, and it is hoped that others will try remote control for easy and reliable "break in" work.

APROPOS AERIALS.

By N. P. SPOONER (G2NS).

FROM time to time, the ground in connection with various types of aerials has been well and ably covered in the BULL. Having occupied progressive altitudes ranging from the domestic clothesprop up to the chimney-pots, my antenna



armature. The fixed contact is another bolt mounted through a telephone type terminal. As a refinement the bolt heads may be faced with silver, but this has not yet been necessary in the original relays, probably because a spark filter is used across the keying relay which prevents the contacts becoming burned. The two relays are both of the same type and are very effective for keying and switching a low-power transmitter, but with powers above 50 watts a larger type will be necessary. (See G6LI's article in July, 1932, BULLETIN.) The click or spark filter across the keying relay consists of a 2 mfd. condenser in series with a 5,000-ohm resistance, and with this arrangement no spark is visible when keying 40 m/a. in the H.T. negative lead. The mains relay has its contacts in series with the mains lead to the plate and filament trans-



is now busily welcoming incoming signals at a height of 41 ft. (I purposely refrain from using such descriptions as "radiating" or "oscillating.") By purchasing the "Handbook," Tenth Edition, from Headquarters (price 4s. 6d., non-members 5s.), one can precipitate a "Nine Days' Wonder" upon the immediate neighbourhood. I can assure readers that this mast is moderately cheap and extremely easy to erect, a two-man job and no digging. For guy-wire I bought a covered, stranded wire from Messrs. David Green, of Lytham, that works out at about 9s. per half-mile. Contrary to instructions I only put in one egg insulator in each guy and two cross-pieces in the bottom section of mast, instead of three. The easiest work was the actual "walking up" of the masts in turn, there being two pegs driven into the ground to stop the bases from sliding forward. Not having sufficient room to erect one of the masts in position, this was "walked up" and then carried in the upright position to the spot it was to occupy, a far easier matter than it sounds. Once in position, one hand was sufficient just to steady each mast in turn, as the "helper" tightened the guy-wires round pegs driven in where needed.

Catching Them Young

By G. EDWARDS (G2UX).

ON several occasions it has been suggested that amateurs should try to help scouts or similar bodies of young boys with a view to creating an interest in short-wave radio.

It is thought that the following brief account of a little work done by a member with boys between the ages of 11 and 14 years may be of interest.

An L.C.C. senior boys' school in South London recently held an "Exhibition of Work" to which parents and officials were invited, which included among other scientific exhibits a 14 mc. telephony transmitter and receiver. All the parts, with the exception of valves, batteries and telephones were made from scrap material and assembled by the boys. The favourite condenser dielectric was celluloid from an old motor-cycle windscreen!



The transmitter was as simple as possible, and used the Hartley circuit with grid modulation, the microphone transformer being a home-made shocking coil with the contact breaker screwed up!

The receiver was a conventional Reinartz using solid dielectric variable condensers with extension handles.

The photograph gives an idea of the sets and the "junior operators"!

Although it is not claimed that the boys who constructed the sets have a very extensive knowledge of radio, there is no doubt that interest and enthusiasm is being created.

The demonstration was very successful, the boys taking delight in showing father "how it works"! As for the quality of the transmissions, although comparisons are odious, one quite eminent visitor, after listening to a discourse on "The Steam Engine," inquired if we had tuned into a "B.B.C. Broadcast to Schools"!

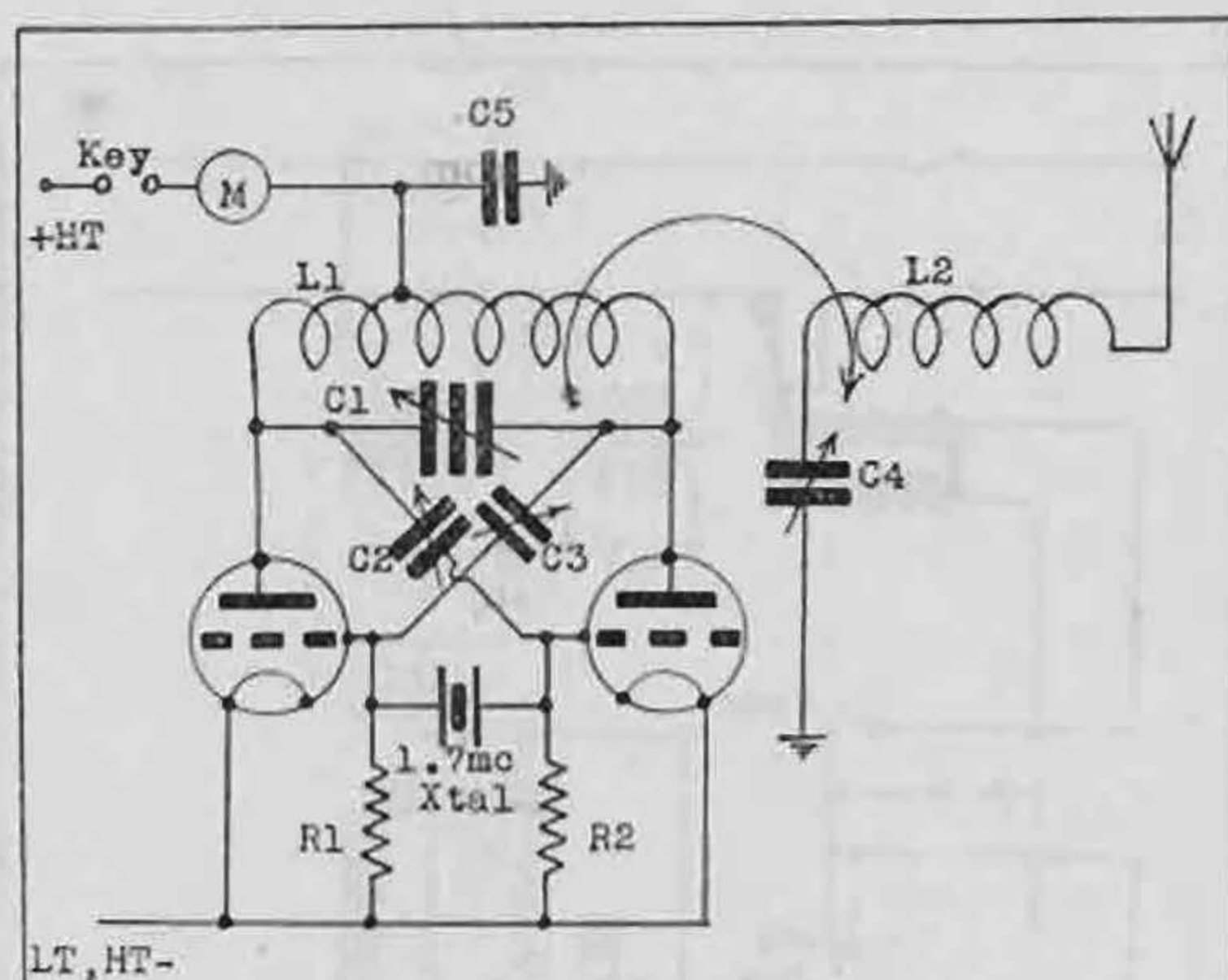
Unorthodox Low Power Crystal Control

By J. R. WILSON, G2XT.

WHEN going on holiday recently the writer decided to take with him a 1.7 mc. portable transmitter, but was undecided as to the best means of obtaining frequency stability.

The circuit finally selected was the double series fed Hartley type using an H.T. supply of 100 volts and valves of the 2 volt receiving class.

After some tests the arrangement shown in the diagram was evolved, frequency control being obtained by connecting a 1.7 mc. crystal between the grids of the two valves.



Circuit used by G2XT.

- C1.—Cyldon .00025 series gap.
- C2 and 3.—Formo pre-set semi-variable (max. capacity .0003 mfd.).
- C4.—.0005 mfd.
- C5.—.01 mfd. mica.
- L1.—30 turns.
- L2.—26 turns.
- R1 and 2.—40,000 ohms.

With the tank coil tuned to the crystal frequency the output for a given input was decidedly better than that obtained from a self-excited circuit and on test good reports were received up to 30 miles. G2LD at this distance reported signals QSA 5 R6 T9, whilst G5QY at 25 miles gave a similar report, the input then being under one watt. In later tests with G5QY the H.T. was reduced to 35 volts (0.2 watts) and a QSA 5 R5 report received.

The aerial used was an old B.C.L. affair of many years' standing.

A 60 ma. fuse bulb in series with the antenna served as a useful current indicator and lit brightly when the input was around one watt.

Incidentally the double series fed Hartley has been found very satisfactory for 56 mc. work.

CORRESPONDENCE

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

Editorial Note.

The letter which follows makes history, being the first, to our knowledge, to have been sent from New Zealand to Great Britain via amateur radio.

It will be remembered that last year the originator of this letter, Mr. Gav Samson (ZL4AI) successfully transmitted to Mr. J. Hunter (G2ZQ) a description of his station, and also an article dealing with Electron-Coupled Oscillators. Mr. Samson's collaborator on this occasion was Mr. H. A. M. Whyte (G6WY).

We foreshadow that within a few years it will be possible to publish technical articles in this journal written only a few days earlier by our members in the most distant parts of the world.

We congratulate Mr. Samson and Mr. Whyte for their present achievement.

We are inclined to agree with Mr. Samson that we have chosen the wrong year for the International 28 mc. Contest, judging by the almost negligible amount of activity so far recorded. We intend, however, to continue the contest in the hope that improved conditions will occur between now and next September.

THE FUTURE OF 28 MC. OPERATION.

The Editor, T. & R. BULLETIN.

DEAR SIR,—May I be permitted to use a little of your valuable space in order to discuss the present day prospects of successful international 28 mc. work?

It may be easily shown that there is a definite maximum frequency at which there is sufficient refraction by the Heavyside layer (or layers) to return the wave to earth. This maximum frequency varies with the height and the ionisation, as density of the layer. Lately 28 mc. has previously been above this maximum value.

Before resuming intensive experiments on this frequency, it is, therefore, desirable that experimenters should endeavour to obtain some idea of the existing (and expected) Heavyside conditions.

Now our best chance of examining the state of the layer is by carefully studying the conditions of the 14 mc. band; if the layer is at such a height and density that conditions on 14 mc. are poor, then obviously it is useless to attempt work on 28 mc.

Considering previous investigations, we find that 1928 was the only successful year for 28 mc. work (see N.Z. Notes for October). Now 1929 was the height of the 14 mc. boom in New Zealand. We have very little information about conditions on 14 mc. in 1926, 1927, and 1928, as the 32 meter band robbed 14 mc. of a great deal of interest, but in 1925 good 14 mc. work was done, and it seems as though the band reached its peak somewhere about 1927 or 1928; 1930 was also quite good, but 1931 was poor, 1932 was worse, and 1933 very little better.

On top of this we find that the 7 mc. band has been quite good, with minimum values about 1932, but in 1932 quite a number of European and North American 3.5 mc. stations were heard and worked in New Zealand, showing that about that time the layer was at its most suitable height and density for the lower frequencies. Since 1932 we find that DX up to 3.5 mc. has become steadily worse, but

7 mc. has shown a steady improvement, and 14 mc. shows distinct promise.

It certainly looks as though we passed through the peak of the cycle somewhere around 1932.

Of course, the 28 mc. contacts made in 1928 may have been due to freak layer conditions owing to electrical disturbance, but if we assume that at that time normal layer conditions prevailed, we may also assume that 28 mc. work will not be successful until 14 mc. regains its previous glory.

As we have not examined these frequencies over a full cycle of 11 years, it is rather difficult to forecast when 28 mc. will be useful, but assuming 28 mc. conditions were satisfactory in late 1928, and in 1932 there were peaks in 3.5 mc. conditions, then late 1935 or early 1936 should again be satisfactory for 28 mc. operation. If this happens, then I think we may expect three years of useful 28 mc. operation, with the rather remote possibility that in late 1937 or early 1938, long distance 56 mc. contacts may be made. In support of this, in 1926, if I remember correctly, fairly long distance 56 mc. contacts were made with the rather crude apparatus available at that time, and from 1926 to 1937 we get our 11 cycle year.

While congratulating the R.S.G.B. Council on their initiative in holding a 28 mc. contest, I feel convinced that there would be more chance of success if it were postponed for at least a year.

(For the benefit of readers interested in the theory of wave propagation, I would like to state that in the foregoing discussion, I have considered that only very low angle radiation will be satisfactory on 28 mc., and that the layer does not come into the discussion except in so far as it raises the apparent height of the F layer. This means that for a tangent ray to return to earth, a greater amount of refraction must take place in the F layer than would be necessary if the E layer was not present.)

Yours sincerely,

G. G. SAMSON, B.E. (ZL4AI).

Copied from ZL4AI by G6WY, October 18 and 19, 1934.

BON VOYAGE!

The Editor, T. & R. BULLETIN.

DEAR SIR,—I am due to sail for India on November 13, 1934, and I should be grateful if you would allow me, through the medium of the BULLETIN, to inform all members that my home station, G6HB, was closed down as from November 1.

I hope to have my other station, VU2FP, in Dacca, Bengal, India, on the air by Christmas, with an input of 300-400 watts (postal authorities permitting!).

I should like to convey my thanks to all who have contributed to an exceedingly pleasant leave, and for the hospitality that has been extended to me at conventions, meetings, and "Over the Air."

Yours faithfully,

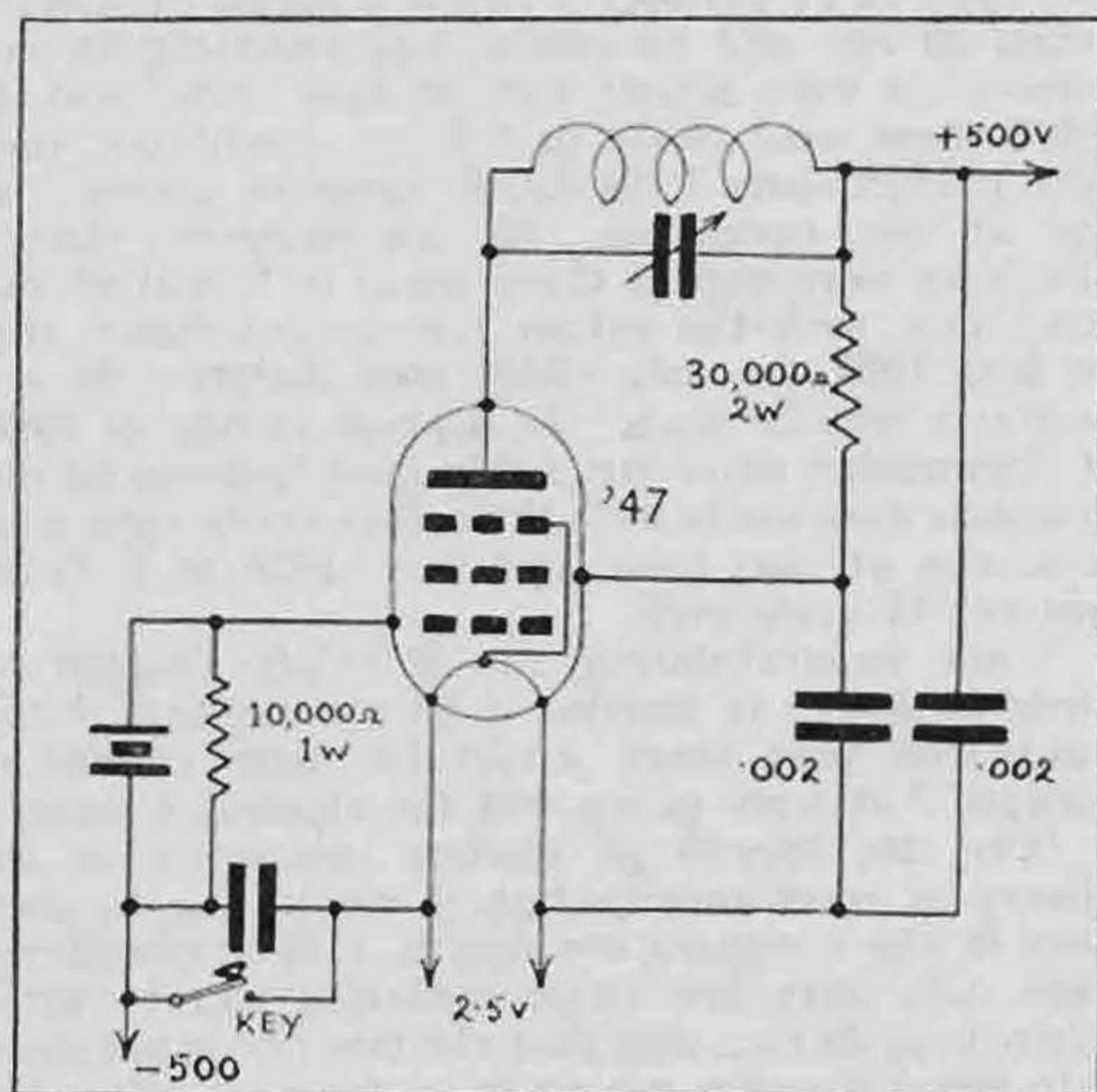
T. H. BEAUMONT

(G6HB, VU2FP).

MORE ABOUT THE PENTODE PORTABLE

The Editor, T. & R. BULLETIN.

DEAR SIR,—Following the publication of a description of my pentode portable transmitter in a recent number of the BULLETIN, Mr. Julio Prieto (X1AA) (President of the L.M.R.E.) has kindly sent me copies of articles which he has published in *Onda Corta* describing some very similar experiments. The single-valve C.C. transmitter evolved by X1AA has been christened "The Microbe," partly on account of its small size and partly since it infects other amateurs with such a desire to build similar apparatus that it has been identified with the germ of the "Radiomania Disease"!



The circuit used by Mr. Prieto is somewhat different from my own, and I am therefore reproducing it here for the benefit of members who are interested. A type '47 valve, with an input not exceeding 27 watts at 500 volts, is recommended, and on field days excellent results have been obtained with a type '33 handling 25 ma. at 250 volts.

Another important observation made by X1AA is that X-cut crystals give more clear-cut signals than those which have been Y-cut when used with this form of keyed oscillator.

It seems that a number of these "Microbes" have been made up by Mexican amateurs, and are giving excellent results; one of them spanned the Pacific on its first test!

Yours faithfully,

R. A. FEREDAY (G6FY, PAOFY).

The Hague.

THE NEUTRALISED T.P.T.G. AMPLIFIER

The Editor, T. & R. BULLETIN.

DEAR SIR,—With reference to his article "The Neutralised Tuned Plate Tuned Grid Amplifier" in the September issue, it may interest Mr. Auchterlonie (G6OM) to know that I described this circuit in an article entitled "The Design and Construction

of a Crystal Controlled Transmitter," appearing in the T. & R. BULLETIN for July, 1931.

I can thoroughly recommend inductive coupling, there being no doubt that this method gives greater efficiency than the more usual capacitive coupling.

Yours faithfully,

D. W. HEIGHTMAN

(G6DH).

The Editor, T. & R. BULLETIN.

DEAR SIR,—As the time at my disposal for devoting to amateur radio is extremely limited, I now feel compelled to discontinue the confirmation of reports from all non-transmitting stations in the British Isles and Western Europe.

The amount of time involved in checking these reports and issuing confirmation cards, not to mention the cost of such cards and the postage thereon, is quite considerable, when it is realised that for every QSO effected, a matter of between ten and twenty-five cards are received.

However, should there be any listeners who are extremely desirous of obtaining a card from my station, they may have one by enclosing with their request an International Postage Coupon. It will be useless sending stamps, as these cannot be exchanged locally.

In conclusion, I wish to make it quite clear that this *does NOT apply to stations with whom I have actually made contact*, or to B.E.R.S. and other listeners located in remote parts of the world. Any such reports are always very welcome, and will receive prompt attention.

Thanking you for the space,

73,

THOS. A. ARCHER (VP6YB).

"Craigston," Aquatic Gardens,
Barbados, B.W.I.,

C.W. v. Telephony.

Several members have taken up the defence of C.W. in reply to "Modulated Wave's" letter, which appeared in the September issue. Space limitations prevent their publication this month.

Strays.

Mr. E. A. Mackay (G6AM) advises us that an unauthorised person is using his call for telephony transmissions.

* * *

The QRA of PK3LC was given incorrectly in a recent issue, this should be:

Mr. C. A. Le Cotey Taloon 1 Lawang, East Java, D.E. Indies.

* * *

G6WY reports working VE5JC, of Vancouver, on 7 mc. during October. He is anxious to know whether this is the first 7 mc. contact with the Canadian 5th District.

His signals were reported QSA 4 R4.

* * *

Mr. J. N. Walker (G5JU), of Bristol, transmits on 28 and 56 mc. during each appropriate Reception Test period. He will be pleased to receive reports from members who hear his signals.

R.S.G.B. CONTESTS, 1934-5.

DATES.

The dates for future Contests are as follows:

The 3.5 mc. Transmitting Contest, November 24 and 25, 1934.

The 1.7 mc. Transmitting Contest, January 12 and 13, 1935.

The Low Power Contest, March 30 and 31.

GENERAL RULES FOR ALL CONTESTS.

1. Entrants must be fully paid-up members of the Society, and be resident within the British Isles.
2. The British Isles for the purposes of all contests includes England, Scotland, Wales, Northern Ireland, the Irish Free State, and the Channel Islands.
3. Contests commence at 15.00 G.M.T. Saturdays, and conclude at 22.00 G.M.T. Sundays.
4. Entries will only be accepted on official log sheets, which can be obtained free of charge from Headquarters prior to the commencement of each specific contest. Entry forms must be returned within 14 days of the conclusion of each contest.
5. Entry forms, unless completely filled in, will be disqualified.
6. The declaration at the foot of the entry form must be signed by the operator.
7. Proof of contact or reception may be required.
8. Contacts with or calls from ship or unlicensed stations will not be permitted to count for points.
9. Only one person will be permitted to operate a specific station during any one contest.
10. Leading stations will be granted certificates of merit, whilst trophies may be awarded at the discretion of Council.
11. Council have the right to amend or alter the rules at any time prior to the commencement of a specific contest, and their decision will be final in all cases of dispute.

RULES FOR TRANSMITTING CONTESTS.

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

METHOD OF SCORING FOR THE 3.5 MC. TRANSMITTING CONTEST.

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

METHOD OF SCORING FOR THE 1.7 MC. TRANSMITTING CONTEST.

1. No points may be scored for contact with stations under 20 miles distant.
2. One point will be scored for other Inter-

British Isle and European contacts, and five points for contacts outside Europe.

3. The input to the final amplifier must not exceed 10 watts, nor may this figure be exceeded on any previous stage.

METHOD OF SCORING FOR THE LOW-POWER TRANSMITTING CONTEST.

1. One point will be scored for each British Isles contact providing the station worked is more than 50 miles distant. Two points will be scored for contacts with Europe, three for Northern Africa (North of 20° Lat.), four for Asia, five for South Africa, and Eastern America, and ten for Oceania, Central, Southern, and Western America.
2. Any licensed amateur frequency may be used.
3. The high tension voltage applied to any stage shall not exceed 120 volts, which shall be obtained from dry batteries or accumulators only. Push pull arrangements will be permitted.

RULES FOR THE RECEPTION CONTEST.

1. This contest will take place during the periods specified for the 3.5 and 1.7 mc. transmitting contests.
 2. The same station may be logged only once during each of the two transmitting contests.
 3. No points may be claimed for test or CQ calls heard.
 4. During the 3.5 mc. contest, one point will be scored for stations heard in Europe and outside the British Isles, two for Africa, three for Asia, four for America, and five for Oceania. The total points so obtained will be multiplied by the number of countries heard during each section of the contest, each American and Canadian District ranking as a separate country.
 5. During the 1.7 mc. contest, one point will be scored for each station heard more than 20 miles distant, and five points will be scored for stations heard outside Europe.
 6. Points can only be claimed in the 3.5 mc. contest for overseas stations heard in contact with the British Isles.
 7. In both contests the report (QSA, QRK, and Tone) given by the distant station must be logged together with the QSA, QRK and Tone of the distant station.
- Note.*—It will not be necessary to log signals from the British station which is being worked.

Miles per Watt.

Mr. F. Mayer (G2LZ) has forwarded some interesting historical data regarding a QSO he had with ZL3AL in July, 1925.

Commencing with an input of 14 watts, power was reduced at the New Zealand end to 2½ watts, and signals were still readable. A record of this interesting work appeared in *Popular Wireless* dated December 12, 1925.

Remembering that such aids to listening as single-signal superhets were not available then, this achievement is an outstanding example of what could be done with ultra-low power in "the old days." The wave used was 43 metres.

HIC ET UBIQUE.

Meetings—Contests—Calibration—Q.S.L. & Q.R.A. Sections— Slow Morse—Reception Tests.

I.E.E. Meetings.

The November meeting, to be held on Friday, November 23, will take the form of a discussion on Microphones and Microphone Amplifiers, to be opened by Mr. H. A. M. Clark (G6OT). Tea will be served from 5.30 p.m.

The annual general meeting will take place at 6 p.m. on December 28, following which Mr. J. L. Howard, of the G.P.O. Research Section, will lecture on the subject of "The Properties of Wireless Aerials."

The Institution of Electrical Engineers.

Visitors to the I.E.E. Building are warned that the Police will not permit parking in the streets adjacent to the building. Cars are only allowed to remain outside the building for a sufficient length of time (usually not more than 20 minutes) to permit of the setting down and picking up of passengers.

B.E.R.U. Contests, 1935

Considerable thought has been given to the rules governing the fifth Annual B.E.R.U. Contest, to be held in February.

The rules and entry form appear as a supplement to this issue. Additional copies may be obtained from R.S.G.B. Headquarters, or from B.E.R.U. Representatives.

The main points of difference between the 1934 rules and those for this contest are as follows:

(a) The transmitting contests will take place on alternate week-ends.

(b) The receiving contest will take place during the first week-end of both transmitting contests.

(c) The contests will run from 17.00 G.M.T. Saturdays to 17.00 G.M.T. Sundays.

(d) Power has been limited to 250 watts in the Senior Transmitting Contest.

(e) One point will be scored for each contact with a station in another zone.

(f) Thirty prefix zones have been recognised, and the total points scored will be multiplied by the number of these zones worked on both 7 and 14 mc.

(g) Entry forms, unless completely filled in, with all necessary details, will be disqualified.

The hours of operation have been reduced in order to overcome the fatigue which has followed previous contests when 48-hour periods were specified.

The commencing and closing hours, 1700 G.M.T., have been selected as being the most equitable for the Empire as a whole.

Competitors are particularly requested to note that their score can be multiplied by the total

zones worked on both 7 and 14 mc. As an example, if a competitor works 10 stations in five zones on 7 mc., he can work the same 10 stations in the same zones on 14 mc., thus giving him a multiplier of 10, and a total of 200 points for 20 contacts in 10 zones. No additional multiplier can be used for contacts on 3.5 or 28 mc.

In framing these rules, the Council have endeavoured to meet the wishes of the majority of members who have expressed views, and it is hoped that they will continue in force for at least the next two years.

Members who are in doubt about any point are requested to communicate with Headquarters as early as possible, and in no case later than December 31.

Reception Contest

Although only seven non-transmitting members have expressed a desire for a reception contest, the Awards Committee have decided to organise the event. The rules appear on page 181. The hope is expressed that greater interest will be shown than written evidence so far indicates.

The International 28 MC. Contest

Reports so far to hand indicate an almost complete absence of activity on the 28 mc. band, although several strong 14 mc. harmonics have been heard, including U1BW, at consistent strength every Sunday during October.

G2HG, the originator of the contest, heard G6CL calling G6LI on schedule, but no contact could be established by G6CL with either station. G2TD, of Ilford, has been heard on several occasions when working on 14 mc., as have more local 7 and 14 mc. stations.

Besides the reception of G6CL (fundamental) and U1BW (harmonic) mentioned above G2HG reports having heard no fewer than 32 other G's, all of whom were working on 7 or 14 mc. GOS was heard at 21.15 G.M.T. and CUC and EAM about 22.00 G.M.T. on October 25. HAF8D was the only other amateur call heard, and that on October 21.

All reports of interesting contacts should be forwarded to headquarters in order that a monthly précis may be prepared for the benefit of members taking part in the contest.

A Polish DX Contest

The L.K.K. of Poland advise us that a DX Contest has been arranged to take place during the period 00.01 G.M.T., December 2, to 24.00 G.M.T., December 16.

Polish stations will transmit control groups consisting of one cipher and four characters, and

the station worked will be required to enter this control group on his QSL card. If the station worked omits to QSL, the SP amateur loses credit for the QSO. QSL's will be accepted up to May 31, 1935. R.S.G.B. members should forward their cards direct to Headquarters, who will, as usual, undertake to forward them to L.K.K.

One point will be scored for European contacts except those with Portugal, Ireland and Malta, when two points will be allowed.

For 28 mc. contacts the points per QSO will be multiplied by 4, e.g., an SP-G contact normally counts 1 point, but if made on 28 mc., 4 points.

The leading station in each foreign country will be awarded a diploma, whilst the three leading foreign amateurs in the world will receive a special diploma and a free subscription to the L.K.K. Journal, *Krothofalowiec Polski*!

In the last contest Lieut. E. S. Cole (SU1EC) won first place with 45 points, second place was

CALIBRATION SECTION FEES.

CRYSTALS, 1s. 6d. each; FREQUENCY METERS, 2s. 6d. for five points, plus 6d. for each additional point. These prices do not cover cost of return postage, which must in all cases be remitted as a separate amount.

Crystals and frequency meters should be sent for calibration, at owner's risk, to Mr. A. D. Gay, 49, Thornlaw Road, West Norwood, London, S.E.27.

won by EI5F with 28 points, and third place by SU1CH with 27 points. G6HC won the British award with 16 points. The leading Polish stations were SP1AR (26,100 points), SP1DN (4,928 points), SP1ED (4,104 points).

Two Midland Successes.

We recently had the pleasure of confirming W.B.E. telephony awards for Messrs. George Brown (G5BJ) and Jack Owner (G6XQ), both of Birmingham.

Mr. Brown has also qualified for a W.A.C. telephony award. Mr. Owner already holds this certificate.

Mr. Brown's QSO's were with W2DC (R7/8), HC1FG (R6), ZC6CN (R5/6), VE1EA (R8/9), ZL4FK (R6), ZD2A (R4), and G6DL (R7), whilst Mr. Owner's final QSO to obtain his W.B.E. was with VK5DL (R7). The latter contact was confirmed by G5BJ.

Philatelists.

A suggestion has been made that a Philatelic Section should be started for the benefit of the many members interested in this hobby. The

object of such a section would be to enable members to exchange their duplicate stamps.

Those interested are invited to communicate with the secretary, who is an enthusiastic collector.

R.E.S. Single-Signal Battery Super-heterodyne

Erratum, Fig. 1, page 52, August, 1934.

R3 across C16—should be 1 megohm.

C15 on L4 should be connected between L4 and join of C2, C3, and lead to R2 taken from coil side of C15.



Having been snowed under with enquiries as to "What's the joke," we have told our vulgar, meaning common, contributor to curb his diseased brain and to produce something comprehensible to the majority of our readers. He has descended to the level of the most expensive Christmas annuals.

Calibration Section.

Manager: A. D. GAY (G6NF).

In response to our request for reports on the reception of calibration signals emitted by G6NF, one postcard has been received. The arrangements necessary for these transmissions have to be brought into operation an hour before they commence, which means that a period from 8.30 a.m. on Sunday morning until 10 a.m. is devoted to the interests of one member, which hardly seems justified. Whether these transmissions shall continue or not is under careful consideration.

The calibration of members' crystals, both from B.R.S. and fully-licensed members, is a facility

which is made good use of, and it seems that many transmitters are becoming interested in knowing, within close limits, the frequencies of their crystals. Crystal registers make this a matter of some importance.

With reference to the announcement which appeared in the September issue regarding the N.P.L. standard frequency transmissions made on the second Tuesday in each month, we are advised that in future the carrier frequency will be 396 kc. (750 metres) and not 360 kc. (830 metres), as announced.

Apart from the Section's routine work of maintaining an accurate frequency standard, calibrating and checking members' apparatus, making out and issuing certificates, we find ourselves engaged in considerable technical correspondence.

While we are always very pleased to hear from members on any subject in connection with frequency measurement and control, it ensures an early reply if a stamped addressed envelope is enclosed. One of our frequent correspondents is very thoughtful in this respect: he makes out a list of the questions to be replied to, leaving blank spaces under each of the questions for replies.

QSL Section.

Manager: J. D. CHISHOLM (G2CX).

For the convenience of our Overseas members, we propose this month to outline the service that is provided for them by the QSL Section, and hope that we shall be able to make the position clear to those who are not at present aware of the extent to which they can use the Section.

Financial members of R.S.G.B. or B.E.R.U. may send their cards for any destination to the QSL Section, so that, if they prefer, they can use R.S.G.B. instead of their own National Society for distributing cards. This has the advantage that in many cases a quicker circulation is possible than if the cards are sent invariably through the section of the country concerned.

An example will make this clear. An Australian member who is in the habit of sending all his cards to W.I.A. could effect a considerable saving of time if he were to forward all his cards addressed to European amateurs direct to R.S.G.B. The loss of time due to posting to Sydney could be cut out.

We do not wish it to be thought that we are poaching on the preserves of the other QSL agencies, but, as our Overseas members have this right, and it does not seem to be exercised to any extent, we think it as well to point out the fact.

There are many cases, of course, where it would not pay an Australian amateur to send to us, as obviously, a card for ZL is bound to reach New Zealand quicker *via* W.I.A. than *via* R.S.G.B., but for places considerably nearer England than Australia, it appears that he could obtain an advantage by posting to H.Q. here.

It will be remembered that according to the rules, we are not able to despatch cards direct to an Overseas member in his own envelopes, as this involves more extra work than the Section can cope with.

QRA Section.

Manager: M. W. PILPEL (G6PP).

NEW QRA's.

- G2CT.—R. W. PEEL, 132, Robin Hood Chase, Woodborough Road, Nottingham.
 G2FS.—L. K. WINSOR, 75, Belmont Hill, London, S.E.13.
 G2IN.—W. JOHNSON, 6, Denmark Road, Southport, Lancashire.
 G2KP.—G. RAEBURN, Sunnybank, Portsoy, Scotland.
 G2QD.—W. S. BOGLE, 23, South Parade, Chelsea, London, S.W.3.
 G12SP.—R. A. SPROULE, 14, Wellesley Avenue, Belfast, Northern Ireland.
 G2VA.—E. J. A. VAUGHAN, Holmes Place Farm Cottage, Half Way, Sheerness, Kent.
 G2VY.—W. BURGESS, 252, Durban Road, Grimsby, Lincolnshire.
 G2YS.—J. W. SWINNERTON, 35, Friars Road, Coventry, Warwickshire.
 G5FA.—J. A. FARRER, 2, Clyne Street, Stretford, Manchester.
 G5HF.—H. R. HEAP, 76, Wimbledon Hill, London, S.W.19.
 G5IJ.—I. J. P. JAMES, 1, West Terrace, Newlyn, Fenzance, Cornwall.
 G5NM.—N. K. ADAMS, 35, Manor View, London, N.3.
 G5PP.—R. PALMER, 44, Kingsland Avenue, Coventry, Warwickshire.
 G5QF.—S. BUCKINGHAM, 9, Brunswick Park Road, London, N.11.
 G5RY.—R. W. WRIGHT, 112, Melling Road, Aintree, Liverpool, 9.
 G5XJ.—J. W. MOORHOUSE, 195, Oldham Road, Royton, near Oldham, Lancashire.
 G5ZN.—P. NICOLL, 35, Reedley Road, Burnley, Lancashire.
 G6FS.—J. FERGUSON, Oxted, Surrey.
 G6HZ.—J. E. A. HUSCHMAN, c/o Mrs. Fallows, 6, Oakdene Terrace, Nuthurst Road, New Boston, Manchester, Lancashire.
 G6VD.—W. M. VENDY, 9, Cecilia Road, Leicester.
 G6XR.—H. V. COOK, 18a, Far Gosford Street, Coventry, Warwickshire.
 G6ZU.—R. H. JACKSON, Dodge Hill House West, Dodge Hill, Stockport, Cheshire.
 2AGF.—F. G. SPRAGG, "Gravenhurst," New Bedford Road North, Luton, Bedfordshire.
 2AKB.—F. A. JEFFERIES, 93, High Street, Oxford.
 2AQF.—T. W. POLLARD, 14, Cranage Crescent, Wellington, Shropshire.
 2ASL.—J. F. ISAAC, "Grasmere," High Town Road, Maidenhead, Berkshire.
 2ASL.—R. H. CLAPP, 151, Stanwell Road, Penarth, S. Wales.
 2AUS.—A. W. ATKINSON, 40, Riversdale Road, Beverley High Road, Hull, Yorkshire.
 2AWL.—E. W. BENGIS, School House, Oakham, Rutland.
 2AZG.—M. L. HOOKER, 327, Broad Lane, Coventry, Warwickshire.
 2AZM.—B. R. EDWARDS, 82, Coolinge Road, Folkestone, Kent.
 2BKD.—F. RITSON, "Sele House," Hexham, Northumberland.
 2BLL.—J. V. WEBLEY, "Cefn Coed," Bilton Road, Neath, Glamorgan.
 2BNL.—J. L. PINKERTON, High Street, Ballymoney, Co. Antrim, Northern Ireland.
 EI2G.—G. RILEY, 58, Belmont Avenue, Donnybrook, Dublin, I.F.S.

The following are cancelled:—2AIF, 2AMS, 2BIH, 2BIK, 2BIU, 2BZZ.

The prefix UK is now being used by stations owned by Radio clubs and societies in the United States. Stations owned by individuals use the prefix U. I am indebted to G5BD for this information.

NEW MEMBERS.

HOME CORPORATES.

- D. W. BERRY (G2DB), 5, Brookvale Avenue, Binley Road, Coventry.
 J. E. DELANEY (G12ZD), 46, Avonbeg Street, Belfast, N.I.
 E. G. ELLIOTT (G5LI), 35, Roy Road, Northwood, Middlesex.
 T. F. RENDALL (G6TR), 2, King's Avenue, Seaburn, Sunderland.
 A. W. HARTLEY (2BTZ), 111, Lichfield Grove, Finchley, N.3.
 R. C. MOORE (W9FHP), St. John's College, Oxford.
 A. W. LEONARD (BRS1555), 7, Wood Street, Tunbridge Wells, Kent.
 S. RAYNER (BRS1556), 5, Portland Street, Southport, Lancs.
 A. THOMSON (BRS1557), 19, Angusfield Avenue, Aberdeen.
 A. TAYLOR (BRS1558), 50, Oxford Street, Barnsley, Yorks.
 W. A. CHITTLEBURGH (BRS1559), 222, Fitzstephen Road, Dagenham, Essex.
 W. H. WYLIE (BRS1560), Roseric, Drainside North, Boston, Lincs.
 J. M. LOWE (BRS1561), 2, Fernbank Road, Undercliffe, Bradford.
 J. H. FARRER (BRS1562), 26, All Saints' Road, Peterborough, Northants.
 H. S. HUGHES (BRS1563), 1, Equity Road, Leicester.

- S. FLETCHER (BRS1564), 5, Park Avenue, Gillingham, Kent.
 G. BLOOMFIELD (BRS1565), 147, Cowgate, Norwich.
 H. J. HUNT (BRS1566), 29, Newcastle Road, Reading, Berks.
 F. J. BARRETT (BRS1567), 6, St. Thomas's Place, Grays, Essex.
 H. E. S. PRITCHETT (BRS1568), 13, Sixth Avenue, Victory Gardens, Renfrew.
 M. A. BROOKES (BRS1569), 85, Lichfield Road, Four Oaks, Sutton Coldfield.
 J. ROGERS (BRS1570), 46, Lindfield Road, Ealing, W.5.
 J. C. N. GREIG (BRS1571), Haslemere, Glenville Road, Rustington, Sussex.
 D. C. PARKER (BRS1572), 139, High Street, Witham, Essex.
 W. ALLEN (BRS1573), 34, Gaul Street, Leicester.
 M. C. CROWLEY-MILLING (BRS1574), Carrington, Colwyn Bay.
 J. M. KIRK (BRS1575), "Cathay," Great Northway, Hendon, N.W.4.
 H. L. JENNINGS (BRS1576), 3, Belmont, Lansdown Road, Bath, Som.
 G. H. W. JOHNSON (BRS1577), 122, Boyer Street, Derby.
 R. L. H. WEBSTER (BRS1578), 95, Lodge Road, Southampton, Hants.
 E. A. LOMAX (BRS1579), 22, Hartington Road, Bolton.
 A. E. TUPMAN (BRS1580), 10, Brook Street, Dawlish, Devon.
 S. H. LEDBROOKE (BRS1581), 5, Hoopern Terrace, Dawlish, Devon.
 W. H. PECKETT (BRS1582), 3b, Victoria Road, Fulwood, Preston, Lancs.
 L. RIDGWAY (BRS1583), 25, Rowsley Avenue, Leicester.
 B. C. LEEFE (BRS1584), 16, Carlton Drive, Leigh-on-Sea.
 G. WEST (BRS1585), 61, Rathdown Park, Terenure, Dublin, I.F.S.
 P. H. TRAFFORD (BRS1586), "Elmira," Ratcliffe Road, Sileby, Loughborough.
 G. GOLDEN (BRS1587), Bridge Street, Westport, I.F.S.
 J. W. WEAVER (BRS1588), 26, Park Mansions, Hendon Central, N.W.4.
 J. R. WILLIAMSON (BRS1589), 13, Bradmoor Road, Bromborough, Cheshire.
 J. B. WALKER (BRS1590), 63, Park Drive, Grimsby, Lincs.
 G. F. BUDDEN (BRS1591), 29, Nunthorpe Avenue, York.
 R. L. DUTHIE (BRS1592), Park, High Blantyre, Lanarkshire.
 A. J. DEANE-DRUMMOND (BRS1593), Littlefield, Marlborough, Wilts.
 W. BROOKE (BRS1594), 17, Mortimer Street, Healey, Batley, Yorks.
 R. N. LAWSON (BRS1595), Firlands Glen, Middle Gordon Road, Camberley.
 R. JUDSON (BRS1596), Lyndhurst, Lion Road, Bexley Heath, Kent.
 L. E. RACKHAM (BRS1597), 38, Barcombe Avenue, Streatham Hill, S.W.2.
 D. W. MILNE (BRS1598), 16½, Merkland Road, Aberdeen.
 H. CRAWFORD (BRS1599), 19, Maskill Street, Fernhill, Bury, Lancs.
 C. O. PRESTON (BRS1600), 230, Healey Lane, Healey, Batley, Yorks.
 W. J. G. GIBSON (BRS1601), 7, Doncaster Street, Glasgow.

DOMINION AND FOREIGN.

- B. E. FEHRMANN (D4BPU), 17, Schillerstr. Chemnitz, Germany.
 V. MILLER (VK3EG), P.O. Box 41, Tallangatta, Victoria, Australia.
 I. B. WILSON (VK5WB), 313, Young Street, Wayville, S. Australia.
 E. B. STEPHENSON (VU2CZ), U.S. Club, Simla, India.
 R. LOWE (VU2DK), 11th Light Battery, Quetta, India.
 C. KRAMER (W9DEI), St. Charles, Minn., U.S.A.
 J. T. KEATING (BERS252), The British Coaling Depots, Ltd., Port Said, Egypt.
 C. BORDA (BERS253), 207, Prince of Wales Road, Sliema, Malta.
 A. WESTCOTT (BERS254), Mount Garnet, Queensland, Australia.
 D. WALKINGTON (BERS255), c/o Joe Allen & Co., Ltd., Jos, Nigeria.
 W. W. WRIGHT (BERS256), 44, Exmouth Road, Exeter, S. Australia.
 R. C. ALLEN (BERS257), 2, Road to the Lines, Gibraltar.
 H. TURNER (BERS258), District Controller of Stores, M. & S.M. Railway Co., Ltd., Perambur, Madras, S. India.
 E. N. GUY, Hamburg 37, St. Benedictstr. 37, Germany.

R.S.G.B. Reception Tests.

Below will be found information relating to Series 30, Reception Tests. For full information relating to procedure, reference should be made to page 143 of the October issue of the T. & R. BULLETIN.

At the conclusion of the Tests, logs should be posted to Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4. The closing date for Series 30 is December 17, when all logs and letters

received will be circulated to all participants in the form of a budget.

SERIES 30.

Test Letter.	Date. 1934.	Period G.M.T.	Band mc.
A	Sunday, Nov. 18	0800-0900	7
B	" " 18	1000-1100	28
C	" " 18	1100-1200	56
D	" " 25	1000-1100	1.7
E	" " 25	1600-1700	14
F	" " 25	1830-1930	3.5
G	Thursday, " 29	2000-2100	3.5
H	Saturday, Dec. 1	1800-1900	28
I	Sunday, " 2	0830-0930	14
J	" " 2	1000-1100	56
K	" " 2	2230-2330	1.7
L	Wednesday, " 5	2100-2200	7
M	Thursday, " 6	2100-2200	28
N	Sunday, " 9	0700-0800	7
O	" " 9	1030-1130	1.7
P	" " 9	1130-1230	14
Q	" " 9	1830-1930	56
R	Tuesday, " 11	2000-2100	3.5

R.S.G.B. Slow Morse Practices

Slow Morse practice times for November-December will be found below. 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. Reports will be appreciated, and are desired in order to ascertain range of transmissions and numbers utilising the service. If a reply is desired, please enclose stamped envelope or postcard. Stations willing to assist on 1.7 or 3.5 mc. (or both) bands should get in touch with Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4.

SCHEDULE OF SLOW MORSE TRANSMISSIONS.

Date, 1934.	G.M.T.	Frequency	kcs.	Station
Nov. 18	Sunday	0030	1820	G2OI
" 18	"	0930	1828.3	G2II
" 18	"	1000	1815	G2DQ
" 18	"	1030	1911	G2JL
" 18	"	1100	1.7 mc.	G2UV
" 25	"	0030	1820	G2OI
" 25	"	0930	1828.3	G2II
" 25	"	1030	1911	G2JL
" 25	"	1100	1.7 mc.	G2UV
Dec. 2	"	0030	1820	G2OI
" 2	"	0930	1828.3	G2II
" 2	"	1000	1815	G2DQ
" 2	"	1030	1911	G2TL
" 2	"	1100	1.7 mc.	G2UV
" 9	"	0030	1820	G2OI
" 9	"	0930	1828.3	G2II
" 9	"	1030	1911	G2JL
" 9	"	1100	1.7 mc.	G2UV
" 16	"	0030	1820	G2OI
" 16	"	0930	1828.3	G2II
" 16	"	1000	1815	G2DQ
" 16	"	1030	1911	G2JL
" 16	"	1100	1.7 mc.	G2UV

A SILENT KEY

It is with very deep regret that we record the passing on October 12 last, at the age of 35, of Mr. J. T. Smallwood, G5JI, of Birmingham and Smethwick, after a long illness.

Mr. Smallwood was an Associate Member of the Institute of Wireless Technicians, and during the Great War he served as a chief telegraphist in the Royal Navy.

In recent years he became interested in commercial radio, but retained his keenness in the amateur movement. Many of our Midland members owe their introduction to the amateur ranks to his enthusiasm.

His passing will be mourned by all who knew him.

Election of County Representatives, 1935.

The response to the invitation contained in the last issue has been lamentable. Nominations have only been received from a few members, which seems to indicate a woeful lack of interest in the organisation of local affairs.

In the hope that further nominations will be received, it has been decided to extend the closing date to November 20 for counties where no nominations had been received up to November 1.

The nominations received up to November 1 were on behalf of the following:—

London (North): Mr. A. W. Hartley (2BTZ).
 Berkshire: Mr. G. Marcuse (G2NM).
 Essex: Mr. M. B. Buckwell (G5UK).
 Glamorgan: Mr. R. H. Hall (G2SN).
 Monmouth: Mr. R. V. Allbright (G2JL).
 Oxford: Mr. H. J. Long (G5LO).
 Pembroke: Capt. G. C. Price (G2OP).
 Yorkshire (North Riding): Mr. R. B. Mortimer (2AUN).
 Yorkshire (West Riding): Mr. H. Rayner (G5TQ).
 Yorkshire (East Riding): Mr. W. A. Clark (G5FV).

The above are considered as elected, and take office as from January 1, 1935.

Ballots.

More than one member having been nominated in the following counties, ballots are necessary:—

Middlesex: Mr. G. A. Exeter (G6YK); Mr. S. K. Lewer (G6LJ).
 West Lancs. and West Cheshire: Mr. H. W. Stacey (G6CX); Mr. J. Davies (G2OA).

Members resident in the above counties are requested to record their vote on the form below, and return to the Secretary not later than November 30.

Voting Form.

THE SECRETARY,

R.S.G.B.,

53, Victoria Street,

London, S.W.1.

I wish to record a vote in favour of Mr.....

.....for the position of

.....County Representative.

Signed.....

Date.....

NOTE.—A copy of this form may be used.

R.N.W.A.R. NOTES AND NEWS.

No. 3 DISTRICT.

THE second annual No. 3 District, R.N.W.A.R., meeting and dinner was held at the Hope and Anchor Hotel, Birmingham, on Sunday, October 7, when, at the invitation of the District Commander (Dr. W. H. Marston) and the Section Lieutenant (S. C. Parish), 37 members sat down. Lt.-Com. W. S. Mann was unfortunately indisposed, but forwarded a letter, which was read by the District Commander, in which he congratulated the members on the remarkable strides which had taken place during the previous twelve months. He informed the district that the ship affiliation scheme had come to fruition and also that a training centre would be established in Birmingham in the course of the next few weeks. The District Commander also congratulated the members on the progress made and pointed out, amongst other things, that the membership had almost doubled itself in twelve months, and similar strides would soon see further enrolment stopped as vacancies were limited. He informed members that H.M.S. *Neptune* had been allocated for working with No. 3 District, and asked for the views of the members as to the best times for working, in order that definite schedules could be made. It is anticipated that by the time these notes appear ship working will be in full swing.

The new frequencies now open to members of Operator 1st Class, i.e., 5,015 and 2,507.5 kc., were discussed with a view to working thereon. Very considerable interest was shown in their probable value as extra channels for reliable W/T working when conditions are bad on the usual frequencies. It was pointed out that any member up to 0.1 standard can use these frequencies by applying to the D.C., no licence endorsement or other formality being required.

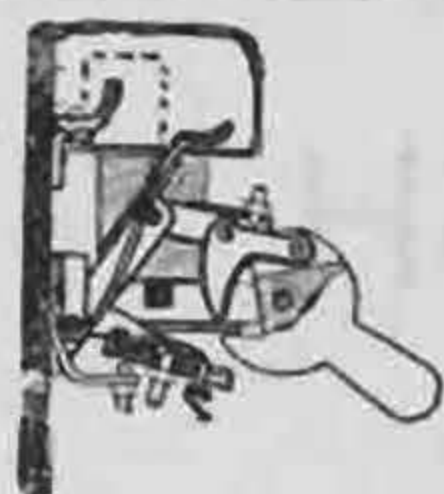
Since the above meeting, the District Commander has received official intimation that the training centre in Birmingham will be available in the course of the next few weeks, and also that it is intended to equip it with 'phones and buzzers for Morse and procedure practice, and with transmitting and receiving gear for communication purposes.

It is also hoped that a series of lectures by eminent men on subjects of general, naval and W/T interest will be held, preliminary arrangement being already under way.

Mr. E. A. V. Ayling is to be congratulated on being the first to work H.M.S. *Neptune*, which at the time was approximately 450 miles away, and which gave him a signal strength report of 7. Since the initial contact, a number of members have been heard working him, his signal strength being generally reported in the district as 8.

The reports from ships of the Fleet which have been listening out on the transmissions of members during the last three months are to hand. The District Commander is pleased and gratified to find that the reports on both procedure and Morse are almost invariably good, very good or excellent and that the number of adverse criticisms and mistakes pointed out are few and far between, and considerably reduced, compared with the previous quarterly reports.

No. 3 District is very pleased indeed to welcome into its numbers Section Lt. R. L. Kirlew, of No. District, on taking up an appointment in Birmingham. He and his signals are already well known and further comment is unnecessary. W. H. M.



ELECTRADIX RADIOS OHMMETERS, MEGGERS AND BRIDGE MEGERS. Cheap.

We have the transmitting keys and relays you want.

CIRCUIT BREAKERS replace fuses now. Magnetic Trip Overload Switches, A.C. or D.C. mains, 2 to 15 amps., from 7/6 each. Trips may be remote controlled. Illus. shows with cover removed. D.P. 20/- and Triple pole

27/6. Cheap. Reyrolle Power Plugs, 15 amps., shrouded panel wall, two pairs on iron box, unused, 10/-.

DYNAMOS, CHARGING OR LIGHTING. 240-watt enclosed Dynamo, 12/20 volts 12 amps., ball bearings, "V" Pulley, type C. Marine Type Switchboard with ammeter max. and min. auto cut-out mains switch and fuses, field regulator, etc., 50/-.

SWITCHBOARDS. Full auto cut-out and -in, field reg. switch, meter, fuses, etc., from 22/6. Let us quote you.



LESDEX BATTERY CHARGERS. Latest designs, all steel cases, meter per circuit, enclosed slide controls, armoured plugs and 25 types for 2 to 200 cells. Prices from 35/-.

LIGHT-RAY TIMING Apparatus, in 2 cases, photo-cell, valve amplifier, for 200/250 v. A.C. mains; relay to mains-operated contactor for timing or release gear. £15 10s. Demonstration Ray Set, in oak cabinet, for mains with cell amplifier and contactor, £6 10s.

MOTORS AND GENERATORS. 220 volt to 500 volt 200 m.a., £5. S.M.D. Co. 12 volts to 800 volts 80/100 m.a., £4. D.C. 7½ h.p. 400 volts 12 amps. to 100 volts 66 amps., 1,700 revs. by E.C.C., £15. D.C. 115 volts 3 h.p. 23 amps. Motor coupled to 110 volts 14 amps. 50 cycle 1½ K.W. A.C. Gen., £12. 220 D.C. to 310 volt 300 m.a. and 12 volts 10 amps., £6. Ditto to 480 volts 200 m.a. and 18 volts 20 amps., £6 10s. The best bargains ever offered. 1,000 others in stock.

ELECTRADIX METERS, largest stock in London, all ranges up to 10,000 v. and up to 2,500 amps., 2½-in panel type Bakelite case for radio, A.C. or D.C., 6/-. Telephone: Central 4611. Write for special lists "T.R."



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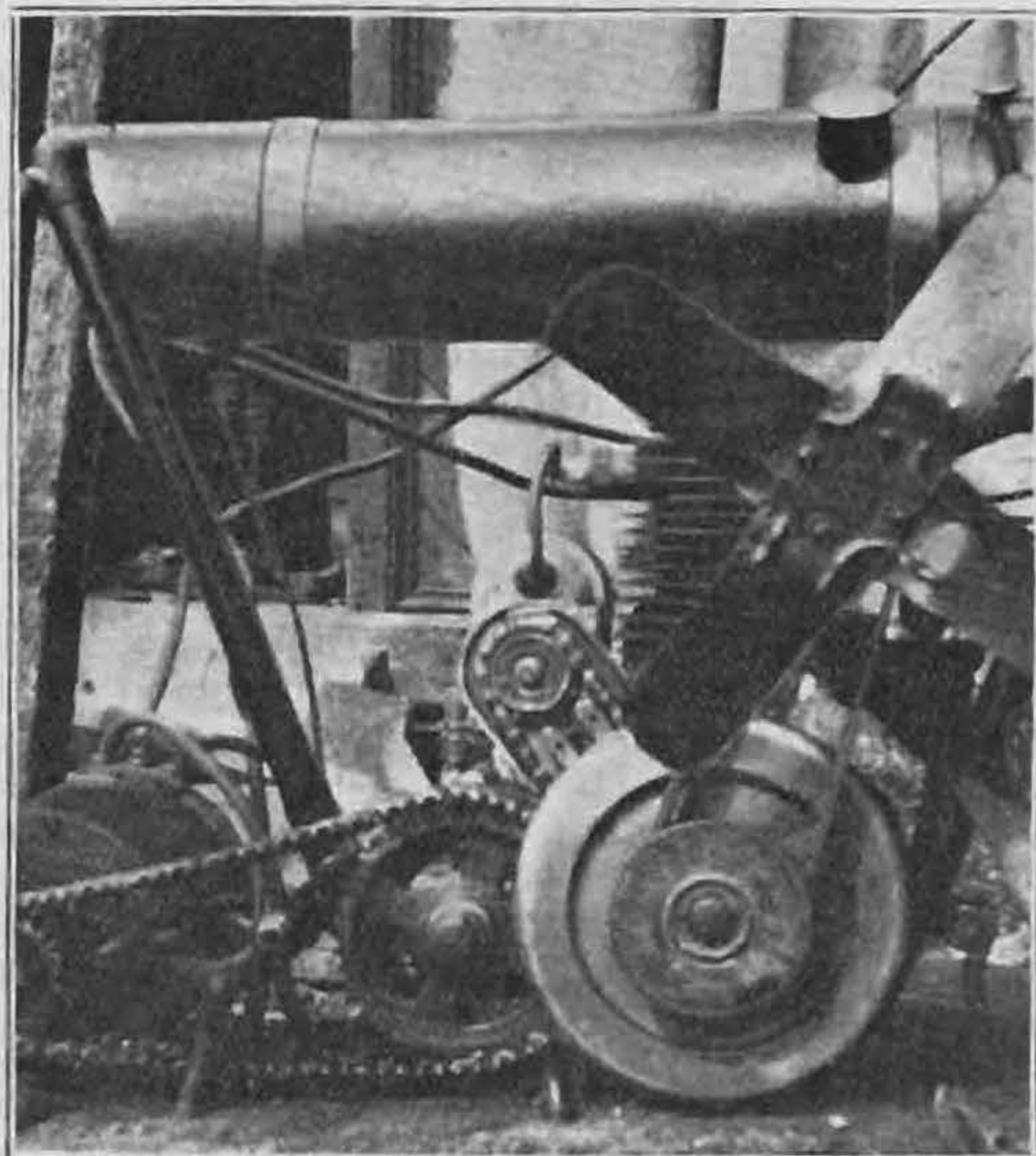
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STATION DESCRIPTIONETTE.

STATION G5LO is situated at Stanton Harcourt, a small village in the Thames Valley, six miles S.W. of the city of Oxford. Although a two-letter call was not obtained until early 1932, radio activity first commenced in 1921.

No mains being available as yet, something had to be done about power supply. To overcome this handicap, a small two-stroke motor-cycle engine was bolted firmly to a large plank and used to drive a 12-volt dynamotor—this charges up a 60-amp. car battery, and is also used as a motor to start up the engine, which, once started, will charge the battery anything up to 16 amps. This 12-volt supply is used for L.T. on the transmitter and also for charging the H.T. accumulators, from which the H.T. supply is obtained, these being paralleled into banks of 10 volts for this purpose. The photograph shows the "charging plant," which is constructed from scrap and cost very little (the motor-cycle cost exactly 2s. 6d.!!).

The transmitters at G5LO are: C.O. for 1.7 mc. and T.P.T.G. for 3.5, 7 and 14 mc., harmonic C.C. being used on 7 mc. Aerial system, 99 ft. inverted L, which works well on all bands. Maximum power is 4 watts, and often much less! Receiver is 0-V-1 with valve base coils. In all 29 countries have been worked, best DX SU on 2 watts and a report of R5 from K6. In conclusion, G5LO is a



confirmed invalid, unable to get about, but is always pleased to see any amateur who happens to be in this part of the globe.

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.)

DISTRICT 5 (Western).

(Hereford, Oxford, Wiltshire, Gloucester.)
MR. W. B. WEBER (G6QW), 2, Balmoral Road, St. Andrews,
Bristol.

DISTRICT 6 (South-Western).

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

DISTRICT 7 (Southern).

(Berkshire, Hampshire, Surrey.)
MR. E. A. DEDMAN (G2NH), 63a, Kingston Rd., New Malden, Surrey.

DISTRICT 8 (Home Counties).

(Beds., Bucks., Cambs., Herts. and Hunts.)
MR. G. FEATHERBY (G5FB), 30 Lindsey Road, Bishops Stortford,
Herts.

DISTRICT 9 (East Anglia).

(Norfolk and Suffolk.)
MR. H. W. SADLER (G2XS), Redways, Wootton Road, Gaywood,
King's Lynn, Norfolk.

DISTRICT 10 (South Wales and Monmouth).

MR. D. LOW (G5WU), "Nantissa," Westbourne Road, Penarth
Glamorgan.

DISTRICT 11 (North Wales).

(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth,
Montgomery, Radnorshire.)
MR. T. VAUGHAN WILLIAMS (G6IW), "Malincourt," Grosvenor Ave.,
Rhyl, Flintshire.

DISTRICT 12 (London North).

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

DISTRICT 13 (London South).

MR. H. D. PRICE (G6HP) 12, Hillcrest Road, Sydenham, S.E.26

DISTRICT 14 (East London).

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

DISTRICT 15 (London West and Middlesex).

MR. H. V. WILKINS (G6WN), 81, Studland Road, Hanwell,
W.7.

DISTRICT 16 (South-Eastern).

(Kent and Sussex.)
MR. A. O. MILNE (G2MI), "Southcot," Larkfield, Kent.

DISTRICT 17 (Mid-East).

(Lincolnshire and Rutland.)
MR. A. E. LIVESY (G6LI), Stourton Hall, Horncastle, Lincs.

DISTRICT 18 (East Yorkshire).

(East Riding and part of North Riding.)
MR. T. WOODCOCK (G6OO), 8, George Street, Bridlington.

SCOTLAND.

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

NORTHERN IRELAND.

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

DISTRICT 1 (North Western).

MEMBERS who failed to attend the October meeting in Liverpool missed the opportunity of meeting our D.R., who came over specially. There was quite a good attendance, however, and one new member and two prospective members were given a cordial welcome.

The earlier part of the meeting was occupied in a discussion of views regarding the proposed amalgamation of Districts for the purpose of holding the annual Conventionettes, and the D.R. was therefore able to obtain first-hand knowledge of the opinions of the local members. Later, a most interesting talk was delivered by 2BWG on "The Effects of Atmosphere on Radio." This is the type of subject generally passed over in Text books by the average member, but the talk was given in such a lucid and interesting manner that many of the members went away considerably enlightened as to the effect of the Heaviside layer.

The meeting concluded with a junk sale, but this was not very well supported. Reports from members are as follows: 2BNA is preparing for

his Morse test; G2KZ is active on 1.7 mc., 7 mc and 14 mc.; BRS1293 is building a tuned R.F receiver; G2OA and G6TT are active on 14 mc. G2OA finding VK's very good; G5SS is active on 1.75 mc.; G2RF and G6CX are re-building, and 2BPU is experimenting with Electron coupled oscillators.

Thirteen members attended the last Manchester meeting, and after the usual talk, a junk sale was held which realised the sum of £1 16s. 4d. for the section's funds.

It is proposed to make this a monthly affair, so if you want to buy or sell anything cheap, come down to the next meeting; you sell your good and pay a small commission to the fund.

A number of members gave quite a lot of gear to the sale, which was sold at ridiculous prices, and to them we extend our thanks.

The C.R. would like to thank G5SO for gathering reports from around his section, and he would be glad if he would do the same again. He reports G2TR is working 7 mc. and building for fone, he has just returned from a motor tour of Germany and Austria and visited a few OE and D stations.

G5TH is on the air now with a full licence, G5SO working on mush filters with 100 per cent. modulated fone.

We offer our congratulations to G2DH and G5MS who have now to contend with a YF before working DX.

G5ZN makes a return after many moons; we welcome you back OM; please note his new QRA under that section.

G2WQ reports particularly good conditions for DX on 14 mc. On Thursday, October 11, about 19.00, he worked a W6 and two W7's; he has consented to act as Treasurer for the fund detailed above. On Thursday, October 4, a party of nine paid a visit to the Manchester telephone exchange, claimed to be the largest automatic exchange in the world, where they spent a very fine time.

The following stations report active on the various bands: G2AM, 2AL, 2JC, 2WQ, 2OI, 2DH, 2TR, 5TH, 5MS, 5XM, 5SO, 5ZN, 5XF, 6ZS, 6QA, 6AX, 3GV, 5YD, 2ACP, 2BHF, 2BKT, 2BVP, 2BGK, BRS1114, 1504, 1502, 1549, 1422, 1227, 770.

We welcomed as a visitor to our meeting one of our American friends, W4AII, who came in to Manchester docks on one of the boats; several of us had the pleasure of looking round his den during his short stay.

STANDARD FREQUENCY TRANSMISSIONS.

SUNDAY,
November 25th, 1934

0930 GMT.	3525 KC.
0940 GMT.	3625 KC.
0950 GMT.	3725 KC.

Accuracy within 0.01 per cent.

DISTRICT 2 (North Eastern).

The D.R. is pleased to announce that Mr. C. A. Harpe (G6KU), Haytor, Poplar Grove, Bradford, as agreed to act as district scribe. All reports in future should be sent to him direct by the 25th of each month.

G6PY has now completed his frequency meter and will be pleased to give a frequency check to anyone he works.

From Bradford G6KU reports that winter activities now appear to be in full swing, and though, as usual, reports are conspicuous by their absence, it is known that many stations have been preparing for action.

We are sorry to lose Mr. Niven (BRS1171) who is gone to live at Sudbury, near London, and trust that he will be able to find a welcome amongst the members there.

The first meeting of the winter session was ranged for October 27 at G6XL, a good time being enjoyed by all.

The local radio society has opened with enthusiasm, one of the first meetings being addressed by two Post Office engineers, the subjects being "Long Distance Telephone Communication" and a description of the methods used in tracking down all forms of interference to broadcast reception. This was the first time that most members had come into contact with the Post Office, and from the remarks and discussion it was clear that the relations between the P.O. and the amateur fraternity were most cordial, it being remarked by the Sectional Engineer that in all cases before his notice nothing but assistance and co-operation had been given by the amateurs.

On October 24 G6KU attempted to interest the members in a discussion and demonstration of frequency measurement.

G2VO has now for the first time the opportunity of running his gear from the newly-installed power mains, and hopes to make contacts further afield than before.

G6XL spent a recent afternoon with a deck chair, binoculars and a thermo-couple meter in the centre of the aerial, in an endeavour to persuade the aerial to be less directional in its behaviour!

G6KU has been busy for the past few months rebuilding for higher power, and after getting all in order burned out the filament transformer.

2BIT hopes to be in possession of a full ticket soon.

Most stations are active, and a request is made to these to send in a short report of anything of interest in order that these notes may be a record of the activity of the area.

Mr. B. Pashley (G6PJ) has been appointed sub C.R. for Sheffield, and it is hoped that everyone will give him the support necessary to make and keep the area in healthy activity.

Meetings are held at the Angel Hotel, the last being on October 19, when about ten members were present. The next will be on November 16 at 7.30 p.m., when it is hoped that everyone will make an effort to be present.

Several new BRS stations report active, whilst 6LF and 2AS have been making good use of the spell of good conditions on 7 and 14 mc.

G6PJ is rebuilding station and hopes to be ready soon.

From the Leeds area we learn that BRS1333, Mr. A. Foster, "Glenholme," Victoria Gardens, Horsforth, Leeds, wishes to complete his crystal register. A previous announcement has not met with the success anticipated, and he would be pleased if stations would give their QRH when on the ether.

DISTRICT 3 (West Midlands).

G2KB is off to the U.S.A. this month to study road lighting and general illumination engineering; he will visit a number of W stations, and hopes to QSO many G's. He will be working in Schenectady, Cleveland, Ohio, Hoboken, N.Y.C., and Boston. G6KI is heartily congratulated on the arrival of a junior operator. He is building a single-signal super. G5TL has built an entirely new S.S. super incorporating one or two new ideas. G5YY is also busy building a S.S. super to try and overcome the QRM he gets from 6NJ, who only lives a few hundred yards away. 2AXZ is on 56 mc., but has heard nothing yet. 2AJI has transmitter working on 7 mc., and is preparing to apply for full licence soon. BRS1543 is trying

transposed antenna systems and getting good results. BRS1177 is temporarily out of action, but hopes to get going again shortly. G6DL finds it easy to QSO W6-7, but cannot raise VK on 14 mc., using a pair of B 12's unity coupling; will be modulating this soon, and expects good QSO using directional antennae. Also has a 56 mc. rig, which is in constant touch with 5BJ. G6CC is still rebuilding.

G5BJ has worked VK, ZL, W6-7, and J on 7 mc., and has at last worked WBE and WAC on fone, getting R6 from ZL. 5BJ and 6DL are on 56 mc., and working other stations via the 56 mc. link. The 56 mc. TX is push-pull modulated into the suppressor grids of the BP 4's. G2AK has put the finishing touches to the W9ID S.S. super, which works extremely well; he is still wondering how we heard anything on a straight RX. G2DV

DISTRICT CALENDAR

November/December, 1934.

- Nov. 21.—District 14 (Essex section), 8 p.m. at G6CT, 23, Eastwood Boulevard, Westcliff-on-Sea.
- Nov. 21.—District 15, 7.30 p.m., at G2IY, 2, Tring Avenue, Ealing Common. Talk, "Transmitting Valves," by G5KU.
- Nov. 22.—District 4, 7 p.m., at Reform Club, Nottingham.
- Nov. 23.—London meeting at I.E.E., 6.15 p.m.; tea from 5.30 p.m. Discussion opened by Mr. H. A. M. Clark, G6OT, "Microphones and Microphone Amplifiers."
- Nov. 24 and 25.—District 14, Field Day, Rookwood Hall, Abbess Roothing, near Ongar.
- Nov. 27.—District 14 (East London section), 8 p.m., at G6LL, 178, Evering Road, Clapton, E.5.
- Dec. 1.—District 12, Annual Dinner at Bull and Butcher Hotel, Whetstone. Tickets 3s., commence at 7 p.m.
- Dec. 2.—*District 9, 12 noon, at Dukes Head Hotel, King's Lynn. Lunch, followed by meeting and station visits.
- Dec. 2.—District 7, 2.30 p.m., at G2NH, 63a, Kingston Road, New Malden.
- Dec. 12.—District 14 (Essex Section), 8 p.m., at G2DQ, Rectory Grove, Wickford.

**Members' disused apparatus will be disposed of at this meeting.*

reports that he is on the air at last. G6NJ is active and finds his DX has gone up by leaps and bounds since installing his Comet. G5NI finds DX good when he is not too QRL. G5VM is on the air again and has a Comet which seems to find the DX all right.

Will all district members please bring their monthly reports to the meeting of M.A.R.S., which is being held on the fourth Tuesday of the month?



DISTRICT 6 (South-Western).

There is evidence that the "season" is now on as practically all stations in the district report increased activity. There has been quite a small epidemic of receiver building, especially among the transmitting membership, so evidently it will soon be impossible to raise that old gag about the receiver being the poorest part of a transmitting station, at any rate in No. 6!

G5YR has a new RX, including self-tuned screen-grid H.F. stage and S.G. detector. 6RP is also set designing, but unfortunately has had to undergo an operation recently, and no doubt that has made him take things easy for a bit. Everyone in the district wishes him a very speedy recovery and good health in the future.

We have to congratulate 5IJ, formerly 2AMS of Penzance, on obtaining his full call; he has to rely on batteries for his H.T., getting a power of about 3 watts, but is already working on 1.7, 7 and 14 mc.

5QA is still confining his attentions to 14 mc and has done a lot of DX on this band, particularly with N. and S. America. He is, however, hoping to co-operate with some of the Exeter members in some 56 mc. experiments very soon.

The D.R. has not been on the air very much lately, as he has been constructing an all-mair short-wave superhet, which is working extremely well on 3.5 mc. Coil construction is still in progress for the other bands. On 3.5 mc. most 'phor stations come in at great strength, and the frequency drift of the electron-coupled oscillator seen negligible.

A meeting at Taunton is still being considered and probably by the time these notes appear the meeting will have been held.

DISTRICT 7 (Southern).

We welcome several new members to the district this month, including BRS1517 (Woking), BRS15 (Shinfield), BRS1523 (Surbiton), BRS1525 (Botley), 2BJP (Reigate), BRS1535 (Woking), BRS15

(Epsom), BRS1550 (Bournemouth), R. Webster (Southampton), and G5JL (Windsor), who is a District No. 9 native, temporarily resident in our district. The D.R. trusts that all the above will do their best to attend monthly meetings and contribute to the letter budget. Full particulars of the latter can be obtained from Mr. Neale (G6GZ).

Mr. J. S. Williams has obtained his radiating licence, and is now G5JW. Congratulations OM. The September meeting at Farnborough was well attended, and it was pleasant to see G2NS and his party, who made the journey from Bournemouth by car. Unfortunately the D.R. was in bed with quinsy and had to miss this meeting, the first he has missed for three years, but apparently this did not detract in any way from the success of the meeting, judging by the accounts of local members who attended!

An interesting letter is to hand from G2MV of Old Coulsdon, Surrey, in which he describes some aerial arrays that he has been using for telephony to Egypt and U.S.A. The results are very interesting, and the D.R. hopes he will write them up in the form of an article for the BULLETIN. He also mentions reception of LSI on 7.1 metres and Berlin on 7.8 metres; this is most interesting. Can we have further particulars, please?

The December meeting will be held at G2NH on December 2. Full particulars are given in the District Calendar.

There is considerable activity in the district on the DX bands, and several members have been busy in the VK Centenary contest. 56 mc. appears to have closed down for the winter, but one or two members are still active. G5JW is carrying out some experiments with 56 mc. directional serials, and would like some co-operation from transmitters in the N. Surrey or S.W. London areas who are interested.



DISTRICT 9 (East Anglia).

An interesting meeting was held in Norwich on October 21, and thanks are due to G2MN for the very satisfactory programme arrangements, and also for the help he has been to the many new members.

A tour of the stations was our first object—a tour in a town where about six months ago only one active station existed!

Starting at G2UT's, a very efficient TX and RX was seen, and one can now understand how a W was hooked during the first week's operation. Following on to 2BGO we were able to hear some really good 56mc. fone work emanating from G2MN, our next port of call. A lot could be written about this station had we the space, but all the space is at 2 MN's and not in THE "BULL." Anyway we climbed various steps, traced several long wires, and can truthfully say we derived some new ideas on how to obtain Q.R.P. DX which 2MN undoubtedly does. A visit followed to 2BSO and then came tea and a discussion which brought our day to a close.

It has been decided to hold our next meeting at King's Lynn on December 2, and on account of the possibility of bad weather an earlier start will be made.

The meeting will therefore commence at the Duke's Head Hotel, King's Lynn, at noon, where a good lunch at moderate price will be served. It is regretted that the N.F.D. film cannot be promised the district for some time yet, but an interesting programme is being arranged followed by Station visits and an early rag-chew tea.

It is also proposed to hold a junk sale at the meeting—a percentage of profits to go towards next N.F.D.

Let the D.R. know of your intention to be present, in good time, please.

DISTRICT 10 (South Wales and Monmouth).

It seems that the dull period reflected in last month's Notes was purely of a temporary nature, for this month news to hand indicates that steady progress and effort is being made in all directions. Activity in the Swansea area is most marked, and members have had the pleasure of extending a welcome to CT2AN, an old Swansea resident, and skeds have been arranged; congratulations are also extended to BRS1516 on attaining his A.A. call-sign, 2BLL.

G2WO and 2SN, after completely rebuilding, expect to be on the air shortly. G2UL, 2TY and 5PH are putting in work on aerials, and the former hopes to submit useful observations in the near future. G5TW having set up a new QRA is not yet experiencing previous successes. 2ATD, 2BYB, 2BLL, and 2AQI are keenly interested, having in view their applications for full licences.

Monmouth and Cardiff areas, although not so active, have been putting in work on 5 metres, in which 6YJ and 2BPG are taking a leading part, and propose giving a talk on this subject in the near future to the members of the Blackwood Radio Club. 2JL is concentrating at present on 7 mc., while 2PA and 2XX are in the throes of rebuilding. 5FI having completed his new gear anticipates being on the air shortly.

It is noted that the Blackwood Radio Club, BRS570 as operator, have made application for an A.A. Licence; this is a step in the right direction, and should prove of considerable interest to the members.

Other members are known to be active, although no details have come to hand, and the above indicates excellent progress throughout the District, and every prospect of considerable activity throughout the winter months.

DISTRICT 12 (London North).

At the October meeting, which was held at the Ark Café, Mr. H. Clark (G6OT) gave a comprehensive description of the Bruce Aerial and data for using this system on various frequencies. The sale of apparatus during the meeting added extensively to the District funds.

The suggestion for holding a District dinner has been well supported, and this function will take place on Saturday, December 1, 1934, at the "Bull and Butcher" Inn, Whetstone, N.20, commencing at 6.30 p.m. Tickets, price 3s., must be obtained before this date.

Contributions to the musical side of the programme will be very welcome, and should be sent to the D.R. at the earliest opportunity. The support of No. 12 District is asked. Please come along and bring a friend, so long as it is not a Y.L.!

Activity in the District is well maintained. G5CW is running a successful schedule with ZL4AI, using 10 watts. G2VD has worked SM at R6, using an indoor Windom 8 ft. 3 in. long and a power of 5 watts. G6WU is working Australians.

G6CL, with the aid of his celebrated "beanstick aerial," has WBE and WAC for the first time since changing his QRA. The free end of the aerial is attached to two beansticks "in series," giving a height of about 9 ft., while some 25 ft. of the 50 ft. of wire outdoors runs parallel to and within inches of the side of the house, but even with these handicaps, all American and Canadian Districts (except VE5 and W5) have been worked, as well as J, ZL, PY, VU and VQ. The input has been 100 watts to a 4211E. Tests have been made on 28 mc., using the last valve as a power F.D. (input 40 watts), but results to date have been nil, except for a report from G2HG.

G5MG has been testing telephony on 7 mc., after a long spell on 56 mc. He continues regular transmissions on this frequency every week-end, and is still anxious to obtain co-operation from BRS in South London and district.

G2SX has had a complete rebuild, and rumour has it that ZL has been raised with 10 watts. His "stand-off half," G5BO, is also polishing things up, presumably in readiness for B.E.R.U. tests. G5DV has worked VE1, and is hoping to join the early morning seekers after ZL4AI! We welcome 2DLV to the District.

Please note that the new address of G5QF is 9, Brunswick Park Road, N.11.

DISTRICT 13 (London South).

The response to G6HM's suggestion regarding a crystal register for the district has been quite good. Will all members of District 13 send along their crystal frequencies to either G6HM or the D.R.?

G2UW is working on 1.7 mc., using a self-excited Hartley with 6 watts input on phone, and 10 watts on C.W.

G6CS has been on 14 mc. and has contacted W1 and W2 with only 9 watts input from dry batteries to a push-pull T.P.T.G. He is at present testing a Zepp antenna. G2GZ has been operating on 7 mc. and 14 mc., with the usual DX contacts. G2ZQ has been working VK's in the Melbourne Contest with great success.

G6HP worked 33 VK's. Will more members send in reports next month, so that we can put South London in the public's eye again?

DISTRICT 14 (Eastern).

The October meeting of the East London section, held at G6LL, was well attended, 18 members being present, including G2ZP, of Yeovil, and G2ZQ, of Blackheath. It was decided to hold another field day on November 24-25 (see calendar). Will all those able to attend and assist with gear and transport notify the D.R. in good time? Philately was not discussed at this meeting owing to the absence of our secretary, who was attending the North London meeting!

The Essex meeting, held at G2KT, was attended by 16 members, and G5UK was unanimously nominated again to the office of Essex County Representative. Southend and district members are notified that Slow Morse classes are being held every Wednesday at 8 p.m. at the QRA of G6CT. Many new members have reported; others, it is hoped, will attend our monthly meetings or get in touch with their representative at an early date. G6QK will be using his portable call, G2IR, on 56 mc., and is anxious for reports.

DISTRICT 12**First Annual Dinner****December 1st, 1934**

at

**BULL & BUTCHER HOTEL
WHETSTONE, N.20****TICKETS 3/-****Commence 6.30 p.m.****DISTRICT 15 (London West and Middlesex).**

The October meeting was better attended than any we have had for some months. It was a pleasure to have with us both Mr. and Mrs. G6HP, and also G5KU, who has joined the district.

The items discussed were many and various. Some time was spent considering future district meetings and the letter budget. For the time being the latter is held in abeyance. District meetings will be held as in the past, but it is hoped that we can find someone each month who will be prepared to deliver a short paper of interest. It was mentioned that the meetings as at present arranged do not prove as interesting to the B.R.S. and A.A. section as they might. With this in view, it is hoped that some of the transmitters will find time to have an occasional "at home" evening for these members only. G6VP, of 12, Ferrers Avenue, West Drayton, signifies his willingness to receive B.R.S. and A.A. members any Saturday evening. He is only three minutes from the G.W.R. West Drayton Station, and cheap tickets are available. It is intended to call a meeting of B.R.S. and A.A. members shortly to discuss various points affecting their welfare.

Details of the next area meeting will be found under the District Calendar.

Cupid has been busy in No. 15, for recently both G2IY and G2BY have entered the state of married life. The D.R., on behalf of all members, wishes them health, happiness and prosperity.

Judging by what one hears, there is a fair amount of activity in the district, but individual reports are lacking. The D.R. will be glad to receive any items of interest for inclusion in these notes by the 25th of each month.

DISTRICT 16 (South-Eastern).

The D.R. is glad to report a fine crop of reports from the district this month.

In Beckenham the first anniversary of the local group was celebrated by a meeting at G2ML on October 16, when 6QB, 2ZQ, and VK2NR were visitors. G 2ZQ gave an amusing account of 2ML'S experiment for reducing hand capacity, which entailed sitting on an earthed coil of wire, and the strange happenings when 2ML accidentally touched H.T. positive! The next meeting is at G2GB, 19, St. Mary's Avenue, Shortlands, on November 17, at 8 p.m.

G 2KJ has completed his month's daily schedule with 6GQ, and the latter is preparing graphs for forwarding to 2GD.

In Folkestone, Rowley Edwards is now 2AZM; 2VI has put up a Windom "trained on America," and has raised his first W with 6 watts; 2GD will soon be working on 7 and 14 mc.

The Medway Society recently held their annual contest for the *Chatham Observer* Trophy, and 2MI and 6VV tied for first place. 5FN finished only one point behind for third place, with 6QC only a few further down as fourth.

VP3V is now in England, and is operating at Sheerness under the call G2VA. G5MR has returned from college, and is active again at Dover on 3.5, 7, and 14 mc.

In Sussex, activity seems to be increasing, especially on 1.7 mc. 2AYN is now G5RO. The Hastings Society is very active. Some 56 mc. tests between 5JZ and 5BS have not yet met with much success. They are experimenting with a portable receiver in an attempt to locate the spot where signals are fading out. G 2CF is busy testing moving-coil microphones as is also 5YA. 2AX is on 3.5 mc. Two more members have joined the Heathfield Society. The R.S.G.B. slow morse tests from 2DQ are much appreciated in this district. 5JZ is rebuilding. 1173, 1472, 1526, and 1494 are also active.

DISTRICT 17 (Mid-East).

A successful meeting of Lincolnshire, Yorkshire and Norfolk members, with a distinctly attractive programme, was organised by the Boston members on October 7 at Boston. Members visited two talking picture plants and viewed the National Field Day films, through the kindness of Mr. Watts. Discussions upon many subjects followed. The attendance included nineteen members and four visitors. This is definitely a record for Lincolnshire, and we would express our thanks to members and visitors from other districts for helping to make the afternoon a happy one. It is regretted that the pictures, taken in a tasteful surrounding of cinema furniture and miniature trees, have not yet been developed.

The District Representative is leaving for South America on November 24 for a three and a half

months' sea voyage to the Western coast of the continent. It is expected that a three-valve all-wave receiver will be included in the baggage, together with a 10 metres receiver. Members desirous of schedules on any bands where listening observations are required, will perhaps get into touch with G6LI. It is hoped that some British 10 metres signals may be heard. A temporary D.R. will have to be appointed during the absence of G6LI, and this will be announced later.

No individual reports are to hand this month, but experience shows that much good work is being done. For example, G5BD worked *every* district of the U.S.A. in less than nine hours recently between 1500 and 2300 approximately.

No 10 metres activity appears on the air at present, but G6LI is fully equipped and operating on that band.

DISTRICT 18 (East Yorkshire).

The Scarborough Short Wave Club has recommenced fortnightly meetings, in readiness for the winter session. These meetings will be held at the Belle Vue Hotel, Scarborough. November 26 is the date fixed for the next, and any R.S.G.B. members visiting Scarborough and District will be cordially welcomed. Group 5B of R.E.S. has been joined by 2AMM and 2AUN, whilst BRS1210 now in London is rebuilding P.A. and experimenting with Piezo electric pick-ups.

G2QO, G6OS, G5FV have been taking part in the Melbourne Centenary Contest, but found fone interference from Europe terrible! G5FV has heard and attempted, unsuccessfully, to QSO VQ8A (Ascension) on 14 mc. The C.R. is thinking of testing the Bruce Antenna, but requires a 400-ohm resistance. (Any offers?) BRS1281 is applying for A.A. ticket. Will the Hull and District members send in reports regularly to G5FV, as there is no excuse for not being mentioned, under the new system of reverting back to the old style of "Monthly Notes and News."

G6UJ active on 1.7 mc. fone. G5VO too busy with Television gear and local Dickensian Society to work CW or fone on the bands. Likewise, G6OO, who finds the local Operatic Society claiming his time just at the moment.

Northern Ireland.

Shades of N.F.D.! An enjoyable "hamfest" was held in the "Merrythought" Café, Belfast, on September 29, the personnel of N.F.D. stations "A" and "B" being present. The affair was the result of a wager in which the station scoring least points in its own section agreed to stand tea to the other station, and station "A" "fell for it"! After the feast, we adjourned to the annual general meeting of the R.T.U., when the following committee was elected:—Gi6TB, chairman; 5HV, hon. treasurer; joint hon. secretaries, 2CN and 5UR. Gi6WG was adjudged winner of the competition for the Houston Fergus trophy, and was presented with the cup. 2AFC received his prize for associates in the parallel competition.

GI has commenced to "look up" already this winter. 5AJ has contacted VK3MR, using but 8 watts on the 7 mc. band. 5UR has had his recent contact with J2CL confirmed, and reports QSO with

SX3A. 6YW has been QSO VK, W7, VP5 and FQ. Gi2KR was elected a member of the R.T.U.; he is getting out well to the States of America. 6HI has been heard once more, and 2CN expects to "pound brass" in the near future. There is a new signal on the band, Gi2ZD, and we extend welcome. 5HV has been busy constructing a new receiver, it being completely shielded in a polished brass "cabinet"; he requests that all who send envelopes for QSL cards use the prescribed size. He has been spending a lot of time and using much sticky paper trying to make "business" type envelopes do the trick. Will you look to this point, OMs? 6TK has been trying to get rid of key clicks in his next-door-neighbour's set.

There seems to be some doubt about the time reports should reach the D.R., and we would remind you that same should be to hand by the 25th of each month.

SCOTLAND.

We commence these notes with a correction. In our last notes we mentioned that 2BYB had moved from Glasgow to Callander. That was a typographical error, and the call should read 2BYP. We mention this as we fear we ruffled the fur of our Welsh member, 2BYB. Anyhow, OM, Callander is not such a bad place, and a heap easier to spell than Llanfairwotsisname. Hi!

G5DK suffered a bereavement this month in the loss of his mother and was accordingly the recipient of our sympathy.

It is odd how the folk that really matter have an uncanny knack of keeping interesting information regarding themselves well tucked under their berets. Here are we harbouring in our midst probably one of the most brilliant engineering students in the country, and he proposed to fade away next month and leave us in complete ignorance of the fact. Laddie, your intentions have come unstuck. G5FP, who some time ago took his M.A. degree, has recently taken his B.Sc. in engineering, with first-class honours in both mechanical and electrical engineering. A fine achievement, "FP," and we heartily congratulate you. (May we also?—ED.)

G2TM had an interesting experience recently in connection with the plane KHMZA which flew across the Atlantic from Labrador and landed at Granton, near Edinburgh. On board the plane was WIYU, and following a request over the air from WISZ, G2TM got in touch with the fliers and put them in contact with WISZ from his (TM's) shack. When the plane left Granton for the South, G2TM maintained contact with it throughout the journey.

G5YG, operated by Jim Stove (G5ZX), the second operator, has entered for the VK contest, and during the first three week-ends has made 35 Australian contacts for a total of 1,750 points. These notes, of course, go to print before the contest is completed, but the station looks like having quite a decent score.

For the benefit of any members from other districts who may visit Edinburgh, the following are the loci of the fortnightly meetings up to December 12:—November 14, at G6FN; November 28, at G6KZ; December 12, at G6MF. Visitors will be made very welcome.

G5FP sends in the following information regarding "B" District:—At a meeting held on October 18, G6LG was unanimously appointed District Officer for 1935. He will, however, take over almost at once from G5FP, who leaves for Manchester early in November. Fortnightly meetings are to be held in the district at the QRAs of the various transmitting members, at which there will be short technical talks with occasional "hat" nights for the benefit of B.R.S. and newcomers.

Comment is made on the frequent 'phone QSOs which have taken place between "B" and "D" districts, indicating apparently an abnormality in the Heaviside layer, as these two districts cannot normally contact owing to skip.

"B" District will make its annual pilgrimage to Scottish headquarters on November 4.

We conclude these notes with a brief appreciation of Mr. Hardie's work as District Officer during 1934. His term has been a most successful one, and the district has prospered in his hands. We therefore take this opportunity of thanking him for his work and of wishing him every success in his new sphere of activities.

EUROPEAN NOTES

Belgium

We are pleased to announce that Réseau Belge has recently elected its new executive and among the names appear several R.S.G.B. members.

As hitherto Mr. Paul de Neck, ON4UU, continues as president, with the stratosphere investigator, Mr. Max Cosyns, and Mr. Kersse, ON4GW vice-presidents. Mr. Anthierens, ON4PA, and Baron Louis Bonaert de la Roche, ON4HM, who were with us at Convention, become district managers, and the well-known DX amateur, Mr. Mahieu, ON4AU, is now foreign communications manager.

After a break of some months the R.B. Journal, QSO, is to make its appearance again this month under the editorship of Professor Turlot, ON4EL.

The QSL Service will be in the hands of Mr. Plumen, ON4MY, although the postal address remains unaltered.

REPORTS WANTED

G2VD (ex 2BKN), L. F. Viney, 5, Twyford Avenue, London, N.2, on his 1.7, 7 and 14 mc. transmissions, using an input of 5 watts to an 8½ foot indoor Windom aerial.

G5NM (London, N.3) on his 7 and 14 mc. transmissions.

G6VD (Leicester) on his 7,075 kc. transmissions.

For Field Day Enthusiasts

Mr. Eric Holden (VO8H), our representative in Newfoundland, wishes to correspond with British field day enthusiasts. His address is Box 650, St John's, Newfoundland.

STRAY

Mr. W. C. G. Smith (G2GT) advises us that his call is being used by an unauthorised person. His station has not been operated since February last

Empire



News.

B.E.R.U. REPRESENTATIVES.

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

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

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

Canada.—C. S. Taylor (VE1BV), Stewiacke, Nova Scotia; R. Prissick (VE2CX), 27, Bellevue Avenue, Westmount, Montreal, P.Q.; W. P. Andrew (VE3WA), 1337 Dougall Avenue, Windsor, Ont.; A. E. Howard (VE4CJ), 2401, 25th St. West, Calgary, Alberta; and A. L. Cusden, (VE5HJ), 1465, 17th Avenue, New Westminster, British Columbia.

Ceylon.—G. H. Jolliffe (VS7GJ), Frocester, Govinna, Ceylon.

Channel Islands.—Capt. A. M. Houston Fergus (G2ZC), La Cotte, La Moye, St. Brelades, Jersey.

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

Hong Kong.—C. EMARY (VS6AX), R. C. Signals, Hong Kong.

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

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

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

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

Malta.—H. G. Cunningham (BERS.161), H.M.S. "Royal Sovereign," c/o G.P.O., London.

Newfoundland.—E. S. Holden (VO8H), Box 650, St. John's, Newfoundland.

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

North and South Rhodesia.—J. W. Mavis (ZE1JE), P.O. Box 160, Umtali, South 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. Shepherd Nicholson (VU2JP), c/o Kanan Devan Hills Produce Co., Ltd., Munnar, Travancore.

Australia

By VK2HC, via VK3EG, ZL4AI, G6HB.

Conditions this season are following very closely those experienced last year, with perhaps 14 mc. being rather dull.

Some VK2 and VK3 amateurs are active on 28 mc., but only local contacts over short distances have been made. The only reliable band at present is 7 mc., which has improved greatly during the last few weeks. The best period for DX on this band is between 1600 and 2100 G.M.T. Several SU signals are coming in well, but are difficult to contact, apparently due to QRM.

I have to record the appointment of a new Sub-Representative in VK3OC, who relieves VK3WL. The latter has done splendid work for the B.E.R.U. in VK3, as well as being the main VK Link Station.

There are also two new E.L.S. in VK3EG and VK2XU.

Egypt.

By SU1EC via G2QO.

Conditions have been improving steadily and a good winter DX season is very probable. 14 mc. has been good for all-round DX, but not very good. 7 mc. has been very good, and had it not been for steady QRM, would have been excellent.

At this time of the year Egypt appears to be the junction of retreating VK waves and advancing W

waves. The appearance of a W station is a sure sign of the coming fadeout of VK stations. This applies to both 7 and 14 mc., though it is more strongly marked on the former. The hours when this is noticed are 14.00 G.M.T. on 14 and 21.00 G.M.T. on 7 mc.

I believe SU1EC was the only station participating in the VK contest. The best hours for this were 12.00 to 14.00 G.M.T. on 14 mc. and 14.00 to 21.00 G.M.T. on 7 mc.

A letter received from an ex-W amateur now resident in ZC6 shows that it is almost impossible to obtain a transmitting licence there unless one is a member of H.M. Forces.

The following are active: SU6HL, 2GA, 5NK, 1EC, 2NP. SU1WEM and SU1RO are rebuilding. SU1CH arrived back from leave in America on 24th.

Hong Kong.

By VS6AX via G6CJ.

Australian stations were received here well on 14-mc. during the Melbourne contest period, otherwise the band has not been used. The 7 mc. band has greatly improved, DX conditions being good, with Europeans coming in well from 17.00 G.M.T.

VS6AX is active on 7,181 kc. and would appreciate reports. VS6AH and 6AQ have been busy with VK's and with fone experiments.

Malta.

By VP3X (BERS201).

Conditions have been excellent on 14 mc. for all-round DX. The 7 mc. band is also improving, especially for Eastern contacts. Very frequent electrical storms from the West have been noted.

BERS 201 and 209 are taking a daily log for future Malta notes. The QRA of VP3E is requested.

Information is sought by VP3X regarding direction finding, with particular reference to the micro ray systems used at the larger air-way D.F. stations in England.



G. J. Jolliffe (VS7GJ).

B.E.R.U. Representative for Ceylon and owner of one of the best-known DX stations in Asia. A description of VS7GJ appears elsewhere in this issue.

New Zealand.

By ZL1AR, via ZL4AI and G6WY.

Six years ago VK stations working on 28 mc. were logged by many ZL stations, including ZL1FQ, ZL1FT, ZL1AN and ZL4BA, the last two being successful in contacting VK on this frequency. ZL2AC also did good work on 28 mc., helping considerably by reporting reception of the A.R.R.L. test stations, WICZ and W6UF, in November, 1928. The intervening years have shown periodical work on this band with indifferent results, excepting the ZL1AN-W6BAX contact in August, 1930.

Now there is gratifying evidence of renewed activity and preliminary 28 mc. testing by numbers of ZL and VK stations in view of the world-wide contest on this band commencing shortly.

The R.S.G.B. has to be thanked for its enterprise in organising such a contest. It will facilitate research in the many fields of mysteries surrounding this band, and the results will probably add information of world utility as to its use as a communication channel.

The N.Z.A.R.T. are awarding a cup to the contestant in New Zealand who gains the highest score, and the twelve months from October 1 should be of exceptional interest on 28 mc.

A revival of interest in 56 mc. work has taken place in the Otago district. Nearly all stations use similar two-valve transceivers, which are very compact and portable. Field days are being regularly held, and many successful contacts up to about 10 miles have been made on these excursions. The local enthusiastic mountaineers intend to experiment from various mountain-tops now that summer weather makes this possible.

Northern India.

By VU2LJ.

Conditions have been so bad during September that little has been done on the 7 and 14 mc. bands.

56 mc. still occupies the attention of the western districts. VU2AB and XY15GL, both ideally situated in the hills, plan to effect a two-way QSO—a distance of 100 miles; 2BL and 2BM are also active on this band, but do not report.

We are sorry to lose VU2AB and BERS74, but wish them the best of luck under their new calls, G6DX and G5GH. One place will be filled by Capt. Stephenson (VU2CZ), to whom we offer a hearty welcome.

Reports are still wanted badly from all.

South India.

By VU2JP via G6NJ.

Conditions during the month have been fair for DX on 7 mc., whilst 14 mc. has been patchy. Will all South India members please report direct to VU2JP?



Our photograph is of the Rev. E. C. Robert (VE2EC), of Cap de la Madeleine, Quebec, an amateur with more hobbies than one.

TRADE NOTICES.

ROTHERMEL-BRUSH PIEZO-ELECTRIC PICK-UP.

We recently had the opportunity of testing one of the new piezo-electric pick-ups manufactured by *Sonochorde Reproducers, Ltd.*, for *R. A. Rothermel, Ltd.*, Canterbury Road, Kilburn, N.W.6, and were very impressed with the reports regarding the quality of the transmissions, which were received from stations co-operating in the tests.

Rochelle salts have for some years been used most successfully for pick-ups in the States, but the Rothermel production is, we believe, the first to come on the British market.

The output obtained is considerably greater than that from an ordinary magnet type pick-up, and when used with a quite ordinary two-stage L.F. amplifier for radio-gram work, more than sufficient volume is available for domestic use.

Light in weight, uniform in response, freely damped, non-resonant, non-magnetic and high sensitivity are the six points claimed by the manufacturers. We can suggest a seventh: "Ideal in every way for the radio amateur desirous of transmitting first-class quality."

The pick-up is retailed at £2 2s. and for the purpose of attenuating the lower frequencies a volume control of half-megohm is recommended.

As the Rochelle salt actuating element takes the form of a condenser, the pick-up should not be connected in the plate or cathode circuit of a valve.

The lot of the average British amateur would be indeed a hard one if it were not for the Birm-

ingham firm of *Stratton & Co.*, for are they not one of the few firms in this country who have set themselves out to cater for our requirements?

The latest edition to their rapidly growing stock of short wave components is a Screened Short Wave Choke (Cat. No. 983), which represents a distinct advance in design and at the very reasonable price of 3s. 9d. should have a ready sale.

The effective wavelength range is from 10 to 200 metres with a safe carrying capacity of 150 mas. The choke is wound in four sections on a frequentite tube, the ends being brought out to terminals at the side of the copper screening container. The latter is made from two circular cans to give an overall height of 2½ ins. and a diameter of 1½ ins. Two fixing lugs enable it to be secured to a base-board.

A universal screened type with a wavelength range from 10-2,000 metres is available at 5s. and the unscreened short wave variety, often specified in T. & R. BULLETIN sets, at 2s. 9d.

These chokes can be supplied by Webbs Radio, 14, Soho Street, London, W.1, or from Stratton and Co., Bromsgrove Street, Birmingham.

* * *

LectroLinxs, Ltd., have submitted a sample of their new two-way plug adapter which retails at 1s. 3d. This fitment is a combined lamp adapter and wall plug. The wiring once having been made remains undisturbed and the change over from lamp adapter to wall plug is made by unscrewing the cover and reversing the body. A most useful component for amateur shacks.

Empire Calls Heard.

By *Eric W. Trebilcock (BERS195)*, *Moonta, South Australia* :—

FROM JULY 15, 1934, TO AUGUST 31, 1934.

7 mc. : g2ao, 2as, 2av, 2cs, 2db, 2dl, 2kb, 2mi, 2np, 2pl, 2qt, 2rf, 2tm, 2tn, 2tr, 2ul, 2xs, 2yl, 2zj, 5cu, 5mp, 5pl, 5qc, 5vn, 5xh, 5zt, 6hb, 6nj, 6os, 6rv, 6uj, 6rq, 6vp, 6xt, 6yj, 6zu, sulch, 2np, 5nk, ve3ig, 4hw, 4ro, 5bi, 5cd, 5eo, 5fh, 5hc, 5hs, 5hu, 5jc, 5kc, vk9ba, 9nw, vplam, lan, 4aa, 5ab, vs5ac, 6ag, 6aq, vu2fy, yi6rh, zs6am, zu6p.

14 mc. : ve4ae, 4ge, 4ig, 3wa, 5hj, vp5pz, zllce, 1gx, 2gq, 2ja, 2kk.

By *G5MP, Hythe, Kent* :—

FROM SEPTEMBER 16 TO OCTOBER 20.

7 mc. : sulec (r7), rm (r4), sa (r4), sg (6), tm (3), 2ga (4), vk2cs (3), hf (4), lz (3), os (3), oj (4), vq (4), xu (7), zc (3), 3bj (3), bm (4), bw (3), dm (3), eg (5), fz (4), gq (4), hk (4), hl (5), mr (7), no (4), wj (3), zb (3), 4ae (3), ei (3), 5hb (4), wp (3), 7rc (7), 7bj (4), vq4, crp (3), crl (3), vs7gy (3), xzn2c (8), zllba (4), 2ch (5), 3fl (5), ft (4), gm (3), 4ai (6), bm (4), ck (4), fk (6), gp (5), zslh (3), 2a (3), zx2aa (2), gfyv (7) (off Greece).

Figures in brackets denote signal strength, on O-v-1 receiver.

By *BRS822 (J. Alexander, 63, Tennyson Road, Small Heath, Birmingham)* :—

FROM SEPTEMBER 5 TO OCTOBER 23.

7 mc. : velft (4.5.9.), vk2dk (3.4.9.), 2hf (4.4.9.), 2kb (4.4.9.), 2oj (3.4.9.), 2ta (2.3.9.), 2vq (4.4.9.),

2xc (4.4.9.), 2xu (3.4.9.), 2zc (4.4.8.), 3cs (3.4.9.), 3dm (4.4.9.), 3dp (3.3.8.), 3ex (4.5.9.), 3gq (4.4.9.), 3kx (4.4.9.), 3ng (3.3.9.), 5mw (2.3.9.), 7nc (3.4.9.), 7rc (3.3.9.), vo8z (4.4.8.), vp4aa (4.5.8.), 5mk (3.4.9.), 5pa (4.4.9.), zllhy (4.4.8.), 3bt (3.4.9.), 3dj (3.4.9.), 3dx (3.3.9.), 3fp (3.3.9.), 3gm (3.4.9.), 4bt (4.4.9.), 4fz (3.3.9.), ztlf (2.2.9.).

14 mc. : velah (4.4.8.), lbr (4.4.9.), ldn (3.4.8.), lgs (3.4.7.), lgz (4.5.7.), lhg (4.4.8.), 2bg (4.5.8.), 2ew (3.3.9.), 2fg (4.4.8.), 2dx (4.5 mod. c.c.), 3je (3.3.9.), 3lu (3.4.8.), 3qs (4.4.9.), 3tv (3.3.9.), 3tw (3.3.9.), vp2cd (3.4.8.), 5jb (4.5.9.).

By *R. J. Lee (BRS1173)*, *Heathfield, Sussex* :—

FROM SEPTEMBER 24 TO OCTOBER 21.

7 mc. : Sulec (3), nh, 2ga, velbv, 3ba, vk2bx, bw, cs, cn, da, dk, eo, er, kb, kd, kx, ln, lz (2), ng, oc, qp, vq, wu, xj, xu (3), zc (3), zf, 3bj, bq, bw, cm, cy, dp, gm, gq (3), hk (3), hl, ht, jj, jq, kr, kx (4), ml, mp, mr (2), mx (2), ox, 2f, 7jb, kv, nc, rc, vs6ah, zllcw, hy (4), 2ab, bf, bh, bl, bm, bn, bz (4), cj (2), cy (4), fn, fr, gl, gn, gy, hy, ja (2), jq, kk (3), km, kq, lb (6), lq, mo, mr, of, pc (2), 3an, ax (3), az (3), bj (6), bl, cc (2), cm (2), cz, dx (2), fg (2), fl (3), fm, fp (7), gm (4), go (8), gr (2), hk (2), ja (4), 4af, ai, ap, bq (2), ck (3), fk (4), fs, ft, gp, ia, zulj.

14 mc. : Sulec, velex, do, 3jz, vo8hk, vp2cd, vq4crp (2), vp5pz, vs6ah, xzn2c.

Figures in brackets denote number of days stations were heard.

EDITORIAL.—(Continued from page 161).

The ultra high frequencies should enable the average amateur to take full advantage of the known directional properties of ordinary aerial systems, but why should we continue to concentrate on copper wire as a radiator? May there not be some better method of transferring energy to the ether?

Everything connected with radio has changed since the early experiments of Hertz and Marconi except the mechanical medium used to transmit and receive signals. To our mind it is conceivable that some other method of achieving the desired result is available if it can be discovered.

The solution may open up vast possibilities, particularly in regard to work below 56 mc.

SOLILOQUIES FROM THE SHACK.

(Continued from page 172).

"There was a young ham, name of Quilter,
Who removed sixteen mikes from his filter.
His thoughtless young YF
Shorted 'em with a KNYF,

And the "packet" she got darn' near kilter."

And now, pirates, fone-hounds, test-machines,
and the whole lot of you who offend against the
written and unwritten laws of Hamdom, mend
your ways while there's time, or the packet you'll
get will be more successful.

STATION DESCRIPTION, No. 44.

(Continued from page 173).

coated with mildew owing to the continual dampness. The other months are known as the North-east monsoon period, and during this time heavy thunderstorms are prominent, particularly during the inter-monsoon months. At these times atmospheric conditions are terrific, making reception impossible. For this reason, Ceylon is often described as the Isle of Static.

VS7GJ is looking forward to an early return to England on leave, when he will be pleased to renew acquaintanceship with his many friends of the air.

R.E.S. NOTES.

((Continued from page 174).

perienced by G5FV in the North. G2HG seemed to be the most successful station in receiving amateur DX, as in a recent letter the following instances were given:—

LU3CG at 20.00 B.S.T. on 29-5-34.

CR6RD „ 07.00 „ 4-6-34.

Next month I hope to publish circuit details of the CC transmitter in use at G5FV, together with photographs, etc.

Schedules.

G2YL transmits "Test Ten" every Sunday throughout the winter, commencing November 11, times from 10.00-11.00 G.M.T. and 14.00-15.00 G.M.T.

G5FV transmits "Test Ten" most Sundays for a period of 15 minutes after each alternate hour, commencing at 09.00 G.M.T. and ceasing at 17.00 G.M.T. Transmissions will be sent with an automatic sender, but a period of listening will take place after each test.

Reports on the above transmissions will be most welcome, even if negative in character.

VU2BL transmits regularly every Sunday on 28 mc. from 11.30 to 12.00 G.M.T.

W9GBJ states he intends to transmit on 28 mc. on Sunday afternoons (here) during the contest period, using 135 watts input into an R.C.A.800, being a tube specially designed for high frequency work.

Stray.

An article entitled "Gramophone Recording, Record Manufacture, and Record Defects," contributed by Mr. D. W. Aldous (BRS1006), appears in the *British Radio Institution's Annual*. Copies of the Annual can be obtained from the Secretary of the B.R.I., 36, Gordon Square, W.C.1, price 2s. Numerous other technical articles have been contributed by members of the Institution.

WX Here!

Heard by G6GF and G6JQ recently. London amateur in QSO with a Southerner: "It's very nice and clear here this morning, now and then one of those nasty black clouds goes over full of dirt and water."

A POTTED TRAGEDY

Ham
Pliers
1,000 volt wires
Blue flashes
Ham
Ashes.

**R.S.G.B.
NOTEPAPER.**

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RADIO SOCIETY OF GREAT BRITAIN

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