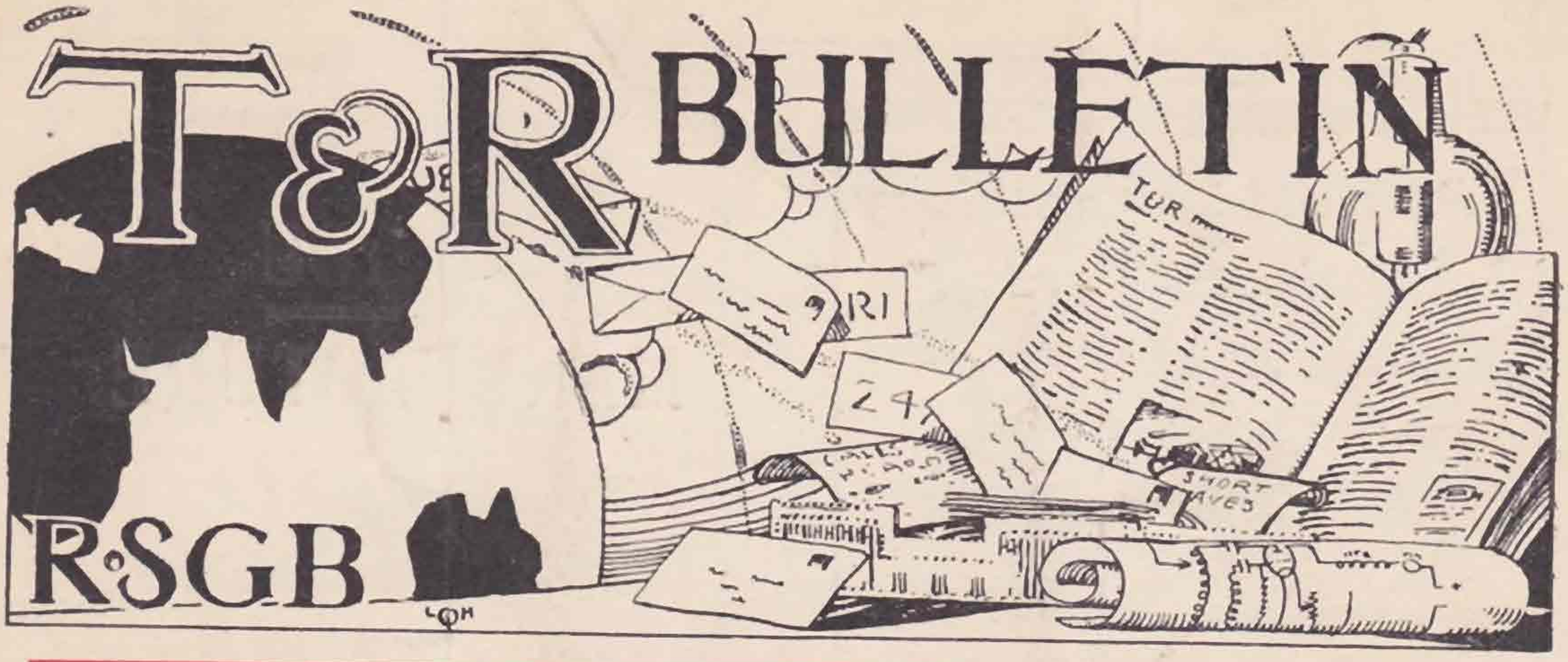

Vol. 2. No. 8. February, 1927. Price 1/-

FOR TRANSMITTERS

AND RECEIVERS.

Wm. C. Borrett. 1927.

THE T. & R. SECTION,
Radio Society of Great Britain

THIS SECTION of the Radio Society of Great Britain is a virile and progressive body of amateur radio experimenters bonded together for promotion of knowledge and brotherhood of those interested in the Radio Art. It exists also with the object of the advancement of the Art, the representation of the amateur in legislative matters, and for the disciplined use of the ether in so far as amateur experimenters are concerned.

The Section is governed by a Committee which is elected annually in accordance with rules approved by a Convention held at the Institute of Electrical Engineers, London, in September, 1926, and the Constitution is democratic in character.

The policy of the Section is to accept to its Membership any person or persons who are able to satisfy the Committee that they are interested in Radio Art, or who in their opinion are persons whose Membership is desirable in the interests of the Amateur Experimenter.

The " Bulletin " is published by amateurs for amateurs. The Section is the body recognised by the British Postmaster-General as being representative of the aims and objects of the experimenter. Through its agency great concessions have been obtained in the matter of licences in the past. We have members in every corner of the earth, and we welcome inquiries from prospective Members at all times. A bona fide interest in experimental Radio work is the only essential qualification.

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Reports to F. R. Neill (5NJ).

T. & R. Bulletin

Devoted to the Interests of the Radio Amateur Experimenter.

THE RADIO SOCIETY OF GREAT BRITAIN,
53, Victoria Street, S.W.1

HON. ORGANISER:
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The EDITOR will be glad to receive articles and illustrations within the scope of the BULLETIN. The illustrations should preferably be double size and should be original. Contributions should be addressed to 53, Victoria Street, S.W.1., and marked EDITORIAL, ADVERTISEMENTS, Etc.

SUBSCRIPTION RATES

The T. & R. BULLETIN IS SENT POST FREE TO ALL T. & R. MEMBERS.

The price to non-members is **1/1** *post free per single copy. Non-members may obtain the Bulletin by ordering each copy singly in advance. The Editorial Committee reserves the right to refuse copies to non-members if so disposed.*

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Rates for display advertisements will be sent post free on application. Small advertisements are charged for at the rate of **1***d. per word or a minimum charge of* **2/6.**

T&R BULLETIN.

The only British Wireless Journal Written and Published by Amateurs

FEBRUARY, 1927. Vol. 2. No. 8.

EDITORIAL

Please Write Right.

Many times of late the Editor or Hon. Organiser, term him what you will, has been in receipt of communications which are not matters which his department of work ordinarily deals with. In view of these circumstances we have published a set of standing notices for correspondents at the rear of this issue of the BULLETIN and it is hoped that all members will assist us by observing these notices as far as possible. Careful observance of the various paragraphs will considerably facilitate the vast amount of work which is now becoming our daily lot to handle, for despite the great increase of correspondence and the like which we have been called upon to handle during the past year the paid staff at Headquarters has only been increased by one junior hand, and the honorary staff has not been increased at all.

About Complaints.

We have also been in receipt of a few complaints concerning our general behaviour as regards the BULLETIN and its date of delivery to members. Furthermore, we have had complaints addressed to the Hon. Organiser which seem to indicate that many members do not appreciate the position as regards the status of ourselves and our contributors. We would like to make it quite clear that the whole of the work at present done in connection with the BULLETIN both by contributors and the Headquarters Staff is done in an honorary capacity and that no payment whatsoever is received by the various members who produce the magazine month by month. Therefore we would ask that any complaints that should be made would be made with due regard to the fact that at present we are somewhat handicapped owing to the fact that everything is done in the private time of a few individuals. Nevertheless, we welcome criticism or complaints and will do all in our power to remedy past mistakes; all that we can ask is that certain members should be reasonable in their expectations.

Apologies.

We must apologise for the late appearance of the BULLETIN during the past two months, but like all human beings we at Headquarters must have a little relaxation occasionally, and the Christmas holidays put a severe strain upon our organisation. We promise, however, that we will do much better for the remaining months of the year.

Last Month's Editorial.

Our Editorial last month appears to have created something akin to public interest, seeing that the daily Press thought fit to copy it with modifications which did not give the true purport of the article under discussion. We did not intend to lead members to think that we are in fear of losing our present concessions as regards experimental wavelengths, but rather that it behoves everybody to see that he does his best to increase our strength against the chance of possible attack upon our freedom in the ether from any quarters. It seems that some readers thought that we were in fear that the British amateur was to lose his experimental wave-bands, but we, of course, were referring to the amateur in general and not of this country in particular. We feel agreeably surprised, however, to note that the great daily Press has so much interest in our doings.

The Convention, 1927.

And now, everybody, what about our Convention this year? It seems rather early to be talking about it, but as stated in our Editorial last year, we think that the Convention should be the culminating episode of a year's work. We have not yet fixed the date or any single detail so that now is the time to send us any ideas that you might have about this. It is wondered whether we should get a good response if we asked how many members would be prepared to take their vacation or a part of it so as to be present at a real good and thoroughly typical Convention, the cost of which might be, say, a guinea? Members would, of course, have to pay more than this should they be unable to arrange for board and lodging with friends or relatives in the London Area, but we should very much like to know what we might expect. The Convention would take the form of lectures, sight-seeing parties, a concert and a dinner and also, perhaps, many other jollifications and could be spread over a week. Come now, let us have your ideas everyone, and don't forget to read the notices on the back page before writing.

Official Notices.

The QRP tests announced to take place in February will proceed as follows throughout February and March:—

Weekdays, 11 p.m. to 1 a.m. G.M.T.

Sundays, 11 a.m. to 1 p.m. and 6 p.m. to 8 p.m. G.M.T.

Wavelength 23 metres. Will all stations and magazines please note?

The response to the announcements concerning the newly-formed Experimental Section has been very poor owing possibly to the fact that some members are of the impression that only expert experimenters can become members. This is not true, however, and any member can become a member of the new Section.

Those members who have kindly contributed articles to the BULLETIN which have not yet been published are informed that these are awaiting a favourable opportunity to appear. ALL matter which has not been rejected on submission will be used.

A Syllabus of Meetings for the year is in course of preparation and will be circulated to members as soon as ready.

Members who are in possession of valuable information as to QRA'S which do not appear in the Official Log Book and Diary are asked to submit this to us for insertion in our records so as to make next year's Diary as complete as possible.

Mr. J. A. J. Cooper and Mr. F. A. Mayer were elected on to the Council of the Radio Society of Great Britain at the last Annual General Meeting of the Society held in December. Both these members are T. & R. members.

Mr. H. Bevan Swift, our chairman, has been appointed one of the members of the Society representing the Experimenter on the B.B.C. Advisory Committee.

The British Postmaster-General has refused to recognise the International List of Intermediates prepared and circulated by the International Amateur Radio Union. Members will therefore continue to use intermediates as used hitherto, so far as the British Experimenter is concerned.

We are advised that the Australian Government has forbidden all amateur traffic on the wavelengths of 20 to 37 metres between the hours of 5 and 7 o'clock Sydney Time whilst the "Renown" is in harbour. It will be recollected that the "Renown" is carrying the Duke and Duchess of York.

Annual General Meeting

HELD AT THE INSTITUTION OF ELECTRICAL ENGINEERS, DECEMBER 17, 1926.

The annual general meeting of the T. & R. Section was held upon the above date and was very largely attended. It was preceded by tea kindly provided upon this occasion by Mr. Ostermeyer. The chairman, Mr. H. Bevan Swift, took the chair at 6 p.m.

The notice convening the meeting and the minutes of the last annual meeting were read by the Secretary, Mr. Gerald Marcuse, the latter being duly confirmed.

The Secretary then read his report for the year's working showing the large number of meetings and dealing with the other activities of the Section, including the Convention. This was followed by Mr. J. A. J. Cooper, the Honorary Organiser of the BULLETIN, who gave a statement regarding the work connected with it. Mr. Cooper also read the balance sheet of the Section in the absence of the Treasurer.

Mr. A. Hambling gave a statement showing the financial affairs connected with the BULLETIN. This showed that all expenses connected with printing and publishing had been covered.

Mr. Morrow described the activities of the newly-formed Research Section.

The above reports were all duly confirmed and adopted. Mr. Marcuse then made an announcement regarding the presentation of his cup for the best transmitting record of the year, which was won by Mr. Goyder.

Mr. Simmonds (the previous holder) then formally presented the cup to Mr. Goyder, who made a brief speech of thanks.

The Chairman then paid a tribute to the work of the Secretary, the Honorary Organiser and others of the committee for the indefatigable work they had done during the year past.

The Committee then resigned and the chairman was re-elected to continue the business of the meeting.

The meeting then proceeded to elect a new committee. The following members were elected to serve as the new committee:—Messrs. Simmonds, Goyder, Cooper, Bevan, Swift, Marcuse, Hambling, Secretan, Alford, Robinson, Hogg and Nickless.

The following area officers had previously been elected:—

Scottish Area—Mr. J. Wyllie.
North Britain—Mr. S. R. Wright (2DR).
Mid-Britain—Capt. H. J. B. Hampson (6JV).
Northern Ireland—Mr. F. R. Neill (5NJ).

The following area officers have since been elected by the Committee:—

South-East Britain—Mr. F. A. Meyer (2LZ).
South-West Britain—Capt. G. Courtinay Price (2OP).
London Area—G. A. Exeter (6YK).

The meeting then proceeded to consider the offer of the parent society for the Section to become corporate members of the main society. The motion was read by the Secretary which was formally proposed by Mr. Hart and seconded by Mr. Watts. The following speakers took part in the discussion which followed. Capt. Hampson, Mr. Alford, Mr. Cooper, Capt. Hartridge, Mr. Dixon, Mr. Marcuse, Mr. Goyder, Mr. Hogg, and Mr. Maurice Child.

The motion was then put to the meeting and the voting in the room was as follows: In favour of acceptance, 47; against, 9. To this was added the result of the voting of country members unable to attend the meeting which was as follows: In favour, 146; against, 14. Town members unable to be present: In favour, 26; against, 9. Total in favour, 219; against, 32.

The motion was therefore declared carried.

Mr. Gregory raised the question whether in the event of fusion, the meetings would continue to be held in the reading room as before, where smoking was permitted. It was stated that this would be adhered to.

A vote of thanks to the late Committee, coupled with the name of the Chairman, was proposed, seconded and carried with acclamation.

A vote of thanks was also carried to Mr. Exeter

for his work in connection with the QRP tests.

The Chairman proposed a vote of thanks to the two gentlemen (two visitors) who had kindly acted as scrutineers of the ballot for Committee.

The meeting was closed at 8.15 p.m. by the Chairman.

An Accurate Method of Measuring Small Quantities of High Frequency Current.

THE method about to be described below is the result of much work in connection with the measurement of small high-frequency currents, and may be recommended in any case where currents to the order of milliamps have to be considered. This condition may arise in the measurement of the current in an aerial when supplied with very low inputs. A typical example will be found in the forthcoming low power tests on short waves.

The method requires a thermionic valve, preferably of rather special construction, although any thermionic valve may be used for the purpose.

The particular characteristics required for the best results with the foregoing scheme are as follows :—

The filament must have a fairly even filament watt emission ratio throughout, with a fairly considerable range of filament current. That is to say, if the filament current be increased from some definite value by a few milliamps, a correspondingly large increase must take place in the plate current. This can best be obtained when using a very thick short filament having a low resistance, taking relatively a high current (·3-·5 amps) at a potential of ·7-·9 volts.

If a filament of this description is supplied with a biasing current, that is, if a certain value of current is passed through it, then the increase of anode current due to any extra heating of the filament will bear a fairly definite ratio to the amount of such extra current which may pass through the filament, provided that both anode and grid are at a constant potential with respect to the filament, and are also in close proximity to the emitting surface.

This fact may be made use of to measure small high frequency currents, or for that matter quite large ones, provided that the filament of the valve is shunted by a suitable radio frequency shunt, or that the filament is sufficiently large to carry the requisite extra current to be measured. However, for our purpose, a valve capable of dealing with 50 to 100 milliamps of extra current would be sufficiently large.

It is suggested that a valve should be selected having a filament current consumption of not less than ¼ amp. such as the D.F.A. 4, D.P. 425, D.P. 625, or P.M.2. Of these last four valves the D.P. 425 or D.P. 625 are probably the best.

The arrangement shown in Fig. 1 is suitable for measuring a current of 5 milliamps.

Z is the ordinary 5-watt Transmitter.

L1 is the ordinary coupling coil of perhaps two turns, which is used to transfer energy from the transmitter to the aerial counterpoise system.

F and F1, are ends of the filament of the valve.

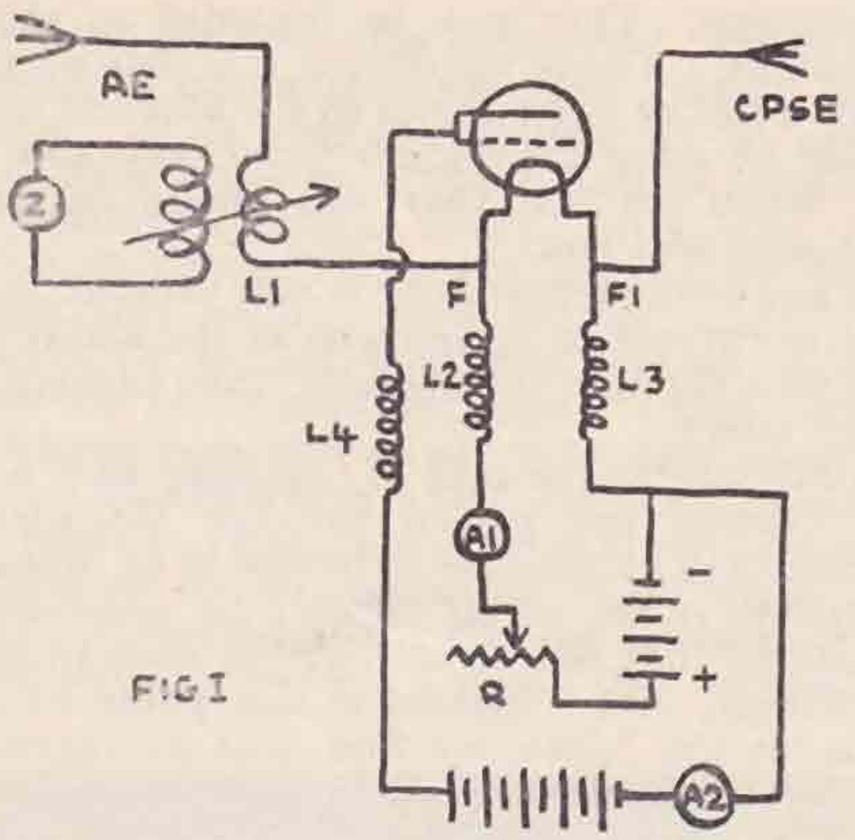


FIG I

L2 and L3 are two radio frequency chokes capable of carrying the maximum current that the filament will stand, and having sufficient inductance to prevent leakage of radio frequency currents from the aerial counterpoise system.

R is a resistance of say 5 ohms.

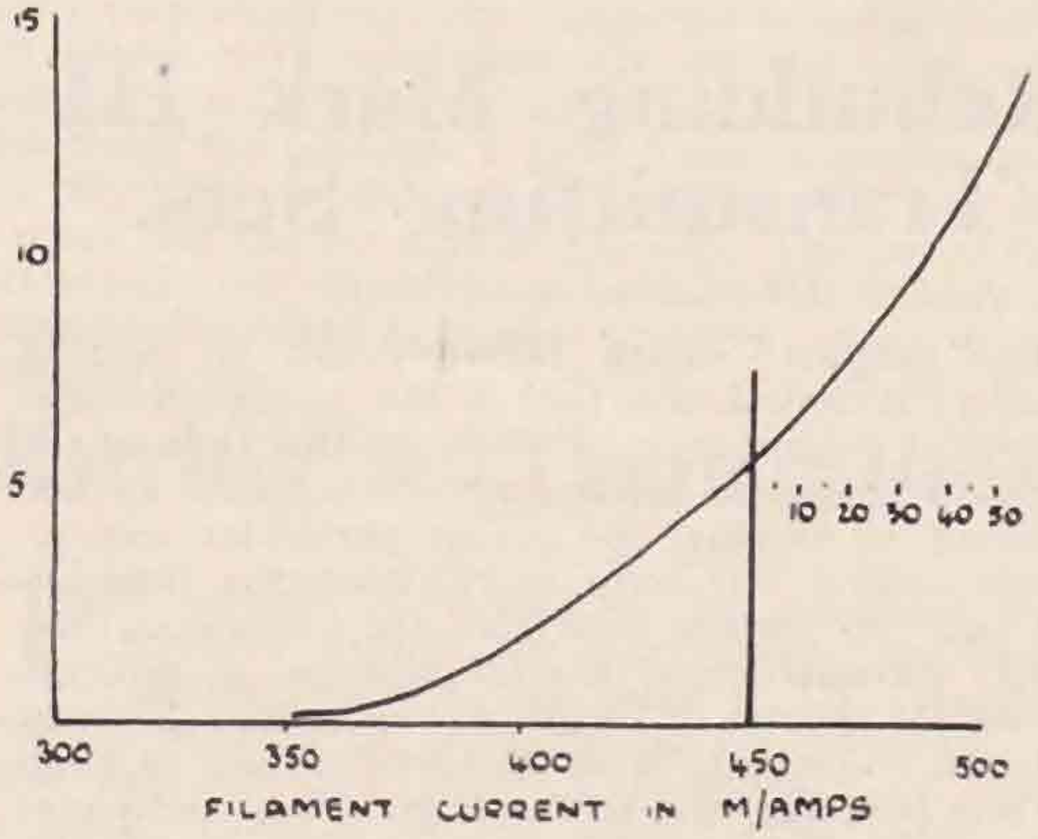
A1 is an ammeter with a fairly open scale reading up to ·75 amps., while B is the filament accumulator of suitable voltage for the valve employed.

L4 is the radio frequency choke serving the same purpose as L2 and L3, the only difference being that it is only required to carry the anode current of the valve and may consist of 36 gauge wire.

A2 is a milliameter of suitable range for the anode current of the valve employed, a convenient value being 0-15 mA.

If then the filament current is fixed at a known value, and the high frequency alternating current which is generated in the aerial counterpoise system be passed through the heated filament, an increase of temperature will take place.

If, now, with everything in place as in Fig. 1, a curve be plotted showing filament current against emission a curve similar to Fig. 2 will be the result.



It should be noted that in the case of the particular valve A.C.1 for which this curve was made, the really useful portion of the curve starts when the filament current is ·425 amps., giving a corresponding emission of 3 milliamps, up to a filament current of ·5 amps. with corresponding anode current of

15 milliamps. This may be regarded as more or less straight. To use the device, it is only necessary to draw a line at right angles to the filament current ordinate at some convenient point, say 450 milliamps, when we see that the anode current of 6 milliamps will flow.

The key to the transmitter is now pressed, causing a minute current to be induced in the aerial which has to pass through the filament, thus causing some heating effect.

We will say for the sake of argument that 5 milliamps' current are passed through the filament. This results in an increase of from 6 to 6½ milliamps. Conversely, if the aerial current be unknown, we will assume that the anode current rises from 6 to 9 milliamps. On looking at the point of intersection on the curve, we find that an increase of 23 milliamps has taken place in order to produce this extra emission. Therefore we are safe in assuming that the value of the anode current is 23 milliamps.

Originality is not entirely claimed for this method of measuring these currents, but it is suggested that the method is probably known to few people, and will therefore be of great use in the current low power tests which are now taking place under the auspices of the T. & R. Section of the Radio Society of Great Britain.

The arrangement shows two distinct advantages over the usual method of multi-junction thermo-coupled instruments. In the first place it it extremely cheap, and secondly the resistance of this filament is in the neighbourhood of 2 ohms, as compared with 12-14 ohms in the case of the thermo-coupled instruments, and that the thermo-coupled instruments can usually only be supplied in the current squared calibration, whereas the instrument above described can be calibrated for direct reading.

As a last point, the best and most sensitive arrangements depend upon a low filament resistance, and it is therefore recommended that a valve be employed in these measurements having a low filament resistance.

L. E.

Rebuilding Mark III Transmitting Sets.

By G2ZC and MAG.

As "surplus" Mark III sets can be bought cheaply, it struck me that a few notes on some successful modifications I made on this type of set might be useful to others, who either own, or are thinking of buying one. The particular experiments carried out were on wavelengths between 260 and 280 metres, but from the general outline given, reconstruction should not be a difficult matter for shorter or longer wavelengths. For my tests (in connection with Artillery) I had to keep the sets portable, and so the original box and panel were used. If reference is made to the sketch, the lay-out of the components will be seen, and to facilitate matters the actual wiring of the set is drawn. The aerial and earth terminals were removed from the underside of the panel, and remounted in the same positions on top of the panel. The "send-receive" switch was removed altogether, as was also one of the variometer rotors. A variable condenser was included in the grid circuit, and the original valve holder was used, except that the panel was drilled so that the leads instead of crowding through one hole, are now well spaced.

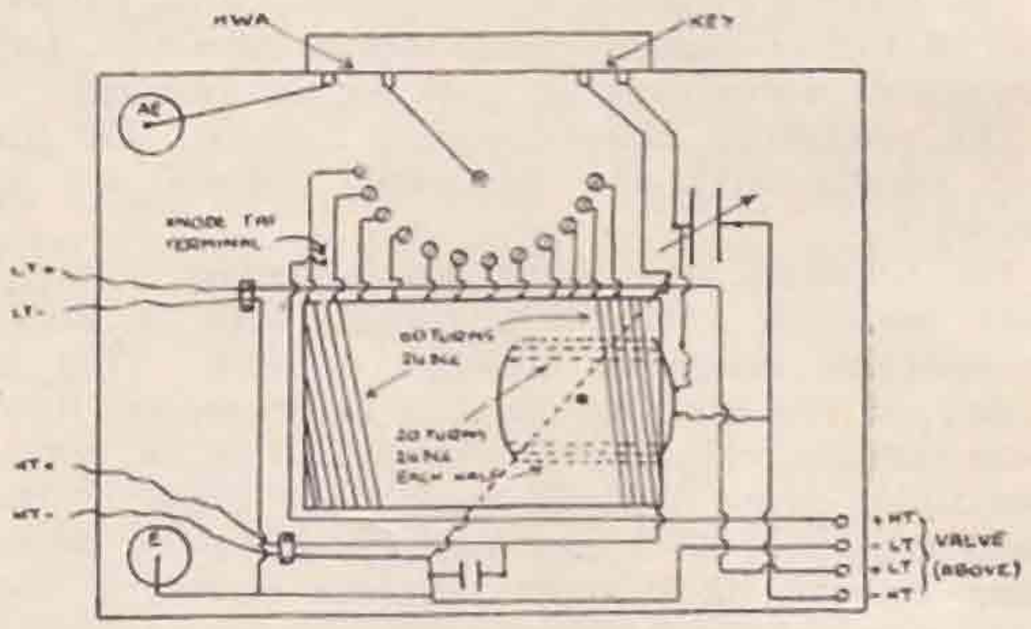
The main coil was removed with 24 D.C.C., sixty turns slightly spaced with tappings taken at every fifth turn from the end, these tappings being taken to their respective studs on the radial switch.

The "Long-Short" wave switch was removed, as was also the grid leak and grid condenser.

The rotor left in the set was rewound with 24 D.C.C. wire, 20 turns on each half (*i.e.*, 40 turns in all).

All wiring was well spaced, and connections all soldered, as in the original set, most connections were held by nuts, and wires were well bunched together.

The circuit (R.F.B.) is practically unaltered, but had to be made as fool-proof as possible for my particular tests, hence the cutting out of every complication, in the way of switches, etc.



On actual test, on my own aerial and using an ordinary earth, signals were reported on O-V-O at R3 over 50 miles away when I was using 2·1 watts (PM4 valve). Under "field" conditions, using a very rough aerial and an earth wire held down by a gunner's jack-knife stuck into the ground through the wire (Hi!!), signals were reported R8 by G-5GW using O-V-I, and a similar aerial and earth system, about five miles away. In both cases ordinary dry batteries supplied the H.T.

It might be added, as a point of interest, that in every case W/T was equally fast, and in many cases faster than field telephone, as I found by sending fast and repeating, that I got my "R-OK" back every time without another repetition, while the telephonist was still at it on his telephone trying to get the other end to get his message. At one point the field telephone (which was laid in case the W/T system broke down) broke down itself, and several Hi! Hi! workings took place between 5GW and myself! We proved the reliability of W/T, at any rate.

SUBSCRIPTIONS.

Members are reminded that many subscriptions now fall due and that it would be a considerable help to our Office Staff if they would remit these as early as convenient to 53, Victoria Street.

Address all Cheques, Etc. to the Secretary—

RADIO SOCIETY OF GREAT BRITAIN,
53, VICTORIA STREET, S.W.1.

The Tuned-Grid Tuned-Plate Receiver.

By CHA2FF (China).

I HAVE recently reconstructed my ordinary "3-circuit" receiver in accordance with the diagram shown in Fig. 1. The whole dope was very kindly sent me by Col. Clair Foster, of Carmel, California (U6HM), of world-wide radio fame, who has not spared himself to guide my tyro's footsteps into the Ham's True Path. As, with me at any rate, the results are so superior to what I had previously obtained with the old "3-circuit," I have thought the lay-out might be of interest to British amateurs, some of whom may not be familiar with the circuit.

The main advantages in working, in my experience, are :—

1. Simplicity—two coils instead of three, and no arrangement necessary for variation of coupling.
2. Ease and sensitiveness of regeneration control —regeneration only occurs over a few divisions of the plate condenser for any position of the grid condenser, and it is possible to build up the strength of signals greatly by adjusting to exact point of beginning of oscillation.
3. Unwanted signals—especially broad QRM from local spark stations—can be tuned out more effectively as regeneration is confined to a narrower frequency band.

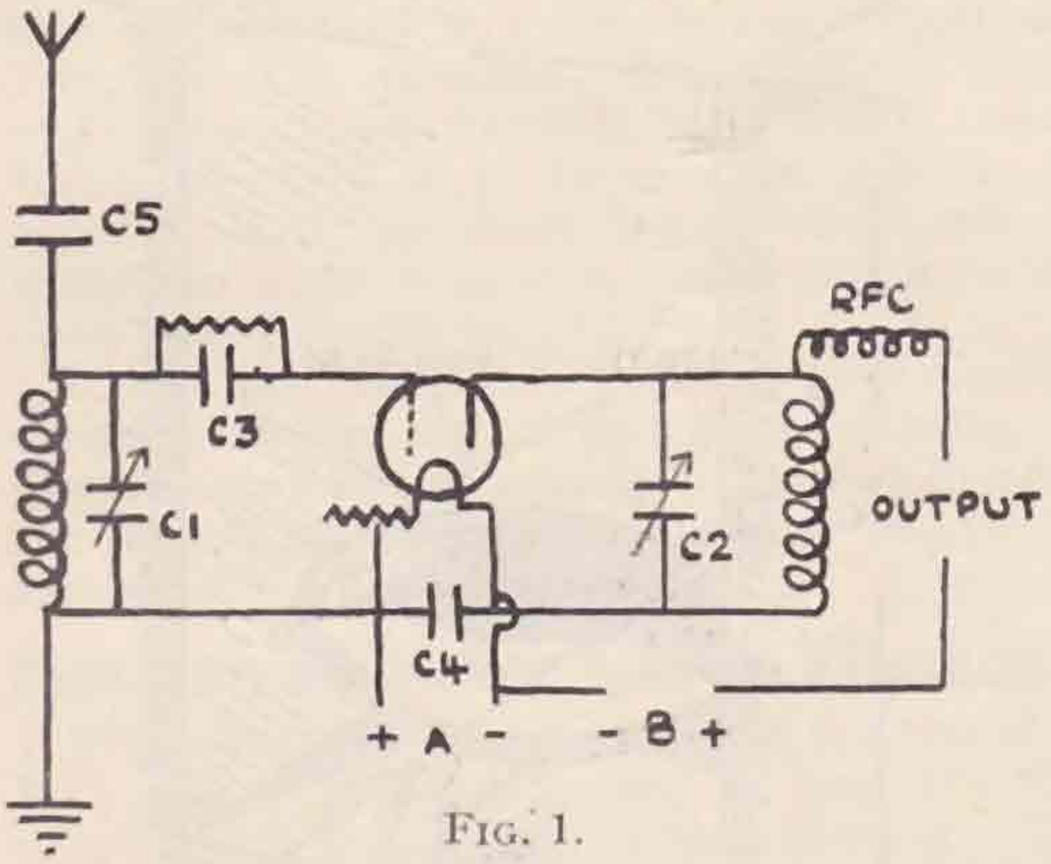


FIG. 1.

Fig. 2 is a photo of U6HM's lay-out—a beautiful example of simple and low-loss design. As I live in a dust-laden atmosphere the "bread-board" lay-out has its drawbacks, and I have adopted a closed-in construction as shown in the photo, only the valves and coils (changeable fitting into sockets) being outside. This shelf system allows very short low-loss wiring. The valves are not fitted into sockets, but the four prongs pass through holes in the ebonite shelf (3-16in.) and the leads underneath are soldered directly to the prongs. Holes for opposite prongs are bored slightly askew and the valve fits in quite tightly.

In the photo the topmost central knob is the filament rheostat. In the centre is the filament switch. Beneath is socket for jack for 'phones for using detector alone. 'Phones are shown inserted for use with detector plus one stage. On right is grid circuit condenser. On left plate circuit condenser. It is very convenient to be able to dispense with audio stage magnification, especially when reading through heavy QRN—the usual condition in China. Detector alone gives fainter but clear sigs. with a silent background. I am not convinced, in fact, that it is ever an improvement to use audio magnification. Using detector alone, I have been able to get very clear music and voice from 2XAF, which is 180° longitude from here.

One point is important—for a time I found it impossible to obtain oscillation at all when using the audio stage, although the set functioned perfectly on detector alone. I found that by shunting

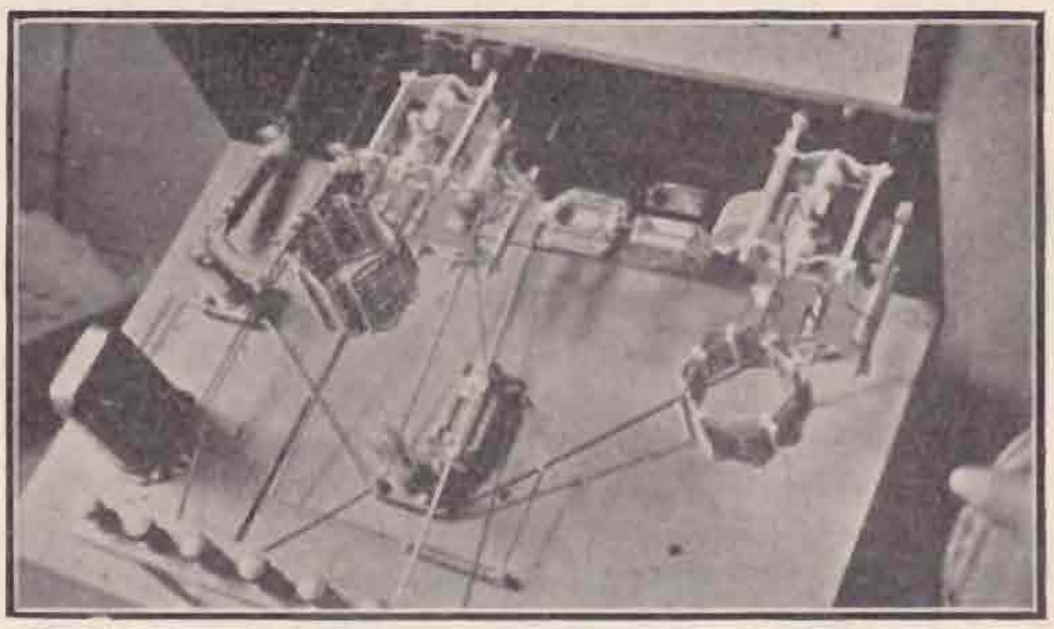


FIG. 2.

the primary of the transformer by a .00025 fixed condenser the trouble ceased. It is also advisable to shunt the 'phones with a similar condenser, otherwise if the position of the 'phones' cord is moved or touched there is a change in tuning. Body capacity effect is there, and one must keep still when receiving faint sigs. Anything moving within three feet of the coils will cause remarkable QSSS. But is that not true of any sensitive set that is capable of really critical tuning ?

Dead spots (if any) can be overcome by insertion of a very small capacity condenser in aerial lead—in series with condenser C5 on the plan. An ordinary knife-edge switch with the knife nearly touching the contacts I have found sufficient, and in my case is the regular switch used for disconnecting the aerial from the set. The use of this extremely low capacity condenser seems to have no appreciable effect on signal strength, which seems strange enough !

G. W. F.

Keying a Transmitter.

By R. H. REECE (2MS).

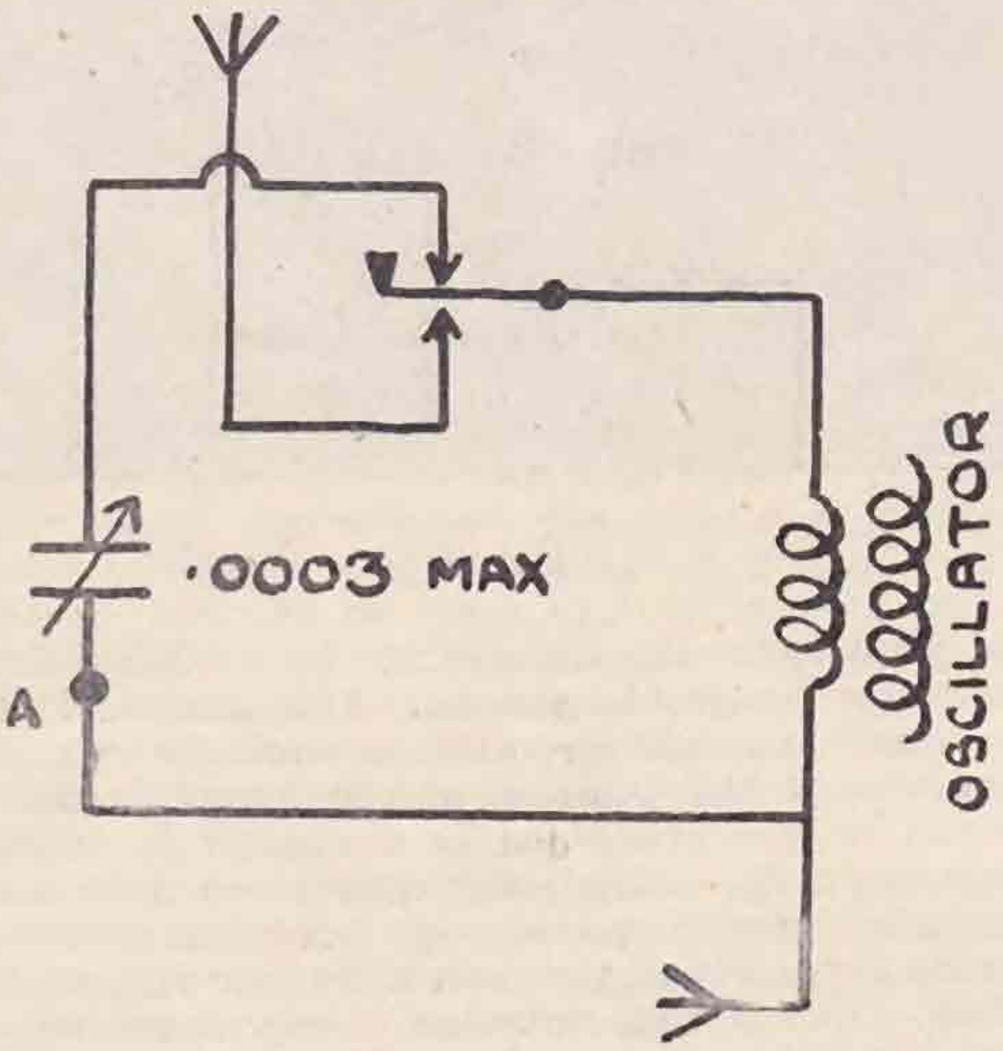
THE method of keying to be described was evolved during the QRP tests on 44-46 metres, when I was using a L.C. Hartley circuit, working the aerial on its 3rd harmonic. I was determined to have a chirpless C.W. note without using a spacing wave. (The latter, of course, was very rightly barred by the rules.)

I began by keying in the aerial lead, using a relay constructed from an old electric bell, with the contacts mounted on an ebonite extension of the armature, to avoid losses in the leads to the key, and capacity effects. QSB was very chirpy, and, moreover, in the spacing position there was still a

arge current in the cpse, which was presumably radiating to some extent, though the QRH was well below the 44-46 band.

It was found that a great part of this chirp was due to alteration in the aerial resistance as the hot wire ammeter heated up. Removal of this considerably improved matters, but still it seemed that anything that altered the conditions under which the oscillator valve was working caused a chirpy QSB. I was using rectified and smoothed A.C., and the volt drop across the filter on load was as great as that across the valve, so it was obviously necessary to keep the H.T. feed constant.

It was then decided to try the effect of keying by substituting an artificial aerial for the radiating one during the spacing intervals. Accordingly a "spacing" contact was added to the relay, and the usual inductance, condenser and resistance connected up between this contact and the cpse.



This resulted in a perfectly steady note. It was soon found, however, that much the same result could be obtained if the inductance and resistance were omitted, the circuit then being as in the diagram. (The relay is not shown in the diagram.) The condenser was varied till a position was found where there was no change in the plate feed to the oscillator on keying.

There was still a large current in the cpse during the spacing intervals, however, but it was found that this could be reduced to a very small value by inserting a 30-ohm filament resistance at the position marked A in the diagram. It could, if required, be eliminated completely by fitting a second pair of contacts to the relay to disconnect the cpse as well.

Underground Aerials.

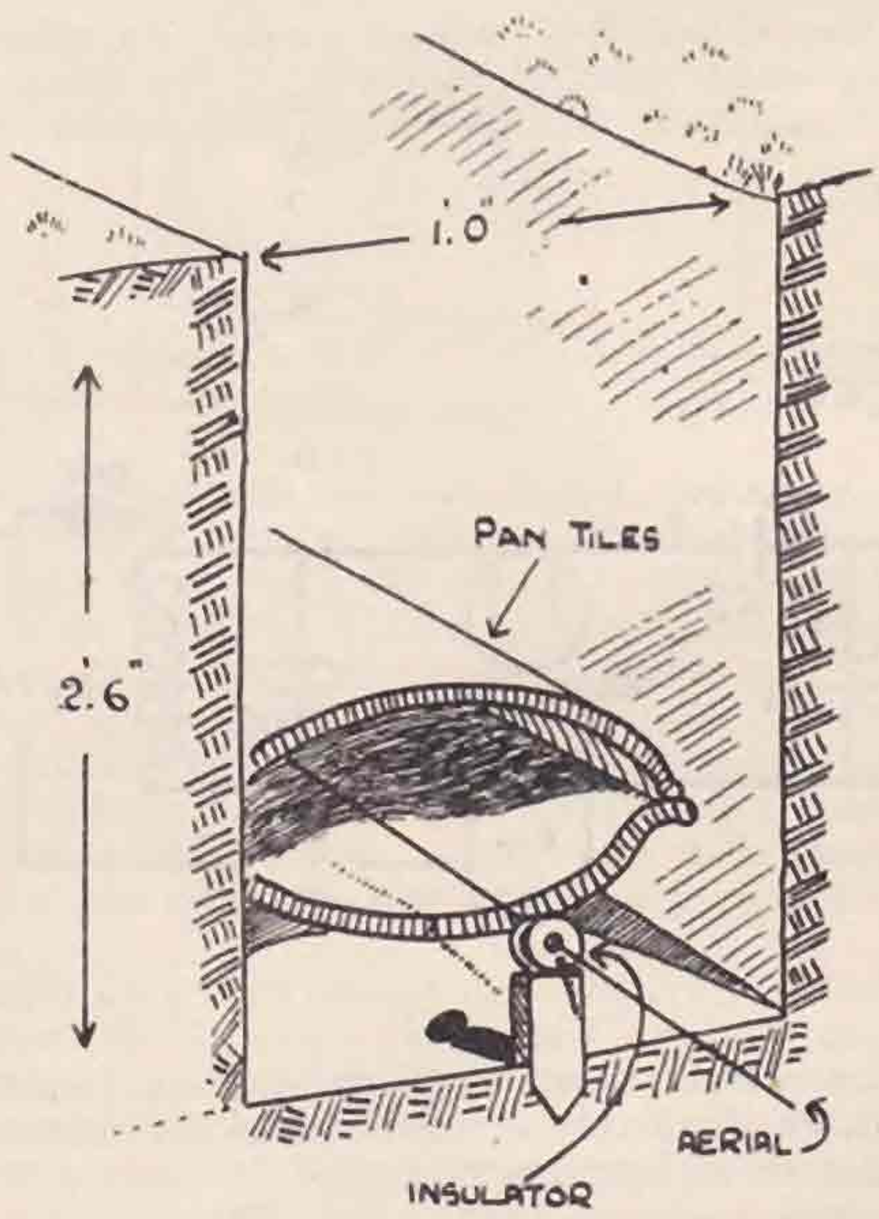
By C. H. Targett (6PG).

SOME eighteen months ago experiments were commenced at the writer's station with a view to studying the operation of underground aerials. The transmitter at that time being licensed for artificial aerial only, the preliminary work was done on the reception side. The receiver used throughout was a straight O-V-O, using interchangeable coils tuning from 20-20,000 metres. The earth used was a rising main-water pipe.

The first aerial to be tried consisted of a length of heavy rubber-covered cable, overall length being about 60 feet. This was laid in a shallow trench about 6in. deep along the garden path, one end terminating in a small bottle.

The results obtained with this were rather disappointing and were of not very much value.

The next step was to construct an aerial of a nature likely to yield results of some value. This was done by assailing the garden path again, this time a trench 2ft. 6in. deep and about 1ft. wide being dug. In this the aerial was suspended on a number of little posts, each having a small reel insulator on top through which the wire was threaded. The whole was then encased in a number of pan tiles, taken from a stable roof which collapsed,



placed so that the wire was compietely surrounded by air. The garden path was then replaced, the wire being brought above ground by means of a length of rubber hose, sealed at the top with wax.

The results obtained with this arrangement were very satisfactory and interesting. Signals on the shorter wavelengths came in extremely well, there being almost no QRN, while the signals themselves appeared to be much steadier than with the usual type of aerial. The most striking thing noticed was the fact that although stations working on short waves were every bit as good as with the elevated wire, long wave stations disappeared completely.

For example, 5XX was absolutely inaudible, although the receiver would oscillate perfectly on that wavelength. 2LO (distant about 16 miles) was just audible, while on 90 metres downwards there was absolutely no difference in strength using either system.

That the underground system is suitable for DX is shown by the fact that, during these tests, short wave signals have been received from the whole of Europe, North and South America, Indo-China, Australia and New Zealand.

Results from the transmission point of view are equally interesting. The transmitter used consists of a Hartley circuit, employing an M.O. D.E.5 valve, working off 2,300 D.C. mains. Maximum power used was 8 watts.

The first tests were conducted on 150-200 metres. The main points noticed were the steadiness of signals and purity of note.

Tests on 90 metres showed an increased range, but beyond that no very striking points were noted.

On 45 metres, range was, of course, again greatly increased, and tests showed that with this system bodily capacity effects are greatly reduced. Results obtained show that this arrangement is more or less directional. The best DX obtained was Madeira, Rome and Cadiz, also the Swedish ship " S.G.T." when 400 miles south of Madeira. The point to be noted is that the three best stations are all within an angle of approximately 30° from the open end of the aerial.

It is hoped, in the near future, to commence experiments on the 23 metre wave, using an underground aerial arranged somewhat after the Hertz type, which appears to be so successful.

Note on Rectifier Valve Filaments

When rectifier-valves are used for the H.T. D.C. supply it is customary to heat the filaments with A.C. from a transformer. The two filaments are connected together and from the positive side of the H.T. supply. The negative lead is taken from the centre of the H.T. secondary winding. The rectifier filaments are therefore at a very high potential, and there is the full H.T. voltage between the primary and secondary of the rectifier filament transformer. This calls for an enormous amount of insulation ; sometimes the filament winding is at least half an inch from the primary and the core. At any rate the secondary must be well away from the other parts of the transformer. This means that the regulation will be very poor ; the secondary voltage may be 20 v. on no load, and may drop to about 10 v. when the two filaments are switched on. With only one filament connected it may drop to about 15 v. because the load is smaller.

Now, suppose that the rectifier valves are in operation with the filaments connected in parallel, and suppose that one of them dies from old age or some other cause. Then one filament ceases to take any load, up goes the voltage across the other filament—it may be as much as 50 per cent. increase—and if the filament has been used for some time—well, you know what that means !

Here is a way to overcome the difficulty. Wind the secondary for double the filament voltage plus a little to make up for drop, and connect the filaments *in series*. Then, if one filament goes out, the current is cut off, and the other filament remains intact.

Also, instead of having to wind the secondary with insulated $\frac{1}{8}$ inch copper rod (!) to carry the double current (filaments in parallel), you will be able to use ordinary wire (no thicker than 14 s.w.g. for 5 amp. filaments) to carry the single current. But don't forget that the filaments are to be in series, and you will use double the voltage. 6LJ.

Radio Trade Notes.

THE Central Radio Laboratories, manufacturers of variable resistances, offer important improvements on their products of last season and with the addition to their already extensive line of another variable high resistance, known as the Heavy Duty Radiohm, especially designed to control the output current of " B " battery eliminators, or for other radio purposes requiring greater current-carrying capacity than their standard units. These new Heavy Duty Radiohms are made in three distinct types, namely : No. 50M, with a resistance variable from 5,000 to 50,000 ohms, to be used primarily as a detector voltage control, also as the amplifier control on some circuits ; No. 10M, with a resistance variable from 0 to 10,000 ohms, for use as an amplifier voltage control in series with the high voltage output ; and No. 2M, with a resistance variable from 0 to 2,000 ohms, especially designed as a C bias control on combined " B " eliminators and power amplifiers.

These new Heavy Duty Radiohms will carry a continuous load up to three watts, and have been approved for use in " B " eliminators by the Raytheon Laboratories. Simplified control of the various output voltages is an outstanding feature of these units, as a single turn of the knob gives full resistance variation, thereby enabling the panel to be accurately marked to indicate the proper setting for various voltages. The fact that these units retain their resistance permanently, after proper voltage setting has been determined, and that they remain smooth and noiseless in operation for the life of the eliminator, not only appeals to the radio fan who builds his own, but has induced many manufacturers to incorporate them in their products as standard equipment.

The base of these units is $2\frac{1}{2}$ inches in diameter and, together with arrow-marked knob, are moulded of bakelite. They afford the popular single hole mounting with bushing and shaft insulated from all current-carrying parts. Insulation tested to withstand 1,500 volts.

Irish Notes.

By 5NJ.

I HAVE only had one report from the Free State this month, so am wondering what has happened to the GW stations. The only one who seems to be doing very consistent work is 11B, who has had a very satisfactory month's DX. Although he found conditions generally rather poor for working U.S.A., yet on 7 watts he had been reported R4 in the 5th district by U5ALH, and has worked U1AAD, 3KR, 2CVJ, 1APV (twice), 2TP and 2CUQ, all before 00.30 G.M.T., his signals being always readable and an average strength of R4-5. He will shortly be on crystal control.

In the North, good DX continues to be done. 6MU has had a splendid month, and is running schedules with U8ADE up till 11.30 a.m. on Sunday mornings, and also with Y-DCR. The latter station he has worked on only 2.5 watts. He has also been heard by U1RD on 20 metres. Other DX includes two-way working with Z4AA, A2NO (where he was reported R7), Fi8FOK, IDH, IC-SN1, and JM2PZ. The latter two are first QSO's from the British Isles, and I congratulate 6MU on this fine work. Reports are also to hand from BXY, C9AO and Y2BG. 6MU will shortly be crystal controlled also—probably by the time these notes appear.

2IT, after a strenuous three months' work, has now got his crystal functioning perfectly, and has had an excellent month also. He has worked about 14 U.S.A. stations, Mosul, A2NO, where he was reported R8, and all Europe. He is starting regular DX work again after a long absence, and has made various alterations to suit the crystal. He should be one of the finest stations in the country very shortly, when he gets everything in working order.

5GH is still off the air, having had various troubles to keep him away from Radio, but he says he still remembers the code and will be heard again shortly, hi!

6HI is still QSO various G's, but complains that local stations do not answer his call. I hope this is rectified by now, OM.

2BB, a new station, operates mostly as a portable, being probably the first portable station in Ulster. He has been QSO Faroes, Denmark, Holland, France, Belgium, Germany, Norway and Spain, and also all the home countries, but it is in reception that the operator excels—he has received practically every country in the world on a single valve, and the number of QSL cards he has have to be seen to be believed. Hi!

6YM has been rebuilt, and is QSO various European countries. Work, as a rule, only takes place on Saturdays, and reports are very welcome.

5WD has been trying to get his QSB cleared up. He has also erected a new aerial, which has caused great hilarity amongst some of the GI's. Results, however, show a decided improvement on the orthodox "Hertz," and sigs are reported R9 in France, using a hand generator.

5MO is still on low power, and has not done very much this month. A new aerial is being tried out at present, and reports will be very welcome.

6YW has not reported, but is off the air at present. I take this opportunity of offering him, on behalf of all Irish stations, our heartiest congratulations on his big success in the QRP tests. I understand full details appear elsewhere in this paper, so will not say more here, except that we are all real proud of him.

5ZY, a new station, has just got started, but is awaiting a crystal before commencing work seriously. This station is available for tests at any hour—day or night—and those interested should write to T. Smith, Inverary, Whitehead, Co. Antrim.

5NJ has had a good month's work, being QSO Australia, New Zealand, South Africa, Brazil, etc., on 75 watts. A delightful QSO took place with Z3AR from 11 until 1 p.m. G.M.T., no fading whatever being noticeable, and many A's and Z's have been heard around this time. Australians are coming over again in the evening, and A5WH and A5JA have been worked easily at 19.30.

I have much pleasure in recording a visit paid to me by the operator of BXY, who is home on leave. He hopes to meet many GI's before going abroad again.

Scottish Area Notes.

By 5YG

From the point of view of outstanding results, December seems to have touched the rock bottom as far as Scottish transmitters are concerned; at least, let us hope so. Apart from 2WL's excellent QSO with YDCR, there seems to be very little of importance in the nature of DX to chronicle. Generally speaking, conditions during December were exceptionally bad, and very little in the nature of real DX could be expected. Night after night has found reception almost at a premium, and complete "fade out" at frequent periods was prevalent. These "fade outs" appear to be much more pronounced and sharply defined than at any period last winter, and from observations taken at certain stations, QSS from R7 to zero has been noted to take place in the short space of five minutes. As to the reason for this, so little data is available that one hesitates to hazard a conjecture, but I would submit that this is a matter which our Research Section might profitably investigate.

I have pleasure in intimating that Mr. W. Winkler (2TF), 13, Lockharton Crescent, Edinburgh, has very kindly consented to take charge of No. 4 District, and I would ask No. 4 District Stations to accord to him the support so willingly given to his predecessor.

A new station, 6MS, falls to be recorded in No. 1 District. This station is owned by Mr. A. H. Mason, 30, Marlborough Road, Cathcart, Glasgow, and I trust before long to see him a member of the T. & R. Section.

This month I had the pleasure of receiving visits from 2HN, 2BFQ and 2BQN, and once again intimate that I shall be more than delighted to see any T. & R. member who can find time to call on me.

Might I call your attention to the fact that from approximately March 1 my QRA will be 31, Lubnaig Road, Newlands, Glasgow. For the benefit of those who purpose calling on me, I may say that this QRA is right opposite Newlands Park main gates at the Newlands end. District Managers especially please note, as this will be the QRA to which your February reports should be sent.

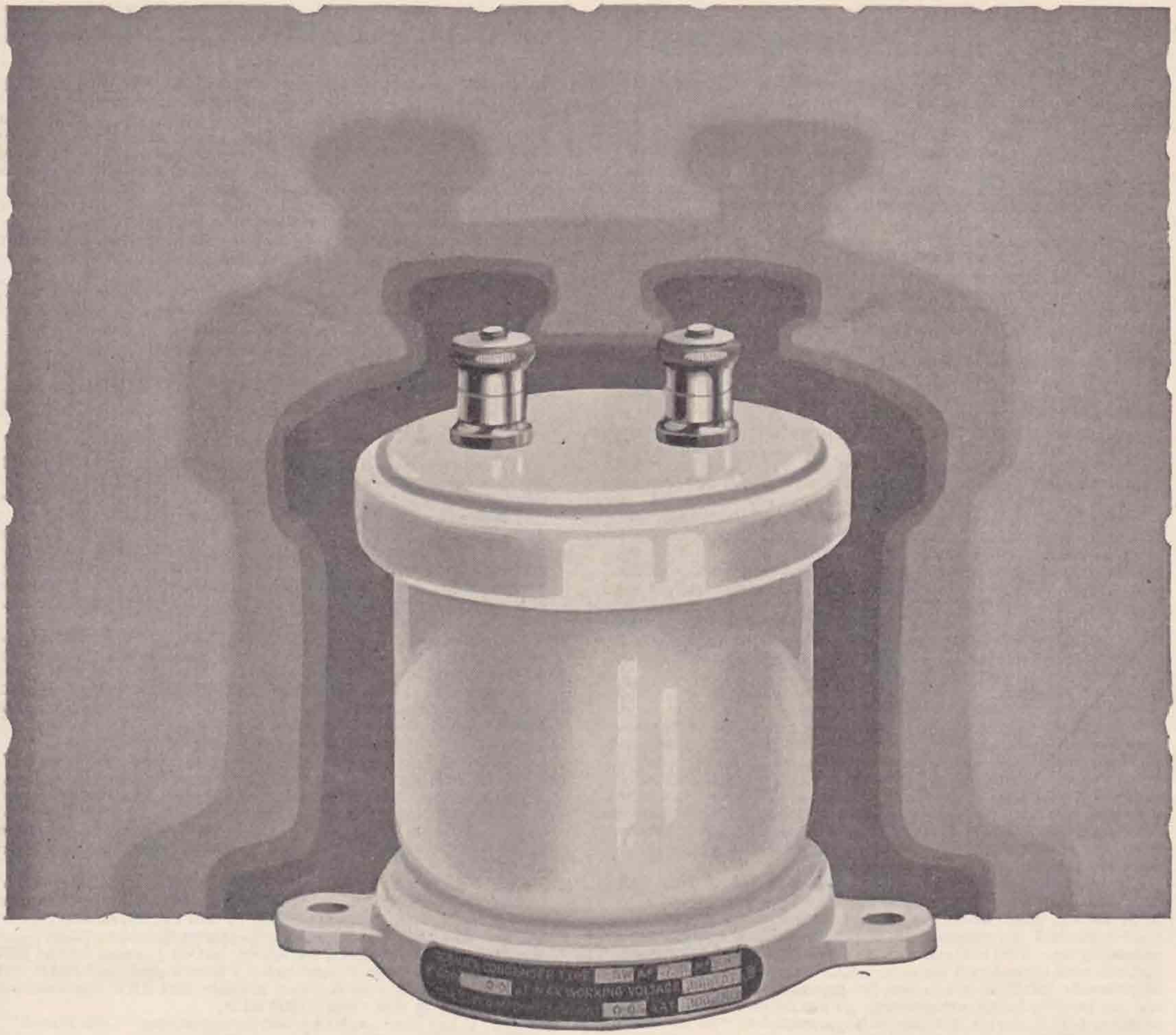
No. 1 District (by 2WL).

2BQN has nothing to report.

2FV reports QRW fitting up ship gear in connection with a new Wireless College in Edinburgh in which he is interested. Any work which has been done was of a purely research nature, and related to the construction of precision apparatus. He hopes to have more leisure shortly, and intends to put in some work on 23 metres.

2HN, by the time this reaches the printer, will have arrived at Colombo, Ceylon, where he will be transmitting under the call-sign Y3VX. He returns to Scotland in June, when Station 2HN will be resurrected.

2WL continues to have R8-9 reports from all parts of Europe, and this is usually accomplished with a power of about 3 watts (input). His best DX, so far, has been a QSO with YDCR, who reported him "R3, DC vy stedi." For this QSO 2WL's power was 4 watts derived from dry batteries (very dry!!!). His hand generator is out of action at present owing to broken brushes. New brushes are being obtained, and he intends to use the "gen" in conjunction with a 90-metre quartz crystal worked on its first harmonic.



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5YG QRT at present.

6JS has spent most of the month in England, and therefore has not much to report other than half-a-dozen "G" QSO's at an average QRK of R5.

6MS is a new station, and only just started transmitting at the end of December. He is up against the 25-cycle A.C. supply problem, but hopes to find a solution.

6NX has not much of interest to report. Although using D.C. mains, his QSB is now reported as varying from SPARK to RAC (over-running the filaments om?—5YG). He has again worked U.S.A., and has had several R9 reports from the Continent (Europe), which is really satisfactory when the awkward nature of his aerial is considered.

The following stations did not report:—2MG, 2TT, 5YQ, 6OW.

No. 2 District (by 6IZ).

2VX, apart from one or two fone tests with 6IZ, has not done very much owing to acute business QRM. He expects, however, that the "depression centring over ABERDEEN" will shortly cease to "depress," and hopes to have some DX to report next month.

6IZ also reports very QRW, and confesses that he is more prone to seek communion with Orpheus than to go to his Xmitter when he gets home at night. On 45 metres he has very little to report outside the usual run of "G" QSO's, and several with D7JO, of whom, by the way, he has a very high opinion. Some daylight work to schedule has been done on 23 metres with a power of 6 watts, and satisfactory reports received. A report is to hand that a Danish station working on 20 metres was heard to call 6IZ while the latter was working on 23, but contact was not established. A twin-feed Hertz aerial has been substituted for the single-feed, and, on the whole, seems to give improved results. Experiments are being carried out with master-oscillator drive.

6VO is crystal gazing, but as he has only just received the crystal, and comparatively few experiments have been carried out, he has as yet nothing to report on this score. He was on the sick list for a good part of the month, which fact played havoc with his DX work, and apart from the usual "G's" and Continentals, there is nothing of note to report. Several stations have been worked on 23 metres. (Hpe you nw vy QSA om.—5YG.)

The following stations did not report:—2JZ, 6GQ.

No. 3 District (by BRS6).

2SR has at last got his new mast erected, but at the best suffers very severely from screening by surrounding trees. A feature of his new aerial system is its complete rigidity, which is only affected by the most extreme gales. In this respect he expresses himself indebted to 5LF, whose kind advice he has made the most of, with the result that he has almost eliminated QSSS. A pre-arranged QSO with U1BMS on December 29 fell through owing to intense QRN, but the "U" station cabled to the effect that 2SR's signals were 100 per cent. audible through it.

5JD started out on 45 metres, but so far has had no luck. He QSY'd to 180 metres, and with a power of 3½ watts worked 2DN in S. Devon, from whom he received an excellent report. His home-made H.T. transformer has been giving a little trouble owing to heating up. This is thought to be due to the fact that ordinary iron was used to construct the core. A.C. mains rectified by sodium bi-carbonate rectifiers are in use for transmission and reception, and are proving highly satisfactory. A buzzer rectifier is used for charging L.T. batteries, but cannot be permitted to "do its stuff" overnight owing to domestic QRM.

6KO has been on the air fairly regularly during the month, but has not done any really late work. His total bag of "U" Stations to date is 8, and practically all of these QSO's were carried our prior to 2300 G.M.T. The aerial system already described is still in use, and is found to be an enormous advantage in "gusty" weather.

BRS6 carried out some reception work from December 18-28, and bagged a goodly collection of stations. The sudden "fade-outs" referred to in the preamble to these notes interfered largely with reception, and information is sought as to their relationship to the abnormally high pressure pertaining during the period indicated.

The following stations did not report:—5NW, 5WT, 6GY.

No. 4 District (by 2TF).

2BFQ has been reconstructing his receiver and is getting very good results with a 2s. 6d. Dutch valve, low-loss coils, and a short tubular aerial of low H.R. resistance.

2TF has again little to report, as he has been off DX work, and until the transmitter is reconstructed satisfactorily, is not likely to be heard. At present the trouble is to get a 45-metre wave controlled by a 135-metre crystal!! On 90 metres it is OK, but there is plenty of room for improvement on the higher frequency. A 12"×12" box wound with D.C.C. wire and connected Reinartz fashion to a detector gives splendid results on SW. CW. stations, but is no good for DX phone reception.

BRS62 has been improving his receiving gear with favourable results judging by the list of "calls heard" he has furnished.

The following stations did not report:—5BA, 5HC and 5IP.

Stray.

G6YU wishes it to be known that his station works every evening on 90 and 150/200 metres and would welcome reports, which would be acknowledged.

South-Western Notes.

By 2OP.

MAY I appeal to members of this district for support and help to the Section (1) by getting more members (a large number in the area are heard on the air, and if you have a friend amongst these who is not a member, please bring the Section to his notice); (2) by sending me reports (to reach me on or before the 10th each month). If you have nothing to report, a card is still welcome to "keep the pot boiling."

2GW (Chippenham) has not been heard, possibly on account of being abroad for a couple of weeks.

6UG (Cheltenham) has had immediate and great success on getting down to 45. He is QSO 'Phone all Great Britain and has recently worked D7JO, I1CE and F8FM.

2OP (Cheltenham) has been carrying out a schedule with 2YX. The former does not burn the midnight oil—reason: the two very young 2OP's prefer 6 a.m. activities.

Mid-Britain Notes.

(Prepared by G6JV.)

Shropshire (via 5SI.)

6TD reports considerable activity, which covers the whole world. He says the conditions this last month have been practically the most unreliable he has ever encountered, being one day extraordinary and the next entirely dead. The Antipodes have been worked at quite unusual times with good contacts. He reports working (FI, IB, ExFi8QQ) *at last*, having received his first report from that quarter about two years ago. He says things nearly blew up before Christmas, as a high voltage condenser was almost red hot before he noticed it and pulled the switches. The condenser case now has illuminated ornamentation!

5SI again has a "Nil" report, but hopes for the best, as the accumulator trouble is being overcome. BRS49 sends a good list of calls heard, including some 6th District U.S. He has QSLs from these, so there is no doubt about their being genuine DX. He asks for information regarding QRA, etc., of JM-2WZ. He thinks conditions have been generally poor.

Cambridgeshire (by G 5XV).

G2DB has been QRP most of December, and has been QSO countries D.B.N.F.K. on 1.2 watts, and one report from a distance of 900 miles gives him R3-4 on one valve—keep it up om!!

G5ZK reports nothing doing, and seems to be having difficulties in persuading his T.50 valve to work nicely—he has, however, been heard on 23 metres in Italy, and locally, and asks for reports on his 23-metre sigs.

G2XV has again rebuilt his short wave transmitter, and reverted to the 37 ft. vertical aerial originally used—this antenna is now used for all transmissions on 160-45-33 and 23 metres, and reports on the 23-metre signals are particularly welcome. Only four Yanks were worked during December, but on January 1 from 2.20 p.m. to 3.8 p.m. three Z's and two A's were logged, and Z3AR was heard calling G2X? so it seems possible that 2XV was reaching New Zealand at that time. (QRH 32.5).

G2AYB has done some excellent reception (see "Calls Heard").

Staffordshire (via 6UZ).

6BH will in all probability get going by the end of the month.

2 VG is working fairly regularly, but fails to report

5CW is still silent.

2WN sends in his own report (and to time, TNX OM), and has been doing very well, using an input of 41 volts from an old H.T. battery, and has received an average R5 from various parts of the U.K. Using his hand generator, he has "foned" Belgium and Germany.

5NU, of Cannock, has joined the T. & R., and is working regularly on the 150-metre band. (Send along reports by the 7th of the month, om.)

2NV, 6OH, 2TN, amongst others, did not report. Make a New Year's resolution to report every month oms, and then keep it.

Wolverhampton (via 5UW).

2OQ has been very QRW during December, and has had little time for DX, but has managed to QSO two Yanks, one being a YL op., but so far, persuasions on 5UW'S part to learn her call letters have met with little success. We wonder if 2OQ will arrange a schedule wid her Hi.

5UW has QRO'd to 50 watts, put up a current-fed Hertz, and QSO'd two districts U.S.A., and a Canadian during first "try out." His sigs were reported R8, R7, and R5, over there and has spent the rest of the month wondering whether the oms over the Pond are prone to exaggeration.

6HT is still QSO all Europe, but only works during daylight.

Other Wolverhampton stations are working on 150 metres, while others still are reconstructing, but failed to report.

Come along, those oms. Remember Wolverhampton has been able to send in reports sufficient to justify our raising your town to the status of a T. & R. Sub-Area. *You won't let it down?*—6JV.

Norfolk.

6ZJ reports being up against some problems, and is trying to

worry them out. He is wondering why a small portable set he has made seems to get out just as well as a much more imposing array of apparatus at his permanent station. Funny thing, this radio, om!

5UF covets a 45m. permit, and we hope to be able to help him when the time comes for the usual six-monthly renewals.

6JV has little of interest to report. In his case he has found results upon 32 metres to be disappointing—but does not generalise. He is not sure whether this is due to a spell of "out o' luck" or failure to appreciate some relevant conditions of the higher frequency involved, in plain language, Ignorance. He thinks that it is probably the latter, and believes that there is still hope for those who appreciate that the more they try to learn, the less they seem to know. But are we down-hearted? Oh, dear, no—not by a kilowatt!

Huntingdon.

G2XV has very kindly offered to collect reports from this county. Will T. & R. members in this county please report to him by 7th of month. Here is his QRA: G. A. Jeapes (G2XV), Chandos, Great Shelford, Cambs.

Many thanks, 2XV. Your help is greatly valued. Many your efforts prosper in Huntingdon as in Cambridge, and may your every test be a DX!

Northampton (via BRS30).

Mr. Trasler is still the only member reporting from Northampton, though he hopes shortly to gain some recruits to the T. & R. ranks in his district. He has logged many DX stations and encloses a splendid list of calls heard. He has been trying a Schnell tuner, and comparing vertical, horizontal and indoor aerials.

Warwick (via 2BP1).

BRS29 has spent much spare time this month with the receiver, and reports good reception of BZ, but little of the Antipodes.

BRS3 has suffered from accumulator indisposition, and reports nothing more exciting than the addition of SS8MAX to the log of countries heard.

2BPP reports QRW, while BRS31 reports good DX. The latter is now awaiting an artificial aerial permit. BRS10 sends a good list of calls heard. 5SK has obtained a motor generator, and says that RAC and 5SK will now part company. 2BMW found a two-seater motor car in his stocking this Christmas, and so radio has suffered while he drives the thing about for a while! 2BVL has "hooked" a baby daughter, and reports QRM and QRW from the cradle. Congrats., OM., from all of us, and may the little lady grow up into a fine Brass Pounder! 2BLM reports nothing of interest this time, and 2BP seconds him. BRS3 sends the following QRA for information:

JM2PZ, John Ginan,
Kingston,
Jamaica.

5DA having left Berwick, is temporarily at Birmingham, and using a QRP transmitter with crystal control. He reports being QSO with B2 and U.S.A. He says that conditions are very much "better" in the new QRA than at Berwick, especially for reception, and has logged Z stations at 10.00 G.M.T. Unfortunately we are to say good-bye in the same breath as "How-do-you-do," for 5DA leaves Mid Britain for the London Area before the next Bulletin appears. We are sorry—for we should like to have kept you in Mid Britain, 5DA OM. Still, good DX and CVL.

Worcestershire (via G6AT).

6AT laments the small size of his report, but hopes to add to the T. & R. members in his area shortly. He is at present very much occupied. He has been tempted to try the supersonic principle of reception for short waves, and blames 6JV and his recent Bulletin articles for putting the idea into his head. However, he seems fairly pleased with his results. 6MW is experimenting with aerials—or was when last heard of. Perhaps he will help 6AT to uphold the T. & R. in his county by forwarding detailed reports of his activities every month.

Northern Notes.

Area Manager: S. R. Wright (2DR).

THERE is one thing certain this month, and that is there has rarely been a worse one for American DX. Almost every ham reporting this month has found this to be so, and certainly, from my own observations, very few American stations have been heard at anything like a decent strength.

I have to welcome two new sub-area managers this month who have kindly offered their services in response to my SOS two months ago. They are: Mr. A. S. C. Millard (2AIZ), who has temporarily taken charge of the Northumberland, Durham, Westmorland and Cumberland areas; and Mr. D. N. Corfield (5CD), who has taken on Lincolnshire, Derbyshire and Nottinghamshire. Their respective addresses will be found under their area reports, and I confidently appeal to all hams in these counties to back these stalwarts up, and enable them to send me some good reports each month.

Now for the reports:—

Yorkshire.

(Reports to DR.)

5KZ has been trying out Hertz aerials, and finds 68ft. the best length for his station working on 45 metres. He finds also that he gets a steady note even in high winds, a thing which he never got using the usual inverted L type of aerial. Power used 9 to 10 watts; new stations worked 37; average range 600 miles; average reports R6; mostly daylight work; DX bad.

6BR is busy with a 3-6 metre receiver, which he has made to work very well, and a transmitter to match is in process of being completed. 5US is assisting in this interesting work, and is constructing similar apparatus. We should like an account of this later, OM's, please. 6BR has had an R3 report from British Guiana when the input was 9 watts. The usual Continentals have been worked and quite a host of phone work done in the British Isles with good results.

5US, as mentioned above, is busy with 5-metre work, but has had time to do a little work on the key. His best DX was with U1CKI on December 18, which was a very good night for the Americans. He also worked U2ATH. (This is the steam yacht "Warrior," which is on a world cruise.) She was then off Port Said, and gave 5US R5. All above on 7 to 8 watts, and under inferior conditions. 5US is also getting some excellent phone work in on this low power: R8 in France on this power is FB. He has also had a C.W. report from Moscow.

6XL has really started in this month, but has not got anything like a real aerial up yet. A Hertz is in use here. H.T. supply is from Exide W.H. type accumulators, 240 volts, and 7.4 watts applied to an L.S. 5 in a Hartley circuit. The first QSO was with 8RIT (Algiers), and the second with I1PN, which would indicate a range of well over 1,000 miles on this power.

6HF finds a current-fed Hertz aerial excellent, but has had trouble getting a pure note. Power used from 0.4 watts to 5 watts. Best DX, TLA2XA. He is at present off the air for rebuilding both transmitter and receiver. He reports very bad reception conditions of late.

6OO has been busy among the Continentals, using 1.5 to 8 watts. He finds his signals travel much better eastwards than southwards, and this is no doubt due to his position on the East Coast, at Bridlington.

2XY has been experimenting with crystal control for some time, using a 15 to 20-watt input on C.W. and phone. By the time this report is in print he will be using full power on crystal control. He states that he actually heard WIZ call GLKY instead of his almost interminable ABC. His phones have not yet recovered from the shock they received.

5SZ has not reported this month, but has been settling down in his new shack and having trouble with his masts. He is seriously thinking of changing the name of his house from West Point to Windy Corner. Certainly his aerial system has to withstand some really terrible strains.

2DR is experimenting with Hertz aerials still, when he has any time, and at present is testing the range of one erected 12ft. high to form a comparison with the same aerial 50ft. high. So far the results have been very encouraging, and a heap of useful data has been collected. A certain amount of rebuilding has been done, and two transmitters are in use at present for 23 and 45 metres and for 90 to 200 metres, and two receivers to correspond. Most of the time has been occupied this month with experimental work within the station.

The following have not reported:—6IG, 6YR, 5SZ.

There is a rumour that our old friend 2IH is getting busy again but is finding things very difficult as he has to use an indoor aerial. Will any hams having any experience of this work get into touch with him. Mr. H. Hiley, 12, Cavendish Street, Keighley, Yorks.

Isle of Man.

(Reports to 5XY.)

5XD has been on the air but little this month, but built a new transmitter and put 5 watts into it, and worked Yugoslavia and Portugal at the first sitting. He has also worked the Continent fairly extensively.

6MI has not been on the air at all this month, but let it be said he did report to this effect. Anything is better than silence.

Lancashire.

(Reports to 5XY.)

5MS gets a decent DC note from his "stink box" rectifier and puts 30 watts on to a Deti valve. He has worked U.S.A., Russia, and PA3A, besides the usual Continentals. He would welcome some information about PA3A who gave his QRA as Africa. He complains of bad conditions for DX.

5XY is the star turn this month, as having got his new Mortley generator licked into shape, and blown his filter condensers, proceeded to celebrate. On 32-34 metres, he has worked South Africa (four times), Tasmania (once), and Australian 2RX at 14.00 G.M.T., getting R4 to 5. Power used, 130 watts. I am glad to see something is doing even if it takes high power to rake them in, OM. He heard five Australians one day between 13.00 and 14.30 G.M.T.

The following have not reported:—The rest of Lancashire's 200 hams! What about it, OM's??

WE ALWAYS NEED TECHNICAL ARTICLES!

Cheshire.

(Reports to 6TW.)

2SO has nothing to report this month, having been off the air owing to business QRM, but hopes to have some DX to report next time.

5PO has not done much of late, but has been trying very small powers of the order of .06 watts. Send 6TW a report for next month, OM.

6TW has done a little 45-metre telephony, and is shortly trying 23 metres. Reports would be welcomed. A good deal of work has been done inside the station and consequently less DX to report. 6TW is an enthusiastic supporter of the Research Section.

Nottinghamshire, Derbyshire and Lincolnshire.

Will all stations in these counties please note that reports should be sent before the 10th of each month to Mr. D. M. Corfield (5CD), 15, Linden Grove, Beeston, Notts, who has been appointed sub-area manager for the above counties.

Northumberland, Durham, Westmorland and Cumberland.

Will all stations in these counties please note that reports should be sent before the 10th of the month to Mr. A. S. C. Millard (2AIZ) 1, Holmlands, Monkseaton, Northumberland, who has been appointed temporary sub-area manager for the above counties.

Danish Notes.

By D7MT.

D7BJ has had difficulty in getting his crystal control transmitter oscillating properly, but it is now working well, and hopes for some good DX.

D7BX has been on all January, and has received a report of R5 from YDCR (India) when using a Hertz aerial.

D7DM, a new station, at present working Europe on 8 watts.

D7EW was able to get on the air for a short time after Christmas, but is now studying again.

D7MT, having been ill, during convalescence has been on the air a good deal, and has been working to schedules. He is comparing signal reception with WX, and is preparing a chart, which he hopes will give some data for useful conclusions. His schedules have been on 47, 45 and 43.5 metres, and in December was reported R3-4 by YDCR (India) when using only a few watts. He was also QSO with SKTR who he believes is near Khartoum, and PA3A.

D7XU is still using 50 watts A.C., but has nothing to report.

D7ZG, working with a Hertz aerial and an input of 15 watts, has worked a large number of stations, including an R9 from Italy, and an Algerian station.

OXZ, the Government experimental station at Lyngby, has been received R8 in India. He welcomes all reports on his sigs.

Indian Notes.

By Y-DCR.

NOVEMBER-DECEMBER. Conditions for DX work are now ideal. With the coming of the good weather are several old Indian "hams" who have apparently been dormant during the summer.

Lt. Rodman, Jubbulpore, who sends in a healthy list of calls heard, reports that November did not produce the signal strength expected. Stations on the 30-45 wave-band were plentiful but weak. He also reports the reception of U2XAF on 'phone, but same spolit by bad fading. He notes that very few European stations are audible up to 17.30 hrs G.M.T.

Y2PM is at last on the air with quite a healthy DC note and should not be long before he gets down to some DX work. It must be remembered that a "ham" in India at present is working under difficulties, especially those with low power. Active transmitters are so scarce that with the exception of two that are 300 miles apart there are no other two "brass pounders" within 1,000 miles of each other. Hi!!! QSL's for Y2PM via Y-DCR, please.

Y-DCR reports having moved into new and better quarters for the winter. He has been QSO with G6BR, G5IS, Gi6MU, and is running a Sked with SMTN. At last he has also been QSO with Aust after trying for months. He is now transmitting on 36 metres, having moved down from 40 owing to the commercial QRM. He reports reception of G stations is excellent, many G's being heard quite strong as early as 15.00 G.M.T., 5BY, 2NM, 6MU, 2NH, 6BD and 6UZ have all been heard at this hour on the 45 metre band. Sigs. at this hour, however, from European stations are much stronger on the 33-36 metre band.

Y2BG has not reported, but he is now going strong (reports please, OM).

VT-2ZY is a newcomer located at Delhi and is very QSA in India. He should have no difficulty in getting across strong to Europe. (DCR will forward QSL's if required).

Y-DCR is still being flooded out with QSL's intended for Uruguay and as he is a "one-horse show" is kept working at top speed. All cards have been re-directed. The only active Indian transmitters known at present are: Y2PM, Y2BG, Y2JY, Y-DCR, VT-2ZY, Y-2CZ.

(Signed) R. J. DRUDGE-COATES.

GENERAL.—All stations report all-round improvement in reception conditions, but increased QRM from commercial stations. The latter are not too bad on the 41-46 metre band, but between 34 and 40 metres QRM is almost continuous from U.S. Naval stations and Dutch commercials, with QSB's like nothing on earth. The notable feature of the 43-45 metre band is the great improvement of continental QSB; a French "ham" has actually been heard using pure DC. Hi!!!

Y2ZY.—A newcomer (at least a new call) is now transmitting on 35-7 and is good pure DC; should have no difficulty in getting bags of G's. He is located at Delhi.

Y2JY is still pegging away with 5 watts and is good strength all over India, but has yet to QSO with a G. He is on 33-5 metres and has a pure QSB.

Lt. Rodman, who is a very active receiving "ham" located at Jubbulpore (Central India) reports all countries being logged at good strength. European stations have been logged as early as 19.00 hrs G.M.T., G2LZ at this time being very good. He also reports European stations much stronger on the 35 metre band than on 45 metres between 19.00 and 20.00 hrs G.M.T. His "bag" for October-November is 33 A's, 15 O's and 10 BZ's. This month he is concentrating on G's and hopes to get in some real DX.

Y-DCR is still going strong on 35-37 metres and has beenQSO with G2CC, G6OG, G2VJ, NPB3, OA3E, SS2SE, BO8 and BK3. G2CC was worked on 10 watts. Hi!! The reception conditions during the low powered tests were ideal and 8 G stations were logged during the week. Receiver used was a Reinartz o-v-1 strengths as follows: G2CC, R4-5; G2NH, R4; G5TZ, R4; G5GQ, R4; G6OG, R6; G5HS, R3; G5KZ, R5; Gi6MU, R4. Unfortunately, DCR could not get QSO, although he called lustily; the chief aim of the G's was apparently USA, as almost all the calls logged were to the U.S.A. QRM from continental stations was non-existent for the first five days, but on the Saturday and Sunday one or two made the air hideous with their raw earsplitting notes and caused much damage among the G's. DCR is now in new quarters and is having a little trouble with aerials. A report on his sigs. will be very welcome as he has not been QSO since moving.

SS2SE (Singapore) is now up on 42 metres, and at the time of writing has not yet been QSO with G. (Here is a fine chance for a first QSO with the Straits Settlements. Hi!!).

BNSK1 (Borneo) has not reported, but he is still very active on 35 metres. He has been QSO with U, G, A, Z, Ei and SS.

Y2BG is suffering from valve trouble, but we hope to have him very active very soon. Last season he was QSO with many G's and will be all out to break his records soon.

QSL NOTE.—Y-DCR is receiving piles of cards for re-direction which are for Uruguan amateurs, owing to the use of Y as a prefix by both India and Uruguay. The only active Indian stations known at present are as follows: Y2JY, Y-DCR, Y2BG, Y2CZ, Y2ZY and Y1WP. All cards for Uruguay have been re-directed, but as DCR is a "one-horse" concern the correspondence comes rather heavy.

R. J. DRUDGE-COATES.

Short Wave Aerials—*concluded from page* 26.

to make the antenna system have a natural wave-length of 45 metres (from a Hertz aspect). It is, however, possible to reduce the length of the horizontal spans so that the total length of them is 22.5 metres. In this case, the system would have to oscillate on double that wave-length, or the aerial and counterpoise would each have to oscillate on four times their material wave-length.

The fact that inserting inductance or capacity in the feeds, as mentioned previously, served only to alter the impedance of the feeds, without tuning the aerial circuit, seems to bear out the theory that the aerial-counterpoise system described in this article functions as a Hertz antenna.

Also, when the antenna is excited on its resonant frequency, the addition of inductance hardly affects the aerial current at all, showing that the impedances of the feeds are merely varied somewhat, but that no shift in wave-length takes place.

It is hoped to carry out the above-mentioned aerial alterations shortly, and to obtain some more interesting data on the subject of suitable aerials for short-wave wireless communication, which undoubtedly offers a wide range for experimental investigation.

Good Work Done.

With the publication of this issue we say good-bye to an old friend who founded the QRA and QSL Section, and who has done a great deal of work in the cause of amateur radio. We refer to the excellent work of Mr. C. A. Jamblin, who founded this section which has received world-wide support, and which is appreciated by every amateur who relies upon long distance reports sent by post as a means of indicating the results of his experiments.

Mr. Jamblin has been the means of forwarding and transmitting many thousands of reports and QSL cards during his twelve months of office, and in addition to this he has secured for the Section many dozens of new members. His work has grown increasingly, and it was apparent from the beginning of his activities that he would come to a time very speedily when he would be unable to cope with the work in the small amount of spare time available from his normal daily occupation. We have now decided, after giving the matter every consideration, that we shall from February 1 run the QSL Section from Headquarters, and arrangements have been made to do this. In the meantime Mr. Jamblin has kindly undertaken to keep our list of QRA'S up to date and to act as a membership representative in the matter of obtaining new members, and so we feel that this is a suitable time to extend to him our very hearty thanks for all the good work which he has done for the cause of the movement in the past, and are very glad to be able to avail ourselves of his services in the manner mentioned.

It has been suggested at Headquarters that we might present to Mr. Jamblin a small present as a token of our gratitude for his good work on our behalf, and we are therefore open to receive funds and subscriptions for this purpose from any member who should care to send. All money sent for this purpose should be addressed to Hon. Organiser, T. & R. BULLETIN, 1, Montreal Road, Ilford, Essex.

QRA and QSL Section.

By 6BT.

THE work of this Section has expanded considerably of late, due doubtless to the increasing membership, and also to the fact that the progressive activities of the T. & R. SECTION R.S.G.B. are becoming more widely known daily.

This is of course as it should be, but unfortunately I am not able to deal efficiently and quickly with this growing correspondence in the limited time t my disposal.

It has become necessary therefore to do something, and it has been decided, as a temporary measure, to divide the Section into two, and the QSL portion will in future be run from Headquarters.

All cards of every description, from members at home and abroad, must in future therefore be sent to London, at the address given towards the end of these notes. I shall " carry on " with the QRA Section as heretofore.

Apropos the new R.S.G.B. Call Book and Diary, I have here full QRA's for the undermentioned call signs of members of the T. & R., R.S.G.B., of which particulars do not appear to have been published. In order that I may verify my information as being correct, will owners of these calls, either past or present, please confirm to me on a P.C. at the QRA Section, whether they still hold, or have relinquished them.

2AFO, 2AVZ, 2BBO, 2BSJ, 2OI, 5HD, 5RT, 6JX, 6XI.

2AHZ, 2AWF, 2BPB, 2BVA, 2RU, 5JA, 6CY, 6LA, 6XL.

2AM, 2AWL, 2BPL, 2BVN, 2XG, 5LC, 6DZ, 6PA, 2AVP, 2AYP, 2BRF, 2XH, 5MP, 6IR.

I have received information from Italy that fusion has taken place with the *A.D.R.I.* and the *Radio Club Nazionale Italiano*, and the new Italian National Association is now known as the *Radio Associazione Radiotecnica Italiana* (A.R.I.)

The address of the new Association is :—

A. R. I.,
Viale Bianca Maria 24,
MILANO, ITALY.

From Russia I learn that their amateurs are now being licensed, and their official calls are composed of two numerals, followed by RA.

PI-1AT (via D-7LO and G6CL) says he will be glad if our members will report on his sigs. if heard.

I now give a revised list of forwarding Agents for the distribution of cards throughout the world, when QRA's are unknown, and the cards cannot be sent direct. (This cancels all previous lists.)

ARGENTINE.—c/o. " Radio Revista," Lavelle 1268, Buenos Aires.

AUSTRALIA.—c/o. " Radio," 51, Castlereagh Street. Sydney, New South Wales.

AUSTRIA.—c/o. " Radiowelt," Rudengasse II, Vienna III.

BELGIUM.—c/o. Reseau Belge, 11, Rue du Congrès, Brussels.

BERMUDA.—Mr. W. F. Horsington, Paget West, Hamilton.

BRAZIL.—Mr. A. S. Freire, 46, Oswaldo Cruz Road, Ecarahy-Nichteroy, Estado do Rio.

CANADA.—(Open cards only), Major W. C. Borrett, 14, Sinclair St., Dartmouth, Nova Scotia.

CZECHO-SLOVAKIA.—Mr. M. Schaferling, Praha XII, Sumavska 12.

CHILI.—Mr. L. M. Desmara, Casilla Sod, Santiago.

CHINA.—Mr. W. G. Fisk, 303, Victoria Road, Tientsin, North China.

DENMARK.—Mr. J. Steffensen, 8 Erhlersvej, Hellerup, nr. Copenhagen

FINLAND.—Mr. K. S. Sainio, 3A, Merikatu, Helsinki, 10 (Suomi).

FRANCE.—c/o. " Journal des Emetteurs," 53 Rue Réaumur, Paris, 2E.

GERMANY.—Mr. Rolf Formis, Alexanderstrasse, 31, Stuttgart.

HOLLAND.—c/o. I.A.R.U., Hoogduin, Noordwijk aan Zee.

INDIA.—Mr. R. J. Drudge-Coates, Cambridge Barracks, Rawalpindi.

ITALY.—c/o. A.R.I., Viale Bianca Maria 24, Milan.

LATVIA.—c/o. Radiofons, Riga, Latvia.

LUXEMBOURG.—Mr. J. Wolff, 67, Avenue du Bois, Luxembourg.

MALAY.—Mr. J. P. C. Bell, F.M.S. Railways, Kuala Lumpur.

NEW ZEALAND.—Mr. F. D. Bell, Waihemo, Palmerston, Otago.

NORWAY.—c/o. Norske Amator Sender Union, Oslo.

PALESTINE.—c/o. Radio 6ZK, Signals, RAF-Ramleh.
PHILIPPINE ISLANDS.—Lieut. Roberts, Fort Mckinley, Rizal.
POLAND.—c/o. Radiofon Polski, Wilcza St. 30, Warsaw.
PORTO RICO.—Mr. J. Agusty, Box 868, San Juan.
PORTUGAL.—c/o. R. E. P., Costa do Castelo 15, Lisbon.
RUSSIA.—Mr. G. Anikin, 51, Swerdlow Street, Nijni-Novgorod, U.S.S.R. Russia.
SOUTH AFRICA.—Mr. Heywood, 91, Berea Park Road, Durban, Natal.
SPAIN.—c/o. A. E. R., Megia Lequerica 4, Madrid.
SWEDEN.—Mr. Bruno Rolf, Hamngatan 1A, Stockholm.
SWITZERLAND.—Dr. W. Merz, Berne-Bumplitz.
U.S.A.—c/o. A.R.R.L., 1045 Main Street, Hartford, Connecticut.
YUGOSLAVIA.—Mr. Torbarina, Dubrovnik 2.

QSL's WAITING

The following have not less than three cards each waiting to be claimed.

Will they please forward stamped addressed envelopes for them to Headquarters ?

2BK	2LF	2WY	5LI	6DO	6RM
2BZ	2OC	2YX	5LX	6FD	6TM
2CA	2OG	2ZA	5MA	6HI	6TX
2CH	2OJ	2ZF	5MU	6HU	6US
2DA	2OW	5AL	5MY	6JU	
2DF	2RL	5BI	5NN	6LJ	6VJ
2DX	2ST	5BV	5NW	6LR	6WS
2DY	2UD	5DK	5QZ	6MU	6YX
2FM	2UN	5FJ	5SG	6NF	6ZQ
2FO	2VQ	5GF	5TD	6NY	BRS4
2HQ	2VR	5HG	5WI	6OU	BRS9
2KF	2WW	5IR	6BJ	6QH	BRS29
					BRS63

QRA's FOUND

JM-2PZ.—John Grinan, Kingston, Jamaica (Inf. GI-6MU).
JM-3AB.—C. W. Randall, Senai, Johore, Malaya (Inf. C. R. Ponting, T. & R.).
PI-WUAJ.—U.S. Signal Corps Station, Manila, Philippine Islands (Inf. G6CL).
SS-3SE.—M. J. Thorpe, 1, Park Road, George Town, Penang, Straits Settlements.
U-2CC.—A. E. Scarlett, Jr., 11, Cooley Place, Mount Vernon, New York (Inf. G2VJ).
OE-JZ.—J. Z. Giverina, Favoritenstrasse 64, Vienna 4, Austria (Inf. G6CL).
R-O5RA.—V. Vostriakov, Malaya Dmitrovka 10, KV2, Moscow, U.S.S.R., Russia.
R-O1RA.—L. Theodor (10-110 MT), Novaja Str 40, Nijni-Novgorod, U.S.S.R., Russia.
W-WAA.—Fabian Istvan, Abony, Hungary (Inf. G5GW).
A-4CG.—C. Gold, Drake Street, Hill End, South Brisbane, Queensland.
LA-5B.—Bjarne Lindemann, Bjorndalen 31, Bergen, Norway.
LA-5W.—W. Rieck, 8 Vaargsalmenning, Bergen, Norway.
D-NSC.—Radiostationem, Orlogsvärftet, Copenhagen (Inf. D-7MT).
FI-8FOK.—R. Lebon, Telegraphie Militaire, Hanoi, F.I.C. (Inf. G5XY).
2ABK (ex BRS64).—R. C. Horsnell, " The Anchorage," Crouch End, Burnham-on-Crouch, Essex.
2AVP.—F. W. Bannister, 6A, Pendennis Road, S.W.16.
2BWR.—D. Rudd, 83, Cricklade Avenue, Streatham Hill, S.W.2.
2DL.—R. Landerdale, 3, High Street, Penge, S.E.20.
2YP.—Capt. V. R. Krohn, Cosine Cottage, Biggin Hill, nr. Westerham, Kent.
6QL.—P. H. Berry, Gills Hill, Radlett, Herts.
6WI.—T. S. Wilkin, 102, Lisle Road, Colchester.
6MS.—A. H. Mason, 30, Marlborough Road, Cathcart, Glasgow (Inf. G5YG).

CHANGE OF ADDRESS.

5SO.—" The Meadows," Birchgrove Road, Lonlas, Llansamlet, Glamorganshire.

CHANGE OF CALL SIGN.

2ALU	now	5GN.
2BMD	,,	6QL.
6ON	,,	2BRX.
RIFL	,,	R-O1RA.
K-Y4	,,	K-4YAA.
2BOR	,,	6WI.

QRA's WANTED.

2BL	2PA	2WX	5DX	5SG	
5TM	5VY	5WK	5WL	6BA	
6GB	6JA	6JT	6BP	6TR	6HW
XAN	SKTR	LPRV	SIC		
	PA3A	Y-2ZY			

All new QRA's by G6BT.

Important.

Will members please note the following :—

Only cards for England, Scotland, Wales, Northern Ireland, Irish Free State, Belgium, France and Holland are accepted from members for free transmission, and they should be sent to :—

QSL Section, R.S.G.B.,
53, Victoria Street,
Westminster,
London, S.W.1.

All other cards should be sent direct to the addressee, but if his QRA should not be known, they should be sent via the forwarding agent for that particular country.

If there is no forwarding agents QRA covering the card you want to get to its destination, the card should be sent to the QRA SECTION. accompanied by loose stamps sufficient to get it to its final destination, when it will be duly forwarded.

This latter section will deal with all queries relating to QRA's, and will publish all new QRA's, change of address, change of call sign, etc., as heretofore. Please keep G6BT supplied with all the latest information, and don't forget, if replies are required direct, to enclose stamped addressed envelope or P.C., otherwise the replies will be returned via the QSL Section.

Notes that are not urgent, will be sent on to me from the QSL Section.

G6BT,
QRA SECTION, R.S.G.B.,
82, York Road,
Bury,
Suffolk.

Additions to List of QRA'S in Log Book.

CANADA.

8AR—L. Reid, St. John's, Newfoundland.
8WM—W. Machell, s.s. " Rosalind," Red Cross Line, St. John's, Newfoundland.

9AL—A. H. K. Russell, 6, Mail Building, Toronto, Ontario.

JAMAICA.

JM8PZ—John Grinan, Kingston, Jamaica, West Indies.

MOROCCO.

8MA—C. Grangier, Box 50, Casablanca.

JAPAN.

1SK—S. Takata, Shimoshizu, Hikogakko, Chiba.

CHINA.

FC8CM—Elecmacani Factory, 544, Sicawei Road, Shanghai.

BRAZIL.

SQ2—L. G. Moreira, Rue Paula Gomes 6, Curityba (BZ2IA).

1BF—A. Tavares, 19, Rua Senador Dantas, Rio de Janeiro.

1BH—G. Damm, 114, Estrade Itarare, Ramos, Rio de Janeiro.

1BJ—J. P. M. de Vasconcellos, 80 Rua Barao de Itamby, Rio de Janeiro.

1BK—J. C. Roos, 139, Rua Paysandu, Rio de Janeiro.

1IN—P.O. Box 522, Rio de Janeiro. (Make further enquiries about this station.)

2AL—J. L. Silva, 49, Rua Arthur Prado, Sao Paulo.

2AN—T. de Tolido Piza, 300, Bella Cintra, Sao Paulo.

2AO—H. Lindenberg, 7, Rua Guadaloupe, Sao Paulo.

2AP—P. Yasbek, 12, Rua Ypiranga, Sao Paulo.

2AQ—J. Saez, 59, Rua San Pedro, Villa Marianna, Sao Paulo.

3AA—P. C. Schuck, 3, Rua D. Laura, Porto Alegre, Rio Grande Do Sul.

5AC—S. de Mendonca, 127, Rua Azeredo Continho, Recife.

5AD—H. Oliveira, Box 257, Rua Visconda de Goyanna, Recife.

5AE—M. Penna, P.O. Box 44, Recife.

6QB—J. M. A dos Santos, Rua Senador Chermont, S. Luiz de Maranhao.

7AA—R. Camelier, 102, Rua Dr. Assis, Belem, Para.

CUBA.

8KP—J. de Castro, P.O. Box 175, Santiago de Cuba.

RUSSIA.

1NN—Swerdlova, 7, Nijni-Novgorod, U.S.S.R.

2WD—W. Denisoff, Tstochnaja Str., 25, Tomsk.

2WP—W. N. Parmonow, 14, Neglinney pr. Moscow.

DENMARK.

7XU—H. Norgaard, 33, Livjaegergade, Copenhagen.

NORWAY.

5B—B. Lindemann, Bjorndalen, 31, Bergen.

PORTUGAL.

6PE—K. S. Wakefield, Quinta Nova, Carcavellos.

GERMANY.

4MCA—Hugo Fagien, Versuchsstation, Königsberg.

W9—Massenbach, Antonienstr. 3, Munich.

HONG KONG.

3Z—Col. Warren, Pekong St., Hong Kong.

TAHITI.

BAM—G. Bambridge, Papeete, Tahiti, French Oceania.

DOMINICA.

HIK—F. Chapman, Barahona, Dominican Republic.

CHILE.

2BJ—T. Taylor, Casilla 868, Valparaiso.

RXY—C/o E. E. Harper, 3110 L Street, Vancouver, Washington, U.S.A.

CORRECTION.

Canadian 2BB is not owned by R. M. Brophy now. New QRA is:

2BB—C. J. Dawes, Pointe Claire, Quebec.

Correspondence.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—Regarding G5GW's article on "Keying a Transmitter with Dull Emitter Valve" in BULLETIN for November, may I be allowed to give my experiences in the matter.

Since I commenced transmitting about 18 months ago I have used at different times the following valves as oscillators:—One B.4, two B.4's in parallel, 2 Ediswan P.V. 5 DE's in parallel, one LS5, one LS5A, one LS5B, and two LS5B's in parallel. (No, I have not burned them all out, OM.) I am rather fortunately placed, insomuch that I can get loan of different valves for tests. In addition to the above valves I also tried a Mullard O.20, but my accumulator objected to lighting a lighthouse.

I have tried these valves in two different circuits, namely, tuned 2rid and tuned plate, and plain coupled Hartley, on QRA's of g00, 90, 45 and 23 metres.

On first starting up on any given wave my sigs. used to chirp about all over the place (ask any of the hams about here, especially G6YQ), but I found that after getting the hang of things chirping could be abolished without the use of a spacing wave, and I consider that such a method of keying should be absolutely prohibited. There are too many stations on the 45 metre band now without some of them wanting the use of two waves. Even if the spacer is removed off the 45 metre band it causes QRM on some other "ham's" wave.

I have worked lots of stations whose spacers have been quite as QSA as their true wave, and, chaps, it's not the game.

Every time I press my key down, down goes the filament brightness, but chirp does not result. Most reports I get ask if I am crystal controlled, unless it is very windy weather, but the answer is in the negative.

Incidentally, as my plate power is, and always has been, obtained from 180 volts of H.T. accumulators, keying the H.T. negative lead results in a longer life per charge for them. I might add that, until very recently, I have always worked without a grid condenser and leak, but now find that the use of them (I use a small jar of water for the leak) greatly assist in the elimination of chirp when using the Hartley circuit. No benefit seems to ensue from their use in the Armstrong circuit, though.

When a grid condenser and leak is used, aerial juice drops a little, but I think a steady QRZ note is much easier to read than an unsteady QSA one.

Without wishing to do any "trumpet blowing," I think that with the method aforesaid, no loss in DX possibilities result, as, using power inputs up to a maximum of 10 genuine watts, I have been QSO four Continents, namely, Europe, Asia, Africa (North) and North America. True, some of the reports give my strength as only R2, but on very few occasions has an actual QSO broke down.

Incidentally, my best DX's up to the present have been worked with input of 7 watts; they are TJ-CRJ, PR4SA, and U4IZ.

Yours sincerely,
E. MENZIES (G5MQ).

School House, Fazakerley, Liverpool.

DEAR OM,—I have just received a QSL from U2AFG, and he wishes to arrange a schedule with a "G" ham. He is on the air all nights except Tuesdays and Saturdays from 7 to 10 p.m. E.S.T. (00.00 to 03.00 G.M.T). Anyone interested may arrange direct (U2AFG, B. Decamp, 120, Central Avenue, Newark, N.J., U.S.A.), or via G2AHP He sends 73's to all G's.

If you could get this in the BULLETIN, OM, I should be very pleased.

73's, OM, and best luck to the BULLETIN.

Yours sincerely,
J. SPAFFORD
(2AHP, T. & R.).

To the Editor of T. & R. BULLETIN.

15, Priory Road, Blidworth, near Mansfield, Notts.

DEAR OM,—I received the following msg from SS2SE (Singapore) on December 24, via radio:—

"Pse. give this to T. & R. Bull. Malay Official Band now 44 to 46 metres, also 23. Three stns. will be working next week on that band—SS3SE and JM3AB and myself. SS2SE."

To the Editor of T. & R. BULLETIN.

GENTLEMEN AND DEAR OM's,—We have the honour to inform you that after January, 1, 1927, the "Radio Club Nazionale Italiano" and the "Associazione Dilettanti Radiotecnici Italiani" are uniting to form the "Associazione Radiotelefonica Italiana," the official journal of which is the monthly periodical "Il Radiogiornale."

We trust that the new association will receive the same kind consideration as has been the case in the past with the two above-mentioned societies, and we hasten to send you our official organ, in the hope that you will soon be good enough to send us your own.

Pray accept, gentlemen and dear OM's, our most cordial and distinguished salutations.

A. R. I.,
General Secretary.

Milan.

To the Editor of T & R BULLETIN.

DEAR SIR,—It has recently come to my notice that there is some one in the London Area who is grinding out gramophone records and using my call sign. Apart from the fact that this person is not playing the game at all by using someone else's call sign, he adds insult to injury by putting on the air the vile stuff that he, perhaps, thinks is music.

Perhaps if he sees this he will change his evil ways, and either join the "T. & R." or have the decency to cease using my call.

Yours truly,
J. C. HARRISON, G5XY.

"Highcroft," Ightenhill, near Burnley.

To the Editor of T. & R. BULLETIN.

DEAR OM,—I have to-day received a letter from C. W. Randall, Esq., of Senai, Johore, Malaya (J.M.3AB), in which he informs me that he hopes to be on the air about the end of December, and will then be transmitting on 23 and 45 metres.

He states that he will be very glad of reports, and hopes to QSO "G" stations.

Despite the presence of almost continuous static he has received good reception of 'phone signals from G2NM relaying 2LO.

I shall be very glad if you will publish this in the "BULL."

Yours sincerely,
C. R. PONTING,
"Bristol" and B.R.S. 28.

11, Woolcott Street, Redland, Bristol.

By the way, OM, I heard JM2PZ the other morning and took down his QRA as follows:—

Messrs. Aquai and John Grinan,
Kingston,
Jamaica,
West Indies.

Thought you might like to have this.

To the Editor of T. & R. BULLETIN.

SIR,—In the December number G2AYB mentions my station. May I please be allowed a little space to reply to him?

When designing my receiver I started with the usual formula or parallel circuit tuning, *i.e.*, ratio C/L large. This gave a very crowded tuning scale. When, to open the scale, I made the ratio L/C large I found that signals were much louder, as well as easier to tune. The "old theory" is a large C/L ratio.

With regard to the output, if the impedance of the transformer, or 'phones, at about 1,000 cycles is lower than the valve, all is well, seeing that we are not concerned with purity but with volume.

At this station I do not, as a rule, use a condenser tuned aerial circuit when operating on the large aerial. One can explore with a neon tube to find nodes, etc., and get an idea as to the harmonic to which the sender is tuned. My way is to compare results with a Hertz aerial. If results are about equal the large aerial is probably being used on its third harmonic. If the Hertz is appreciably better the large aerial is probably on an even harmonic. In the matter of aerials, I am now using quarter-wave Hertz on 23, 33 and 45. The "tank," or counterpoise end of the system, or whatever you like to call it, is simply our good old friend the main water-pipe. It seems to work.

I have had some correspondence with G2AYB. He is full of ideas and is just the sort of fellow you ought to persuade to write for the "BULL."

Yours, etc.,
ERNEST H. ROBINSON (G5YM).

To the Editor of T. & R. BULLETIN.

DEAR SIR,—It has repeatedly been voiced that the Yankee and Canadian hams crowd to the lower side of the 40 metre band.

Now, suppose we do operate within the vicinity of 40 or 41 metres. The result is that a very low percentage of foreign stations are worked.

This, I think, is due to the fact that one naturally tunes from the lower end of his scale to the higher, and therefore "first come, first served."

May I suggest that some of you Britishers start at the higher end and tune down. Of course, if everyone adopted this method there would immediately be a rush to get as close to 42.8 as possible, but it stands to reason that if some of you were to allow this suggestion, it would help to clear the jamming experienced around 38 metres.

Yours truly,
W. G. SOUTHAM (C2AX).

15, Grove Park, Westmount, Que.

To the Editor of T. & R. BULLETIN.

DEAR OM,—We are now seeking opportunity to know who does change the reception of our station, R1NN, in your country during the whole 24 hours. At what o'clock it is heard the best and at what o'clock it is not heard at all.

Of course, both the receiver and the transmitter must not be changed even a trifle during all time of the test. As our station has several ops. it is possible to work all time without intervals.

And, *vice versa*, we shall listen for our partner all the 24 hours of any chosen day.

The results of test must be sent by each receiving station to its transmitting partner, and, after working up, published in a way as considered the best by mutual agreement of both parties.

If any of your serious OM's can undertake this affair we shall be very glad to hear of his proposition. The best suitable time for us is from 21.00 G.M.T. (our time will be midnight) on Saturday till 21.00 G.M.T. Sunday.

We must prove that our amateurs are useful for scientific research, and it is why we are undertaking this work. The aim is to promote short-wave amateurship in our country.

Best 73's.

Awaiting your considerations,

W. GRZYBOWSKI (RK8),
Chief Op. R1NN.

President Technical Section of Nijui-Novgorod Radio Society of Amateurs.

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t he Editor of T. & R. BULLETIN.

DEAR MR. MARCUSE,—Many thanks for your recent postcard, and with reference to the recent complaint from the G.P.O. I received a letter from the G.P.O., in which they stated that in view of my statements the Postmaster-General did not intend to pursue the matter any further.

As I have not used the 440 metre for some considerable time, and am no further interested in this wave-length, I replied requesting the Postmaster-General to cancel my 440 metre permit, and have now received an official notification that this has been done.

I am under the impression that some unauthorised station must have been using my call sign, as previously pointed out I have not transmitted on any wave-length since I dismantled my station at Morecambe during the first week in July. At the present time I have no transmitting gear erected, and it will be at least another six weeks before I am in a position to commence operating.

I received a postcard this morning from Mr. E. P. Ward, 58, New Street, Sandwich, Kent, in which he states that he received my transmission on November 21 at 1.40 p.m. and onwards, testing on speech, needless to say I was not transmitting.

If possible, I shall be pleased to have a notice inserted in the BULLETIN asking for the co-operation of members in trying to find the offender.

Yours sincerely,
J. W. RIDDIOUGH (G5SZ).

West Point, Menston, Yorks.

To the Editor of THE T. & R. BULLETIN.

DEAR SIR,—I would like to query your editorial note on 5YM's remarks on "Meters and Chirps" in your current issue. You state, "Obviously the H.F. current in the aerial rises in accordance with the overcoming of the resistance of the H.W. meter."

Now the aerial is an oscillatory circuit, and, therefore, the current in it cannot rise logarithmically as in a simple circuit containing inductance and resistance alone, as you appear to suggest in the above statement. Again, assuming that the aerial current did rise gradually, the change in aerial current should have no effect on the received *note*, but only on the *strength* of the received signal.

Now when the ammeter wire heats up, its resistance rises. The frequency of the aerial circuit is given by:

$$f = \frac{1}{2\pi}\sqrt{\frac{1}{LC} - \frac{R^2}{4L^2}}$$

Where L = Inductance in Henries,
C = Capacity in Farads.
R = Resistance in Ohms.

Hence as the resistance rises, the frequency falls very slightly.

Now on 45 metres a change in frequency of this magnitude will be heard as a chirp in the receiver.

This argument applies only to self-excited valve transmitter. Crystal-controlled sets should be immune from this trouble.

Yours faithfully,
H. A. CLARK (G60T).

ED. NOTE.—It is regretted that our footnote should have given the impression implied in the earlier part of Mr. Clark's letter. The latter portion is, of course, a clearer interpretation of what really happens.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—Congratulations to Mr. Richards and the *Wireless World* for bringing up the question of "Radiese" for correspondence purposes. We must certainly not go to extremes in this; mould our BULLETIN according to QST, but should, as suggested, aim at something higher. What do other members think about it?

Yours truly,
ERIC BATEMAN (G2AOL).

"Monkleigh,"
Hove Park Road, Hove.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—I have recently received two reports of a station using my call sign. The following are particulars: From G6CL, 107, Friern Barnet Road, London, N.11, January 2, at 12.35 G.M.T., CW 45.5λ, R2; from G2AWL, 121, Alleyn Park, Dulwich, London, S.E.21, January 3, at 15.46 G.M.T., CW 45λ, R5.

My licence is only for λ150-200 m., and my set has not been working for some months.

Yours faithfully,
M. MARSHALL (G6XZ).

Beach View, Island Road,
Newquay, Cornwall.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—I should like to call your attention to the fact that my call sign, 5JD, is evidently being used by some unauthorised person, as I have had several cards reporting my transmissions at times when the station has been inactive. In all cases no wavelength was stated, so that I am unable to give the wavelength of the signals.

This sort of thing is apt to get one into the bad books of the G.P.O., and I shall therefore be pleased if you would give this letter some publicity in the next number of the BULLETIN.

Wishing the BULLETIN every success,

Yours faithfully,
JOHN L. WOOD (Gc5JD).

"Stanhurst,"
Burntisland, Fife.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—I am always very glad to receive reports from B.R.S.'s. It is a good help in my experimental work. I have received a great number of such reports, but I wonder that I only seldom receive a QRZ report! It is of great importance, also, to know something about the difficult hours for transmitting to G's. Are you all afraid that you not will get confirming on a QRZ report? I am always glad to hear about QSS and to hear how my sigs. are heard at different hours.

With best 73's to all those that have sent me a report,

Yours faithfully,
E. POULSEN (D7MT).

6, Virginiavej.
Copenhagen, F.

Calls Heard.

A2no, B, b1, ch2, 08, 09, v33, z9, bnsk1, bz1am, cbf2, csok1 d7mt, 7xu, f8ax, ce *, cr, ek, fsw, ga, kl, mat *, nx, sr, us, oc octu, berri, fm, 8mb, g2bm *, 2dl *, 2gf *, 2lf *, 2mj *, 2mn *, 2nh *, 2tl *, 5bk *, 5ma *, 5td *, 5xw *, 6bn *, 6hz *, 6ia *, 6ou *, 6pu *, 6wk *, gc2sr *, 2wl *, 5ba *?, 5nw *, g1, 5zy *, I, 1ae *, 1do *, j3xp, k3uh?, 4ha, 4uhu *, 4yae, la, 1a, N, oag, oam, ous, owp, oeke, smzt, ss2se, texx, tjcrj, tllit1b, u1aao, 1amd, 2xg *, 3ka, z, 4aa, Various, tun2, fl, cag, agc, gfup, tfv, wiz. *Indicates fone. Pse QSL to BRS42.—Calls HRD by T. H. STREETER, School House, Alford, near Billingshurst, Sussex, England.

NORTHAMPTON ENGINEERING COLLEGE,
ST. JOHN STREET, E.C.1.
January 19, 1927.

A—2ds, 2rt, 5bg, 5hg, 5kn. B—a2, b1, b7, b82, ch5, d2, h6, k3, k44, n33, o5, o8, r2, y8, 4aa, 4ar, 4xs, 4zz. Bz—1af, 1ap, 1aw, 2af, 2ag, 2as, 3ab, 5aa, bzl, poa. C—2be, 8azs. Cs—2un. D—7ew, 7lo, 7ni, 7zg, 7zm, 0xe, 0xz. F—4bm, 0cng, 0cdj, fut, 8abc, 8ag, 8arm, 8bnh, 8bw, 8cp, 8dd, 8dgs, 8fk, 8fr, 8fu, 8fwb, 8gam, 8gdb, 8gi, 8gz, 8hsg, 8if, 8il, 8jj, 8jnc, 8kp, 8lb, 8lz, 8ndx, 8nox, 8olu, 8oxo, 8py, 8rbp, 8ren, 8rvl, 8rz, 8ssw, 8tis, 8udi, 8uga, 8ut, 8vx, 8ya, 8yor, fl, fw. Fa—8mco. Fi—8fok. G—2ak, 2bm *, 2cc, 2cs, 2db, 2nm *, 2nh *, 2nm *, 2nt, 2ow, 2sw, 2tb, 2to, 2vg *, 2vr *, 2vs, 2wn, 2xo *, 2xv *, 2xy, 2yx, 2zc, 5ad *, 5da, 5dc *, 5dh, 5gu, 5gw, 5hx, 5jw, 5kz, 5ma, 5ms, 5oc, 5qg, 5ru, 5sz *, 5tr *, 5tz *, 5ul *, 5us *, 5uw, 5xd, 5xy, 5yk *, 5ym, 6bt *, 6ci, 6cl, 6ft, 6fz, 6ht, 6hw, 6hz*, 6ia*, 6jv*, 6ka, 6kk, 6lb, 6lr, 6nh, 6oh*, 6qh, 6qo *, 6ta, 6tx *, 6ty *, 6ut, 6uu, 6uv, 6uz *, 6vp, 6yc, 6yv, 6za, bvj, gbm, gfa. Gc—2vx, 2wl, 6iz, 6ko. Gi—5wd, 6mu. Gw—3xo, 3xs, 3xu, 11a, 11p, 18b, 19b. I—1cr, 1gw, 1mt, 1xa. Jm—2pz. K—2do, 4aap, 4abf, 4abg, 4abn, 4aci *, 4dka. ha, 4ld, 4ls, 4rm, 4sa, 4sar, 4ua, 4uao, 4ul, 4vo, 4xr, 4xu, 4xy, 4ya, 4yae, agb, agc. La—1e, 1r, 1se, 1x. N—0ag, 0ax, 0cmx, 0cx, 0nm, 0rf, 0vn, 0wb, 0xx, pcg, pcll, pemm, pcrr. O—gp, hl, ke, po, py. P—1aj, 1ao, 3fz, 6pe. R (Russia)—1ua. R (Argentina)—fc6. S—2nm. Sm—1p, smrp, smtn, smuk, smus, smws, smxr, smyg. Ss—2se. Tp—tpav, tpvv. U—1ads, 1aff, 1apk, 1asf, 1asu, 1azr, 1bdw, 1bdx, 1bes, 1bhm, 1blb, 1blf, 1bux, 1cmf, 1ga, 1rd, 1vz, 1xm, 1za, 2agn, 2apv, 2ayj, 2bbb, 2cvj, 2fj, 2fo, 2kc, 2or, 2pe, 2vh, 2xs, 3afq, 3agg, 3blc, 3bwt, 3ld, 3qf, 4aan, 4bl, 4qb, 4rn, 8adm, 8ben, 8brc, 8cau, 4b1, nkf, nrrg, wik, wiz, nem. Y (India)—2bg. Y (Uruguay)—1cd, 2ak. Z—3ar, 4aa. Miscellaneous—abc, ap4, az4, cb3, ct4, cw3, dnsc, du4, fu9, miz, ptr, sad, sbm, sic, 1dh, 7de, 9pz, 9rn, 9sj, 9yu.—0-V-1 Reinartz, 30-50 metres. (*) indicates telephony.—P. H. BRIGSTOCK TRASLER (BRS30), 37, York Road, Northampton. December 12—January 10 (inclusive).

A—7cs, 7la. B—k5, n33, h6, ½i4, v33, 4aa, a2, m2, 4aa, 4rl, o8. Bz—1ak, 1aw, 2as, 2ab, 2ag, 1ab. C—1ar, 2ax, 3mp. China—bxy. Cs—2un, aa2, ok1, 2yd. D—7mt, 7xz, 7ni, 7fp, 7xu, 7zg, 7fj, 7wa, 7uj. E—ear6, ear18. FA—8vx. FM—8st, 8oz. Corsica—oct. F—8brn, 8vvd, 8zb, 8yor, 8fk, 8pam, 8so, 8gi, 8rbp, 8zet, 8kl, 8xa, 8aro, 8nox, 8apo, 8op, 8bla, 8ut, 8alu, 8oqp, 8ya, 8bp, 8jc, 8kl, 8ffr, 8rv, 8qw, 8dx, 8bp, 8vx, 8kp, 8fy, 8tis, 8kp. G—2wl, 2bm, 2nt, 2nh, 2hq, 2vq, 2abf, 2vz, 2xp, 2cc, 2wj, 2dx, 2nm, 2dl, 5fq, 5uw, 5xd, 5uy, 5ax, 5wf, 5go, 5vl, 5td, 5jw, 5ms, 5dh, 6lr, 6ft, 6ry, 6ta, 6yd, 6ko, 6tg, 6vp, 6yu, 6cl, 6nk, 6ai, 6ug, 6gf, 6da, 6td, 6nf, 6bd, 6nx, 2rg, 2wn, 2cb, 5lb, 5ru, 5au, 5xh, 5xd, 5dh, 5jw, 5wk, 6uz, 6fa. Gw—11b. 18b, 14c. I—1ce, 1co, 1dr, 1mt. K—4ey, 4xy, 4sa, 4ldk, 4ld, 4aw, 4aca, 4uag, 4qa, 4ul, 4ora, 4mca, 4ha, 4xu, 4abg, 4abf. LA—1a, 1e, 1f. N—pcrr, owb, owm, owr, ouk, ogg, ozi, oxz, oth, opm, oqq, odk, ouc, onm, oag, oci, opy, oae, orf, ovn, ory. OE—py, fz, hl. O—a3b, a4l, a5x. P—1ao, 1af. SM—zn, rt, ua, uv, ss, yg. TP—ax, av. TL—1it, 1b. U—1ayl, 1akz, 1asa, 1asu, 1ckp, 1ckj, 1cxl, 1ga, 1kl, 1nq, 1xam, 1aq, 1as, 1uz, 1axa, 1aao, 1cmf, 1all, 1buz, 1dl, 2arm, 2bum, 2cib, 2em, 2md, 2nz, 2uo, 2vsx, 2pv, 2ej, 2cvj, 2czr, 2ctf, 2amj, 3ahl, 3lw, 3ckl, 3bwj, 3qw, 4iz, 4alg, 4lq, 8abg, 8afl, 8bth, 8djg, 8afq, 8alf, 2xo, 3jo, 8at, 9ef. Y—2zy. Miscellaneous—glky, gfu, gmd, ozb, sfv, xmo, 2bm, spm, agb, spl, cbi, aop, 1dh, gft, gmd, skc. PSE QSL OM's, TNX.—J. B. and R. D. SCOTT (BRS41), 9, Upper Garville Avenue, Rathgar, Dublin, Ireland. November and December, 1926, and to January 10, 1927.

G—2cr, 2cs, 2hq, 2mn, 2nh, 2vq, 5ad, 5fw, 5gw, 5gq, 5gy, 5hx, 5jw, 5ko, 5nj, 5qv, 5sx, 5uw, 5xd, 5za, 6fd, 6ft, 6hw, 6hz, 6yh, 6yl, 6yv, 6za. Gi—1bd, 2it. Gw—18b. N—ocm, ocx, oflx, onm, opm, opx, orf, owm. U—1ac, 1cmx, 1qai, 2ca, 2dh, 2is, 5kn, 8xe, 9sj, 9xi. FA—8ev, 8jx, 8rit, 8vx. Ch—asse, oxz, te, uu. O—py. S—sdk, sgl, smc. EAR—18, 19. D—7fp, 7lo, 7ni. P—1aw. CS—2yd. I—1bd, 1cr, 1na. B—4aa, 4rs, n33, s6. LA—1e. BZ—ctc. U—6eaei, 6tms. YS—7cc, 7ll. K—4cu, 4mca, 4mc, 4qa, 4sa, 4sar, 4sc, 4ua, 4xa, 4xb, 4xr, 4xu, 4ya. F—ocng, octu, 8ba, 8cl, 8cp, 8dx, 8ddh, 8gi, 8gz, 8jd, 8jnc, 8jo, 8oqp, 8oui, 8qnb, 8sm, 8ssw, 8tis, 8tl, 8ut, 8vvd, 8xum, 8zai, 8zb, 8zyj. Miscellaneous—11b, y6eur, suc, pcrr, wiz. All on 30 to 50 metres, at between 07.00 and 22.00 G.M.T. on January 9, 10, 11 and 12.—A. M. HOUSTON FERGUS, La Moye, Jersey, Channel Islands.

U.S.A.—1aep, 1asa, 1asf, 1ayl, 1big, 1ch, 1cn, 1dm, 1zd, 2afg, 2amj, 2bzo, 2cuz, 2cvj, 2czr, 2px, 2qr, 2tp, 2wc, 2yd, 3ajc, 3fi, 3hg, 8adg, 8afq, 8ben, 8ccq, 8dsy, 9cb, 9mo. G—2bm, 2cb, 2kz, 2mn, 2nm, 2rg, 2tl, 2wn, 5ad, 5au, 5ax, 5by, 5dc, 5gq, 5hs, 5ku, 5nw, 5qg, 5td, 5up, 5uw, 5xo, 6al, 6at, 6cl, 6fd, 6ft, 6iz, 6jv, 6ko, 6lr, 6mu, 6nx, 6oh, 6rd, 6vp. Gw—11b. F—8arm, 8aro, 8bw, 8di, 8du, 8esp, 8ez, 8fwb, 8fj, 8fr, 8gam, 8gdb, 8ih, 8jrt, 8kl, 8nox, 8olu, 8pam, 8ssw, 8tis, 8udi, 8vvd, 8wel, ocdj, ocmv. B—4aa, 4ar, 4rs, a2, f4, h5, m8, o8, z2, arb. N—of3, ogc, onm, ooo, opm, ouc, owb, owc, owg, 2pz, pcmm. D—7bj, 7bx, 7fj, 7fp, 7ni, 7wa, 7zg. K—4ls, 4ul, 4xr. 4mca, llo. Miscellaneous—smsh, smvg, i1au, p1aw, mn2vs, gbm, cs2un 1prv, p1af, c1ar, wip. PSE QSL by card. 0-V-0. Below 50 metres. December, 1926.—C. H. TARGETT (G6PG), High Street, Dartford.

B—4aa, 4ar, 4ls, 4ps, 4ua, 4xs, 4yz, b2, k3, s4, h5, h6, k44. BZ—1ic, 2as. CS—2un. D—7zg. EAR—19. F—8bp, 8cl, 8cn, 8cu, 8dgs, 8gdb, 8if, 8ix, 8jc, 8jj, 8jrt, 8kl, 8km, 8kmz, 8ku, 8kw, 8lb 8mw, 8nox, 8pam, 8plr, 8pri, 8ren, 8ssw, 8udi, 8vaa, 8wy. FA—, 8vx. G—2cc *, 2cs, 2hq, 2jb, 2nt, 2wn, 2yx, 2zc, 5dc *, 5dh, 5hk, 5hz *, 5jw, 5ms, 5ru, 5sz *, 5xd, 5bd, 6ft, 6ia *, 6qh, 6ql, 6ry, 6uz *, 6vp, 6za. Gc—6iz, 6ko, 6nx, 3fn (!!!). Gi—2it, 5mo, 5wd, 6mu *. Gw—3xo. I—1ce, 1cr, 1dr, 1mt, 1na. K—4abf, 4ls, 4mca, 4sar, 4ua, 4uaj, 4ul. LA—1x, 5b. M—1ams. N—0cmx, 0dg, 0dk, 0nm, 0px, 0uc, 0uk, 2pz. OE—ak. S—2nd, 2un. SM—sh, uk, vg, vr, xn, yg. U—1aao, 1abz, 1amd, 1asf, 1aw, 1awe, 1axz, 1ayl, 1azf, 1bhs, 1bux, 1ck, 1ckp, 1cmp, 1cue, 1ga, 1ic, 1le, 1lq, 2cej, 2di, 2fj, 2fo, 2qr, 2tp, 2uk, 2xaf *, 3blc, 3gp, 3jo, 3lw, 4af, 8axn. Miscellaneous—and, wiz, lpz, fw, sktr, dusc, pemm, perr. (*) indicates telephony.—A. CROSS, JUN. (GCBRS6), The Mause, Muthill, Perthshire, Scotland, on L.C. 0-V-2. December 18 to 28. PSE QSL, OM's!

G—2cc, 2gy, 2kf, 2og, 2ta, 2vr, 2xy, 5ku, 5kz, 5ok, 5ru, 6fa, 6ia, 6lr, 6nf, 6pu, 6ql, 6vp, 6yc. Gc—2wl, 5nw, 6ko, 6nx. GI—2it, 5nj, 6mu. GW—11z. F—8bp, 8co, 8cp, 8gdb, 8gi, 8jn, 8nox, 8wel, 8yor, 8zet. K—2do, 4uao, 4wl, 4xr. B—h5, k44, m8, v33, 3aa, 82. I—1bd, 1co, 1cn, 1na. N—0pm, 2pz. LA—1x. 1a. S—2nd, 2bs. D—7zm, 7ni. SM—uk, vj. R—aa7. U—1aof, 1asf, 1ch, 2aa, 2cvj, 3gp, 9sj. Miscellaneous—pcrr, pcll, pcmm, ocdj, octn, ref, rcrl, anf, wiz, gbm, fw, agb, ain. Calls heard during December. I shall be glad to send detailed report on request where one has not already been sent.—BRS62, 27, Ladysmith Road, Edinburgh.

Calls heard from December 19 to December 31, 1926.—U.S.A.—1aae, 1aao, 1abz, 1agz, 1amd, 1aof, 1arv, 1asf, 1asj, 1aso, 1awe, 1axa, 1azr, 1bhm, 1bhs, 1bke, 1bpn, 1bsk, 1bux, 1caw, 1cbz, 1ckp, 1cmf, 1cmp, 1cmx, 1cnp, 1cdp, 1cnz, 1cue, 1dc, 1dd, 1ey, 1fa, 1ff, 1ga, 1gp, 1ka, 1kk, 1lc, 1ld, 1mp, 1nl, 1qc, 1rb, 1rr, 1rd, 1uc, 1vw, 1dk, 1xi, 1xm, 2aep, 2aes, 2aev, 2agk, 2ajc, 2akz, 2amf, 2amh, 2amj, 2amn, 1amq, 1ann, 2anx, 2apv, 2arr, 2ase, 2ath, 2avb, 2awu, 2ax, 2bad, 2bgh, 2bs, 2bv, 2bx, 2cej, 2cks, 2ctq, 2cuz, 2cvj, 2cxl, 2cxr, 2cjc, 2dh, 2fo, 2fj, 2hc, 2jt, 2mk, 2nm, 2om, 2qr, 2rs, 2tp, 2uk, 3afq, 3ajc, 3anr, 3arl, 3auv, 3bg, 3blc, 3bms, 3bwt, 3cl, 3ct, 3cds, 3cah, 3dp, 3fu, 3gp, 3jo, 3ld, 3nr, 3pf, 3rt, 3sj, 3ue, 4aah, 4af, 4ak, 4br, 4cv, 4dd, 4du, 4db, 4gt, 4nh, 4oy, 4st, 4ut, 4vl, 5akn, 5ew, 5mx, 5oa, 6am*, 6amm*, 6chl*, 7ek*, 8ada, 8afq, 8ahc, 8alf, 8amu, 8anc, 8arm, 8avj, 8axn, 8azs, 8bf, 8brc, 8cau, 8ccq, 8cm, 8cro, 8dpn, 8mc, 9abd. Canada—1am, 1ar, 1da, 1dq, 2be, 3kp, 3gp. Jamaica—jm2pz. Brazil—1a, 1aa, 1ac, 1af, 1ag, 1aj, 1ak, 1al, 1am, 1ao, 1ap, 1aq, 1ar, 1aw, 1ay, 1bk, 1bl, 1bo, 1bq, 1br, 1bu, 1ia, 1ib, 2ab, 2ad, 2ae, 2af, 2ag, 2am, 2ar, 2as, 2au, 2ia, 2id, 2ik, 3am, 5aa, 5ab, 6qa, sq1, sq1x, sq4, snf, snni, poa. Chile—2ab, 2ak, 2ar, 2as, 2bl. Argentine—ba1, bg8, db2, de3, dr4, dw4, en8, fa2, tn8. Uruguay—1cd, 1ci, 1fb, 2ah, 2ak. South Africa—o1sr, a3b, a3z, a4l, a4m, a4z, a5x, a5z, a6a, a6n, a7o, ktc. Asia—bxy, ss2se, fi8fok, y2bg, ydcr, ssf8max.* * Australasia—a5hg, a7cs, a7la, z2bg, z4aa, z4ak,* z4ap.—* Signifies heard in afternoon 14.30-16.00 G.M.T. * * Signifies heard in morning at 09.00 G.M.T. Two-valve receiver.—**G2AYB.**

Calls heard December 4 to 19 and 26 to 31.—U.S.A.—1aao, abz, amd, aic, asa, asf, axx, bez, bfx, bhm, bhs, bke, bkq, bux, bzd, ch, cib, cmf, cmp, cue, ic, lc, np, rd, ue, vc, wc, 2anp, auh, avs, arm, bg, ctf, cuq, dh, fo, hc, qr, tp, uk, 3afa, ajc, blk, buv, cah, ckj, gp, jo, ue, 4af, cv, ll, 5api, kz, 8avo, ben, bf, blk, bth, ccq, cli, ded, djq, dsk, oo, vx, yp, 9adk, kv, zk, ab1. A—2bb, 2xi, 5hg. Z—3ai, 3ar. C—1da, 2be. BZ—1aa, ab, ac, ad, af, ak, am, aw, br, ia, ib, 2af, ag, al, as, au, 5aa, ab, 6qa, sq4, snf, snni, ptr. R—af1, db2, dh5, hb5, uu3. Y—1cd, fb, 2ak. CH—2al. O—a3b, a4l, a4z, a5x, a5z, a6n, 1sr. PI—1bd, 1hr, 3ac, fi1b, ss8max, npo, and, anf, bxy, jm2pz, hik, ban.—Receiver O-V-1. Full reports for all who QSL for same.—B. and F. Smith (BRS3), 101, Highfield Road, Saltley, Birmingham, England.

U—1asf, 1asr, 1amz, 1bhs, 1bz, 1ch, 1nv, 1ug, 1yb, 2amj, 2cdu, 2dh, 2hp, 2tp, 2uz, 3cjr, 3gp, 3kr, 3pk, 4dd, 4io, 4lk, 4mu, 4rc, 4rd, 7ek, 8ax, 8aol, 8pl. C—1ar, 2bc. BZ—1ak, 1am, 1an, 1ao, 1aw, 1bd, 1bk, 1br, 1ib, 2ag, 2ar, 2as, 2id, 5aa, snf, sq1, sq4, sq1x. CH—2ab, 2as. R—db2. Y—1bu. LA—1e. 1f, 1x. TL—1b, 1z. I—acd. FA—8jo. O—a3b, a4z, a5x, a6n. PI—1hr. jm. JM—2pz. A—2bk. Various—68x, kel, sws, 9sj, 1dh, ocmd, glyk, and, anf.—Calls heard during December on O-V-1 receiver, by Lawrence L. Parry (BRS29), 106, Church Road, Moseley, Birmingham.

Calls heard during December, 1926, by W. H. Talbot Smith (BRS10), 16, Farman Road, Coventry. All below 50 mteres.—U—1fnx, 1bim, 1bhs, 1awe, 1asl, 1dd, 2ma, 2gts, 2cok, 2bc, 2ba. C—1da, 1ia. BZ—1ak, 1as, 1af, 1aq, 1am, 1aw, 1ag, 1ar, 2af, snf, 5aa. CH—2as, 2ub. O—a6n, a5x. K—4xy, 4xu, 4ab. I—2bg, 1co, 1ay. N—ofb, opy, 2pz, oco, odg. EAR—3, 18, 19, 26, 28, 30. B—d8, m8, k2, 4yz. F—8cn, 8flm, 8zc, 8pri, 8ncx, 8imr, 8ssw, 8tis, 8zb, 8il, 8apo, 8jj, 8lx, 8dx, 8pmr, 8jn, 8wa, 8mm, 8vvd, 8dd. S—smuk, smuv, s2nm, s2nq. Sundry—rtrl, byd, ys7kk, la7x, ss8max, sab, fw5ab, z3ar, hfk, crp, v9sj, doxz, sq3, sq4. Telephony—g5dc, 6bt, 6ty, 6uz, 6ko, 5us, 2nm, 5li, 5nj, 6qo, 2xy, 5lq, 2vz, 2vr, Bodmin Beam Station and Naples.

Calls heard by H. L. Palmer (BRS49), Cheltondale, Cheltenham, between September 24, and December 12, 1926.—U.S.A.—1aae, 1aal, 1aen, 1air, 1aji, 1arc, 1asr, 1axa, 1bca, 1bez, 1bhs, 1bms, 1cjc, 1cjh, 1cmf, 1cnz, 1cue, 1da, 1dd, 1ga, 1kl, 1lj, 1mp, 1nq, 1qb, 1rd, 1rf, 1sw, 1ul, 1vc, 1vy, 1xv, 1zs, 2aes, 2afx, 2agp, 2agt, 2asq, 2ayj, 2baa, 2bs, 2bw, 2cjb, 2cqz, 2ctn, 2fo, 2gv, 2kx, 2ne, 2sq, 2uk, 2uo, 3bms, 3bof, 3bva, 3bwt, 3ckj, 3dw, 3gp, 3ld, 3ue, 3ut, 4bl, 4gw, 4la, 4ni, 4pk, 4sl, 5aio, 5aq, 5auz, 5dl, 5kc, 5sw, 5tt, 5zav, 6ake, 6bch, 6bxi, 6chy, 6dat, 6ge, 6hj, 7aib, 8ajn, 8aju, 8amd, 8atv, 8bcc, 8bja, 8bth, 8ccq, 8clp, 8csv, 8cwy, 8ded, 8kf, 8xe, 9axq, 9beq, 9bwo, 9cci, 9ccs, 9ckm, 9cn, 9cxc, 9dqr, 9ejg, 9elb, 9la, 9xi. Canada—1ac, 1am, 2bg, 3kp, 3wab, 8azs, 9bj. New Zealand—1ao, 2ac, 2ae, 2ak, 2bg, 2bx, 2cc, 2xa, 3aa, 3ai, 3ar, 4aa, 4ac, 4am, 4ao. Australia—2yi, 3bd, 7cs. South Africa—a3e, a5x. Various—ardi, jm2wz, rhb5, fa8ip, nkf, pr4sa, ktc, glky. Brazil—1aj, 1aw, 2ab, 2as, 6qa.

Calls heard by P. H. B. Trasler, 37, York Road, Northampton, between December 12 to January 9, 1927 (inclusive).—A—2ds, 2rt, 5bg, 5hg, 5kn. B—a2, b1, b7, b82, ch5, d2, k3, 844, n33, o5, o8, r2, y8, 4aa, 4ar, 4xs, 4zz. BZ—1af, 1ap, 1aw, 2af, 2ag, 2as, 3ab, 5aa, bzl, poa. C—2be, 8azs. CS—2un. D—7ew, 7lo, 7ni, 7zg, 7zm, oxe, oxz. F—4bm, ocdj, ocng, fut, 8abc, 8ag, 8arm, 8bnh, 8bw, 8cp, 8dd, 8dgs, 8fk, 8fr, 8fu, 8fwb, 8gam, 8gdb, 8gi, 8gz, 8hsg, 8if, 8il, 8jj, 8jnc, 8kp, 8lb, 8lz, 8ndx, 8nox, 8olu, 8oxo, 8py, 8rbp, 8ren, 8rvl, 8rz, 8ssw, 8tis, 8udi, 8uga, 8vx, 8ya, 8yor. FA—8mco. FI—8fok. G—2ak, 2bm*, 2cc, 2cs, 2db, 2mn*, 2nh*, 2nm*, 2nt, 2ow, 2sw, 2tb, 2to, 2vg*, 2vr*, 2vs,, 2wn, 2xo*, 2xv*, 2xy, 2yx, 5ad*, 5da, 5dc*, 5dh, 5gu, 5jw, 5kz, 5ma, 5ms, 5oc, 5qg, 5ru, 5sz*, 5tr*,, 5tz*, 5ul*, 5us*, 5uw, 5xd, 5xy, 5yk*, 5ym, 6bt*, 6ci, 6cl, 6ft, 6fz, 6ht, 6hz*, 6ia*, 6jv*, 6ka, 6kk, 6lb, 6lr, 6nh, 6oh*, 6qh, 6qu*, 6ta, 6tx*, 6ty*, 6ut, 6uu, 6uv, 6uz*, 6vp, 6yc, 6yv. GC—2vx, 2wl, 6iz, 6ko. GI—5wd, 6mu. GW—3xo, 3xs, 3xu, 11a, 11p, 18b, 19b. I—1cr, 1gw, 1mt, 1xa. JM—2pz. K—2do, 4aap, 4abf, 4abg, 4abn, 4aci*, 4dka, 4ha, 4ld, 4ls, 4rm, 4sa, 4ua, 4uao, 4ul, 4vo, 4xr, 4xu, 4xy, 4ya, 4yae. LA—1e, 1r, 1se, 1x. N—0ag, 0ax, 0cmx, 0cx, 0nm, 0rf, 0vn, 0wb, 0xx. O—gp, hl, ke, po, py. P—1aj, 1ao, 3fz, 6pe. R—fc6. Russia—1üa. S—2nm. SM—sm1p, smrp, smtn, smuk, smus, smws, smxr, smyg. SS—2se. TP—tpav, tpvv. U—ab1, 1ads, 1aff, 1apk, 1asf, 1asu, 1azr, 1bdw, 1bdx, 1bes, 1bhm, 1blb, 1blf, 1bux, 1cmf, 1ga, 1rd, 1vz, 1xm, 1za, 2agn, 2apv, 2ayj, 2bbb, 2cvj, 2cyx, 2fj, 2fo, 2kc, 2or, 2pe, 2vh, 2xs, 3afq, 3agg, 3blc, 3bwt, 3ld, 3qf, 4aan, 4bl, 4qb, 4rn, 8adm, 8ben, 8brc, 8cau, nrrg. Miscellaneous—abc, ap4, az4, agb, agc, cb3, ct4, cw3, dnsc, du4, fu9, fl, fw, bvj, gbm, gfa, miz, ptr, sad, sbm, nkf, nrrg, wik, wiz, 1dh, 7de, 9pz, 9rn, 9sj, 9yu. Uruguay—1cd, 2ak. India—2bg. Z—3ar, 4aa.

Calls heard during November, 1926, by F. G. Pratt (BRS39), 54, Lombard Street, E.C.3, London. Received on O-V-I Reinartz—U—1adm, 1aao, 1bdt, 2ci, 2rs, 2anx, 2abp, 3ay, 3ee, 4sl, 4tn, 5ev, 5aj, 5agl, 8bzt, 8aj, 8ccr, 9bp, 9cia, 9el. BZ—1ax, 1ar, 1al, 1ib, 2af, 2ad. C—1ac, 2fo, 2bg. A—2yi, 4bd, 5bw. Z—3ar. Y—1am, 2ak.

P1aj, smuk, sm1p, g12it, g16mu. G's—2cc, 5nj, 6yd, 5uw, 6td, 6og. Z's—2ae, 2ak, 4ac. A's—2tm, 2yi, 2mh, 2rb, 3bq, 5bg, 5kn. F's—8jn, 8ct, 8jf, 8kf, 8gm, 8lmm, 8jj, 8fr. B's—3ar, 3ab, 4aa, u3, v33, 4yz. Various—z1ao, a2bb, k4abg, k4yai, k4u, nopm, noaz, m1cd.—From Mr. M. Solomon (6BR), 125, Carmichael Street, Georgetown, Demerara, British Guiana.

G calls heard in Latvia. Extracted from Latvian *Radio* by G6BT.—By KC2A—2bi, 2db, 2gv, 2it, 2nt, 5dh, 5hx, 5kz, 6br, 6gh, 6lj, 6mu, 6yw. By KC2K—5gq, 5nn, 5tz, 6og, 6qh; GI—2it, 5mo, 6yw. By KC2N—5by, 5pm, 5zu, 6hz, 6qh, 6ux; GI—2it, 5mo, 6mv. By KC2U—2bi, 2jb, 2nh, 2nt, 2od, 2rg, 5by, 5dh, 5gq, 5hs, 5hx, 5is, 5kz, 5ma, 5nn, 5pm, 5tz, 5up, 5wv, 6hz, 6og, 6oo, 6ox, 6tx; GC—6nx. GI—5wd, 6mu, 6yw. By KC2O—2it, 2rg, 2xy, 5dh, 6og

November 1.—f8zb, f8ya, f8xix, n0pm, f8ffr, f8zb, f8udi, smxh, c6ko, u1aao, bz2ag. November 2.—ear6, I1co, f8udi, fa8fmr, gi6mu, g6ia, c1ar, bz1bi, bz1ad. November 3.—r1nn, f8tis, tpav, f8lca, bz1ax, f8bw, f8ya, bk44, c1ar, u3ld, u2ay. November 5.—f8jrt, g6qh, g5hs, f8sst, bv33, i1ca, f8ssw, f8rf, u1bhm, g5pz, November 6.—f8tis, bk44, gi6mu. November 7.—u2afg, u2tp, u1aox, g5hx, g5ku, u2gx, 0cdj, g6uz, f8vxa, f8rot, n0nd, u2av, u1cra, g5nn, f8vxa, g6oh, f8prd, g6og, g6uz, i1cw, u1cp, u1ckp, u1aao, u1bjk. November 8.—f8prd, g2oq, bv33. November 9.—smzn, bk44, b4aa, i1ce, bz1af. November 10.—f8kl, ðhu. November 11.—g6ia, f8zb, f8kp, f8apo, g6su, n0pm, bz2ag, g5mq, g5wp, g5gq, g5vd. November 12.—g5mq, f8vvd, f8vl, f8pd, u1om, u1axx, u2ayj, u8pl, u1gp. November 13.—u1bzp, u1rf, u1my, u1cmf, u2bsl, u3bbb, u1vz, u3vi, u2nz, u2pm, u2baa, November 14.—g5hs, g2jb, ga2qb. November 16.—ear6, f8vvd, u1kl, u3ld, f8kb, g6vp, u8pl, u4tf, u2cvj, u3jo, pr4sa, u2cxl, u4bn, c2fo, u8ccr, u8bg, c2bg, u8bbe. November 17.—bz1aw, i1ba. u3ld, u8xe, g6td, u1rf, u8adm, u7de, u4sl, u3ay, u2cvj, u1aao, November 18.—u3bqj, u1rd, f8jj, u1bzp, u3ay, u3td, u1aao, f8jj. c1ar, u3jo. November 19.—u2nz, c1ac, u3jo, u2adg, u2tp, u2cvj, u3gp, u1crb, u1ej, u1aao, u8ajm, u3jo. November 21.—u2bm, g6br. November 22.—u2cvj, u8kf, u2em, u3akw, u1rf, u1rd, u1bq, u2bwa, u1ajx, u8adm, u1bgc, u4ak. November 23.—f8rl, u2sz, u4ak, u2bm, u1cez, f8arm, u1aao, k4mga, u4dd, u2baa, u1vz, g6ia, u2cvj, f8lgd. November 24.—u1uu, smws, u2nz, u2bar, u1aom. November 25.—u2afg, u1cwf, u3pf, u2ctu, u2ff, u1air, u8ccr, u2gv, u8pl, u1bjf, u3bva, u9bpb, u8brc, u8bni u8avd, u9dq, u1afl, bz1ar, u8ily, u1aao, c3kp, u1awe, u3ay, u2em November 27.—smuk, sad, u1ng, u1asr, u2fj, u2bum, u3ahl, u1cmf u3pf, u2cbq, u1ala, u1aer, y2ak, c2bg, u1sw. November 28.—u7de, u1ga, u8bnh, n0pm, g2nm, u1amb, u1xj, ðhl, bz1ac, u1axa, f8mm, u1afy, u1pr, u2tp, u2bbx, u2em, u2crb, u2ufg, y2ak, sk4uah,

u4bl, fs8lha, 8hl, u8rh, u1cz, u1awe, k4uah, u1bhm, u1aci, u9mc. November 29.—f8ez, u8chp, u2ha, c1ar, qpwx, bz5ab, u8rc, bz5ws, bz2ag, g2cc. November 30.—bz2ab, bz2am, u4st, f8tis, f8bw, g6ta.—Pse QSL cards. QRA: J. Romero-Balmas, 10, Principe 10, Almeria (Espagne). 2° 31′ 15″ W. 36° 51′ 00″ N.

2cc, 2bz, gi2it, 2jb, 2kt, 2nh, 2nm, 2qb, 2vr, 2xv, 2xy, 5ax, 5by, 5hs, 5is, 5kz, 5ma, 5mq, 5pm, 5pz, 5ul, 5wq, 6al, 6bl, 6br, 6hz, 6lj, gi6mu, 6og, 6pu, 6ry, 6yd, gi6yw.—W. G. Southam (G2AX), 15, Grove Park Westmount, Quebec, Canada.

DX Svns, QRK during November, 1926. Gld to QSL crd.—U1aep, 1ahv, 1ch, 1rd, 1ga, 1beb, 1wl, 2ud, 2awf, 2pm, 2baa, 2md, 2cvj, 2bw, 3tr, 3jo, 3pf, 8adm, 9mc. BZ—2ag, 2ad, 1aa. Y—1ar, 8zr. C—1ar, 2ax. P—3fz. OA—5z. Q—8kp. PR—4sa. CS—2yd. FA—8jo. Sundries—sfv, fjhp, wiz, wik, nkf, wgy, agb, pcpp, pcrr, pctt, octn, ocrb, ocdj.—A. Stewart Ceacy, 10, Melrose Avenue, Reading, Berks.

A—2yi, 7la, 7rh. B—h5, k44, 4re, a2, o8. BZ—1aw, 1ar, 1af, 1ao, 1ap, 1ia, 1ib, 2af, 2ag, 2as, 6qa, snni. C—1ac, 1am, 1ar, 1da, 1dq, 2be, 2fo, 3aj. D—7bd, 7jo, 7fp, 7bx, 7ew. E—ear6. F—8cp, 8ut, 8cax, 8vvd, 8qrt, 8lmm, 8dx, 8jrt, 8tng, 8tis, 8rbp, 8zb, 8ct, 8zet, 8il, 8jj, 8dnx, 8tuv, 8nox, 8gdb, 8di, 8kv, 8olu, 8ih, 8mw, 8ez. FM—8mb. FA—8vx, 8jo. GI—6mu. GW—1iz, 14c. I—1ida, 1cr, na, 1nr, 1ce, 1pn, 1gn, 1cn, 1cr, 1co. JM—2pz. K—4xy, 4gd, 4aca, 4ey, 4wie, 4abf, 4adc, 4wi, 4mla, 4ua, 4xr. LA—1x, 1f, 1k. N—opm, ouc. ND—5ik. O—a4z. OE—py, jz, hl, ke. P—1ao, 1aj, 9ab. R—1ua. S—5nf. SM—tn, ys, vg, rt, uv. U—1ga, 1amp, 1cmx, 1amj, 1cnp, 1asf, 1vc, 1bu, 1cib, 1aui, 1biz, 1bhm, 1bqt, 1yb, 1ch, 1bbm, 1ads, 1cdp, 1asa, 1aal, 1rw, 1fw, 1acr, 1ajx, 1axx, 1cxl, 1bez, 1lc, 1vn, 1mp, 1xm, 1akz, 1awe, 1aao, 1bqd, 1ckp, 1gp, 1dd, 1ic, 1zn, 1dk, 1in, 1uw, 1au, 1rd, 1ahv, 1auk, 1amd, 1asu, 1bsl, 1asr, 1adl, 1cmp, 1cmf, 1bzp, 1ctp, 1bca, 1cue, 1cki, 1aqt, 1bke, 1aff, 1bes, 1adf, 1aer, 2em, 2ait, 2cjb, 2cyx, 2ctf, 2aib, 2bzo, 2bxu, 2tb, 2im, 2auf, 2bwa, 2cvj, 2ahm, 2ajn, 2fo, 2agn, 2agm, 2arm, 2awp, 2bg, 2uo, 2qr, 2bv, 2awk, 2bsc, 2ags, 2cxl, 2kx, 2bj, 2qu, 2alk, 2baa, 2tbp, 2akq, 2di, 2da, 2ev, 2tp, 2ie, 2nz, 3ckj, 3auv, 3jo, 3gp, 3cc, 3dh, 3ln, 3asl, 3jm, 3ay, 3cl, 3blc, 3pf, 3ao, 3py, 3bva, 3xi, 3cab, 3sj, 3buv, 3ajc, 3blc, 4rn, 4bl, 4jo, 4fl, 4av, 4rk, 4he, 4ry, 4dd, 4ak, 5ex, 5abk, 7de, 8avj, 8wt, 8axn, 8dom, 8dwn, 8bfa, 8dpt, 8bkm, 8bf, 8bu, 8agi, 8adm, 8ux, 8amu, 8ccs, 8gk, 8xe, 9hp, 9bht, 9dqu, 9axh, 9dte, 9hj, 9za, 9mo, 9bpb. Y—2ak. YS—7kk. Z—2ac, 2bx, 3ar, 4aa. Various—ch2bl, chil, glyx, sgl, and, anf, d8q, vido, hik, wiy, nmu, oxz, wik, pi, wuaj, tpai.—Heard during December, 1926. Receiver O-V-1. Glad to QSL, QRK, QSB, QRH, QSS, es WX. Pse QSL. A. S. Williamson (BRS26), 106, Rushdale Road, Meersbrook, Sheffield.

Lieut. F. Rodman, Jubbulpore, C.P., India. Receiver O-V-1. October.—G—2bm, 2lz, 5bm, 5by, 5lf, 5nj, 5tz, 6kk. A—2ah, 2al, 2bb, 2bk, 2cg, 2cm, 2cy, 2gq, 2ij, 2jp, 2mh, 2rc, 2rx, 2sh, 2so, 2tm, 2yh, 2yi, 3my, 3wm, 3xy, 4ac, 4bo, 4bw, 4cg, 4cm, 4go, 4rb, 5bw, 5bx, 5da, 5hg, 5ja, 5lf, 5ma, 5mu, 5rm, 5sa, 5wh, 6ag, 6mu, 6sa, 7aj, 7bq, 5bw, 7dy, 7lj. B—h5, z1, 3aa. BZ—1aa, 1af, 1ag, 1ak, 1ao, 1am, 1ar, 1bd, 2am, 2ak. BN—sk1, sk2, sk3, CB—8hsd. EI—pk1, pk4, andir. FC—8bx, 8flo, 8zw. FI—ib, hva. F—8ag, 8ck, 8ez, 8ffw, 8fuu, 8kf, 8jn, 8je, 8mul, 8ou, 8xm, 8zb, ocdj, ocng, fw. HU—6lf, npm. I—1ay, 1ce, 1co, 1da, 1fm, 1ma. J—1sm, 1ts, 1uv, 1zb, 2aa, 3aa, 3az. K—2do, 4mca, 4uhu. N—pck4, opm, pcll, pcmm, pcrr, pcpp. O—A3b, a3c, a3e, a3f, a3u, a3y, a3z, a4e, a4l, a4n, a4z, a5j, a5o, a5q, a5x, a5z, a6a, a6n, a6u, a7b, a7e, a7h, a7u, a7o, a8n, a8p, 1sr. PI—1au, 1at, 1bd, 1bl, 1hr, 3aa, 8aa, 9aa, wuaj, nuqg, npo. R (Argentine)—bh1, db7, dh5, ha2. SM—smtn, s, 2co, 2nd, 2nm. SS—2se. U—2uco, 5agl, 6cua, 6cto, 6mu, 6byh, 6rw, 6dcq, wiz. Y (India)—2ak, 2jy, 2zy, dcr. Y (Uruguay)—1ak, 1am, 1bu. Z—1ao, 2ac, 2ax, 2bp, 2bx, 3ai, 2ar, 4ac, 4ak. Miscellaneous—gfup, rau, rdkk, glq, suc, crs, 1cha, pjc.

R. J. Drudge-Coates, Rawalpindi, India (YDCR). O-V-1. October.—G—2xy, 2cc, 2nm, 2vl, 2qb, 2fk, 2nh, 2it, 2sp (2bp), 5gq, 5kz, 5pm, 5hs, 5tz, 5by, 5wq, 5lb, 5pz, 6kt, 6yd, 6uz, 6og, 6re.

Calls heard by R. A. Bartlett (BRS27), 3, Chertsey Road, Redland, Bristol, December, 1926.—A—2bk, 2yi, 3bq, 5wh, 5hg, 7cs. BZ—1aa, 1ac, 1al, 1ao, 1an, 1aq, 1ar, 1aw, 1lb, 1br, 2ab, 2ag, 2as, sq1, snn1. CH—2as. C—1dq, 1ac. O—a3b, a4v, a5x, a5z, a6n. P—1aj, 1ao, 1aw. S—smsh, smus, smwr, smxn. U—1axa, 1cmp, 1amd, 1ahv, 1cib, 1rd, 1bhm, 1aml, 1bjk, 1ag, 1asf, 1asa, 1aer, 1ckk, 1vz, 2tp, 2baa, 2btr, 2cxl, 2arm, 2uk, 2axy, 2awk, 2ait, 2kx, 2om, 2alp, 2agn, 2px, 2dc, 2bw, 2bsl, 2bbx, 2cvs, 2bad, 2dx, 2bwa, 3qw, 3lw, 3auv, 3wf, 3agp, 3acw, 3wu, 3bmz, 3mv, 3anr, 3gp, 3jo, 4ry, 4ak, 4hy, 4aah, 4cv, 4wj, 5qr, 5axk, 6bjl, 8ajn, 8xe, 8bth, 8bru, 8ben, 8pl, 8alg, 8bja, 8ahd, 8aul, 8bf, 8ded, 8acu, 9nv. Y—2bg, 2ak, 1am, 1cd, 1cg. Z—2ae, 2ak, 3ar, 4aa. Miscellaneous—cb, f2, bxy, pi1dl.

Calls heard November-December.—G—2cc, 2bp, 2nh, 2it, 2xy, 2vq, 2nm, 2bi, 5tz, 5hs, 5kz, 5ma, 5is, 5fq, 5vl, 5mq, 5wq, 5sz, 5 b, 6re, 6og, 6mu, 6rg, 6br, 6ia, 6yd, 6nf, 6ar, 6bd. A—2rx, 2bb, 2yi, 2xx, 3dc, 3bq, 3px, 3ma, 3tm, 3kn, 3en, 5gq, 5hg, 5da. 5wh, 5lf, 5rm, 5kx, 6mu, 6gb, 6bu, 6ag, 7aa, 7cw, 7dx, 7cs, 7bq, B—y8, b7, o8, v33, oh, ch5, b82. D—7mt, 7xf. F—8en, 8ea, 8bu, 8jrt, 8mn, 8zmm, 8ba, 8cp, 8yor, 8dk, 8lgm, 8kg, 8if, 8ca, 8vl. I—1bw, 1co, 1mc, 1pn. J—3az, kzb, 1oz, 1ts. K—4uhu, 4mca, 4abg, 4aca, 4yae, 4abr. S—smtn, smuk, smuv, smvl, smsh, smwr, smxv, smxp, s2nd, s2nl, sdk, spm. N—opm, oaz, oqq, owr, ofp. PI—3aa, 1hr, 1bd, 1dl, 8aa, 3ac, wuaj. U—9mc, 2crb, 6dat, 6buc, 6cuc, 6cvw. O—a3e, a5z, a5x, a3z, a4l, 1sr. OE—hl, ke. Miscellaneous—ss3se, tpav, kel, bnsk1, bnsk2, pk1, tpaw, oxz, dnsc, 1b, lit1b, p9ab, la1e, qst, cs2ydc, 1dh, gwlk, spma, sktr, r1nn.—R. J. Drudge-Coates (YDCR), Rawalpindi, India. Reinartz O-V-1.

Calls of stations, outside Europe, heard by G. G. E. Bennett (BRS63), 26, Blenheim Park Road, Croydon, England, between October 31 and December 31, 1926.—A—2bk, 2yi, 3bd, 3bq, 3hl, 3ls, 5bw, 5hg, 5ja, 5kn, 5ma, 5wh, 6ag, 7cs, 7la, 7rs. Z—2ac, 2ae, 2bx, 3ai, 3ar, 4aa, 4ak. J—hbb. PI—1au, 1hr, 3aa, 3ac, npo. EI—and, anf. BN—sk2. M—1dh. Red Sea—sx. Hongkong—bxy. Pacific Ocean—npn. O—a3b, a4l, a5x, a6n, vnb. EG—suc. Sudan—ktc. FA—8ev, 8vx. FM—8afa, 8ip, 8pmr. India—dcr. SS—2se, 8max. CH—2ab, 1rx. BZ—1ac, 1ak, 1am, 1an, 1ar, 1aw, 2ab, 2ad, 2af, 5aa, 5ab, 6qa, ptr, snni. Uruguay—1cd, 2ak. R—lp1, sp1. Dutch W. Indies—pjc. C—1ar, 1cx, 1da, 1dq, 2be, 3blc, 3fc, 3he, 3kp, 3mp, 9rl. U—1aae, aao, aav, aci, adm, ads, aen, aer, ag, aga, ahv, aic, air, aky, ajp, ale, amd, asa, asf, asq, atv, awe, awq, axa, axx, bbr, bdt, bc, bez, bgc, bhm, bhs, big, bjk, bol, bqd, buy, cfl, ch, cjc, cjk, cki, ckp, cmf, cmp, cms, smx, cqz, cue, cw, dd, ga, gp, ic, ka, kk, lc, lj, nq, or, pm, ql, rd, sw, um, un, uw, vy, vz, we wl, xj, xm, yb, zn, zs, zw, avg, ayl, 2aas, aby, agn, ahm, ait, aky, ama, amf, amj, anm, anx, arv, ase, asq, avr, awq, azj, azy, bbb, bc, beo, bj, bw, bwa, cbg, cei, cej, crb, ctn, cty, cvj, cxe, czr, di, dx, fc, fj, gk, gp, gv, kx, md, nz, pp, sf, sz, tp, uk, uo, xaf, xg, 3aev, afw, ags, akq, amf, anr, auv, aux, awk, ay, bjf, blc, bmz, bqj, buv, bwt, cah, cc, cjn, skj, cky, ee, gp, jo, ld, lw, mv, oq, pf, ps, tr, ue, wu, 4aab, ak, bn, dd, di, ft, he, iz, js, km, lk, ll, nh, rc, rm, sl, tp, ux, 5aav, adz, afn, dl, kc, jd, 6bjl, cuc, cy, mu, rn, 8ade, adg, afq, ago, ahc, alf, aly, alr, amd, amu, ath, atv, avd, avj, axz, bct, ben, bf, 8th, ccq, cdv, co, cpk, dbb, dnh, don, dpn, dsy, ihd, kf, mc, pf, qb, rt, ul, wk, 9akt, bbw, bmm, bmu, bdg, ccs, cxc, dls, dng, dr, dte, ejg, ez, zk, xi, aa7, kdgl, nap, ncd, dkf, not, ntt, waa, waq, wiz.—On 30-60 metres. EI—anc. C—3fc, 9ai. U—1adm, ckp, rd, vc, 2aol, apa, cty, nz, py, tp, xs, xt, 4cz, 8adm, aly, nkf, wik, wll.—On 17-23 metres.—Pse QSL OMS—Tnx!

Calls heard by Lieut. F. Rodman, R.C.O.S., Jubbulpore, India, between November 1 and 21, 1926. Aerial 30ft. high (vertical); no earth. Receiver, O-V-1.—A—2bb, 2bd, 2bk, 2cg, 2cs, 2dy, 2gq, 2mh, 2rd, 2rx, 2sh, 2so, 2ss, 2uc, 2uk, 2yi, 3al, 3bq, 3dc, 3em, 3en, 4an, 4bd, 4cg, 4cm, 4gm, 4lj (?), 4rb, 4ru, 5bg, 5bx, 5bw, 5da, 5hg, 5ii (?), 5ja, 5lf, 5oa (?), 5oq, 5sa, 5wh, 6ag, 6kx, 6mu, 6sa, 7cs, 7cw, 7dx. O—hl, th. B—4ar. CB—8hsd. BZ—1af, 1ai, 1ak, 1al, 1am, 1an, 1ao, 1bk, 1ib, 1ik, 2ab, 2af, 2ag, 5aa, 6qa, BN—sk1, sk2. CH—2ar, 2as, 2ld. China—9ab. F—8ba, 8gi. 8jf, 8jn, 8fj, 8sa (?), 8ts, 8ssw, 8yor. FC—8em, 8zw. FI—1b, 8fok, 8zx (?). S—2co. K—4mca, 4agb. G—2it, 2jb, 2kz, 2nm, 5dh, 5nn, 6uz. I—1au, 1co, 1ga, 1gw, 1ma. J—1ts, 1zb, 3az, 3yz. EI—pko, pk1. N—ofp. LA—1x. Z—1au, 2ac, 2br, 2bx, 2xa, 3aa, 3ai, 3am, 4ac, 4ak. PI—1aa, 1at, 1au, 1bd, 1dl, 1hr, 3aa, 3ab, 8aa, wucb, wuaj. R—af1, af3, dh5, fc1. Sweden—smtn. SS—2se. O—a3b, a3e, a3f, a3u, a4l, a4m, a4z, a5o, a5x, a5z, a6n, a7h, a7o, a7s (?). Y (Uruguay)—1ak, 1am, 1ar (?). U—1aao, 1afl, 1ahv, 1ckp, 1cmp, 1cva, 1gm, 1rd, 2ac, 2cvj, 2fz, 2lw, 2ns, 2pj, 2px, 2tp, 2xaf, 2xbe, 3lw, 4ft, 5hi (?), 6ad, 6adt, 6daq, 6rw, 6zat, 7aa (?), 8ben, 8btr, 8ded, 9aay, 9ek, 9sj, 9xi, wiz, wiy. Various—not, ard1, jm2pz.—31 to 47 metres, between 11.30-18.00 and 01.15-02.30 G.M.T.

F8YNB via J des E, Paris, via J des 8, Rugles, asks G5CZ, 5CZ, 5FS, 5HX, 5KZ, 6IA, 6IG, 6NX, and 2AB to send QSL cards of their QSO. Tks to all.—M I

Strays.

Belgian, B-CH5, of Verstrepen R., 23, Rue Van Straelen, Antwerp, wants to get into touch with British amateurs experimenting on crystal control with a view to conducting tests and exchanging information.

* * *

E. R. Westlake, 57, Castle Fields, Shrewsbury.—"The back numbers of the Bulletin have come to hand; please accept my best thanks—I find them full of interest."

Observations in India.

The following table of times for the best reception of different countries has been compiled from observations carried out during October to December, and will probably be of interest to readers of the "BULL."

Indian time is 5½ hours in advance of G.M.T.

Time G.M.T.	
00.00—02.00	Great Britain, France, Holland, Italy, all thinning out and finally fade out about 01.00 hours. Brazil, Chile, U.S.A. districts 4, 6 and 8 coming in about 01.30 hours.
02.00—04.00	All European stations faded out, Brazil, Chile, U.S.A. remain audible up to about 03.00 hours on the 35-45 metre band.
04.00—08.00	Practically blank on the 35-45 metre band, few commercial stations audible (FW, PCG). Signals on the 20-30 metre band coming in strong from Europe.
08.00—12.00	Japan, Philippines, East Indies begin to come in about 09.00 hours, and remain steady, Australia New Zealand coming in about 11.30 on the 35-42 metre band, signals on the 20-30 metre band very strong from U.S.A. and European commercial stations, but few amateurs heard. U.S.A. in strong at 11.00 hours.
12.00—16.00	Australia, New Zealand, Philippines, Japan, China, East Indies all in strong and remain constant during this period on the 35-42 metre band. South Africa coming in.
16.00—18.00	Australia and New Zealand fading out about 17.00 hours, Japan, China and Philippines still in strong, South Africa at their best about 17.30 hours, Scandinavia coming in strong, Italy, Germany, Great Britain, France all coming in weak.
18.00—20.00	Japan, China, Philippines all fading out, South Africa steady and Europeans getting stronger, stations using pure D.C. steady, but those employing R.A.C. and A.C. fading.
20.00—22.00	Great Britain, France, Holland, Sweden all strong, but scarce, South Africa fading out about 22.00 hours.
22.00—00.00	Great Britain, France, Holland, Spain all in at their best on the 40-46 metre band, Porto Rica coming in about 23.00 hours.
General	In addition to the above, G stations have been heard on the 45 metre band quite strong about 15.00 G.M.T. G5BY, G2NH, G2NM, Gi6MU, G6UZ and G6BD have all been heard strong at this hour, but not regularly.

(Signed) R. J. DRUDGE-COATES,
Radio Y-DCR.

EXCHANGE & MART.

MARCONI generator 600 volts D.C. 30 milliamps coupled to 14 volt 4.5 amp motor, £5 or part exchange for wave-meter.—G-2GY, 91a-Temple Street, Bristol.

TANTALUM.—Tantalum metal sheet for A.C. rectifiers.—Blackwell's Metallurgical Works, Liverpool.

Bulletin Standing Notices.

All members are asked to read carefully the following notices before writing.

Address all your correspondence to the particular Officer in whose province it is to deal with the matter under discussion. These are the Advertising Manager, The Hon. Organiser T. & R. BULLETIN; The Hon. Secretary, T. & R. Section; The Sales Manager, T. & R. BULLETIN; Secretary, Experimental Section; Q.S.L. Manager; Q.R.A. Manager, and the Chairman, T. & R. Section. Each one of these officers has his own Department and method of dealing with correspondence.

Always write your letters relating to different subjects on separate sheets of paper. Do not send in an order to the Sales Department and ask the Hon. Organiser a question in the same letter or ask a question about your licence. Also do not mix criticisms of the BULLETIN with criticisms of some other Department of the Section.

When sending cheques or postal orders do not embody payment in respect of several items in one sum, but make out separate sums for the various items.

Orders for all articles except enamelled emblems should be addressed to the Sales Manager and nobody else, and cheques should be made payable to Sales Department, T. & R. BULLETIN. Cheques and orders for enamelled badges should be made payable to the Secretary, Radio Society of Great Britain, and also subscriptions.

Questions concerning licence matters should be addressed to the Hon. Secretary, T. & R. Section.

Reports concerning other activities should be addressed to your Area Manager and should reach him not later than the 14th day of the month preceding the month intended for publication.

Changes of QRA should be addressed to C. A. Jamblin, Esq., QRA Manager, 82, York Road, Bury St. Edmunds, Suffolk, and these will be embodied in a monthly report in the BULLETIN and will be noted by Headquarters.

QSL cards should be forwarded properly addressed and stamped in the case of known QRA's to QSL Manager, Radio Society of Great Britain, 53, Victoria Street, S.W.1. In the case of the free delivery countries, however, it is only necessary to address the card and not stamp it

When corresponding with the Hon. Organiser, T. & R. BULLETIN, and if a reply is required, always send a stamped addressed envelope unless you are sending an article for publication. Replies cannot be guaranteed unless this rule is observed.

Read these notices month by month in order to ensure that no change takes place without your knowledge.

Short-Wave Aerials.

By Bernard J. Axhen, A.M.I.R.E.

THERE is at present much difference of opinion, especially amongst transmitting amateurs, as to what type of aerial system is the most efficient for short-wave wireless communication.

On 200 metres, it was generally considered better to use an aerial and counterpoise than an aerial and earth connection, as in nearly all cases the ohmic resistance of the counterpoise was less than that of the earth system.

On 45 metres, and wave-lengths of that order, however, it is another matter, because the radiation resistance has increased so enormously in comparison with the ohmic resistance that the latter may become more or less negligible. In such a case it is doubtful if the reduction of ohmic resistance obtained by using a counterpoise makes up for the reduction in the effective height of the aerial which must result.

The writer is inclined to think that a mediocre earth is as good as a counterpoise on 45 metres. At his station work was carried out on this wavelength for some months with an earth connection consisting of a 15-ft. lead running from the operating room (on the first floor) to an outside water-pipe. Curiously enough, a 7/20 bare copper lead gave slightly better radiation than a 7/18 600-megohm insulated cable.

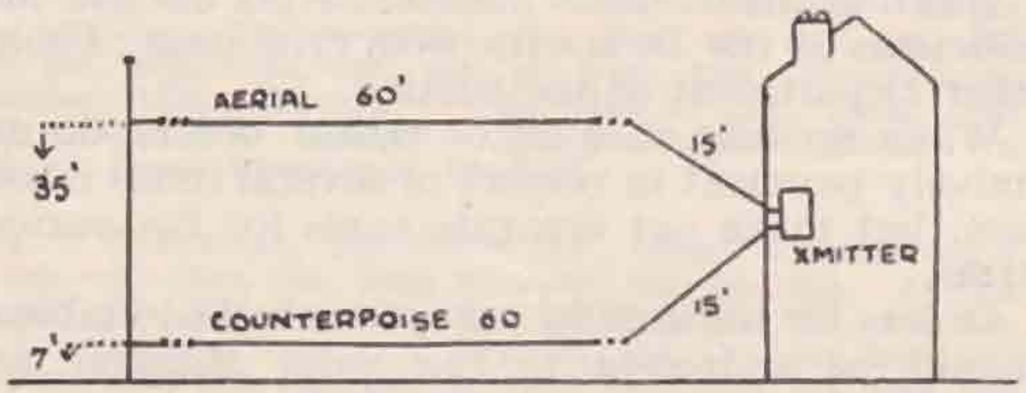


Fig I

A single-wire counterpoise was then erected, and work carried on again for about a month.

The aerial current was somewhat increased by using this counterpoise instead of the earth connection with the same power input. However, judging by reports received when working various stations in different parts of the world, the results were not the slightest improvement over those obtained with the earth system.

An interesting fact was recently discovered, however, which throws some light on the subject, and, the writer hopes, on the much-discussed point as to whether an aerial and counterpoise acts as a Hertz radiator or as an oscillatory circuit with inductance and capacity like the normal aerial-earth system.

Referring to Fig. 1, it will be seen that the aerial and counterpoise are almost exact replicas of each other, thanks to the position of the operating room.

When an earth was used, the antenna system was tuned to the third harmonic (135 metres) of the normal transmitting wave-length (45 metres) to obtain maximum aerial current. An attempt was made to do this with the aerial and counterpoise, with a certain measure of success—the tuning did not seem at all critical. A few days ago, however, while carrying out some adjustments, the antenna current suddenly increased from .4 to .8 amperes, the anode feed, of course, also increasing tremendously. It is well known that the aerial circuit can be tuned not only by watching the aerial ammeter, but also by watching the rise in plate milliamperes. The wave-length was checked, but found to have dropped to 37 metres. It was

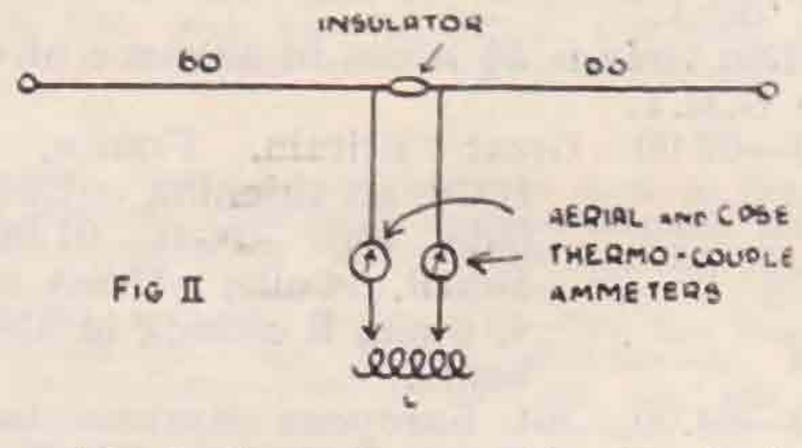


Fig II

therefore evident that the aerial circuit had a natural wave-length of 37 metres.

The transmitter was then tuned to 32 metres and switched on for a second. The radiation was again comparatively low—·35 amperes.

The plate feed was also comparatively small, showing that little power was being absorbed by the aerial circuit.

From these data it was obvious that not only

(*Continued on page* 26.)

SUBSCRIPTIONS.

ALL MEMBERS WHO HAVE NOT DONE SO ARE ASKED KINDLY TO FORWARD THESE TO HEAD-QUARTERS AS SOON AS POSSIBLE

had the aerial system a natural wave-length of 37 metres, or a harmonic of that figure, but that the peak of its resonance curve was very sharp.

Attempts were therefore made to increase this natural wave-length to 45 metres by adding inductance, the loading inductance being inserted at various points to ensure keeping the nodal point in the right position. However, it was found impossible to bring the aerial circuit into proper resonance at 45 metres. It being suspected that the antenna system was functioning on a wave-length of the order of 110 metres, it was then decided to try and tune it to its second harmonic of 45 metres, *i.e.*, to tune the aerial system to 90 metres. To do this, series condensers were used at various points. This, however, also failed to produce the required result. Reducing the capacities of the series condensers, or increasing the added inductance, beyond a certain point, merely reduced the aerial amperes, this apparently being due to the increased impedance of the aerial circuit.

This point should be borne in mind, as it has a bearing on the conclusion arrived at at the end of this article.

From the above data it appeared that the aerial system was endeavouring to function on a certain wave-length, and this wave-length could not be shifted by means of series capacity or inductance. Also, that this wave-length depended upon something other than the values of inductance and capacity in the circuit.

The first idea that occurred to the writer was to see if this wave-length was dependent upon the physical dimensions of the aerial system, as in the case of the Hertz. Referring again to Fig. 1, it will be seen that both aerial and counterpoise have a straight horizontal span of 60ft, and lead-ins of 15ft. The total length of wire, therefore, is 150ft. Reducing this to metres, the length becomes 45.8 metres. The experiments, however, had proved that this was not the natural wave-length of the aerial, and this method of determination must therefore be incorrect.

If, now, the straight horizontal parts only are regarded as Hertzian radiators, and the lead-ins are regarded as feeds, the length of the aerial becomes 120ft., or 36.6 metres. This is about the wave-length of the aerial system as found by experiment. Under these circumstances it seems reasonable to regard the aerial system in question as a Hertz with current feed. (See Fig. 2.)

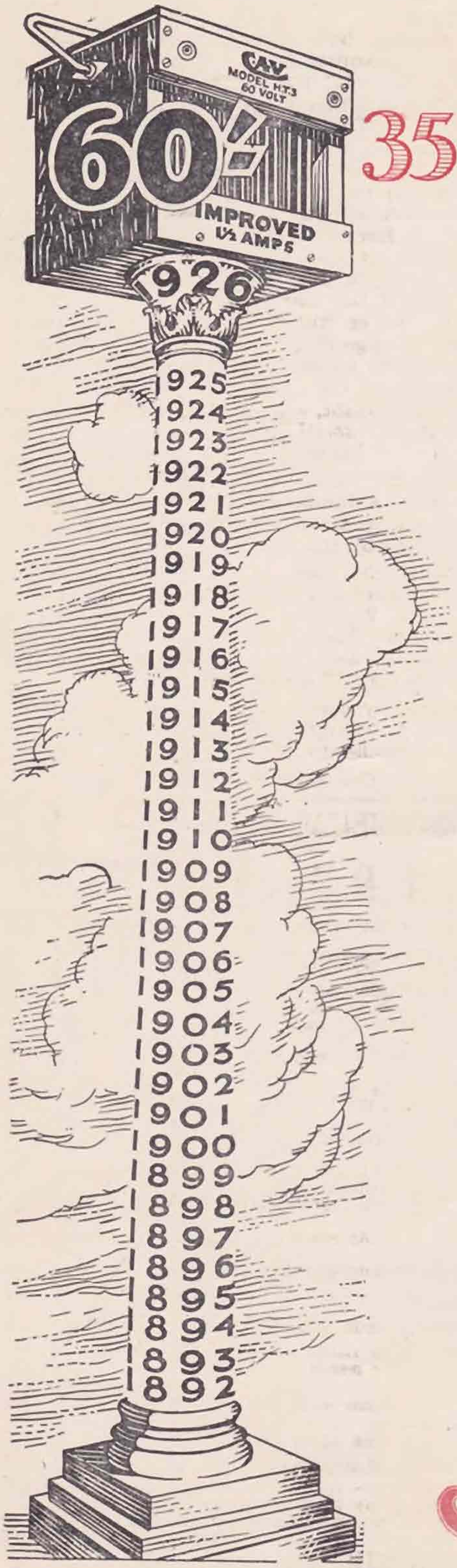
In this case, the maximum antenna current, *i.e.*, the nodal point, will be in the middle of the system, at the aerial inductance L_1. This was proved be experiment.

Undoubtedly, the aerial-counterpoise system must possess a fundamental wave-length due to its inductance and self-capacity, but this seems to be outweighed by the Hertzian effect.

Of course, the horizontal spans of aerial and counterpoise may not act together quite in the way shown in Fig. 2 to produce a natural wave-length of 37 metres. Each may have a fundamental of 18.5 metres and be oscillating on twice that wave-length, *i.e.*, 37 metres.

Unfortunately, owing to location, it is not possible to increase the length of the horizontal spans in order to bring the dimensions up to those required

(*Concluded on page* 15)



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