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The Journal of the Inst. Radio Society  
of Great Britain



Vol. 3. No. 4. October, 1927

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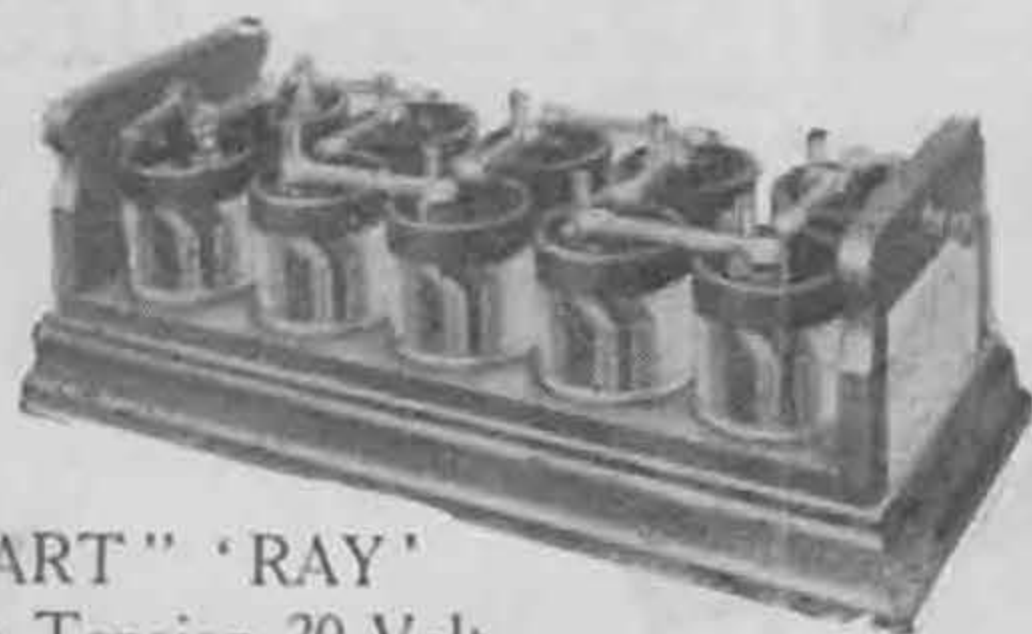
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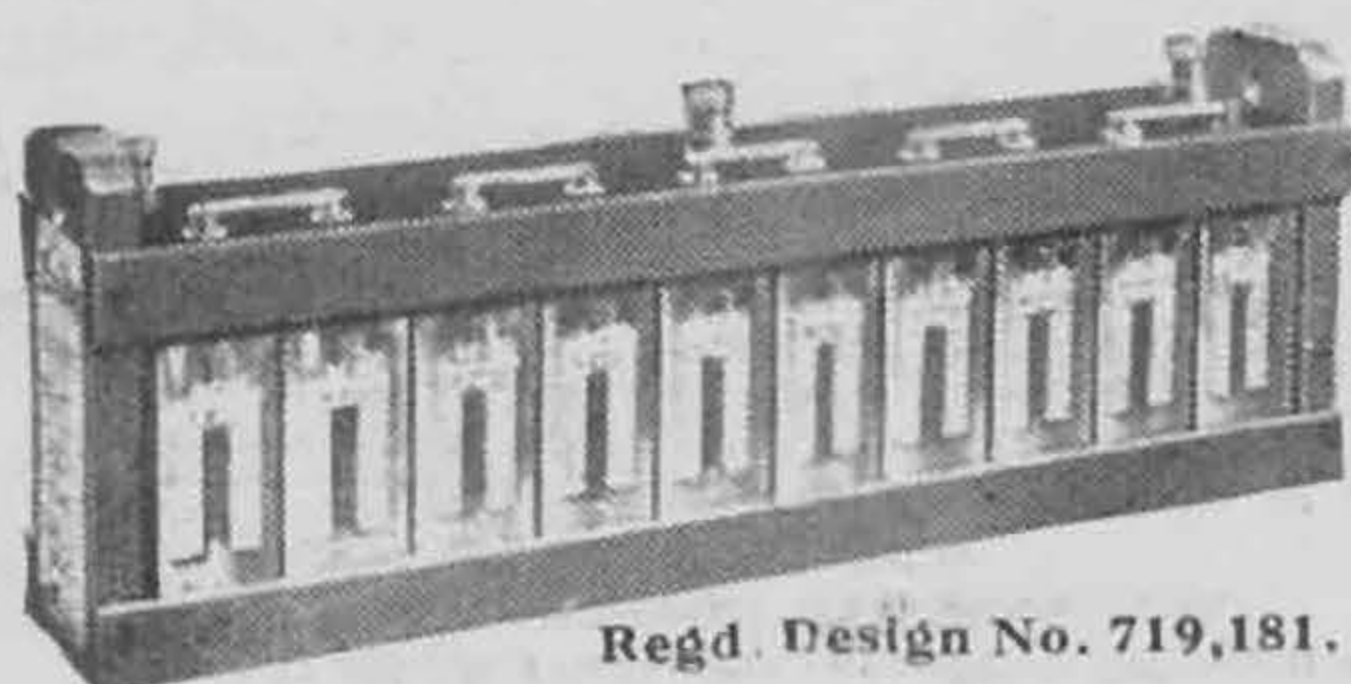
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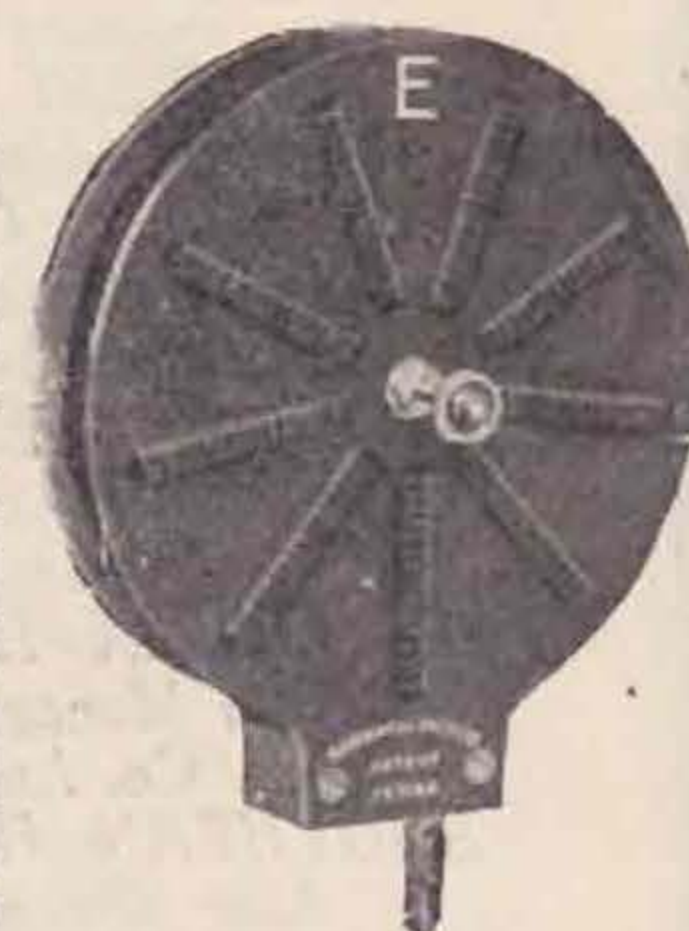
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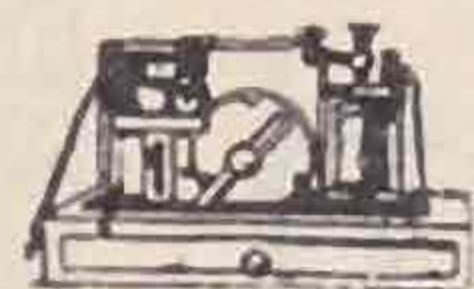
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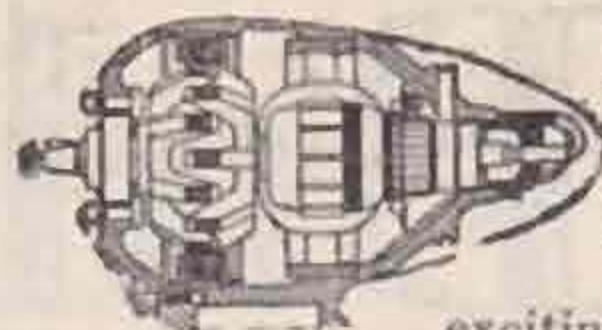
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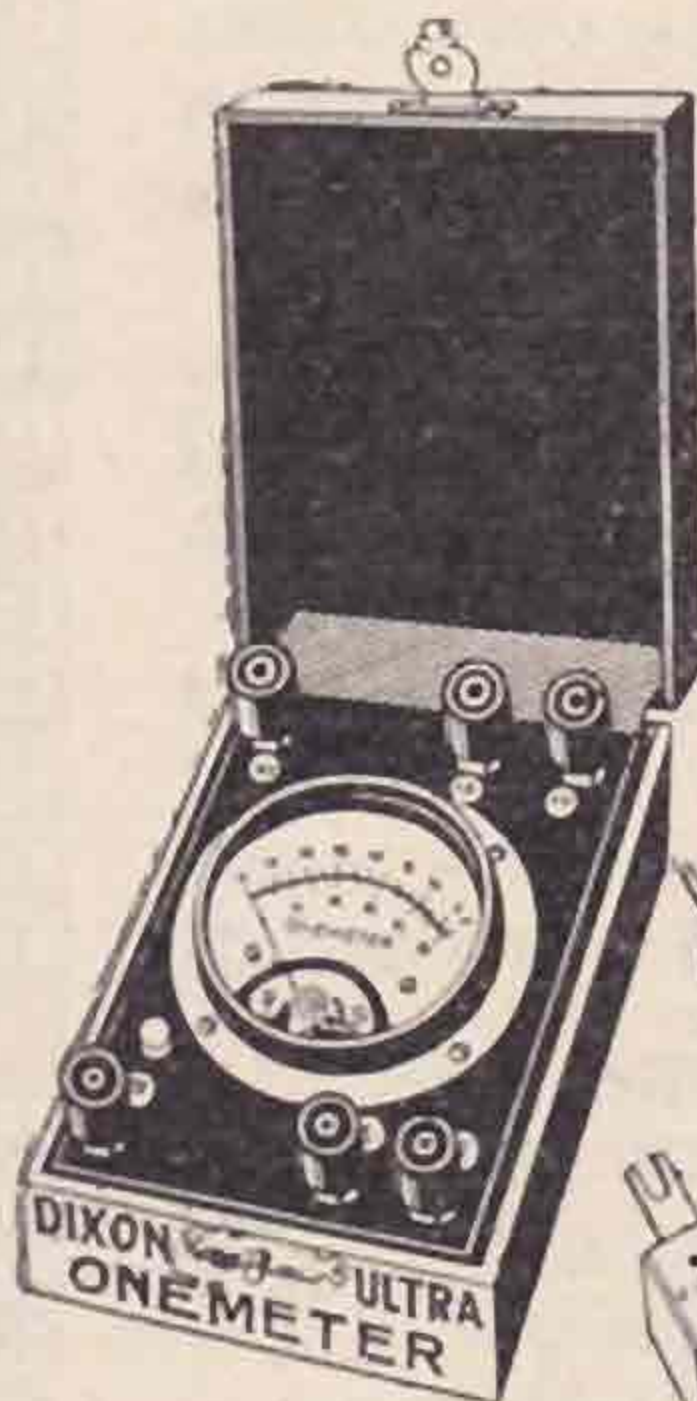
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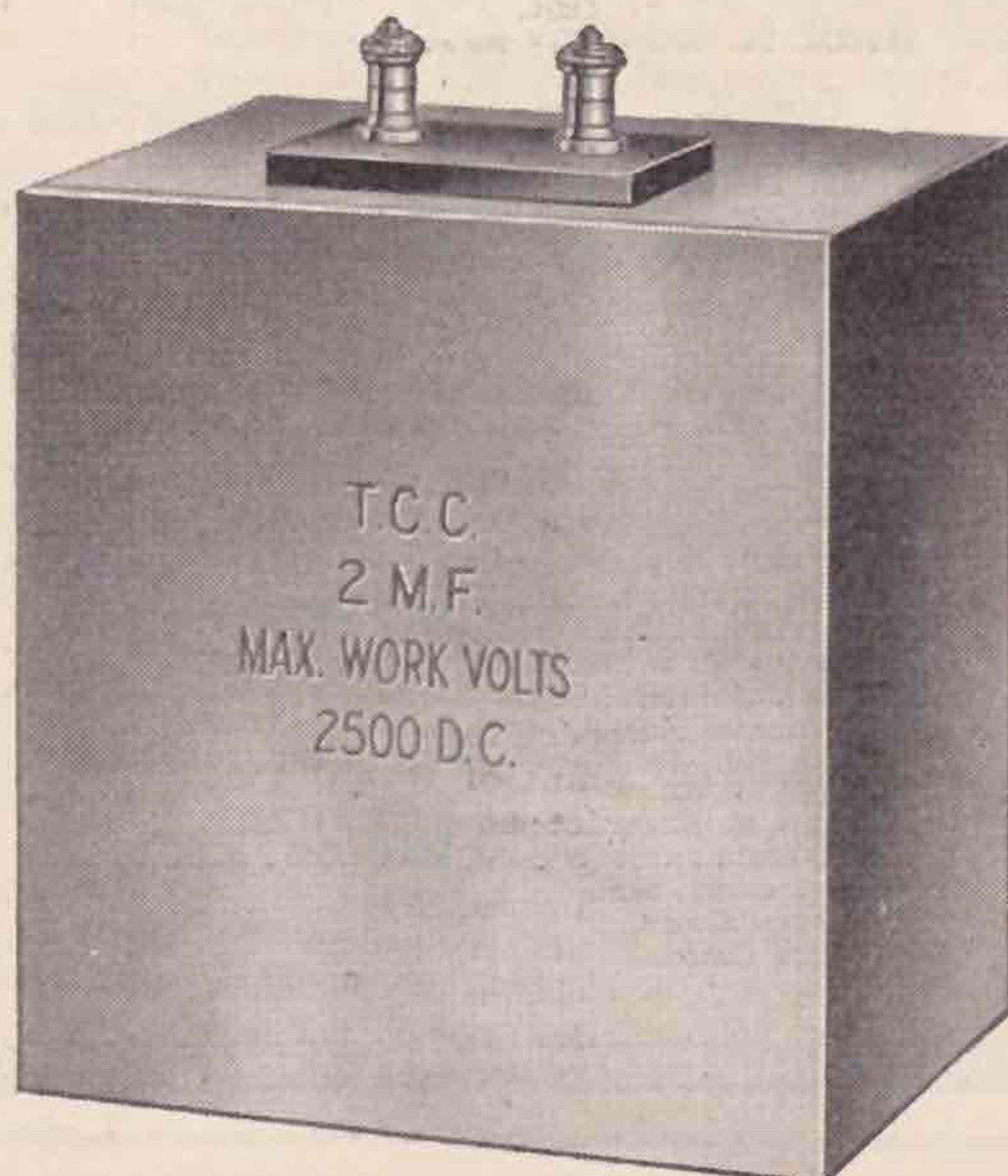
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# TOR BULLETIN.

*The only British Wireless Journal Published by Amateur Radio Experimenters*

OCTOBER, 1927.

Vol. 3. No. 4

## EDITORIAL

At the time of writing these notes, the Convention has not taken place, but it is very evident from discussions which we have had with certain members already in London that it will result in one or two far-reaching resolutions being passed, one of which will be a radical alteration in our "Area News and Notes" pages, which have grown to immense proportions and which have, in consequence, caused us some concern. Members should turn to the headings of these pages as, if such resolutions are passed, we shall embody them in a notice at the head of the Notes.

### Our Publishing Date.

We ran an editorial note under this heading last month, but in view of several matters, we have to refer to it again. Because our publishing date is the fourteenth day of the month, this does not necessarily mean that the BULLETIN is printed just before that date. Most of the contents, excepting "Area Notes and News," is printed two months in advance of publication date, and members must not, therefore expect that matter submitted by them will appear in the issue following.

We again emphasize the fact that all "Area Notes and News" must be in our hands by 20th of the month. This does not mean 21st or 22nd of the month; delay in this matter causes dislocation in our arrangements, and, in future, "Notes and News" arriving after 20th will run the risk of "losing the bus" so far as that issue is concerned.

### Correspondence.

There recently appeared in our columns a letter which mentioned an individual station in connection with a certain matter. The editorial blue pencil is used very freely, as a rule, on such correspondence, and it was owing to a careless oversight that this particular letter escaped our notice. Correspondence intended for publication should be strictly impersonal, as our columns are not intended to be used for any purpose other than the entertainment or education of members. We appeal to all members to assist in lightening our heavy burden of work by refraining from mentioning individual members by name when submitting letters which

are intended to bear upon general policy. Should an individual be so mentioned, the letter will not be published.

### Forward.

Despite the many difficulties which have beset the path of progress of amateur radio in this country, we are glad to be able to say that we are now on the verge of a new era which will mean increased prosperity and status to our movement. We are not being unduly optimistic when we say that the outlook for the British amateur is decidedly rosy, and that during the next few months we shall see such an influx of new members and such a strong position thus created that individual members will materially benefit in many directions. It is premature to name all the benefits which we expect to mature, but a larger BULLETIN, with more technical and other interesting matter, is one which we are sure will be greatly appreciated by all. To help us to attain such a state of affairs, every member has but to introduce one or more new members, trade with advertisers and lose no opportunity of bringing the society to the notice of everybody likely to be interested. If you will do this, we will do the rest, and in the meantime we are continuing to exert ourselves to the uttermost in order to further the cause.

### Articles.

We have recently received certain correspondence which shows that many new members do not realise the conditions under which the BULLETIN is produced month by month. All articles published in the BULLETIN are written by members and presented to fellow members free of charge. Our policy has always been to publish articles for the good of amateurs generally, and the wonderful response to such a policy which has been received can readily be gauged by the fact that the magazine has been running for over two years under such conditions. When our space allows of it, we shall be able to give many more useful and interesting articles to members, for we have often had to refuse articles on account of their being too lengthy for the limited space at our disposal. The greatest credit and thanks are due to those members who have for such a long time helped us to provide interesting and instructional articles month by month for, like everything else in the BULLETIN, it is done for the good of amateur radio. Of and for the amateur is the keynote of everything which appears in the BULLETIN.

J. A. J. C.

## G6WW.

The writer, though a great admirer of crystal control, has found that it suffers from the serious disadvantage that, unless one is prepared to buy an indefinite number of crystals, it is impossible to avoid having half one's experimental work ruined by QRM.

It behoves one, therefore, to look around for some self-excited circuit which will give nearly as good a signal, and at the same time be really flexible.

It is fairly easy to obtain a good note with battery power and a tube which is being well underrun, but a very different tale is told when R.A.C. and a tube which is dissipating almost its rated maximum are in use. It seems fairly well established that one of the ways of maintaining a constant frequency is to see that the internal capacities of the tube are masked by a relatively large external capacity.

This alone, however, is not sufficient, as the writer soon found out, and it became evident that one of the causes of the trouble was that it was impossible properly to control the amount of grid feedback in almost every circuit known.

It must be appreciated that when a load is put on to the oscillatory circuit the grid voltage will be reduced owing to the voltage drop inevitably associated with an increased load.

If said voltage is already low, it is quite possible that it may then be insufficient to maintain steady oscillation.

It is important, therefore, to see that the feedback is sufficient, and at the same time it must not be too great or inefficiency will result, and perhaps heating of the grid.

After trying every circuit mentioned in the various periodicals and text-books, together with

various modifications said to give control of the grid voltage, the writer came to the conclusion that none of them was both effective and flexible. Such as achieved their object were much too complicated to get into operation, requiring a lot of time to change wave and so on.

Thinking about the matter, the writer came to the conclusion that one of the well-known receiving circuits used in its reversed sense would probably achieve the desired end. He therefore built up an experimental reversed Weagent circuit, and same gave excellent results in every respect.

The grid circuit is more or less aperiodic, and herein arises another advantage of the circuit.

Col. Edgworth in an article in "E.W." some time ago, points out that a circuit using an aperiodic grid coil will be more stable than one in which both coils are tuned.

Series feed is employed in this circuit, as is the writer's usual practice, and he recommends its use wherever possible as it eliminates the unsatisfactory H.F. chokes.

The plate circuit should consist of a large condenser and a small inductance, and great care should be taken in the choice of these components, as a very considerable current will be created in this circuit, owing to its being in resonance, and not, as is frequently the case, slightly detuned. The grid may with advantage be of considerably smaller diameter than the plate, and can be wound with much smaller conductor.

The feedback condenser must be able to withstand safely considerably more than the plate potential.

The same remarks apply to the fixed condenser by passing the H.T. terminals.

The grid leak is used without an H.F. choke, as no advantage could be found either practically or theoretically from its use.

## Where the Help comes from.

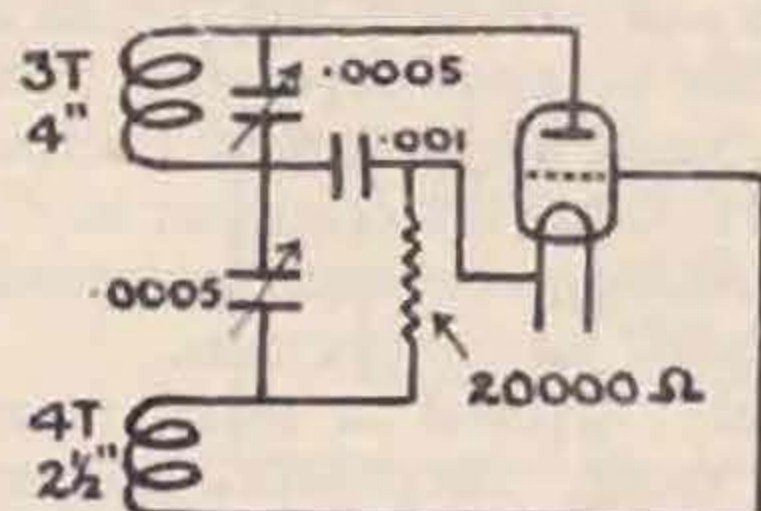
In a reflective mood, we can consider our present position as compared to that of just over two years ago. Then we were a mere handful—about 400 in all, mostly London members, but a determined band of enthusiasts. We were then the T. & R. Section of the Society without vote or effective say in the management of it; now we are the Society and control its destinies and well-being. Our membership is not easy to count, as it rapidly increases day by day, but it can safely be stated to be approximately 1,400 members at home and abroad.

Certain things have made this possible—the sympathy and help of every one of the original 400 members and the energy and perseverance displayed by its representatives. Our aim has been to become the premier Radio Society of the world, and this is well on the road to fulfilment.

Considering all things, we might be well content with our progress had we reached our ultimate objective, but as this is not the case we have still to push on and not relax our efforts. In the meantime who of this band of 1,400 is going to help, who is going to assist in crowning the work thus so well begun, by putting the important finishing touches to the structure? Certainly not the member who has merely destructive criticisms to voice or the member who is merely content to "sit still and say and do nothing." Amateur radio is safe for Britain, and its keeping is in the hands of every single member. The one who helps is the one who speaks out and offers suggestions and criticisms at the right time and place, certainly not he who merely grumbles and thinks not. To this latter we can only repeat the phrase of Bairnsfather fame, "If yer knows of a better ole . . .!"

J. A. J. C.

The residual inductance plus the D.C. resistance of the wire wound grid leak offers a resistance very great relative to the impedance of the condensers shunting it, and in any case the R.F. voltage at



that point is very low if a large condenser is used for feedback control.

Little else can be said about the arrangement, except that the writer would be glad to hear from anyone who has used the circuit before or who attempts to use it as a consequence of this article

## QRM.

By E. PHILIP ALLEN (2ABA).

One of the questions which has always troubled those engaged in radio research is that of interference; and nowadays on the 44-46 metre wave-band the trouble seems likely to assume large proportions unless some steps are taken to prevent its further progress.

It has been pointed out many times before that a steady QSB and the avoidance of spacer-waves helps to a great extent in this direction. I note, also that G6YW has started an "Anti-Raw A.C." campaign, which ought to have the support of all those interested in the prevention of QRM.

There seems to me, though, to be another side to the question which, so far, has not been tackled at all. The question is, do we take proper care in the matter of QRH?

It would be interesting to know how many ops. observe the conditions of their licences and listen on the QRH they intend to use, in order to see if all is quiet. Many, I fear, only listen to see if there is any "DX going," and then just start up, heedless of what QRM they are creating!

Another question is: "Why do G stations all crowd down between 44-45 metres, instead of distributing themselves more evenly over the whole band?"

When logging stations, I always make a point of obtaining their exact wavelengths. So, perhaps, the following figures may be of interest:—

Out of the British stations logged during three months (on 44-46y band)—

23.7 per cent. were above 45 metres.

73.6 per cent. were below "

2.7 per cent. were dead on 45y.

From this it will be seen that there are more than three times as many G stations working between 44 and 45 metres as between 45 and 46. With this state of affairs prevailing, is there any wonder that we have QRM?

If only the op. of every station would just take the trouble to find out what wave-length is quietest,

before pounding the key, I feel sure that the trouble would soon be a thing of the past.

Moreover, the number of QSO's lost owing to jamming would become less, and we should not be wasting our valuable juice in calling TEST for hours on end, through hopeless QRM.

It sounds OK in theory; will some of your try it in practice, OM's?

## Echoes of the Mid-Britain Conventionette.

We wonder:—

If the alarm and despondency occasioned to the police-sergeant on duty by the ever-increasing array of motors outside the Cock Hotel has abated?

What difference it makes to 2SH when he puts his hood up, and whether his seat gets wet?

If anyone knows of a "better 'ole" than the Cock Hotel?

Or of a better lunch and tea for 5s.?

If 5YX can draw sparks from his bed-post like 2QM did from the safety rails at 5XX?

If not, why not? (There is only one letter different.)

If our transmitter is tuned to maximum efficiency?

If 6JV has used the Wouffhong yet?

What little Miss 2XV thought of the black pussy cat—and if she was allowed to have it?

If 2BWB is going to make a sked with the passenger he gave a lift to on the way home?

If the visit to 5XX wasn't an F.B. finish to an F.B. day?

## Help!

We all know that no paper is quite immune from printer's errors, but the August number of the "Bull" seems to abound in these little slips, particularly in the "Traffic Notes." We have selected a few of the choicest and added a word or two in comment in the hope that the result may bring a smile to the faces of those readers who skipped them over without further thought.

"6HP is QRN for tests day or night. . ." The wicked lad. We had been wondering where all the bangs and crashes came from during the last few weeks, and now we know. Don't you think it's about time you stopped it, 6HP?

"5KU . . . worked eight OR's." Well, we've worked dozens of them, but we don't make a song about it.

"5HS also did his share in giving us a few hints on the Y.F. Hertz." H'm. This is something altogether new. Let's have the dope, OM.

"6HU has been 9RW . . ." Say, OM, have you got a QRA in the States, or are you a pirate?

"Tests during eclipse week with DYMT were arranged, but except for the morning of the eclipse no European DX could be worked. . . ." At which his enthusiasm was promptly dimmt. Help!



5YQ

## The Mid-Britain Conventionette.

(BY OUR SPECIAL CORRESPONDENT).

On Monday, August 1, 43 members of the Mid-Britain area and their friends kept schedules at the Cock Hotel, Kingsthorpe.

Members began to arrive soon after 11 a.m.—the first arrival being 2BWB, who had come from Norwich, some 120 miles—and by mid-day Note Books had been produced and many and varied circuits had been drawn. Such exchange of ideas is always the order of the day when radio men meet, and was, of course, the primary object of the whole affair.

At one-fifteen the party sat down to an excellent lunch, after which 6JV, who occupied the chair, welcomed the members to the first Mid-Britain Conventionette, and explained the programme which had been arranged. He then called upon 2XV to tell the story of how the meeting had come to pass. 2XV explained that this had developed out of a suggestion by 2BAX of Huntingdon (unfortunately not present), and thanked both 5JO and 6JV for the assistance which they had rendered him in making the arrangements.

After a half-hour's interval spent in the billiard room, while the tables were cleared, the party reassembled and 5YX gave a most interesting lecture upon the adjustment of a QRP short-wave transmitter. Few, indeed, are better qualified by their achievements to speak upon this subject, and 5YX had a most attentive audience. The lecturer is to be congratulated upon the lucidity of his remarks, and upon the detail with which he handled his subject. If we may be permitted to offer him a hint for any subsequent occasion, it would be that he might, with advantage to those at the back of a large room, speak a little louder next time.

Tea was served at 5.15 p.m., and this fully upheld the standard set by the earlier experience; in fact, the praises of the catering department were freely sung. After that, 6JV was called upon to present to 2XV a mascot of the first Conventionette, which took the form of a black cat, complete with squeaker (which could be made to transmit tolerable

morse). This mascot bore a label and inscription stating that the gift was in recognition of 2XV's services in arranging the meeting.

The party then proceeded to 5XdX by road. For a wonder the rain had ceased, and the procession of cars drew up beneath the masts at Borough Hill about 7 p.m. Mr. Hotine (the engineer in charge of 5XX) met the party and personally conducted the tour of inspection.

This formed a most interesting finish to a really successful and enjoyable day.

No account of the Conventionette, however brief, would be complete without remarking upon the excellent spirit and enthusiasm which prevailed, and the remarkable distances covered by many who attended. The Coventry members were present almost to a man, 2SH came along

from London, and 6BR from Ilkley. Those who came in cars freely offered seats for the journey to Daventry, and this was greatly appreciated by members who had travelled by train.

Of course, there was a Wouffong, too (found by 5YX in the tomb of F.K.1 TUT of Luxor, where it was used to suppress fone stations on 45 metres), and plenty of quips and fun, which space forbids to tell.

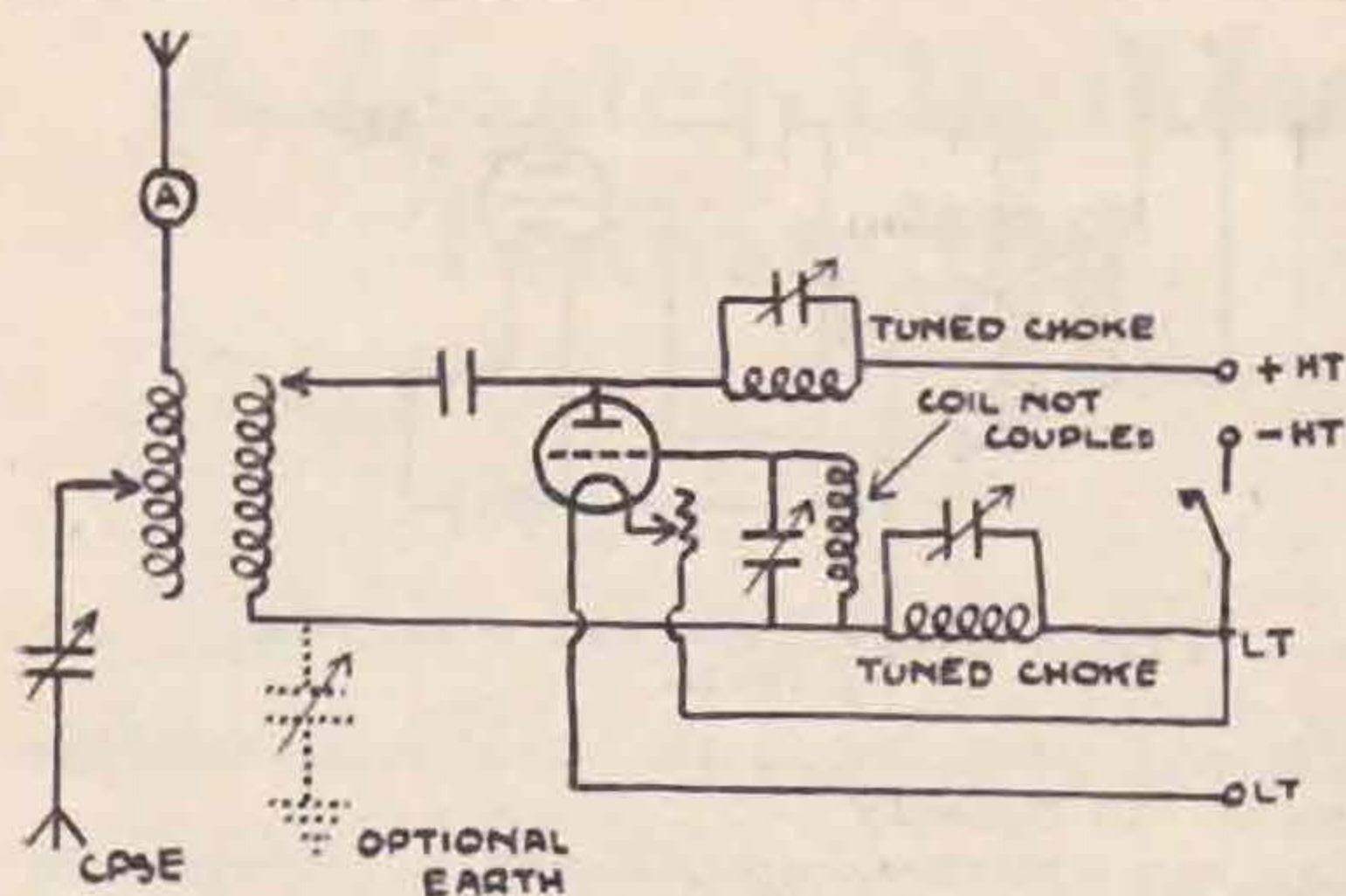
As the party broke up, after the visit to Daventry, the prevailing note sounded was: "We hope to see you at the Convention in September, and at the second Mid-Britain Conventionette next year." So clearly there will have to be another!

## Aerial Systems at 5MQ and 6YQ.

For 45-metre transmission the system takes the form of an aerial and counterpoise functioning, it is believed as a full-wave Hertz radiator, having a total length of 147 ft., approximately 45 metres. In the case of 6YQ, aerial and counterpoise spans are each 54 feet in length. The download from aerial to coupling coil is 27 feet, from counterpoise to coupling coil 8 feet, and the coupling coil itself 6 feet. At 5MQ, owing to difficulty in getting the same spans, the system had to be erected as follows. Aerial and counterpoise spans each 30ft. long, lead from aerial to coupling coil 75 ft., lead from counterpoise 7 ft. and coupling coil itself 6 ft., which gives the same total length. In both cases the aerial and counterpoise spans are vertically under one another.

At 6YQ it has been found advantageous to connect the counterpoise end of the coupling coil to the H.T. positive terminal of the transmitter, but this was not the case at 5MQ. Both transmitters use the tuned grid tuned plate circuit, but with series and shunt fed H.T., respectively.

Tuning at 6YQ is accomplished by touching some part of an absorption wave-meter previously tuned to 45 metres, against the mid-point of the radiator (i.e., at approximately 74 feet from the free end of the aerial), and resonating the transmitter until maximum current is indicated in the wave-meter while at 5MQ, as the feeding point is at a

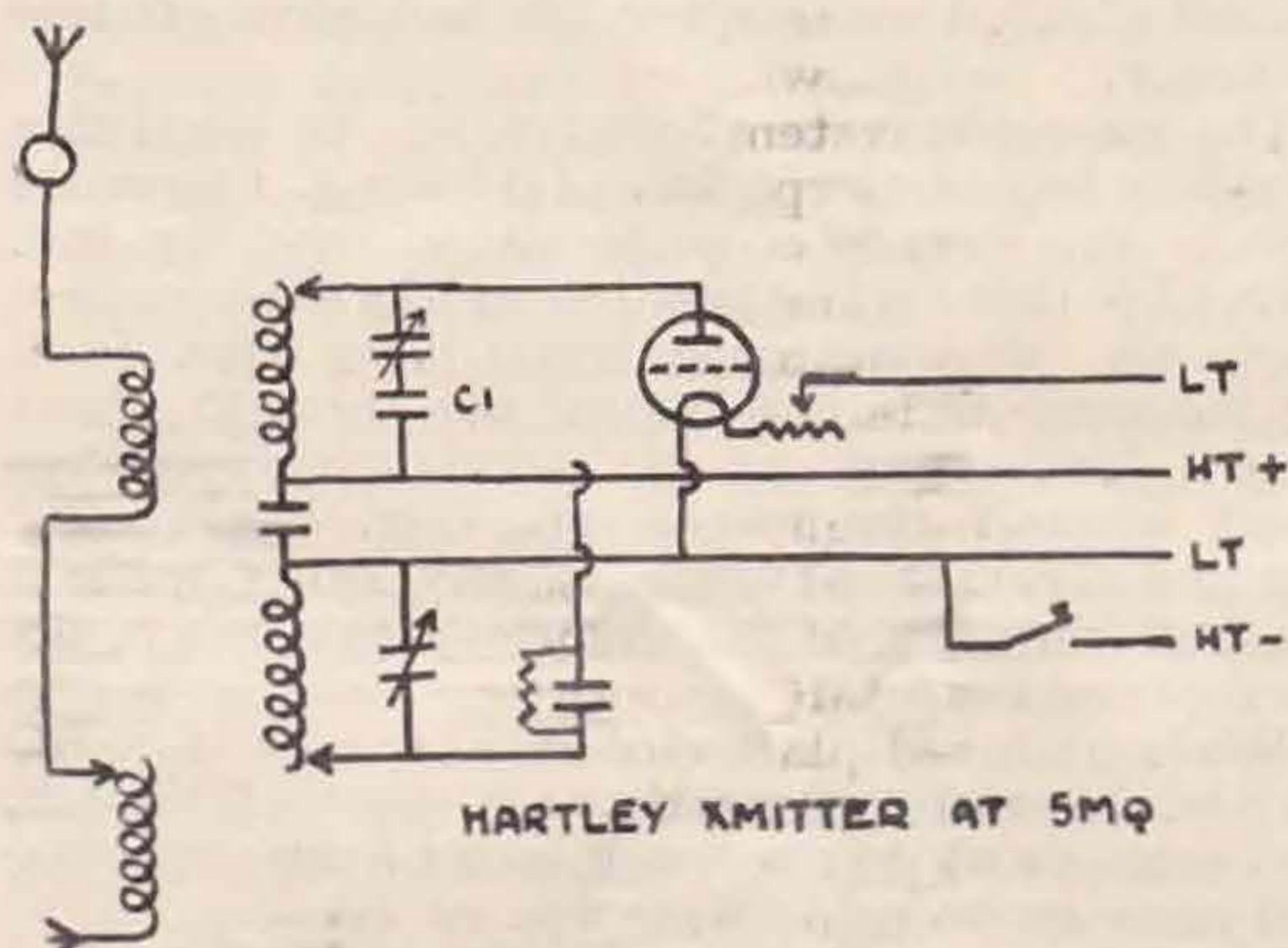


TUNED GRID AND PLATE TRANSMITTER AT 5MQ

theoretical voltage node, a hot-wire ammeter is inserted at the junction of the counterpoise and the coupling coil, and the transmitter is resonated until maximum current shown at this point.

Thirty-three metre transmission can be carried out at 6YQ with the same aerial system by reducing the number of turns in the coupling coil and inserting in series with it a variable condenser and resonating the whole system to 33 metres, but this cannot be done at 5MQ. This leads us to believe that the spans of 54 feet at the former station take control at 33 metres, and that the leads simply function as feeders. This, however, is a sore point which has not yet been settled. It was found necessary at 5MQ to erect a separate aerial and counterpoise of a total length in this case of 33 metres, so keeping to the original full-wave idea.

Twenty-three meter transmission can be carried out at both stations with the original 45-metre aerial system, but here the way in which it functions is problematical, but it can definitely be stated that it is not as a double-wave Hertz. Here the coupling coil is further reduced, the aerial ammeter being cut at the mid point of the system and resonance secured by means of the series condenser.



HARTLEY TRANSMITTER AT 5MQ

The efficiency of the system is found, at 6YQ, to be approximately the same at the three waves stated, and with the exception of the fact that it cannot be made to work at 33 metres, this is agreed to by

5MQ, efficiency being judged by results in the way of DX worked. In both cases and on all three waves it is found to be very difficult to work European stations, which appears to point to the fact that the greater part of the radiated energy is radiated at a high angle.

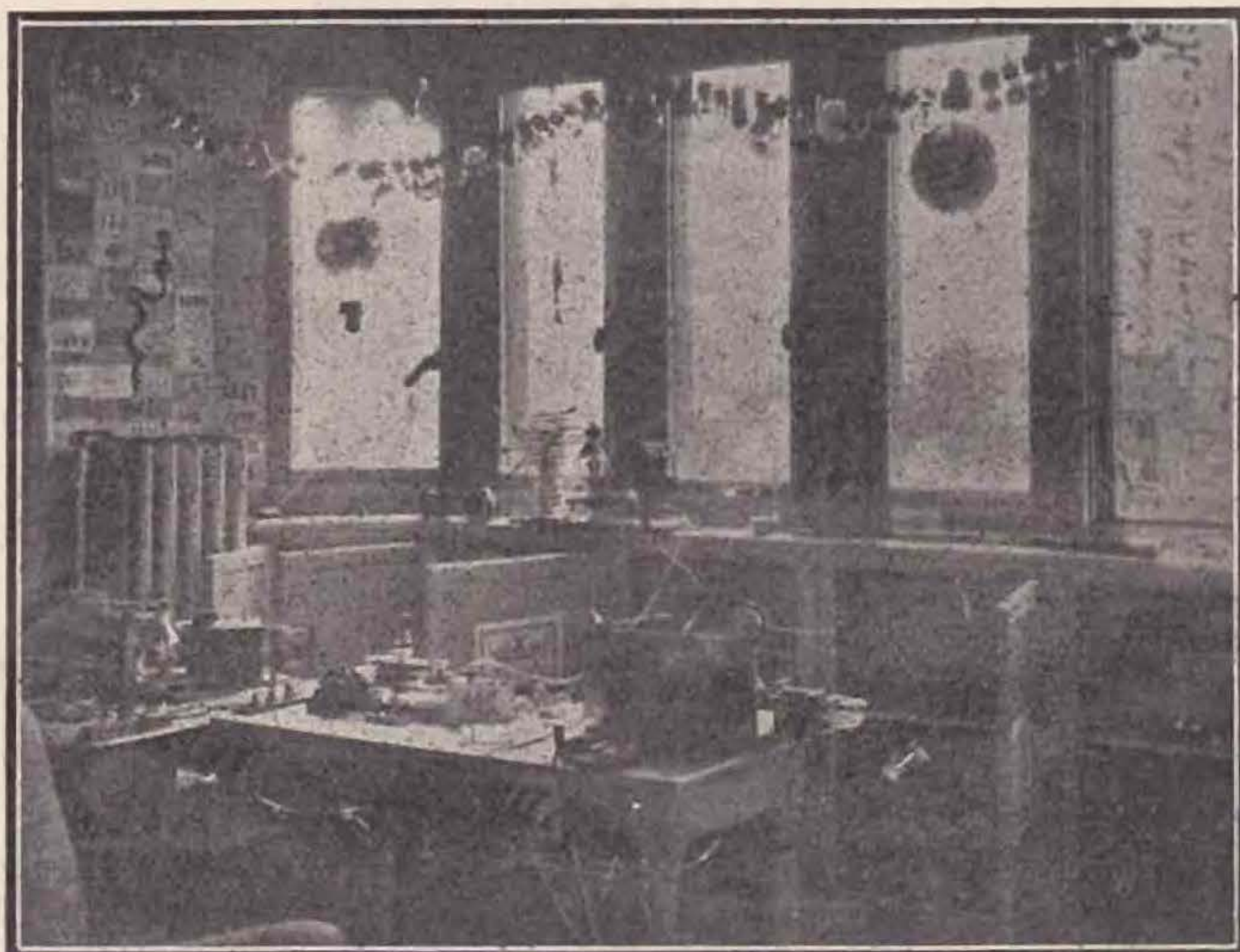
It would be interesting to hear the experiences of other amateurs who try, or have tried, this type of radiator which appears to be particularly suited to DX work. The fact that, with a maximum input of 9 watts and a minimum of 2.4 watts, it has been instrumental in raising our combined total of NU QSO's to over 300, is our sole plea for trespassing on your valuable space.

GEO. A. MASSEY (EG6YQ).

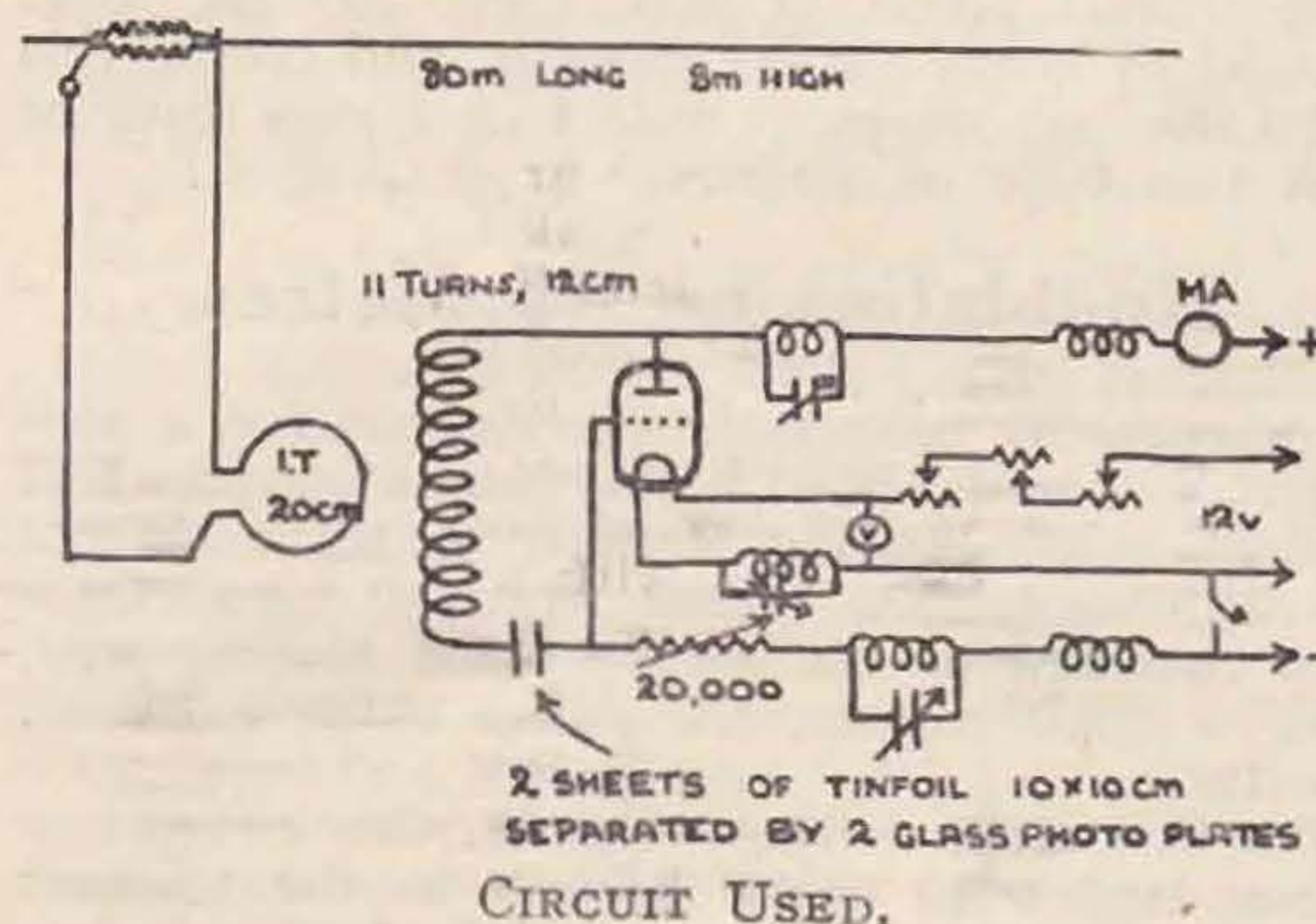
E. MENZIES (EG5MQ).

## Radio EB-4AU.

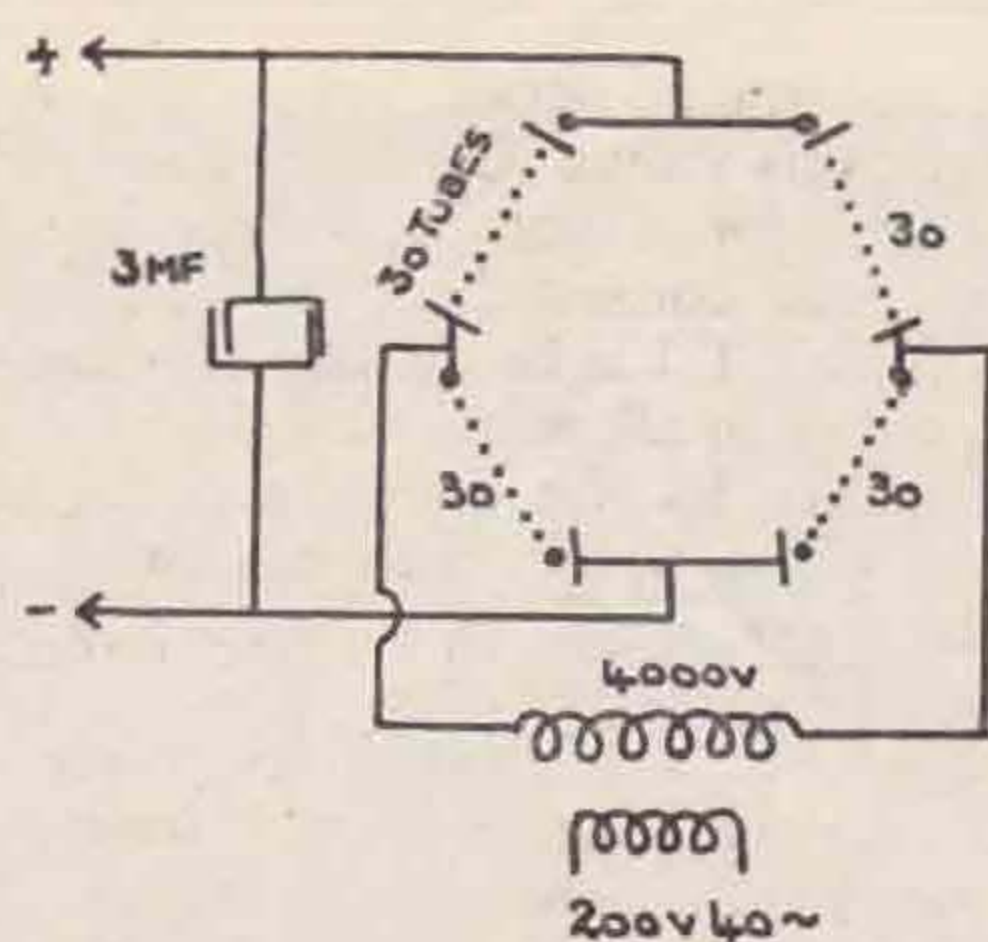
Referring to the photograph from left to right we see the transmitter 32 to 40 metres, the circuit



being the Mesny. On the wall can be seen many cards testifying to excellent DX work and on the second table AC and DC voltmeters with a board of



three rheostats in series. The receiver is a Schnell (one detector and one low frequency valves). Under



POWER SUPPLY RECTIFIER.

the window is a chemical rectifier in four cabinets (120 cells for RAC 4,000 volts), and near the window is the 20-metre transmitter, Colpitts type. The aerial is a Zeppelin type of Hertz, 80 metres long, and two radio frequency lines with only one turn coupled to the plate. The two RF lines are joined for 32-metre transmissions and the earth is used. The circuit diagram, etc., of the station is given in the diagrams.

EB-4AU is QSO the world on 20 metres, having been reported R8 by AF-IB, R8 by OA-FHL Hobart, R9 by NP-4SA.

It is a very interesting station from many points of view and well worth studying.

European working times:—Fridays, 15:00 to 17:00 G.M.T., and Sundays 70:00 to 11:00 G.M.T. on 40 metres.

QRA:—JACQUES MAHIEU,  
LC Manoir, Peruwelz, Belgium.

### Stray.

This message received here on 45 metres on Sunday, September 11, 12.18-BST:—

"CQ de EN-O-RZ. Test with QUARTS, pse. QSL via IARU."

Is this a new radio innovation? If so, I guess he will sure get some QSL's. Hi!!

By his note I should say he was crystal controlled; or would he be lager controlled? Hi!

G6UO.

### Go by Underground!

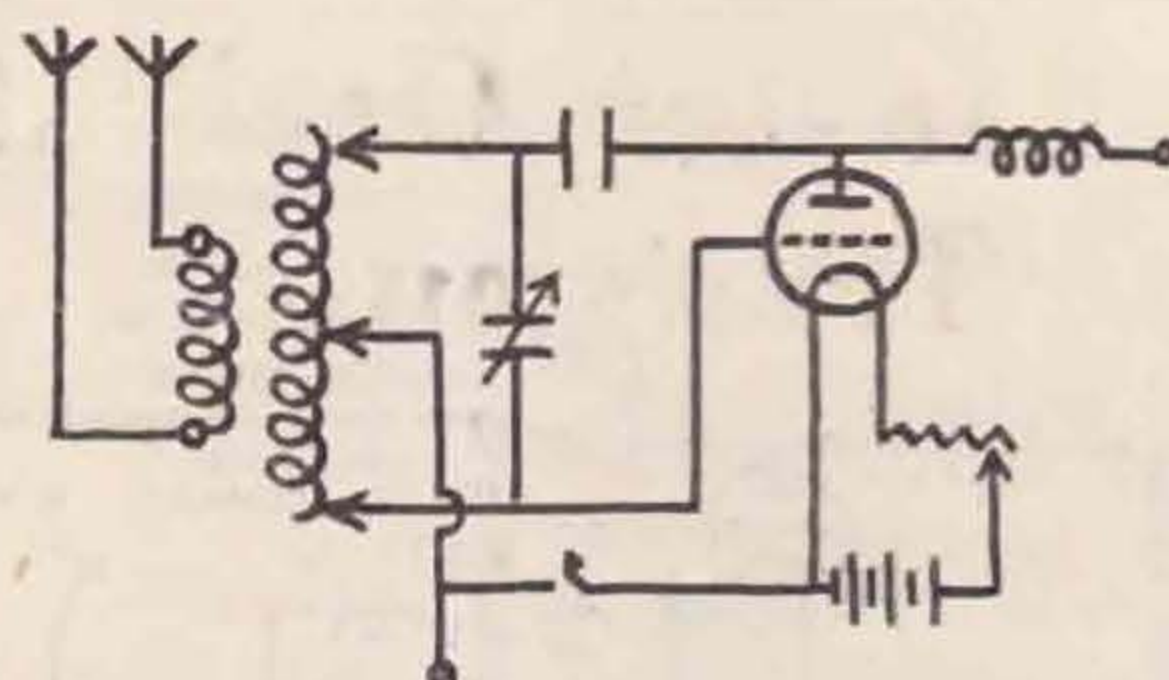
Mr. C. C. Mortimer, of 86, Magpie Hall Lane (BRS88) reports reception of 2FC, Sydney, Australia (via 2MB, 30 metres) at R3 strength, on an underground aerial (2 feet deep 30 feet long, encased in heavy rubber tubing), and claims this to be the first reception over such a long distance with this type of aerial. Any challenges?

### Modulation on 45 Metres.

By J. E. Fynn (6TX).

Experiments have been carried out for a considerable time at G6TX to determine the best method of modulating the carrier wave on the 45-metre band. The circuit employed for all these tests consisted of the loose-coupled Hartley and, being a QRP station, the power never exceeded 5 watts.

The first method tried was with the microphone (a standard solid back) straight in the filament tap, but fone was always reported QRZ. In an effort to increase modulation the modulation transformer was pulled out of the 150-metre trans-

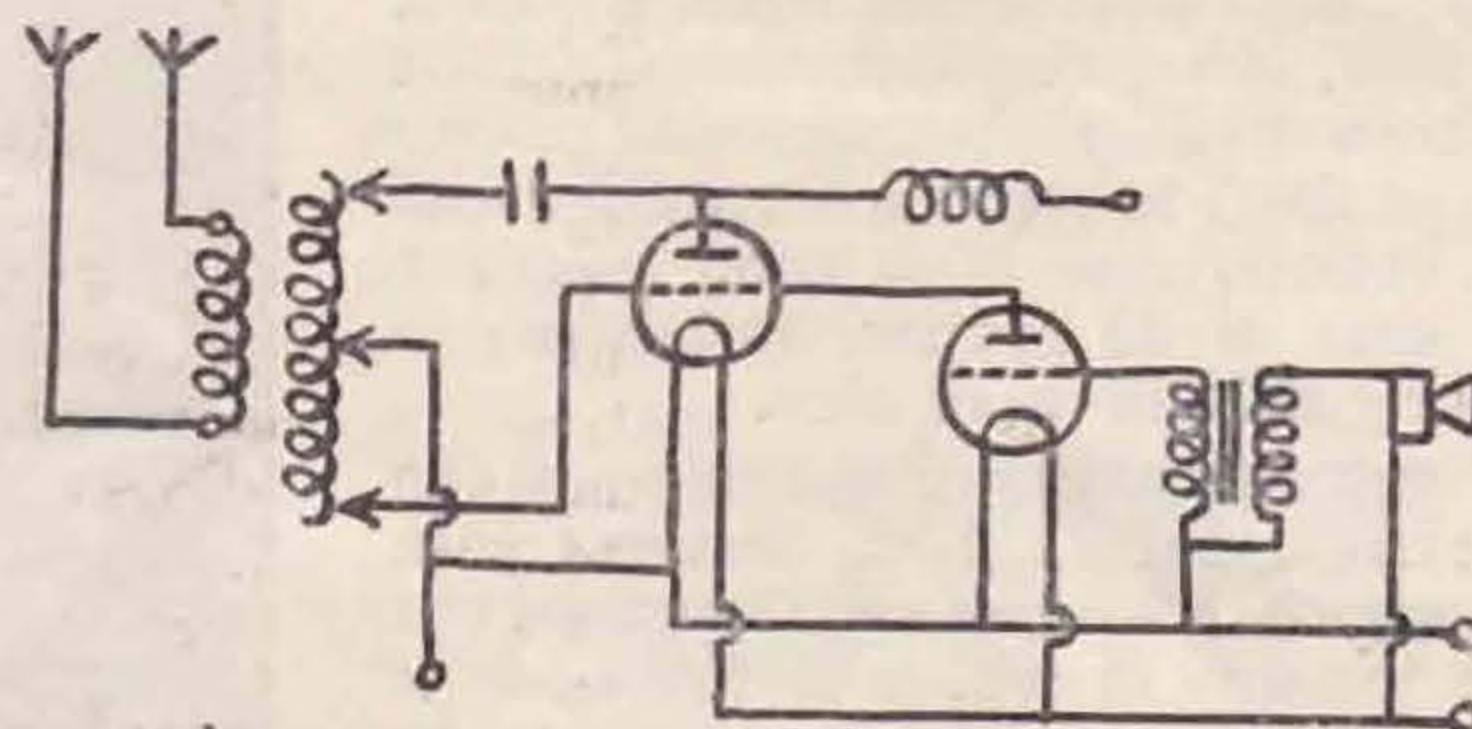


USUAL HARTLEY USED FOR FIRST FEW TESTS

mitter and connected in the usual manner in the filament tap again.

This was a marked improvement, but things were by no means satisfactory; it was noticed that the presence of the transformer reduced the plate current nearly 50 per cent., radiation remaining constant, thus doing the job of the grid leak and condenser which always failed to operate successfully here with low power. Furthermore, this was also found to steady the wave when keying, so that this component has found a permanent seat in the s/w set.

A separate modulation valve was next tested with the transformer and coupled to the first valve in the manner shown in the diagram. This gave rather interesting results, and though rather inclined to overmodulate, was used for some weeks. I believe this system is in use quite successfully at one or two stations.



HARTLEY WITH VALVE MODULATION

We now come to the final hook-up which, once tried, has always been used. This consists of one turn of wire, coupled to the plate end of the Hartley coil, across which the microphone is connected. This gives absorption or wavelength control which, I was surprised to find, gave extreme efficiency.

The microphone is connected by its usual flex to either end of about 6in. of 14 s.w.g. enamelled wire in the form of a circle placed near the coil.

At 6TX it is held in position by the glass spacers inside the coil itself, modulation being kept down by reducing the diameter of the turn to about 1½ in. Modulation can be carried further than usual without the speech breaking, the quality remaining far in advance of any other method tried, possibly due to the absence of batteries in the microphone circuit.

While not having tested this out at a QRO station, I am sure it would prove effective, though, of course, owing to the much larger fields, coupling will have to be reduced to 2in. or 3in.

I will not give the performance of the set here, other than mention that modulation has been sufficient to put readable speech into both Madrid and Rome with an input of 2-5 watts.

# A Master Oscillator Transmitter.

The question of high frequency amplification on wavelengths below 100 metres was, in the early days of short-wave development, considered insurmountable, and even to-day this subject has received little attention on the reception side, possibly because the short-wave receiver does not lack range, and even at the limit of that, the normal static level can only be overcome by an increase in the power of the transmitter.

The question usually arising when the subject of master oscillator transmission is mentioned is that the additional expense of one or more valves may not be worth the steadying up of the transmission, while the extra input to the transmitter does not increase the radiation since the last valve in the system is the only one supplying power to the aerial.

In the simple two-valve M.O. transmitter, where one valve oscillates on the desired frequency and is coupled to another valve, supposedly working as a high frequency amplifier, which is coupled to the aerial system, it is usually thought that the input to the first valve should be at least equal to, if not greater than, the input to the power amplifier for good control of frequency. If one considers the amount of "grid swing" on, say, a 50 watt valve like the D.E.T.1, working in a self-exciting circuit with an input of 50 watts—100 to 200 volts is the order—it can be seen that a small oscillator of some 10 to 15 watts input should have no difficulty in supplying a high frequency E.M.F. of this order to the grid of the 50 watt valve, even allowing for the grid to filament capacity of the large valve and losses in the grid condenser, etc. Then we should be able to make up a master oscillator transmitter in which the drive valve works at an input, at the most, one-third that of the input to the power amplifier, while anything we can do to improve the voltage to current ratio in the output from the drive will enable us to work with better power ratios still. It is necessary to assume that the aerial system puts no load on the drive oscillator, otherwise the input to this valve will be higher than is necessary, while it is essential for the steadiness of the wave to have no coupling between aerial and drive oscillator. This is best effected by neutralising the power amplifier.

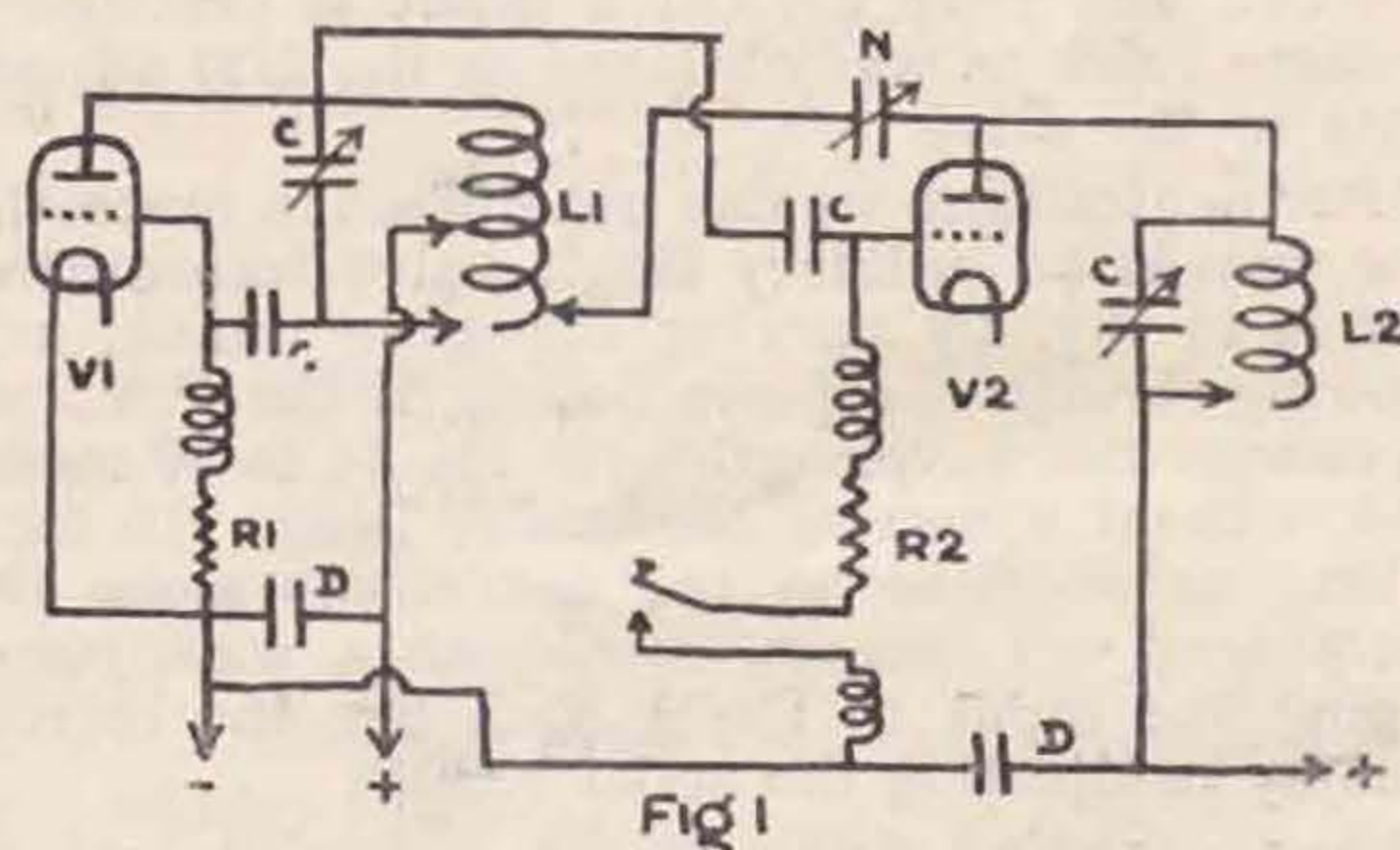
The transmitter described embodies these principles and is in use on wavelengths from 46 to 23 metres. Fig. 1 shows the circuit of the transmitter.  $V_1$  is the drive valve working in a Hartley circuit.  $V_2$  is the power amplifier the grid of which is connected to the plate of the drive through a grid condenser, the filaments being joined on the bus-bar. For 45 metres  $L_1$  and  $L_2$  are 5 turns of 12 gauge wire of  $5\frac{1}{2}$  ins. diameter, and for 23 metres they are of 3 and 2 turns respectively.

The condensers  $C$  are .0003, preferably with air dielectric, and not less than .0003 for the grid condensers themselves. By-pass condensers  $D$  are .001 or more, air or oil dielectric.  $N$  is a neutralising condenser a little larger than the usual make of neutralising condensers, as the internal capacity of a large power tube has to be neutralised.

The value of the grid leak  $R_1$  will depend a great

deal on the type of drive valve used and the input required to this valve. Generally it is less than that of the P.A., for which a value of 15,000 ohms for  $R_2$  is about correct for the D.E.T.1 type valve. Actually a D.E.T.1 is being used for the drive valve; this is in order to allow investigation into the effects of high inputs to the drive on the set, although a LS5 or LS5a valve will be quite sufficient to handle the input required when the P.A. is working at inputs of 30 to 50 watts.

The drive circuit should be made as rigid as possible without using too much dielectric material, everything being done to ensure a good supply of H.F. voltage to the grid of the power amplifier. A complete former for the Hartley coil is not advisable; it can be made quite rigid if the usual spacing strips of ebonite are threaded on the coil and a small amount of Chatterton's compound run into the holes, sealing the coil to the spacing strips and preventing movement of the turns and all vibration. Care should be taken in fixing the coils, so that the coupling between  $L_1$  and  $L_2$  is as small as possible. The only coupling in the set should be through the internal capacity of the power amplifier and the reversed coupling of the neutralising condenser.



The set is best adjusted by first removing the neutralising condenser tap on  $L_1$  and then adjusting the drive alone to oscillate on the wave required, the correct position of the plus H.T. tap on the Hartley coil should be found for minimum input to the oscillator when  $V_2$  is switched out and its plate circuit mistuned. If this minimum input is too low to give the right power ratio (about one-third that of the proposed input to the P.A.) then the value of the grid leak should be reduced until the input is the right value. The next step is to get the P.A. into resonance. First turn the plate condenser of the plate circuit until a sudden rise in the drive input indicates the rough resonance point. It is now safe to switch on the P.A. and close the key. This indication of resonance with the P.A. switched out depends on the neutralisation being absent and the method can be recommended as a great saver of H.T. fuses. After completing the fine tuning of the P.A. plate circuit a peculiarity of the "driven" valve is noticed. That is the plate current to this valve has vanished when its plate circuit is in tune with the drive, while in the self-excited valve circuit it is only possible to reduce the input to a low value.

Before neutralising the P.A. it is best to put a moderate load on the valve by loosely coupling the aerial to the plate circuit. The lead from the neutralising condenser is then clipped on the grid end of the Hartley coil and a tuning correction

made to compensate the added capacity. If the note from the transmitter (using D.C. supply) is heard on an "upper harmonic" in a long wave receiver it will be found that on keying the P.A. two notes can be heard, usually far apart at first. To neutralise the set we must bring these two notes together by varying the neutralising condenser, care being taken to re-tune the drive and the P.A. plate circuit if any large changes have to be made. It is preferable to use the neutralising clip on the grid end of the Hartley coil, and this will allow a fairly small value on the condenser itself. By making an adjustment which puts a spacing wave directly on the marking wave it may be thought that a very bad signal is being transmitted. This is not so, because in this position the spacing wave comes from the drive alone, and there are three ways this can radiate: by direct radiation from the coil, by magnetic coupling between  $L_1$  and  $L_2$  and by coupling through the internal capacity of the P.A. The latter has been eliminated and the other two should be negligible, and so, if a spacing wave is heard, it should not reach more than a few miles. A further clue to the neutralisation of the set is that the input to the drive does not change on keying the P.A., and that the drive input is practically the same value as was obtained in the first adjustments to the drive.

After neutralising we can use the set in much the same way as an ordinary single valve transmitter. That is to say, by varying the drive tuning, and following it with the plate tuning of the P.A., we can change the wavelength over the 44 to 46 metre band without upsetting the neutralising. In fact, as long as we tune on the condensers alone the neutralising will remain over quite a wide band, keeping the input to the P.A. about the correct value by readjusting the aerial circuit.

When changing down to 23 metres it will be necessary to repeat the tuning up process and to re-neutralise for this wavelength. The input to the drive may have to be increased owing to the extra load from the internal capacity of the P.A. at this higher frequency and to the higher dielectric losses. This is merely a matter of increasing the voltage on the anode of the drive or reducing the grid leak, and once all adjustments have been noted it is a matter of a minute or so to change from 45 to 23 metres.

The method of keying shown is not essential. The key can be placed in the H.T. supply to the P.A. or actually in the supply to the whole set. This is not advisable, as it may give a chirpy note, the drive probably taking some time to start up, for it is running under a condition of high input with practically no load, which is not the same condition for a single tube oscillator for this method of keying. If the P.A. only is keyed we have a condition where the excitation is always applied to its grid and filament, and so it is able to start up without delay and can give a very sharp, clear-cut note.

Provided the set has been designed and made so that a good drive efficiency is obtained, the set will be found ideal when applying crystal control. The input of, say, 15 watts, which can be made to drive a 30 to 50 watt P.A., can in turn be easily controlled by a crystal oscillator using the Goyder method and feeding the energy from the plate

circuit of the crystal controlled valve into the grid side of the Hartley drive coil. As the large power in the transmitter is quite neutralised from the drive, there is no danger of damaging the crystal from a heavy feed back.

The master oscillator set itself seems to have some of the properties of crystal control, apart from the steady wave. For example, the supply to the P.A. need not be completely smoothed, provided the supply to the drive is quite smooth a pure note will be transmitted since the P.A. depends entirely on the drive for its wave form, and a small amount of ripple can be introduced into its supply without much modulation.

R. POLLOCK, 5KU.

## Exchange & Mart.

### REVISED CHARGES.

After the appearance of this issue the charges for small advertisements appearing under this heading will be  $\frac{1}{2}$ d. per word with a minimum charge of 1/6.

We hope that the reduction which is a keen competitive price will meet with the support of every one of our members.

Now is an opportunity for everybody to get rid of his surplus gear and at the same time to help the Bulletin to a substantial extent.

## Obituary.

We much regret to record the sudden death of one of our prominent members, Major T. Vincent Smith, who died suddenly while visiting a beam station on September 5. Major Vincent Smith, who was 55 years of age, has always been interested in the affairs of the Radio Society of Great Britain and served upon the Council during the years 1925-1926. He had held many important radio positions, having been associated with wireless at the Air Ministry and in France. Latterly, he has been perhaps better known as the Wireless Correspondent of "The Times."

We also regret to learn of the death of H. Hiley (2IH), of Keighley, who recently passed away. Mr. Hiley was one of our oldest and most enthusiastic members, and we extend our heartfelt sympathy to his relations and many friends.

## R.S.G.B. Calendar.

*This constitutes the sole notice which members will receive concerning forthcoming meetings.*

WEDNESDAY, OCTOBER 19.—At 6 p.m. Captain E. H. Robinson, "The Balanced Colpitts Oscillator." Institute of Electrical Engineers.

FRIDAY, NOVEMBER 11.—"The Development of the Broadcast Receiving Valves," with lantern views and demonstration by F. E. Henderson, G.E.C. Tea, 5.30. Meeting commences 6 p.m., at I.E.E.

FRIDAY, NOVEMBER 18.—"Theory and Radiation of Short Wave Signals," by Mr. Champion. Tea, 5.30 p.m. Meeting commences 6 p.m., at I.E.E.

### DATES TO BOOK.

FRIDAY, DECEMBER 2; WEDNESDAY, DECEMBER 14.

### COUNCIL MEETINGS, Etc.

MONDAY, OCTOBER 17.—Council Meeting at 5.45 at 53, Victoria Street, S.W.1.

FRIDAY, OCTOBER 28.—T. & R. Committee at 5.45, at 53, Victoria Street, S.W.1.

## The Valve in Action.

By R. POLLOCK (5K.V.).

It is very seldom realised that a valve used in a transmitter is behaving in a very different manner from the way one might expect on viewing the curves supplied with the valve. The dynamic characteristics of a valve, although so very valuable, are often overlooked when one builds a new transmitter, or sets out to use a certain type of valve under given conditions of Anode voltage, input, etc.

We usually encounter the difference between the static and dynamic states when we use the simplest form of resistance coupled amplifier. The usual steep slope of a good amplifying valve appears quite different if we repeat the grid voltage values when the valve has a few thousand ohms series resistance in its plate circuit. The curves are no longer steep, but slope more to the right, and the straight part becomes much longer, while the original value of negative grid volts required to make the valve non-conducting has increased enormously. We can obtain dynamic curves of valves quite easily by adding external plate resistance and repeating the ordinary process for taking valve characteristics. Increasing the resistance makes the dynamic curve slope less, and if we go on trying higher values we shall get a curve which is practically horizontal. The slope of the dynamic curve is equal to

$$\frac{m}{R_i + R_e} \text{—mA per grid volt.}$$

where:  $R_i$  is the valve impedance.

$R_e$  the added external resistance,

and  $m$  is the magnification factor.

We have considered the case of D.C. voltages, etc., or, if you like to be very academical, the case of A.C. of zero frequency. Well, let us pass to the other end of the spectrum. Here we have H.F. voltage supplied to the grid and an inductance included in the plate circuit. In the ordinary way, without this inductance, the grid voltage

would swing the plate current up and down the static curve every cycle, and the effect of the inductance would be to reduce the slope of this curve in the same way as with D.C. voltages and a plate resistance. In fact, all that is happening is that we are taking curves of the valve many times a second. The effect which concerns us most is

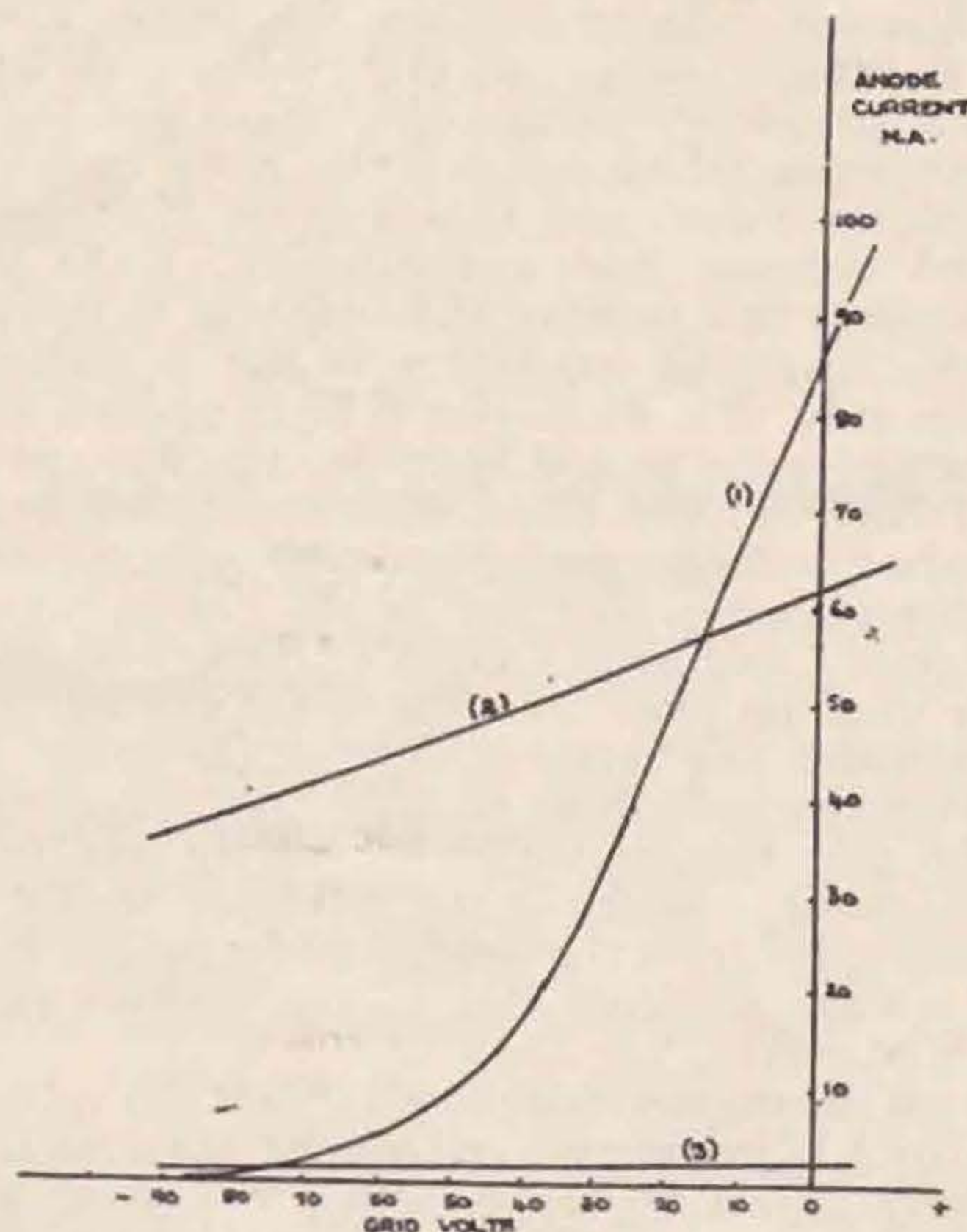


FIG. 1.

that of tuning the plate inductance, either by its own or a lumped capacity, to the frequency of the grid voltage supply.

A tuned circuit offers an indefinitely large resistance to currents of that particular frequency, although circulating currents in the coil and condenser circuit itself are only impeded by the actual resistance of the circuit. The result is to reduce the voltage at the anode of the valve to practically zero, and the plate current or feed is now merely a matter of microamperes. The valve now operates on a flat curve with its grid swinging still over the given range of voltages, and this curve lies almost on the grid volts axis. When an R.F. load is applied to the plate circuit the curve lifts its head up and the valve works on an ordinary dynamic curve. The three curves in Fig. 1 are for a given value of anode volts, and in case (1) for no external anode resistance or inductance (static curve), case (2) for a fairly large extra anode resistance, case (3) for a tuned plate circuit resonating to the frequency of the grid voltage supply, or an infinitely large external anode resistance with various values of D.C. grid voltages.

The effect of a load would be to raise this curve to some such position as case (2), increasing to the overload position similar to curve 1.

These remarks apply to the driven valve, that is, a valve whose grid voltages are supplied from another source. In the case of the self-excited valve we do not approach curve (3) so nearly in the unloaded condition with the plate circuit resonating. This is due to the losses in the oscillating circuit when running at the power necessary to give the correct grid excitation. As far as running con-

ditions are concerned there is no difference, except that with an overload the valve may not be able to supply its own grid excitation and it more easily returns to the static curve, which in this case means a standstill at one particular point, usually with high feed.

It would be as well to mention now the effect of grid-filament capacity. When oscillating, a valve has a definite range of grid voltage variation, making the plate current swing above and below a certain value which we call the plate current or feed to the valve, and thus a given H.F. voltage applied between grid and filament of the valve corresponds to a definite H.F. wattage in the plate circuit. The grid excitation is not a matter of voltage only. The excitation is being applied across a condenser, due to grid-filament capacity, and so a small H.F. current flows, this, multiplied by the excitation voltage, will give quite an appreciable number of watts, and this is the reason why we only get a "minimum" input to the self-oscillating valve when its plate circuit is tuned and unloaded, while under the same conditions the input to a driven valve will drop to zero. This loading up of the grid voltage supply is merely due to the grid-filament capacity in the valve and wiring, and is quite apart from the extra loading caused by the grid voltage swinging over to the positive side of zero grid volts.

From the engineering point of view the valve is a D.C. to A.C. converter, and one of the first things we want to get on the A.C. side is a good waveform. We will assume the valve supplies itself or is externally supplied with a pure sine wave for grid excitation. This must be amplified, using the principles of good amplification. We must apply this voltage so that it swings the plate current over a straight part of the working curve, and it must not itself swing over to the positive side of grid voltage and cause a possible loss of excitation, and, what is worse, supply the valve with a waveform having no tops to its positive peaks. The best working position is selected by making the grid voltage fairly negative to start with and then allowing the excitation voltage to swing above and below this steady value. The most usual method is to leak off the negative charge, collected by the grid, through a high resistance, but if we place a milliammeter in series with the grid leak is an oscillating valve circuit we shall see at once that this negative voltage on the grid is not at all definite in its value. When the valve runs without load and its plate circuit tuned, the low feed to the valve is accompanied by a fairly high reading on the grid meter, showing that the grid has a high negative potential. On coupling a load to the plate circuit the feed increases and grid current is reduced, meaning, of course, less negative grid voltage. While if we overload the valve, up soars the feed and down goes the negative grid voltage, and we have nothing to stop the disaster. Of course, there is nothing wrong with the grid leak method for a valve that is being run at a steady input all the time. A rough dynamic curve taken with a fairly high plate resistance and D.C. grid voltages will show you where to centre the steady negative grid voltage, and then it is a matter of adjustment of grid leak value, until grid current multiplied by grid leak resistance gives this value at the input shown on the curve.

It is a very rough approximation because we do not know how near the curve, on which the valve operated with this load or input, approaches the dynamic curve taken with an anode resistance and D.C. grid voltages.

Far and away the best method of giving the steady negative grid voltage is by using grid bias. The effect is the same as with a leak, but it is much safer when making adjustments. Referring again to Fig. 1, it will be seen that a negative grid voltage of 60 will render the valve nearly non-conducting as regards the static condition (curve 1). This voltage, however, is just about right for the working condition as appears on curve (2). Should there be an overload on the valve, then the valve simply returns to the static curve, and the feed to the valve is far from high. This principle opens up new fields for those intent on solving the many problems of clickless keying, etc., and it is from an

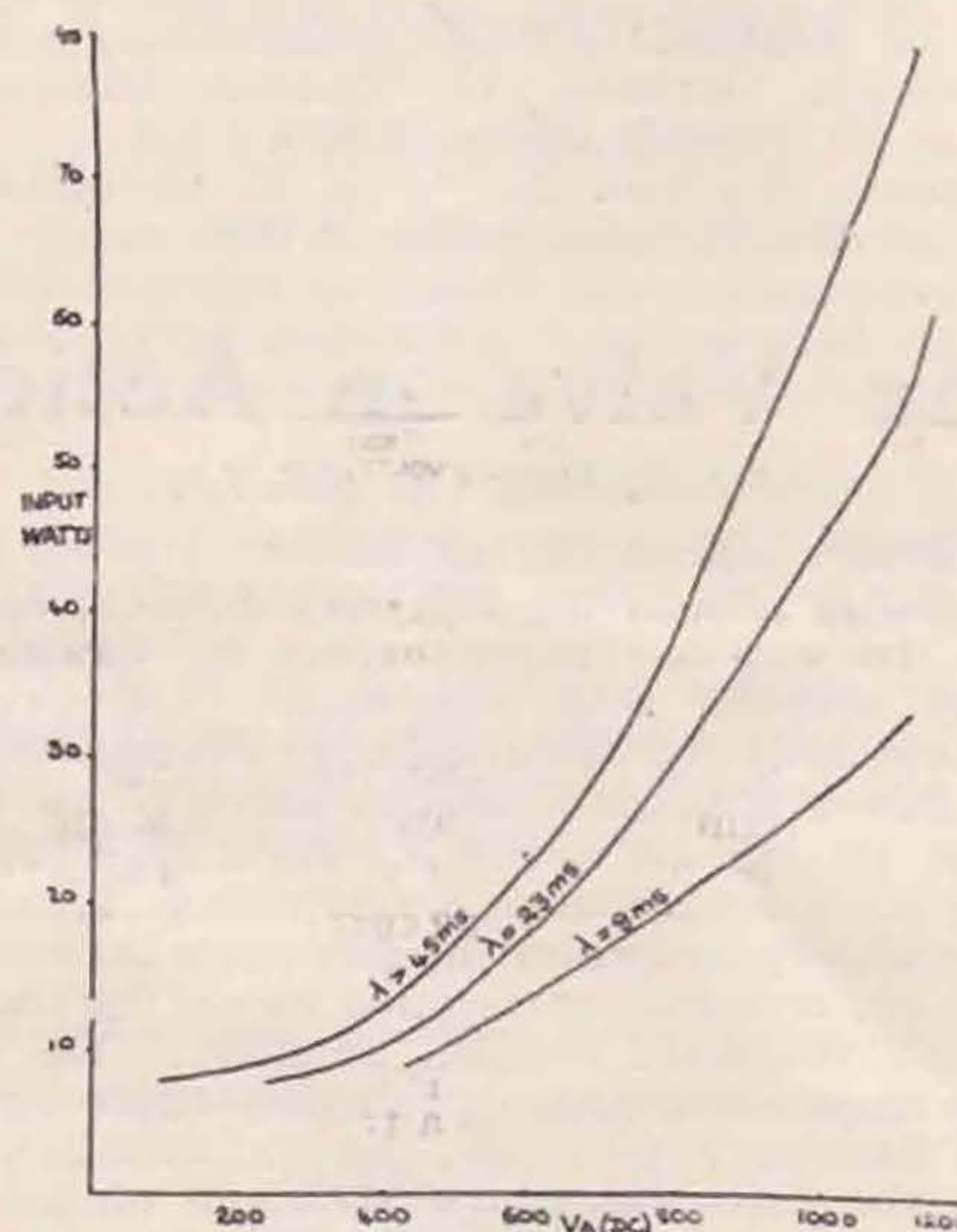


FIG. 2.

Relation between efficiency and anode voltage for a given input power for the Osram D.E.T.1 valve—efficiency as regards reliable communications over 2,000 miles (45 metres.)

engineering point of view much more definite and stable than the grid leak method. As a rough point to start from in first using grid bias for an oscillator it is as well to apply sufficient negative voltage to stop the valve from taking more than a few milliamps feed at the H.T. voltage used, when non-oscillating. Then proceed with the tuning adjustments, remembering that the grid is now stopping at one negative value, and so may possibly run with not too low an input when oscillating without load. The voltage can, of course, be arranged with the aid of a rough dynamic curve, as in the case of the grid leak. The idea is to centre the negative grid voltage on the middle of the straight part of the working curve.

With regard to the purity of the signal transmitted, this will depend a great deal on the extent to which the source of H.T. supply can be loaded without saturating the cores of smoothing chokes,

etc. When a valve is running above its rated power we may have trouble due to the peak value of the feed current being above the total emission of the valve. That is to say, every cycle the H.F. current may pass, or rather try to pass, the utmost possible current which the filament can emit, and a bad waveform will result. It is as well not to run a valve with a feed higher than one-third of the total emission of the filament to ensure freedom from this effect. Another effect, not

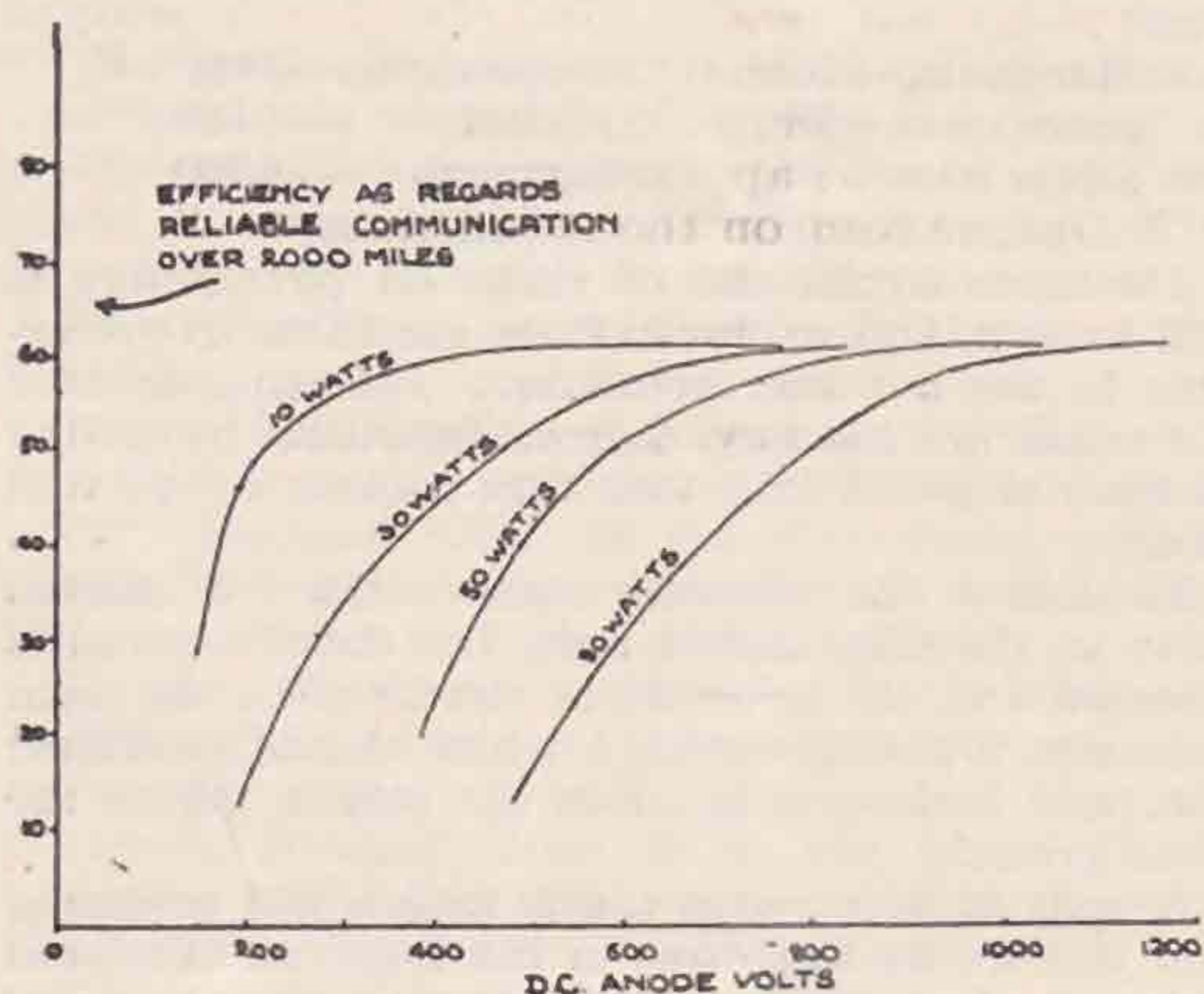
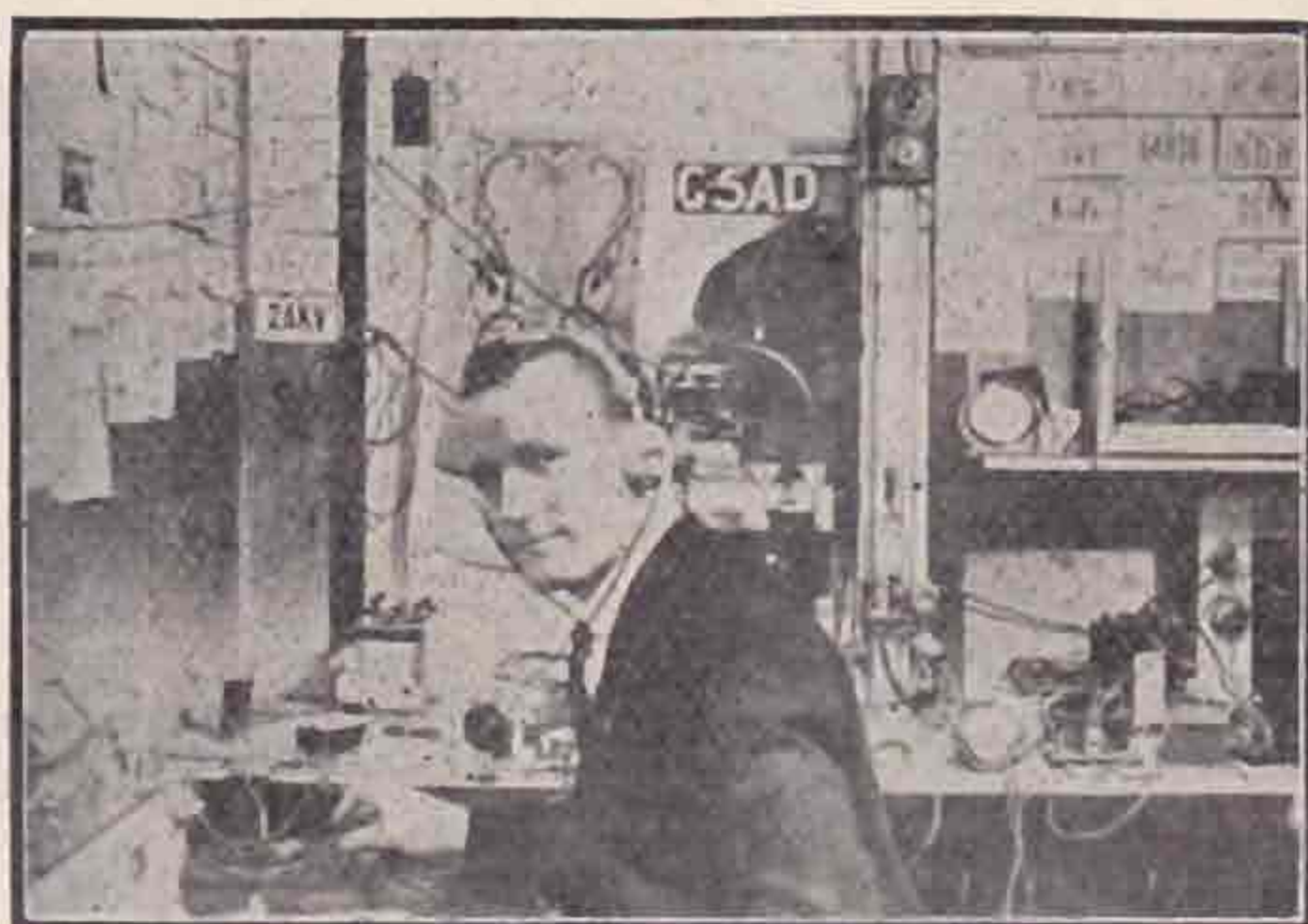


FIG. 3.

Relation between input watts and anode voltage for reliable transmission for the Osram D.E.T.1 valve.

often realised, applies to those valves which have single wire, bright emitter filaments, and are lit from the A.C. supply. When we have a filament carrying a fairly heavy heating current the magnetic field created is quite sufficient to modulate the electron stream from filament to plate, and so, although we may supply a perfectly pure anode voltage, there will always be a trace of A.C. in the signal due to the A.C. on the filament. In the



G5AD.

case of "N" shaped or "V" shaped filaments the trouble is not so noticeable.

Figs. 2 and 3 may be of interest to those who use the D.E.T. type valve for transmission. They were constructed after correlating laboratory observation with the results of long distance

communications and give some idea of the possibility of "getting over" with one of these valves when running at a given input at certain values of anode voltage. The efficiency or effectiveness scale is rather difficult to decide on, but taking an arbitrary value of 60 on an even vertical scale the effectiveness of the valve is shown in Fig. 2. All these observations were taken on 45 metres. Fig. 3 shows the relation between input and anode voltage for a good efficient transmission, that is up to the "60" mark of Fig. 2. No actual communications on 8 metres have yet been had, but from observations in the laboratory we can assume the 8 metre curve to be fairly representative. The upper limits to these curves (Fig. 3) gives the maximum safe input on these three wavelengths.

## A Danish Short Wave Radio Society Formed.

During some time the Danish short-wave amateurs have been considering the formation of a Danish short-wave amateurs' society. This at last has resulted in the formation of "E.D.R.," i.e., "Experimenting Danish Radioamateurs," a society for promoting short-wave amateur radio in Denmark. The patronage is being held by the famous scientist, Professor P. O. Pedersen, the director of the Royal Technical College at Copenhagen. The board is consisting of 7AX (Hon. President), 7ZM (Hon. Vice-President), 7EW (Hon. Treasurer), 7MT, 7BJ, 7CH and 7DM. Our official organ is the Radio-weekly *Radioposten*, which has kindly offered us space for our matters. The number of members at present is 41, including 25 of the 42 Danish licensed transmitters. The Danish QSL-service, which was previously undertaken by 7JS, to whom we offer a special thank for his good service, is now in the hands of "E.D.R.," c/o. *Radioposten*, 10, Snaregade, Copenhagen K, to which address QSL's for all Danish amateurs may be sent. We should also be very glad to receive lists of "ed-calls heard abroad" for publication through our columns in *Radioposten*. We should, too, be very pleased to give space for notices from British amateurs.

We hope that the friendly co-operation between British and Danish amateurs, which has already for a long time been a fact, may be growing, for the benefit of the friendship between nations and for amateur Radio in general.

7EW AND 7MT.

TECHNICAL ARTICLES ARE STILL WANTED!



## Trade Notes.

### The Electradix T. Micro-Voltammeter.

Hitherto the possession of a good moving coil suspension galvanometer that will measure minute potential differences of the order of one-millionth of a volt or a fraction of one-millionth of an ampere, and can be arranged to make every test that a radio user could possibly wish to do, has necessitated the expenditure of many pounds.

An instrument for this work, illustrated, is in a polished mahogany case, 11 in. by 7½ in. by 5½ in., with glass panel door, terminals and detachable zero adjuster on ebonite panel on top. The case is mounted on three adjustable brass milled feet. Inside, fixed horizontally, is a large powerful circular steel permanent magnet, having a D'Arsonval undamped moving coil suspended between its poles by a long manganin strip and a similar spiral connection below, with a clamp for transport. Mounted on the coil is a reflecting mirror, in front an aluminium needle and scale seen through window at top. The sensibility of the instrument is such that at one metre distant a current of one micro-amp. or a pressure of 10 milli-volts gives a deflection of one centimetre or 2½ microamps. give a deflection of one inch. Currents as low as one-tenth of a micro-ampere can be read.

The multipliers increasing the range by 2 and by 5 times scale reading are supplied with the instrument.

The design and workmanship are of the highest possible class, and these instruments are used by the Research Board for special work.

This type of instrument has been used with great success on signal strength tests, bridge work, insulation testing, inductance and capacity measurements, etc.

The "Electradix T." Micro-Voltammeter can also be used as a *Moullin Voltmeter*, and coupled to a valve is capable of giving accurate readings of about thirty times the sensitivity of an electrostatic voltmeter or thermo-ammeter.

The apparatus added at Fig. M is a valve and nolder mounted on a panel with fil. rheostat, grid condenser and leak, H.T. battery of about 70 v. and smoothing condenser connected as shown.

The variations in applied pressure at A B are rectified and amplified by the valve and registered as D.C. on the Micro-Voltammeter G.

The current from the plate which passes through the galvo will be a varying one, but unidirectional, whose mean value depends in a definite way upon the strength of signals or potentials applied at A B.

The value of the instrument deflections in milli-volts having been noted, the relative value of signal strengths can be compared.

As an A.C. ammeter with a set of thermo couples for various currents it is an accurate standard for measurement of aerial transmitting currents.

The instrument can be adapted for use on A.C. currents of any frequency and is equally correct on D.C. when so adapted.

(1) This pattern, invented by the late Professor Duddell, consists of a moving coil with a single suspension as shown in Fig. D.

It is well known that owing to the very minute E.M.F. generated by thermo-couples on small currents it is only possible to operate a very delicate moving coil instrument by this means. The E.M.F. generated is about 45 micro-volts per deg. centigrade.

Manganin-Constantin junctions give good results.

The following table of junction values is of interest:—

Manganin	+570	Constantan	—3440
Zinc	+750	Nickel	—1640
Silver	+710	Bismuth	—6500

(2) Distant control thermo-junctions.

The commercial use of these on pyrometers is well known, and many stations use these in preference to the hot-wire ammeter. The experimenter can construct his own thermo junctions by fitting an ebonite panel with four Clix sockets on a small box.

To solder the selected combination of thermo wires to the Clix socket tags, the ebonite panel is reversed and the clean wires stretched in the form of a cross touching the tags, which should be tinned first, and making contact in the middle where the wires cross.

A spot of flux and a touch with a hot soldering iron will secure the wires in the tags and the loose ends may be cut off. A fragment of Woods metal and a warm iron is used to solder the junction where the wires cross.

The panel is then reversed and screwed into position in its box. The external connections can be made by Clix plugs into the thermo junction sockets. CALIBRATIONS OF "ELECTRADIX T." MICRO-VOLTAMMETER.

A universal shunt box will give exact multiplication factors whatever the resistance of the moving coil galvo used, the resistance of the galvo usually being low compared with that of the shunt. The galvo is connected across the shunt box terminals, but the test current passes through fixed portions of the shunt plugged in as desired. If this portion be one-tenth of the whole the reading of galvo is  $\times 10$ .

Using a needle pointer a scale can be marked or a chart made giving the deflections of instrument in milli-amp values with shunts from which micro-amps. can be ascertained.

The same can be worked out with milli-volts for the E.M.F. calibration. The resistance of coil is about 100 ohms and the point on the scale corresponding to 1 micro-amp. will be about 10 milli-volts.

### Excel & Collett Products.

Excel & Collett Products are made to such a standard of quality and finish, that Colletts' "Excel" Terminal Tags will meet the demand of the most discerning experimenter. They are made in a variety of types for all radio uses. All types are sold at reasonable prices and can be obtained in ls. cartons.

Also "Collett" Panel Brackets and Holdtite Clips are lines which appeal strongly to the discerning user by reason of their quality.

The whole range of "Collett" and "Excel" radio products are manufactured by the S. H.

Collett Mfg. Co., 60, Pentonville Road, London, N.1. In the event of your dealer being out of stock, supplies can be obtained in a few hours from S. H. Collett Mfg. Co., 60, Pentonville Road, N.1.

### The Marconi S.625 Valve.

After considerable research Captain Round, who requires no introduction to BULLETIN readers, has recently produced a new valve which will be of interest in connection with high frequency amplification.

The principle involved is that of overcoming inter-electrode capacity effects by interposing an electrostatic screen between the usual grid and plate, this screen being of such a form as not to impede the electron flow from filament to anode.

Neutralisation is unsatisfactory in that it is not constant over a reasonably wide band of frequencies, and requires re-adjustment if the set is to be maintained at its most sensitive stable working point. Marconi S.625, on the other hand, attacks the problem in a fundamental manner, and does not lose in efficiency at higher wavelengths.

In use, the valve is mounted in a horizontal position, the grid and plate circuits being separated by copper screening boxes so arranged that the partition dividing them is in the plane of the screening grid, being cut away only just sufficiently to allow the glass bulb to pass through.

The partition is earthed and the screening grid connected direct to a suitable point in the H.T. battery, so that a complete electrostatic screen is formed.

Marconi type S.625 thus brings within reach an amplification of 30-50 per stage with absolute stability and maximum efficiency over a very wide range of wavelengths, and is an important step towards reliable long distance reception. A single stage presents no particular constructional difficulties, and once the general principles are mastered a second, and even a third may be added, when the sensitivity is on a par with that of the best super-heterodyne circuits, and a high frequency magnification of as much as 30,000 becomes possible—a figure hitherto undreamed of.

On the short wave band Marconi S.625 promises similar developments, and a magnification of ten to twelve per stage on 20 metres has proved practicable with two stages. It also offers possibilities of a very powerful L.F. amplifier for a short-wave super-het, and should assist materially in experimental long distance work.

Particulars are obtainable from the Marconi-phone Company.

### The Multiformer.

The "Multiformer" is but a little idea that has led to many possibilities and has, incidentally, brought about the solution of more than one problem connected with radio receiver design.

The "little idea" was that of making an easily replaceable winding for an L.F. transformer with a view to alleviating breakdown troubles.

After experimenting with various arrangements, it was decided to assemble both primary and secondary windings as separate units, in the form of flat discs, the iron circuit to be constructed in the form of a partial shell with a removable cross-member.

Here arose a difficulty! Mechanical arrangements demanded a magnetic joint simple in form, conventional design, on the other hand, required a very complicated form of joint, from a mechanical point of view.

After serious experiment, it was decided to commit the sin of breaking away from conventional design, so, instead of interleaving individual laminations, a form of "mortice joint" employing the whole bundle of laminations constituting the cross-member was decided on.

As a transformer the "Multiformer" appears remarkably efficient.

The constructional form employed enables any value of impedance to be built up on both primary and secondary windings. It follows that "ratio" also is a variable quantity.

The windings are enclosed in moulded discs, standardised in size and readily interchangeable.

Non-inductive wire-wound resistances and condensers of various capacities are also accommodated in moulded discs.

By choosing a suitable pair of discs or units and inserting them into the base-part of the "Multiformer" (which is wired up as an integral part of the circuit) it is possible to commutate the various electrical connections required by either transformer or resistance and choke-capacity coupling.

The rearrangement of wiring required for R.C.C. or choke C.C. is effected by means of an auxiliary contact stud which functions only when a condenser unit is made use of.

Among the many uses to which "Multiformers" can be put may be mentioned those of L.F. transformer, transformer for a gramophone pick-up device, transformer for modulation purposes and L.F. choke for smoothing purposes. Other uses will suggest themselves to the experimenter.

One particularly useful application is that of a "Jack" unit which can serve to cut out a stage of L.F. without requiring the incorporation of a switch for the purpose, or, as a means of inserting headphones into the anode circuit of any stage for testing purposes.

### Scientific Instruments.

Over 30 years ago the firm of Messrs. Gambrell Bros., Ltd., was established for the production of scientific instruments, and during the war they supplied a large number to the Admiralty, War Office and Air Force, and are still doing so. This experience in the design and construction of instruments was at the beginning of broadcasting turned to account in the manufacture of radio components and sets of very advanced design, particularly from the point of view of "efficiency" and "low loss."

Of these productions, readers of the BULLETIN will readily call to mind the well-known Gambrell "Efficiency" Coils which were the first really low-loss coils manufactured for the use of British radio enthusiasts, and which still are popular with short-wave experimenters, etc. The highly efficient Neutrovernia condenser, first produced two years ago, is looked upon as the standard small variable condenser.

The designing of the Gambrell Mains Receivers which at present stand alone have brought to the general public radio entertainment in its simplest form and in such a manner that no skill or technical

knowledge whatever is required of the operator. Those of our members who are in the trade would do well to note this interesting range of broadcast receivers.

## Deckorem Products.

### Valve Emission Tester.

The popular use of dull emitter valves has resulted in a call for a satisfactory instrument for valve testing which will give a true indication of the capabilities of the valve. It is a well-known fact that even if the filament is quite intact and glows, the valve may be quite useless or seriously impaired if the emission is much lower than when the valve was supplied by the manufacturers. This Deckorem testing instrument comprises a milli-ammeter with necessary contact devices, mounted in a strong metal case, and wired up completely ready for use. It is only necessary when testing valves to remove one from the last valveholder of the receiver and insert the plug adapter in its place, the valve to be tested is fitted in the valveholder of the tester, and the push depressed for a reading. The metal case is finished in black crystalline, a good quality milli-ammeter is fitted, also push buttons with special contacts. The Deckorem Valve Emission tester will be found a valuable and quick aid for tracing defective valves. Price 37s. 6d. each. Supplied with terminals instead of adapter, price 37s. 6d. each. Standard package 3.

### Short Wave Choke, 8 to 80 metres.

For working on very short wave-lengths, a special high frequency choke is a necessity. One has been specially designed in consultation with Mr. J. H. Reyner, B.Sc., A.M.I.E.E., M.Inst.R.E., and is guaranteed to function without peaks on the wave-lengths stated. It should be noted that this choke can be placed in series with another of higher wave-length if required, and the choking effect will then be quite satisfactory down to 8 metres. Price 3s. each.

### High Frequency Choke.

Designed to exercise good and adequate choking effect on wave-lengths from under 300 to over 2,000 metres. The coil is wound in several sections to reduce capacity, and the windings are protected by a polished insulated cover, *not celluloid, which might be damaged by a hot soldering iron.* The only metal parts on the choke are the two terminals. Tested by Mr. J. H. Reyner, B.Sc., A.M.I.E.E., M.Inst.R.E., of the Furzehill Laboratories, the figures were as follows: Inductance, 72,000 M.H.; self-capacity, 8 m.mfds. Price 5s. 6d. each.

### Primary Dry Batteries.

It may be surprising to the general public the amount of care and scientific knowledge is required to manufacture commercially a reliable high tension battery, especially when one considers the materials and number of chemical elements necessarily used to produce each cell, which must remain inert for a long period without any reaction of any kind taking place.

It is obviously necessary to use the purest material it is possible to obtain to gain the maximum

electrical output from a given quantity of material which can be used for a given size cell.

The British Battery Co., Ltd., Watford, has carried on research work in this direction for over fourteen years; this experience would appear to justify the claim they make for their batteries.

All batteries sold by them are made at their works at Watford, and they only make one quality.

They lay particular stress on the recuperative property of all the cells they manufacture, which render them particularly applicable for use as high tension batteries. The normal life of a dry battery depends upon the rate and length of discharge. If a battery is subjected to a discharge of, say, 20 milli-amperes for a given period before it is exhausted at a discharge of 10 milli-amperes, it would take approximately four times the period before it reached the same condition. It is, therefore, necessary when power valves are used to use a battery which is of sufficient capacity to economically withstand a heavy discharge without deteriorating its useful life.

Such a battery is made by the British Battery Co., Ltd. Their super-capacity units are four times the capacity of the standard cell, and will easily stand a discharge of 20 milli-amperes for a long period.

### Interesting Range of Secondary Batteries.

Messrs. Hart Accumulator Co., Ltd., have specialised in the manufacture of accumulators for a number of years.

For *low tension circuits*, the types designated respectively "Magno," "Enduro," and "Rme," which are equally suitable for receiving sets employing dull emitter or bright valves, will, no doubt, be attractive to amateurs who, in ever-increasing numbers, are recognising the many advantages of glass containers. Assembled in specially moulded pressed glass boxes, these cells are of first-rate quality and attractive appearance. Fitted internally with moulded ribs or grooves, extending almost to the bottom of the box and between which the plates rest, the use of bottom blocks in these cells is entirely obviated, and, in consequence, a larger space is available for the collection of any deposit, as also, of course, for a greater volume of electrolyte. The "Rme" is intended primarily for operation with valves requiring considerable current, and constitutes a very useful unit basis upon which to build additional battery power if and when desired—connectors, manufactured from an alloy of non-corrodible material, being provided for that purpose.

Other *low tension accumulators* which make their individual appeal to particular classes of wireless users, are:—

- (a) The "Hart" "Me" type, in celluloid, a cell which, supplied in a wide range of capacities, still enjoys a pronounced popularity;
- (b) The "Hart" "Meu" type, which is fitted with a special device for obviating any splashing or spilling of acid from the cell. Adapted for use under conditions involving considerable movement from the vertical, this cell may be completely inverted without any loss of electrolyte, or subjected

# The facts about The Empire Broadcast

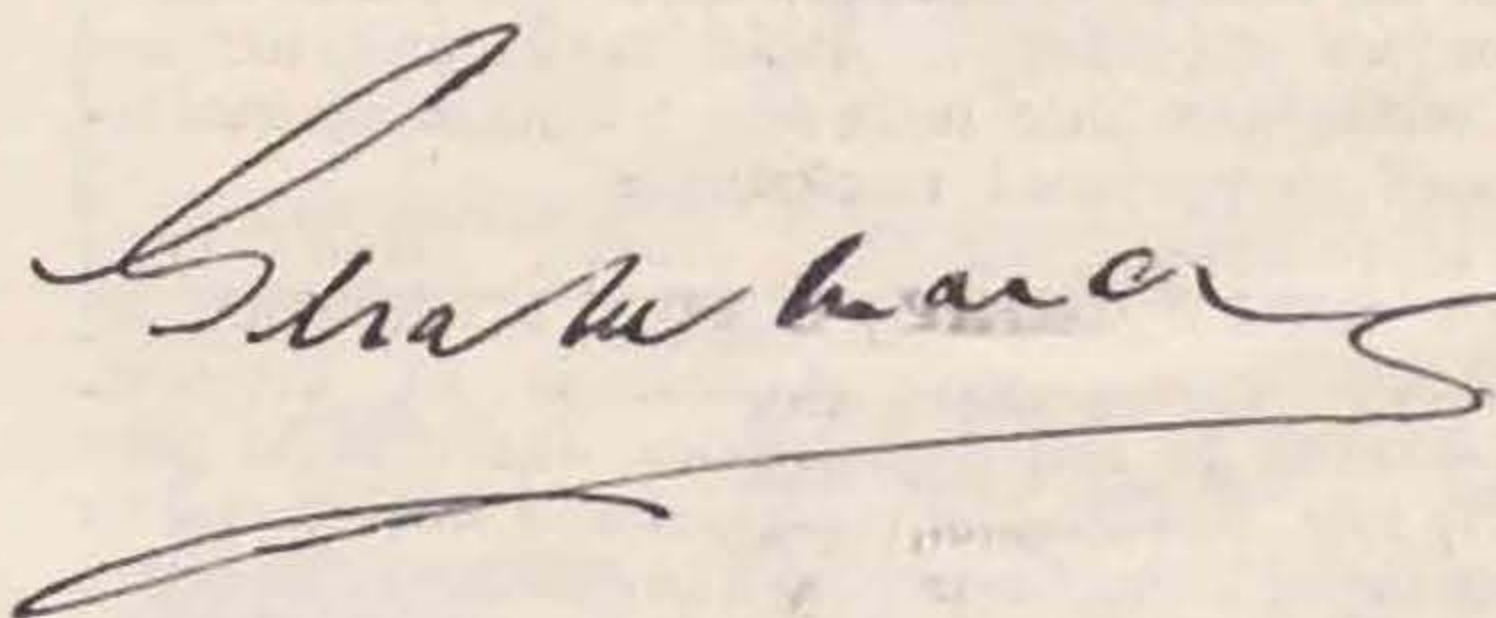
Read what  
Mr. Gerald Marcuse says:—

Experimental Wireless Station, 2.N.M.  
"Coombe Dingle,"  
Queen's Park, Caterham, Surrey,  
12th September, 1927.

Messrs. Marconi Company, Limited.

Dear Sirs,

Out of thirty valves used in my experimental British Empire transmissions, twenty-eight are of your make, and I wish to express my appreciation of them. Results obtained during tests have far exceeded my expectations and I would specially like to mention your L.S.5 types, which are used throughout the amplifiers, and the M.T.9.F., which is, indeed, a short-wave transmitting valve *par excellence*.



28 out of 30—  
no more need be said

A particularly useful general purpose valve is the new Marconi type, 2-volt DEL 210. A description of this, and of all Marconi valves, is contained in an amusing but most informative booklet called "Back Chat". To get your copy, send off the coupon below. The Marconi DEL 210 valve has been reduced in price & is now obtainable everywhere at

10/6

**MARCONI VALVES!**  
—do everything that a valve should do

The Marconiphone Co., Ltd. (and reduced)  
210-212, Tottenham Court Road, London, W.1.  
Please send me copy of "Back Chat."  
Thank you.

Name .....

Address .....

County .....

3d. stamp if unsealed.

T & R B

to violent movement with the same result. For that reason it is especially suitable for providing the low tension current supply of portable receiving sets. And

(c) The "Hart" "Mez" type which, assembled in an ebonite container, can be recommended for use in tropical climates, or, otherwise, under conditions in which changes of temperature may be factors of importance.

For *high tension circuits*, the type known as the "Plrg"—a patent for which is held by the Hart Co.—has been developed. In these cells the plates are contained in a moulded box provided with ribs moulded on to the outside of the base and walls, in such a manner that, when a number of the cells are assembled together to form a complete battery, the points of contact are reduced to a minimum, the cells themselves resting upon the edges of the ribs moulded on the case of the container; in this way perfect insulation is obtained. The voltage of the cells is maintained for lengthy periods, whilst, as there is little or no leakage of current, loss of capacity by self-discharge is, practically impossible. The individual cell boxes can be supplied either in ebonite or in moulded pressed glass, and the cells are assembled, to form batteries of the required voltage, in teak crates of pleasing design, convenient for handling. This battery is particularly suitable for accurate scientific work, and for use under conditions in which the question of insulation is of exceptional importance.

For more general use the "Hart" "Rao" type of high tension battery, having a capacity of 1,250-2,500 milli-ampere hours, is of interest. Manufactured in large quantities, the cost is particularly low, though the material and workmanship leave nothing to be desired. The container consists of a moulded glass box, which is provided with grooved bottom rests, into which the plates fit. The lid is of ebonite, sealed to the cell with a special compound, and, when assembled into batteries, the cells are connected to each other by means of connectors made from an alloy of non-corrodible metal. The treatment of the plates in these cells deserves special mention, both the positive and negative being covered with sheets of perforated ebonite which completely envelop the plates, thus preventing any dislodging of the active material from the grid structures.

The circular glass boxes into which these cells are fitted are also provided externally with a projecting rib which holds them in position upon a perforated tray, the latter—furnished with handles enabling the cells to be removed for examination, etc.—being enclosed in a teak cabinet of excellent design and workmanship.

In the same class mention should be made of the "Hart" "Raydax" type high tension accumulator which, similar in design to the "Rao," but having a capacity of 3,000-6,000 milli-ampere hours, should prove particularly acceptable to users of wireless sets incorporating the new, heavy consumption, power valves.

The "Hart" "Ray" (1,250-2,500 milli-ampere hours capacity) and "Rado" (3,000-6,000 milli-ampere hours capacity) types of high-tension accumulators constitute further variations of the "Rao" design, which have been evolved, primarily, to meet the requirements of wire-

less users to whom economy in table (or floor) space is of importance. Manufactured in 20 and 30-volt units as standards, the wooden frames into which these cells are assembled, are so arranged as to permit of their being placed, if desired, one on top of the other, thus providing a compact unit in a minimum of space.

To meet the increasing demands for a high tension wireless accumulator in a moulded compartment glass box, the Hart Co. has recently produced the "Comparto" type, having a capacity of 1,500 milli-ampere hours. Assembled in 12-volt groups, among the many advantages of this latest product of the "Hart" factories—may be mentioned the following:—

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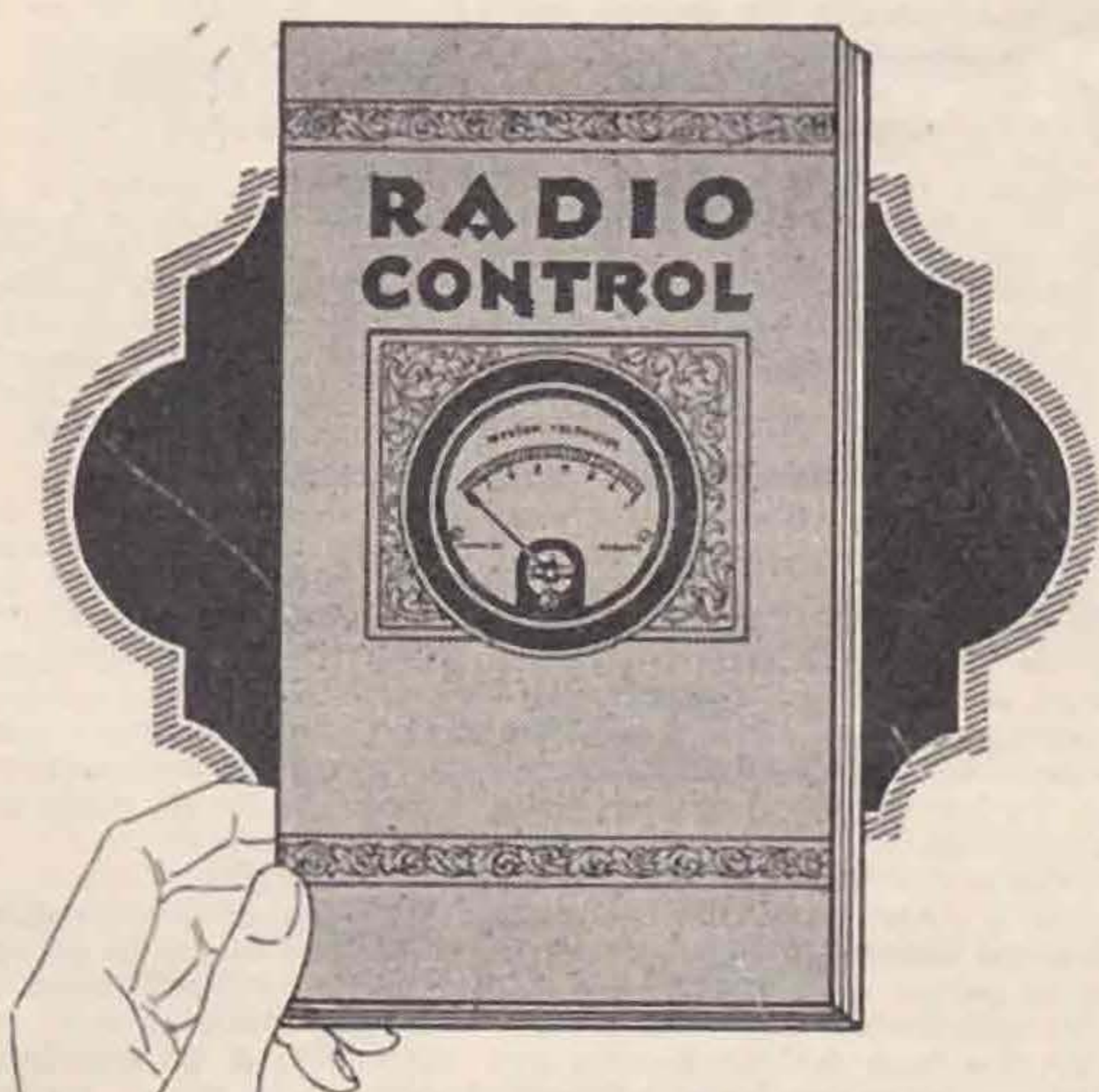
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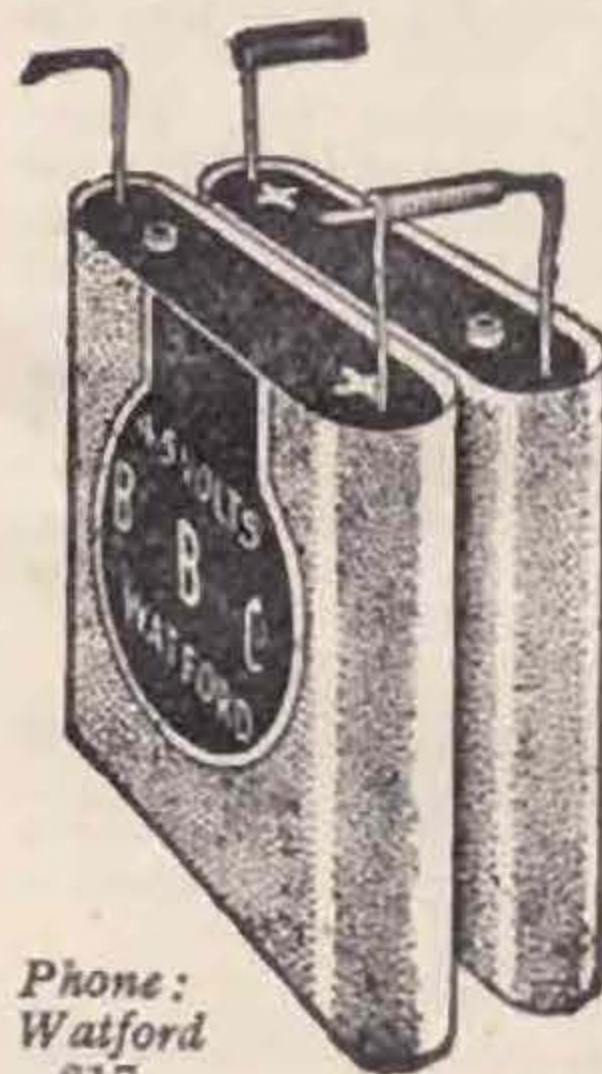
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## Notes and News from the Areas.

### Special Notice to Area Managers and Others.

In accordance with the unanimous decision of the Second Annual Convention of the Radio Society of Great Britain, held September 30—October 1, 1927, the following is the procedure to be followed in future when reporting for these columns:—

Each report furnished by a member will be written on one sheet of paper and shall consist of: (1) The call sign of the station reporting; (2) the programme of the station as regards lines of experiment and objects; (3) results of recent work. Special note: The total number of words is not to exceed 27 for each member, and such details as number of QSO's will no longer be published.

The object of the Notes is to keep in touch with one another members who are mutually interested in certain aspects of the work. These rules come into force with the next issue of the BULLETIN.

## Mid-Britain Notes.

Area Manager: H. J. B. HAMPSON (C6JV).

### The Elections.

Members will have observed the nomination form in the September BULLETIN. May I ask all to fill this in without delay (which generally means complete forgetfulness) and to return same to me without waiting for the last available date, which will have been approached or past by the time these notes appear. This remark is not quite so Irish as may at first appear, because the election forms will follow subsequently, and to these also the same remarks apply.

Then the sub-area elections must be considered, too. Please put on a postcard the name of the member whom you wish to see elected as manager of your own sub-area and post your card to me. The voting last year was not as brisk as it should have been, and indicated some slackness and apparent lack of interest on the part of many members. See to it this time, please, and attend to your election duties at once and before you forget. By the way, I always deny to any member the right to grouse if he didn't vote!

I am prepared to stand for re-election, but as remarked last year, vote for the member who will, in your judgment, serve the area best and whose promise to serve you have obtained.

### Shropshire (reports to 5SI).

6TD has kept schedules with 0A7CW and 0A2SS, and reports the 20 m. band to be excellent for NU and South America. 5SI has worked a dozen NU on 23 m. before starting his holiday towards end of August, but he could not get away from radio and spent a week-end with 6JV.

### Leicestershire (reports to 6WW).

6WW has been extending his aerial tests into the 23 m. band, but complains that the period of bad 23 m. DX started as soon as he had decided to QSY. Schedules are being arranged for serious work as soon as conditions improve.

### Cambridgeshire (reports to 2XV by 5th of month).

Conditions during the latter part of August have been positively dud for DX working, and this, combined with the fact that August is the holiday month, makes the reports rather small. However, here goes:—5YX has been doing some experimenting with circuits and finds little to choose from on 45 metres, but on 23 metres he really finds the "tuned grid—tuned plate" to be better. During August he has been QSO 26 Yanks, 2 Brazil, and 1 Argentine on 10 watts. 5YK has worked a few "local" Yanks and a Brazilian. 2XV has been busy on 32 and 23 metres and has worked 28 Yanks during this month, but has found DX conditions very poor during the latter two weeks, U.S.A. stations not even being audible on any wave at any time; three all night sittings have been made to see if the NU's come over at any time at all during bad periods, but none have been logged on several occasions from 8.30 p.m.—8.30 a.m. B.S.T. However, the 28 American QSO's mentioned were all effected on less than 10 watts, which proves that this is ample power for Atlantic working under reasonably good conditions with a fair degree of reliability. 6CR.—We now have a "sixth district" in the area, in the form of 6CR, who is shortly starting up on 8, 23, 45, and 150-200 metres; his QRA is A. E. Carter, 41, Parkside, Cambridge, and he will be glad of reports.

Note his QRA in your call book, fellows!!! 5JO has been busy doing good work on 180 metres.

### Huntingdon Area (reports to 2XV by 5th of month).

No reports have come to hand from this area recently, and I ask 2BAX to do his best to liven things up, please.—2XV.

### Northampton (reports to 6TR).

2QM is reported to be QRW with his little QRP's 5XX and 5GB. 5IV has been heard using an input of 2 watts from dry batteries. BRS89 has been helping 6TR. 2CH has been working with one watt input and has averaged R4 reports from stations up to 250 miles. 6TR has had 50 European QSO's during August, averaging R4. He is puzzled at the reports of his QSB from D.C. to A.C., using the D.C. mains. He is also bothered with chirp.

### Warwickshire (reports to 2BPI).

5QP has been using 3 watts to an LS5 and has had about 30 European QSO's, averaging R4. BRS3 reports good reception of 2FE on 23 metres. He also has following notes:—SAW1 is an unlicensed station at Lisbon, and not South American. NR2FG says he will be in England next year. 5CG5PX has been adopting his no aerial Duplex apparatus for short waves. He has started experiments with television, using the Baird system. (Let's hear results.—Editor). BRS29 has built a new Reinartz receiver, and BRS10 reports "nothing doing," which is better than no report at all.

### Coventry and District (reports to 2BPI).

5ML is working C.C. He is often QSO NUNE. 6MC is changing QRA and consequently rebuilding; he hopes to be on 23 metres and 45 metres soon. 2BKY has mislaid his motor bike (borrowed it for a grid-leak, OM?) and won't be happy until he finds it. 2AFS has been holiday making and visiting T. & R. members. 2BPI has taken his Morse test and hopes to be on the air by the time these notes appear.

### Worcestershire (reports to 6AT).

6AT says that his new transmitter is reported C.C. by 80 per cent. of stations worked. TPVA and E1IAU report R6 signals on 7 watts input and fone R4 to R2. Strongest signals are reported from Belgium. The new Master oscillator arrangement thus appears to be a success.

### Staffordshire (reports to 5UW).

2KK says he is sorry he has not reported for so long, but his transmitter has been dismantled; he hopes to get working again during the next few days. He has had a few QSO's with EG, EF, EB, etc., on 10 watts. 2BOC reports DX conditions not too stable this past month and has been busy altering his receiver, with improved reception. Has done nothing with transmitter as he is still waiting for the promised mains. 2TN has been abroad, so has nothing to report.

### Wolverhampton and District.

A meeting of the members of the Wolverhampton and District Society was held on September 7 at 5UW, and was attended by 20Q, 2AAD, 5LK, 5PR, 5UW, 6AT, 6MZ, 6PB; apologies from 6HT, 6UZ, 5NU, 2WN, 6BH and 5AF, while 6OH missed his train. Hi! Arrangements for attending the Convention were discussed, and the meeting ended with a general "R.C." on various topics connected with transmitters and receivers. We propose to hold these meetings every fortnight throughout the winter, and visitors from other sections or areas are cordially invited and welcome extended. 2AAD has nothing to report, but promises to get busy as soon as the P.M.G. says go with a "open" licence, 2OQ has gone down to 23 metres, and reports variable conditions, but has raised NU seven times out of eight attempts, has made numerous alterations and hopes for much DX next month. 2NV has not reported. 2WN is still busy rebuilding. 2RR is on 150 metres with fone. 5AF is away from his QRA, and expects to be so for some little time, so has nothing to report. 5NU says he is still very busy with receivers, but hopes to start up again with transmitter shortly. 5PR says his only power is "gas," so has to struggle along with dry batteries, but hopes to get a QSO soon. 5UW has found DX conditions very indifferent this month except in the early mornings. On 32 metre band, with 50 watts, schedules have been run at week-ends with 0Z3AJ, 4AC, 3AP, 3AU, 0A2RC, 3XO, 2NO, 2NT, 7CW, and reports on 2NM fone tests have been QSR via these skeds. QSO's with SB7, SC1, SU4, SA2, NU6, NC1, NE1, and a few chats with EB4WW. On 23 metres SA, SB2, and several NU's have been QSO, but conditions on this band during the latter three weeks have been very disappointing. 5LK has blown all his condensers, and is QRT pending the arrival of new ones. 6OH says he has been QRT throughout the summer (?), but is starting up again with crystal control on 90 metres and reports will be welcomed. 6HT has been on holidays, so has not reported, but we know he has been "playing with ultra violet rays" a QSY to very much higher than radio frequencies. Hi! 6UZ has rebuilt, and is investigating the Mesny, but holidays have deprived us of a DX report. He promises that his famous generator hum will be absent when he starts up again. Cheers and many TNX OB. 6PB is trying to get a 45 metre permit. 6MZ attended the recent meeting of the Wolverhampton "gang," and says he is feeling quite "keen" again. Get busy, OM, and do not forget to report to 5UW by the 9th of the month.

### Norfolk (reports to 6ZJ).

5UF has been busy with European QSO's, using 5 watts from D.C. mains. He reports that on Sunday, August 21, not a single G station was heard, and asks if anyone else noticed the "wipe

out"? (Could you hand a packet of this to all our QRO fones on 45, OM?—6JV). 6JV has carried out many A.A. tests and attempted to prove conclusions so formed on the air. Many 45 metre QSO's have been made and some useful information gained. Tests have been made with half wave and full wave systems, current and voltage feeds, also with a new 4 wire 65 foot cage. The latter was erected with the help of 5SI, who spent a week-end of his holiday at Norwich. Circuits have varied from the simple series fed T.C.T.P. to pull-push, using two LS.5 valves. It has been a month of intensive testing, and the probability is that too much has been attempted. Many points requiring further investigation have been noted and will be followed up as time permits. Up to the present the 32 metre wave has been found the most consistently useful for DX working, and the full wave aerial has given the best results.

## Scottish Area Notes.

(By 5YG.)

August reports show some improvement in number, but from the nature of them it is quite obvious that the season of phenomenal DX is not yet with us.

I am glad to welcome a new amateur in our midst, in the person of Mr. F. Adams, of Wick (2AP), who sends in his first report, the forerunner of many, I hope.

I have also news of a new amateur station starting up at Peterhead, but have not had this confirmed so far.

GI6WG, GC5XQ, and GC2VX were welcome visitors at 5YG during the month.

### No. 1 District (by 2WL).

2MG.—Five QSO, including EI, GW, and GI. Best report received from EI giving R8. Power: 60 watts derived from a Newton alternator. The rebuilding of the transmitter is contemplated, as it is felt that too much power is being dissipated on the valve plate. 2WL.—Holiday QRM, but expects to be on the air some time in September with new transmitter, making use of master oscillator drive, and power derived from dry batteries. 5YG.—QRT owing to holidays, but expects to resume with new Newton generator early.

5XQ.—25 QSO, including EA, EK, EB, EF. Best report was received from EASPO, "R4 and steady DC," when the input was only 2 watts. Power normally is in the region of 2.5 watts derived from D.C. generator. Illness restricted activities somewhat during the month, but some work was done in connection with the rebuilding of the receiver. 6MS was not home much, but gets down to the "mangle" at every opportunity, and puts out an FB D.C. signal.

6NX.—80 QSO approx., including the usual European countries. Best report being R4 and R5 from Moscow, R6-7 from Italy, and an R4 report from NU. This appears to be the first time the station has been heard in NU since the aerial was altered some months ago. Power is usually about 10 watts derived from D.C. mains. The first part of the month was spent on 23 metres, but nothing of note was achieved.

6WL.—44 QSO, including Europe, NE and NU. Best reports being "R5, D.C. FB steady, from NU, and "R9" from NE. Power: 6 to 10 watts derived from H.T. accumulators and dry batteries. Hertz aerial altered at middle of month to N-S alignment, and reports seem to show stronger signals going westward than with the E-W position previously used. QSO has been made with NU with 6½ watts input and the N-S arrangement of aerial. 23 metres will be tried shortly.

### No. 2 District (by 6IZ).

2AP reports nothing done in August owing to holidays and motor cycle touring. The hand generator used has been overhauled, and a good start was made in September. 2VX likely to be QRT for some little time owing to family illness. (Very sorry indeed, OM, and hope for early improvement—5YG). 6IZ.—23 QSO, 13 on 23 metres, including NU 1st and 8th districts, NC 1st district, and SA; 10 on 44 metres, including Europe on CW, and "G" on phone. Best reports on 23 metres came from NU, which yielded "R gud DC," and from SADA9, who reported R3. Power on 23 metres is 20 watts, and on 45 metres ranges from 6-20 watts derived from D.C. mains. All stations report 23 metre signals as being pure D.C. Several reports of loud speaker reception of phone have been received from England. 6VO has not been on during the month, his operations being much hampered through lack of a suitable source of power. He intends abandoning crystal control in favour of his old love, yclept—the M.O. drive. 2BQK.—On holiday for part of the month, but has done quite a lot with his "closed" aerial gear. Suitable source of power constitutes one of his troubles also. He intends to apply for his radiating licence shortly, and blossom into a full-fledged "ham" (luck to you, OM.—5YG).

### No. 3 District (by BRS6).

5NW.—QRW business, but hopes to start crystal control on 45 metres shortly. 6KO.—44 QSO, 27 on 23 metres, including NU, SA, SB, and NC; 17 on 45 metres, consisting mostly of "G's." Best reports on 23 metres transmissions: NU, "R6," SA, "R5," NC, "R6." Power, 10 watts from hand generator. Had pleasure of a visit from BRS6, and with him succeeded in working NU stations, the best report being R6. Conditions

very "patchy" on 23 metres at present. Regret was unable to attend Convention.

BRS6.—QRT, but spent most enjoyable week-end with 6KO. Regrets he was from home when 5JD called. (Call again, OM, and any other OM's passing through.—BRS6). BRS71.—QRT.

### No. 4 District.

No reports!!! Might I once again appeal to you fellows who comprise No. 4 District. There are six of you, and three have never made an appearance in these notes since Geoffrey Gore went south. What's the matter, OM's? Write me and metaphorically "tear me to atoms if you so desire," but do keep in touch.—5YG.

## Indian Notes.

(By AI2KX.)

### General.

Amateurs in India are now passing through the most trying period of the year, the Monsoon season. Only those who live or who have lived in the tropics know what real bad QRN is like. Again, the poor unfortunate "ham" in the plains of India has to operate in a temperature of anything between 90 and 120 degs. F. Many have been off the air during the summer, and the credit goes to those who, in spite of the most trying conditions imaginable, have kept their station on the air.

2KT reports good work done on the 19/21 metre band, the 33/35 band being abandoned owing to QRM from commercials. QSO has been made on 20 metres with GIOA80, AMEF and EB. (Well done, OM!). All reception made on a 5-metre vertical indoor aerial. European stations become audible and remain steady from 1615 to 2100 G.M.T. on the 20 metre band. 2KX reports very little work done in his hill station. He is in the foothills of the Himalaya mountains and reports reception very good there. QSO with GEHSM and EF has been made on 20 metres. From September he will be operating again from his old station in Rawalpindi on 20 and 30 metres. 2KW reports conditions very bad. Difficulties have been experienced in getting down to the 20 metre band. QSO has been made with EG, EF, GI, AF, OA and EK. 2KW is located at Karachi on the north-west coast. 2BG, 2JL, 2KJ, 2JY, 2HT have not reported. We hope to hear their signals on the air when conditions are more favourable.

## Danish Notes.

(By 7EW and 7MT.)

Owing to the holidays only very little work has been done and our bag of reports is very small. 7BX has been at the seaside and has only done little work on 2 watts D.C. or A.C., his best DX being 1A1A. 7BJ has put up a 45 m. Hertz and has good results on it. He is also, with success, using it as L-aerial, combined with a little indoor counterpoise; hi! 7EW has erected a 32 m. Hertz, but does not seem to "get out" on that wave. He should welcome reports of his 32 m. signals. 7JO has broken his D.E.T.1 valve (you have our sympathy, OM). His best DX this month is EU10RA, Nijni-Novgorod. 7JS has been away to Iceland, where he has been making receiving tests in the firths. 7MT has only kept his schedules with EG6CL and ED7JO. He will appreciate reports of his 33 m. signals. In the fall he is going to build a big 100 watts (D.C.!) transmitter. OIC has now finished his trip with M/S "Oregon." During his trip to Buenos Aires he kept a regular schedule with SB1IB, SAB and GFY. His power was 400 watts. Hi!

## Dutch Notes.

(Prepared by EN6CX).

At the time when these few lines will appear in the "BULL." perhaps solid rules for amateur transmitting will have been fixed by the international radio congress at Washington. It is to be hoped that the uncertain position of the transmitters in this country then will soon come to an end.

EN6VN is installing a tube rectifier, so his high-powered A.C. will soon be off the air. (Hear, hear!! other A.C. stations!!) EN6GA continues punching holes in the air by working all continents. EN6WM has started again with his 1-watter; works distances up to 600 miles with ease. EN6BC does some splendid work with his nice D.C. note and 3 watts input. EN6AX is often heard with great strength when working England on 'phone. EN6CX still on QRP. Is now testing on crystal-control, but has trouble to make his crystal "perk." Reports of these transmissions will be welcomed. Wavelength 60.2 metres.

## French Notes.

By EF8PY.

I beg to apologise for my two months' silence, but this has been due to several causes which I have not been able to avoid. French activities have sustained a "slow motion drive" (hi!), due to vacations.

8YOR, our star station, has given up for two months, and as 8JN is silent, we have no real reliable and consistent station. 8FT is the best one afterwards; he works the States, all districts, when he likes, and "poundbrasses" most of his time. QSA sigs. are reported in Chile, Uruguay, Australia, etc. As he is DM for Paris, he receives many foreign hams; so, EG friends who expect to spend time in Paris, write to him or to 8PY, and we shall give you opportunities to see many French stations. 8ARM is sailing in the Atlantic between France and South America and reports good DX receptions. 8ZB, with 2.5 watts input, has been R4 by OA7CW. A French ham in South Tunisia is able to receive and transmit on s.w. his QRA: Marguerite, Q.M. Radio, Station de T.S.F., Sidi-Abdallah, Ferryville, Tunisia; working QRH's: 38 and 61 metres. 4BM has changed his call into 8FZX. 8SHIP says the Zeppelin supports no rival for DX on 20 metres; he is now regularly QSOing the NU with it, a thing he never did before with other types. 8SM has made interesting tests on buried aerials; with an underground Levy, and two E4M valves on a Mesny, he succeeded in QSOing NU, SB, AI, OA, and OZ. He was greatly aided by 8CT, of Arcachon. 8PY did make some tests on ultra-short wavelengths, 2.7 and 3.9 metres. Levy aerials were used. A set of accumulators was used as H.T., and the D.C. was transformed into I.C.W. in order to get a more readable note. The power was 10 watts. Good results were obtained, and we hope to describe them later. 8DY telephony have been received to 2 miles, using a 3 metres wave; the aerial used for reception was the chassis of a motor car. 8VVD works now DX, and keeps a regular schedule with OZ2BG, being received there while no other stations can be heard. 8PME, another ancient would-be DXer, is now QSO NU and SA, without having changed his power or aerial, which proves for the efficiency of knowing how to "pound" the key. We had the pleasure to welcome GI6MU in Paris; he visited some hams stations, and pushed many keys here. 8PX has succeeded in getting heard by KFZG at Point Barrow (Alaska). 8RVL is still our star QRP station. With a power valve having 45 volts on its anode, the anode current was 3 ma., which gives an input of about one-tenth of a watt. At a distance of 200 miles 8JZ received 8RVL's 'phone quite loud; a 'phone QSO was also established with GC6IZ, who received him R4, "quite OK." 8AXQ, a newcomer, wants reports on his transmissions from British listeners. There were two YLs in France who were hard at key-punching, FMMAJO and EF8YD; now a third has come in the person of 8PPP; so drive many QSLs to her, but pse no private msgs! Hi!

## Irish Free State Notes.

By 11B.

With very few exceptions the activities of GW transmitters appear to have been dormant during the past month. Reports received all point to very poor DX conditions, and my own experience has been that all DX has been very difficult mainly owing to the very prevalent and persistent atmospherics which at times have made reception quite impossible. For the past two weeks all G's and the nearer European stations have been fading out completely after 22.00 G.M.T. The only really live station has been 17C, whose record below is most creditable.

Now for reports:—

12B has not been very active, most of the work of the W.S.I. having been concentrated on their portable station, 13B. 13B, with maximum input 10 watts on 45 metres, has worked many G's and others, the best being SMXV. On 23 metres he has only local QSO's, but such reports as have been received appear to show that he is getting out well on this wave. 14B is on the air again with a new aerial, but has nothing to report, having been mainly occupied with tests with 13B. 16B is also on the air again after a long absence. With an input of about 5 watts to a D.E. 5 valve he has worked many G's and also EK and EE. 17B reports that he has been laid up with a septic hand and has also been having domestic QRM from decorators; but he is now on the air again. He has installed a new Hartley transmitter using 220 volts D.C., and has worked many G's, both CW and 'phone. He has had a report of R4 from Madeira. 11C has been rebuilding and has nothing to report. 14C has also been rebuilding and would welcome reports on his signals, both on 45 metres and 23 metres. 16C and 18C are still both closed down, but hope to be on the air shortly. 17C is again very much our star station, and is doing most creditable work, having had 82 QSO's during the month. On 45 metres, with inputs of from 2 to 9.5 watts, he has worked G, EB, ECS, ED, EF, EI, EK, EN, EM, ET and EU, the best being EU10RA at Nijni-Novgorod. On 23 metres he has worked NU 2 and 8 districts, R2 and R7 respectively, with input of 8.8 watts, as well as a few local stations. He found conditions on the shorter wave hopeless during the greater part of the month. 11B has not had much time for wireless and has only European QSO's to report on 5 to 6 watts, the "best" being SM and EI. He is contemplating going down to 23 metres owing to the terrific QRM on his Xtal wave in the 45-metre band.

The following stations have not reported:—18B, 19B, 12C, 13C, 15C.

## Northern Ireland Notes.

By 5NJ.

Reports are still few and far between, but nearly all stations are becoming active again, and serious winter work will probably commence very shortly. 6WG, transmitting on 45 metres with about 8 watts input, has again done excellent work. Fifty-three QSO's took place during August, and the U.S.A. 2nd district has now been worked. The station was R3 at NU2CC, and other reports are as follows:—R9 in London, R6 to 7 in Germany, and several R7 reports from France and other parts of the Continent. When it is remembered that 6WG works under considerable difficulties, and with very low power, it is obvious that he is one of our very best stations. 6JA has also had a fairly good month's work. With only .3 of a watt on 45 metres, he has been R4/5 all over the British Isles. He has also, on 10 watts, been QSO the U.S.A. 1st district for the first time, signals being reported a steady R5. The number of QSO's was 59, and an R9 report was received from Belgium. This is excellent work. Another new station is on the air—2CN. The QRA is Cecil B. Clelland, 31, Dufferin Avenue, Bangor, Co. Down. I should like to welcome him to the air on behalf of all G1's, and to wish him all good luck in time to come. Tests have already commenced, and most of the British Isles have been worked on 2.5 watts. A hand generator will be in use when these notes appear.

RECEPTION.

2AFD has completely rebuilt his receiver, and is now going stronger than ever in the reception line. It is hoped to obtain a radiating permit very shortly.

## South-Western Notes.

Area Manager: G. COURTENAY PRICE (2OP).

My notes did not appear in last month's issue. There were so few reports, presumably on account of holidays, that I kept hoping for more, and consequently "missed the bus." Those received are included this time. I have to report with pleasure, visits to 6UG and BRS28 (Bristol) this month. I have now covered practically all Gloucestershire and Wiltshire and Somerset, and am sure that the extreme S.W. will excuse my absence. It is a matter of time and distance, and for this reason I am considering the opening of a sub-area office for Cornwall, Devon and Dorset. With your next reports will you please let me have any suggestion and air your grievances so that I may know where I am? What are your views on the interference question, especially that of 'phone transmissions? I have my own views, but I want yours in connection with this and other questions raised in these columns. I represent you and not myself. Conditions have been very poor for DX, especially between 20th and 22nd. 5MU during July had 60 QSO's and during August 26, also QRT three weeks. Greatest DX, SMUA, using 0.6 watt. He reports visits from 6JK, 6CY, 5XR, 5JO and 2BFA, also a very pleasant afternoon and evening with 6YZ. 5FS now crystal controlled on 23, 45, 90, 200 and 440. He wants schedules a week each at a time with G stations. 6RB QSO practically all Europe, with exception of ER and EH. Worked NITF3 (Iceland), EPIBE and EU10RA. 6UG has been rebuilding and fitting new tube rectifier; power 40 watts; transmitter tuned plate and grid with grid modulation; preliminary tests using 15 watts worked several Europeans and all Britain on fone. BRS80 (Newport) has been away most of month, but reports test from A2ME September 3, R4, rising R7.

## London Area.

By G. A. EXETER (6YK).

As I have been threatened with all sorts of horrible things by our worthy Editor for occupying too much space, I shall have to confine myself to as few remarks as possible. The second Area Hamfest succeeded in attracting the pleasing number of no less than 40 members. This is infinitely better than our first, and the organisers are feeling that their efforts were not wasted. Everything went off well, and I think that our next will bring even greater numbers. I hope everyone enjoyed themselves, and will roll along next time and bring others with them. Regarding reports, we should like to see more of these embracing actual research work and results, rather than that of DX worked. I am sure that most of our members will appreciate reading of others' difficulties on certain problems, and of information gathered while attempting

to solve them. Just see what you can do, fellows, and make these notes the most attractive thing in the "BULL."

## Western Division.

By 6YK.

6WN has had 27 QSO's on 4.5 watts, most of Europe being worked and the best report being R6 in Sweden. He has now obtained a transformer and is building a new rectifier, when it is hoped to QRO to 10 watts. So far, he has had no luck on 23 metres, but is still trying. 5VP comes to life with a report of activities in directive transmission. He is using an inverted L aerial, excited at its third harm, and is receiving reports from all parts of the globe. 6VP says that he has been trying out 23 metres with a fair amount of success. He is 1,100 volts of Chem. Rec. A.C. We also welcome BRS102, who says he has been off for some time, and has had no real DX of note. He has recalibrated his receiver from 14 to 50 metres. He says that NU3PR would like reports from G's on his 20-meter stuff. Reports via BRS102. 6YK has been doing a little 45-metre work during the day, trying to ascertain the cause of QSSS reports from DX stations. Finally, it was traced to partial radiation from feeders of CF Hertz and a fluctuating mains voltage. By the way, 6QB wants all the gang to QSY to 90 metres for G traffic and "chewing," so that the QRM on 45 can be eased for DX work. He has already schedules on that wave with several stations, and is open for more. It is a good idea, and will well be worth following up.

Reports by the 15th, please!

## North London Division.

Something wrong this month—hardly any reports. Come along North London, we have lead for months, get a move on and give me a postcard! I know you're active because I hear you and see you!

6PP has been on vacation for two weeks, but took his RX with him for amusement and logged a number of his intimates. His QRP sigs. have percolated into three new countries for him, EC, EA and EI. The power used in each case was 2 watts. 2AJI has been visiting EB stations part of the time, but managed to log 110 Yanks, including NUIBYV at midday. 5HJ has been off the air most of the month, but had QSO with SLN of Gothenburg (QRA required, please!) 5KU has been to Ireland, also visiting, and has done little on the air. He had his first South African of the season on September 4, FOISR on 33 metres. He sent greetings to British hams. KU has been using Frequency Doubling as per 6AT for 23 metres, and has received several C.C. reports from NU. (5KU has not yet blown up—6CL!) 5AD has been very busy answering QSL's and forwarding QSL's for others. Chief event was installation of 2NM's 100-watt generator. His sigs. are now QSA in America (all parts), and also in North London!!! 2AXL has been away. BRS12 has only to pass the morse test and then will be the owner of a low-loss call sign. 5VY and 5TT have entered the 45-metre band and seem to be getting their QRP out well. 5HS is still holiday making, but will soon be raising the uttermost parts of the earth again. 5GU is too QRW for anything radio. 6CL had a busy month—93 QSO's with a maximum of 2 watts. Schedules were kept with ED and EK.

Many stations have visited here, and a few been visited. Especially welcome were the provincials.

Station visits: 5XD, 5IV, 6WD, 5WQ, 6YK, 6LB, 6NK, 6TV, 5VY, BRS12, 86, 2AJI, 6DP, 5TT, 2AX, and 2CB to 6CL. 6CL, 5XD, 2CB and BRS86 to 2CX, 2GF and 6HP.

NOTE.—Owing to change in publication, date of BULLETIN (now 14th), area reports can be received up to the 15th.

## Southern Division.

Reports to 6PG, 21, High Street, Dartford, Kent, by the 10th of the month, please!

This month is really a splendid effort, OM's—several new stations reporting. Please keep it up. 2CX is now going on 5 watts of R.A.C., and has worked the usual Europeans. He recently QSY'd to 23 metres, and found it to be more efficient than 45 metres. NUIAXA answered his first test call, and two days later he was QSO NU8AXA. Power used was 8 watts. He proposes joining 6QB's 90-metre party and hopes to QSO the 45A gang on this wave. 2WR sends his first report. He has been on the 45A air for about six months, using inputs of 1 to 2 watts, and has QSO'd many stations, the best DX being Latvia and Morocco. He has now QRT until his A.C. mains are installed, as he finds QRO 'phone and raw A.C. too much for his D.B.'s, but will start up again later on 23, 45 and 90 metres—particularly on the latter. 2CB has had 38 (all European) QSO's, the best being EAR70. He was given R6 on 6 watts, and also R9 from Brussels. He has also tried 23 metres, but without success so far. 2NH has been on 23 metres exclusively, and with 45 watts has QSO'd 12 stations—all of them NU's. He has built an 8-metre outfit and will conduct tests every night during October, November and December from 21.00 to 22.00 G.M.T. He will welcome reports from London or Australia. 5MA reports (via 2NH) that he has not been on for three months, as he is rebuilding the power supply, using a D.C.

generator in place of his old "sync." He will probably be on the air again by the time these notes appear. 6NK was on holiday the first half of the month, which included a very pleasant week-end with 5N, after which the set was rebuilt, going back to the old T.G.-T.P. The latter part of the month he had 17 QSO's in five days, the best being LAIG of Oslo—being R7-4 on 1.35 watts. He was also QSO EAR6, being R4 on 2.7 watts, but the test had to be abandoned after twenty minutes owing to QRM and QRN. He paid visits to 5N, 2NH, 6PP, 6CL and BRS42, and was visited by BRS42 and 5GU. 6QB is now on the air regularly—at present on 45 metres. He is trying to revive 90 metres again, several of the gang supporting him. What about it, OM's? On 45A, using 9 watts D.C., he has been getting R6-7 from Denmark and Sweden, several stations asking if it is C.C. 2HP has not been on the air very much as he is fed up with D.B.'s and is still waiting for the A.C. juice to be laid on, probably about Christmas. He has been receiving on 12, 23 and 45 metres, endeavouring to find a suitable circuit. Conditions have been rather bad, however. 6AP is busy reconstructing his gear for his new QRA at Lee, S.E.12. He will be using A.C. for supply on 23 metres, when he gets going. 6TA reports for August that he has been very QRW at the office, but has QSO'd SB, SC, NU and TUN (also report from SA) on 23 metres, using 50 watts of valve RAC. All stations gave R5 or more D.C. He thinks 23 metres FB, but very uncertain. BRS25 logged 212 stations during August, including 51 NU's and NC1BR and 3MP on 20 metres. He has a card from NUSADG who says that 20A sigs. from Europe have been very QRZ there lately, and on most nights inaudible. 6HP is away on holidays, but has had a fairly good month, being QSO, among others, with EJ. He received a visit from 6CL and accompanied him to some other South London stations. BRS93 is getting on well with the morse code, and is doing some good receiving, his log including NU, SB, FI, SA and SU, as well as the usual Europeans. 2BQH reports that conditions were bad on 20 and 40 metres. He has also been away on holiday, so has had little time for radio. 2BWR sends his first report. He has acquired a mangle and a mike, and hopes soon to commence some tests with 2AWL. He is, however, busy swotting at present. BRS88 now has his new station in operation, and has carried out some tests with EH9OC, when he received his CW R6 and fone R3 in daylight. He is experimenting with underground aerials and would like to fix up some tests. 6PG will be on the air again by the time these notes appear, having been QRT since May. He has done some receiving recently, however, and found conditions fairly good, though QRN and QRM were rather bad. Work during the winter will be done chiefly on 23 and 90 metres. 2ARZ has now a SW receiver going, and is getting FB. He is changing his QRA soon and will make an attempt to obtain his radiating licence.

## East London Division.

By 6LB.

6LB has had his usual blank month and is going to QSY to 23 metres, to which end he has been teaching the receiver some new tricks. He recently enjoyed a visit to 6CL. 6LL has done little work owing to the calls of week-end camp, but hopes to get down to it again shortly. 6UT has worked two new countries—EC and ETP. He recently tried 23 metres and after his first test call three NU's were reported heard calling him. By this time he has probably QSO'd. 2BXM has also rebuilt his receiver and reports good reception of NU's. Best DX is the 9th District. 2NU, a very old hand, has recently come to life, and is making a big noise in the lower regions. We'd like some dope OM. The remaining 47 stations in the Division are all dead!

## Southern Notes.

Collected by 2ABK.

By the time these notes appear in print, we shall have had our second Convention, and I hope that when there to meet as many "Southern Hams" as possible and to get reports for the November BULLETIN straight from the horse's mouth.

Reports this month are very few, and many of these report N.D. Why, OM's?

Kent (by 2MI).

2MJ is now using 480 volts power mains for H.T. The hum has been eliminated, but listeners to his transmission can hear the trams passing his house; the noise is rather curious, it sounds like induction heard on a trunk land-line.

2MI has nothing new to report, 150-200 fone worked on Sundays and a little more work done to 45 transmitter.

BRS91 reports absolutely N.D.

Other Districts.

6FD (Cowes) sends a heroic note in pencil from a sick bed and reports N.D. owing to being QRT owing to an operation for appendicitis. He sends 73's to all and hopes to be at the key again soon, and so do we, OM!

2HJ reports only five QSO's on 45 metres on 6 watts A.C. Worked his first EK. He is now rebuilding and adding an H.T. rectifier, and wants reports, and if heard several times, please give com-

parison of QSB and QSSS. Receiver also is being rebuilt. He wants QRA SS2BN, and also wonders if something can be done to MLR with his 45 flat spark.

6CJ has given the Muse a rest for this month—but let's have some more, OM—it's F.B.—2ABK. A few Yanks have been worked on 20 metres during month on 10 watts, during the time the rectifiers were not blowing up. The H.F. amplifier he recently demonstrated with 2DX at the first R.S.G.B. meeting is F.B. and a real boon.

6WQ reports best QSO 2AI of Plumstead, who he received R4 phone when using something under one watt on 150-200 metres. Closing down now on 150-200 and going to 45.9 for the winter months, and hopes to have some interesting reports.

5UY reports working one Hungarian and two Danish stations on 6 watts on 45. No luck on 23 metres yet, he wants tips on same, OM's. He is trying to rouse local interest in short-wave work, but no luck.

5QV reports a visit to Belgium, where he visited EB4CB, Ostend, and found that he had still a new type of aerial yet to try. Later he looked in at EB4DC and says he has some F.B. specimens of radio handicraft. They are always glad to see EG's, and both speak English O.K. No difficulty is experienced in raising OA and OZ at week-ends, and also NZ is always sure DX, and schedules have been arranged. An article on aeriels has been sent to BULLETIN and awaits publication. Station visited by 2KT, 2LZ, 2MI, 2UN, 5AR, 5FQ, 5RT, 5XW, 6FT, 6JV, 6LB, 6QO, 6WI, and 5YZ called during Belgian trip. How about a visitors' book, OM? Hi!

BRS42 reports best RX on 32, OA2SS, and on 20 metres SADA9. Eight NU's were logged, but holiday QRM made a short month.

BRS76 sends his first report and says he got excellent reception of Australian short-wave tests. On August 28 30 G fone stations were logged on 45!! Some QRM!! Hi!

BRS27 has had little time for radio, he has been bear stalking in Norway and promises good work this winter.

2LZ has been busy with a 23-metre transmitter, and not much else has been done. Excellent music has been put out on 180.

2ABK has been dismantling prior to change of QRA. Send reports to me in future, OM's, either c/o 2LZ or c/o Southend Radio Co., Ltd., 5, Central Arcade, Southend-on-Sea, Essex. Mni tux OM's.

## Northern Notes.

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

There seems to be very little activity this month, partly owing to the holidays and partly owing to the fact that many stations are being rebuilt in readiness for the winter months.

5MQ easily tops the performances for the month, and sends a most interesting report, while 6YV (Whitley Bay) comes in a good second.

I have had brought to my notice during the past month two cases where reports have been sent in with inputs stated which have been found to be under those actually in use. I need hardly say that this is hardly playing the game, and feel sure that these few words will be quite sufficient to ensure that a further complaint will be unnecessary.

### Star Station.

5MQ, Mr. E. Menzies, School House, Fazakerley, Liverpool. (For details, see Lancashire.)

### Yorkshire.

(Reports to 2DR by the 14th.)

2XY has little to report, except a schedule with NE8AE, who works with 7 watts on 47 metres, and comes through with remarkable regularity. Both phone and CW have been used with R9 results, using an input of approximately 130 watts.

6DR had 45 QSO's on 45 metres, input 7-10 watts. The best DX was with NE8AF (R5 on 7 watts). A visit was paid by EK4RT. Conditions fair at the beginning of the month and improved greatly later.

BRS26 is QRT owing to holidays.

2BOQ logged 176 stations with a best DX of OA2SS. Application is in for a radiating permit here.

6OO has been only a few times on the air and worked some locals only. EU15RA being best DX with 8 watts on 45 metres. He also heard NE8AE (Grenfell Mission at St. Anthony, N.F.).

6IG had 28 QSO's with a best DX of O9RA, Moscow, and Italy and Spain (R7) with 3.8 watts. This on 23 metres. Conditions here are very variable.

5SZ had a QSO with EU08 and found a Russian YL at the other end!

2DR has been away most of the time and has not been on the air at all.

6XL has nothing to report, having been on holiday.

The following did not report: 6BR, 5US, 2YU, 6YR, 6WD, 6TY. 2YU had 98 QSO's and has got going on 23 metres, using 2 watts. Best DX on 45 metres: LA, ET, ES and EA. Average R6. The usual Continental stations were worked, using 8 watts on 45 metres.

### Cheshire.

(Reports to 6TW by the 12th.)

2SO is still busy with tests on the C.F. Hertz, to complete the

investigation of this type as against the V.F. Twenty-three metres is in occasional use here and reports would be welcomed.

BRS98 logged 341 stations and finds a counterpoise not nearly so good as a direct earth for his receiver.

6TW is using about 3½ watts on 45 metres, with a C.F. Hertz, and finds he can work more G's this way than any other he has tried.

The following did not report: Rest of Cheshire!

### Lancashire.

(Reports to 5XY by the 12th.)

5MQ again hits the star station position with some very good work. Using 9 watts from H.T. accumulators, he worked SB districts 1 and 2, 30 NU's districts 1, 2, 3, 8, 9, and Canada second districts, besides the usual Continentals, who have been very numerous on 32 metres after 23.00. Waves used: 23, 32 and 45 metres. Good work, OM!

5MS has not been on all month. Holidays again!

5XY is away from home, so is cut off from his transmitter. Consequently no work has been done.

The following did not report: rest of Lancashire and all the Isle of Man. Hi!

### Northumberland, Durham, Cumberland and Westmorland.

(Reports to 2AIZ by the 12th.)

6QT reports bad conditions for the last three weeks. Now on 23 metres and would be glad of reports. He is carrying out tests with BRS44 on 8 metres.

6YV.—Your July report arrived too late for inclusion, OM, but your August report shows the stuff you are sending "up the spout" is good: 19NU, 1NC, 1NP, 8SB, 2SA, 1EM, 1EB, 2EG on 23 metres with 50 watts and Hertz. Best report, R6 from NU1AXA. This is the best higher power report for this month.

BRS44 reports poor conditions on the 23-metre band and good on 32-34 metres. He is helping 6QT with some 8 metres experiments.

5IO (better known as 5MO and 2RU) has now only one call, i.e., 5IO. He is back again at the old game and hopes to be on the air before these notes are in print on 90, 45 and 23 metres. Luck to you, OM!

### Notts, Derby and Lincs.

(Reports to 6MN by the 12th.)

6UO seems to have been busy among the Continentals, using 10 watts from batteries on 45 metres, but is having trouble with his aerial on this wave, and his transmitter on 23 metres. Total QSO's 73.

5SP has been on the "hospital waggon" all month, but luckily was able to use his hands, so managed 47 QSO's, but gives no details: Hope you are O.K. now, OM!

2ADC has obtained a licence, so BRS48 has become a sign of the past. A 45-metre transmitter has been built and some interesting work is being done on the A.A.

6MN had 40 QSO's using 8 watts pure D.C., with a Fotos 45-watt valve. Reports conditions very bad for the last four weeks.

5QT hopes to be on the air by September 18, long before these notes see daylight.

6AH has completely rebuilt, but has done no actual working yet. A little reception work, including Australian 2FC, has been carried on, but it is hoped to be in full stride by the end of the month.

BRS34 has got fixed in his new QRA, but is hampered by bad screening and aerial arrangements generally.

## German Notes.

By EK4CL.

On September 10 and 11 a short-wave meeting was held in Berlin during our big wireless show. The Berlin amateurs had much pleasure to greet here several prominent provincial and foreign colleagues. Amongst them we were very pleased indeed to be honoured by a visit from our Danish friend, ed7MT. After visiting the exhibition several very interesting discussions took place, particularly about c.c. It is hoped, that very soon a great number of EK's will use c.c. as our leading suppliers of quartz crystal have kindly reduced the prices for amateur purposes. A detailed paper was read about the needs for a far-sighted regulation of amateur transmission licences in Germany and passed on to our delegates at the Washington Conference. On the second day Telefunken kindly invited all our fellows to visit the very interesting short-wave stations of Nauen. (A.G.A., A.G.B., etc.)

May we thank most heartily the London amateurs for their kind telegram of kind wishes, and D. F. T. V. is anxious for still better co-operation and friendship with the British OM's.

General conditions for reception of EG's were not so good this month, because of strong QRN, but conditions seem to improve during early September.

All lists of calls heard for publication please send either via eg6CL or direct to Q.S.L. Section.—D. F. T. V.

## Q.R.A. Section.

I am indebted to many members of the R.S.G.B. abroad, who have so kindly sent me up-to-date lists of QRA's in their country, among whom I would like to thank the following:—

Señor Miguel Moya (EAR).  
M. Marcel Ocreman (RB).  
Herr Curt Lamm (DFV).  
M. Bruno Rolf (SRK).  
V. Vostriakov (EU-05RA).  
Señor Franco Pugliese (ARI).  
L. A. Primavesi (SU-2AK).  
H. Russell-Boyle (OZ-2AS).  
J. Steffenson (ED-7JS).  
Lieut. E. de Aveliz (EP-1AE).

These lists will be incorporated in the 1928 Handbook, but will not be published in the BULLETIN, owing to pressure on space.

If you cannot find QRA's anywhere else, do not forget to send a loose stamp to this section, and I will try and send them to you by return of post.

EB-4CK asks me to say that a fresh supply of QSL cards is now to hand, and if any British amateur has not received a card from him, in acknowledgment of tests carried out, if they will send their call-signs to this Section, the cards will then be sent to them.

Please see if you can help me with the QRA's requiring verification at the end of these notes.

"A little help is worth a heap of sympathy."

## Q.R.A.'s Found.

AC-FRJ given last month, should be AC-BRJ.  
EA-PP.—Julius Elbert, Friedrick Hebbelgasse 6 II. Graz, Austria.  
FM-8KR.—Pde Sainte-Croix, 1 Bd Mercier, Constantine, Algeria. (Inf. BRS46).  
EA-TX.—A. Ottillinger, Weiherburggasse 25, Innsbruck, Tirol, Austria. (Inf. G5AD).  
AQ-1DH.—Kenneth Mummery, Radio 1DH, Kirkuk, Mesopotamia. (Inf. G5AD).  
EAR-C2.—M. L. Colom, Apartado 491, Barcelona. (Inf. 2BXM).  
NC-1AD.—G. G. Mackay, Newcastle, New Brunswick. (Inf. G6YL).  
NU-2BDJ.—W. H. Werth, 610, West 136th Street, New York City. (Inf. BRS29).

(G)

2BPA.—L. H. Cordon, 1 Central Avenue, W. Bridgford, Notts.  
2BPH.—A. R. Parker, "Glendaragh," Daisy Lea Lane, Lindley, Huddersfield.  
2BPR.—H. E. Rainbow, 28, Spencer Avenue, Coventry.  
2BQJ.—J. G. A. Roe, 24-26, Bore Street, Lichfield, Staffs.  
2BRI.—D. D. Marshall, 41, Kelvinside Gardens, Glasgow, N.W. (Inf. GC-5YG).  
2BSJ.—A. F. Hembury, 57, Winstead Street, Battersea, S.W.11.  
2BXM.—F. C. Mason, 80, Forburg Road, London, N.16.  
2AI.—W. J. H. Kempton, 34, Raglan Road, Plumstead, S.E.18.  
2AP.—F. Adams, 16, Thurso Street, Wick, Scotland. (Inf. GC-5YG).  
2BG.—G. R. Silverthorne, 4, Kimberley Road, Six Bells, Aber-tillery, Mon.  
2CN.—C. B. Cleeland, 31, Dufferin Ave., Bangor, N. Ireland. (Inf. G6BB).  
2CT.—C. L. Thompson, 5, Sinclair Grove, Golders Green, London, N.W.11.  
2HY.—J. G. J. Goddard, The Croft, Cark-in-Cartmel, Lancs.  
2TU (P).—Radio Transmitters' Union (N. Ireland). Hon. Sec.: J. A. Sang (GI-6TB), 22, Stranmillis Gardens, Belfast.  
5YN.—E. Y. Nepean, "Loders," Andover Road, Winchester.  
6BW.—A. B. Whatman, The Cottage, Twyford, Winchester.  
6SB.—N. Mickle, 37, Bromham Road, Bedford.  
6YL.—Miss B. Dunn, Lilystone Hall, Stock, Essex.  
6ZW.—A. Van Zwanenberg, Gurrey Lodge, Finchely Road, N.W.2.

### CHANGE OF QRA.

2KK now "The Bungalow," Willow Ave., Edgbaston, Birmingham.  
2OZ now 6, Woodhurst Road, Acton, London, W.3.  
2PZ now "Bourne," Ashlawn Road, Hillmorton, Rugby.  
2XV now 117, Victoria Road, Cambridge.  
5PO now 37, Old Chester Road, Bebington, Cheshire.  
5RB now Swinley House, South Ascot, Berks.  
5YI now 86, Victoria Road, Sherwood, Nottingham.  
6BN now "Fieldside," Groespuan, Welshpool.  
SMZN now Gama Latin, Goteborg. (Inf. G6YL, G5AD).  
ED-7HM now Kirkestrade, Neksö, Bornholm. (Inf. G6PP).

### CHANGE OF CALL SIGN.

2ATZ now G6IO.  
2AXO now GI-2CN.  
2BMB now G-2BG.  
G6WT now FN-2C.  
EI-1PL now EI-1ZA.  
SB-1QA now SB-1BU (Inf. BRS6).

## QRA's WANTED.

G2YD, SQ-BX, ET-PKV, OA-7CH.

## BRITISH RESEARCH STATIONS.

### Numbers Issued.

BRS 107.  
BRS 108.—J. W. Pettifor, 15, Gunthorpe Drive, Sherwood Estate, Notts.  
BRS 109.—W. McG. Gradon, Garlieston, Corkickle, Whitehaven.  
BRS 110.—P. E. Hind, 24, Abinger Road, Bedford Park, W.4.  
The "Wireless World" and this Section are still endeavouring to obtain particulars of a large number of British Amateur Call Signs of which we at present have no information. We are particularly anxious to verify the correctness or otherwise of the undermentioned QRA's, and we appeal to members of the R.S.G.B., who can give us AUTHORITY information about any of these, to send a P.C. or a note via the Q.S.L. Section with your cards, without delay.  
I would appeal to members who are resident within easy reach of any of these addresses, to call and verify whether these stations are still licensed, or if the call has been relinquished, which is just as important for our records as the former.  
2BA.—Dr. W. Eccles, F.R.S., City and Guilds Technical College, Leonard Street, E.C.2.  
2NI.—F. Akister, 117, Glebelands Road, Ashton-on-Mersey.  
2PK.—Universal Radio Co., New Bridge Street, Newcastle.  
2QT.—C. C. Barnett, Winton Cottage, S. Perrott, Mesterton, Somerset.  
2TJ.—J. Fife Mortimer, Hoylelake Road, Moreton, Cheshire.  
2WB, 2WC.—W. Bannister, 62, Knoll Street, Rochdale, Lancs.  
2ZH, 2ZI.—B.T.H. Co., Ltd., Rugby.  
5CL.—C. Woods, Woolwich, S.E.18.  
5HB.—H. Brooks, Milton Works, Chester.  
5NL.—H. C. Turner, 45, Manley Road, Whalley Range, Manchester.  
5OI, 5OJ.—J. Warburton, 47, Clayton Road, Bradford.  
5OS (P).—W. H. J. Coombs, 29, Alexander Road, West Park, Chesterfield.  
5WG.—G. M. Jones, 49, Baron Road, Chadwell Heath, Essex.  
5XM.—F. Eustance, Briardale Road, Liverpool.  
6DF.—G. W. Phinnimore, Dale Road, Matlock.  
6HA.—C. W. Root, 16, Empire Road, Dovercourt.  
6HL.—H. H. Speke, 12-14, Bilston Street, Wolverhampton.  
6KL.—W. H. J. Coombs, 29, Alexander Road, West Park, Chesterfield.  
6OI, 6OJ.—J. Timbrell, "Rydal," Wall Heath, Kingswinford.  
6PO.—J. Macdonald, "Lynwood," Castle Road, Weybridge.  
6RC.—N.E. Coast Wireless Co., Ltd., 40, Crowntree Road, Sunderland.  
6TI.—L. Baldwin, 244, Dudley Hill Road, Undercliffe, Bradford.  
6UN.—A. J. Howell, Pedmore, Stourbridge, Worcester.  
Here is the present list of calls of which we want reliable information. Please look through it carefully and see if you cannot help to still further reduce it!!!

2's.

ah, at, bf, bj, bk, bl, bn, bp, bq, br, bt, bu, bv, bw, cd, cf, cg, cj, cr, cu, cv, dk, dm, dt, dw, fi, fn, fo, fy, gb, gc, gh, gm, gx, hf, hi, ho, ig, im, io, ip, is, ji, jt, jy, ki, kj, ko, la, lc, ll, lk, ma, mh, mp, mr, mt, mu, mw, ng, nx, ob, os, ow, pa, pb, pm, qg, qo, qw, qx, ri, rn, rv, sa, sg, td, ts, ut, uu, uw, vh, ww, wx, xa, zg, xs, yb, yc, yd, yi, za, zf, zh, zn, zx.

5's.

ah, al, am, ap, ay, bf, bm, bo, bs, bx, bz, ch, ci, cm, cn, co, cz, df, dl, dr, du, dw, dx, dz, fb, fe, fg, fh, fi, fo, fp, fy, ga, gc, gk, gl, gr, hf, ho, ht, ib, ih, ij, il, im, iq, iu, ix, iz, jf, jt, ju, jv, kd, kj, kn, kt, kv, la, lg, lm, lq, lr, lt, lx, lh, li, lk, ln, lo, lp, lq, ls, lt, lx, ma, mf, nh, ni, nk, nm, np, nr, ns, nv, nx, oa, of, og, oh, on, oo, op, oq, or, ou, oz, pa, pb, pc, pf, pg, pk, pt, pv, qa, qf, qh, qi, ql, qn, qo, qs, qw, qy, rg, rj, rm, ro, rr, rv, ry, sa, sb, sg, sh, sj, sr, sw, sy, tb, tc, tj, to, ty, uc, ui, uj, uk, ur, ut, uu, va, vf, vh, vi, vj, vm, vo, vq, vs, vz, wf, wj, wk, wl, wo, wr, ww, xa, xb, xf, xg, xj, xk, xl, xv, ya, yb, yf, yh, yp, yv, yy, zb, zd, zi, zj, zl, zm, zp.

6's.

ac, ag, ak, am, an, ar, ax, az, ba, bi, bk, bl, bs, bu, bx, ca, cb, cd, cf, cg, cm, cn, co, cr, cs, ct, cu, ex, cz, db, dh, dl, ds, dt, dv, dx, ff, fi, fj, fm, fn, fo, fp, fu, fx, ga, gb, gd, gi, gj, gk, gp, gs, gu, gv, hj, hk, ic, id, if, ih, ij, ik, in, ip, iq, is, iw, jc, jf, ji, jn, jp, jq, jt, jy, kp, kq, kv, kx, ky, kz, la, lg, lh, li, lk, ln, lo, lp, lq, ls, lt, lx, ma, mf, mh, ml, mo, mr, mv, my, na, nd, nm, nu, nv, nw, ny, oa, oc, od, of, ol, oq, or, os, pc, ph, pm, pn, ps, pv, pz, qf, qi, qj, qm, qn, qp, qq, qr, qx, rg, rh, ri, rk, rn, rt, ru, rv, rx, rz, sc, sd, si, sj, sl, sn, so, sp, sx, sy, tc, tf, tj, tk, to, tq, ts, tt, tv, tz, ua, ub, uh, ui, uj, uk, va, vc, vd, vf, vg, vh, vk, vm, vq, vs, vt, vu, vy, wb, wc, wd, we, wf, wp, wr, wu, wy, wz, xb, xj, xk, xm, xn, xo, xq, xw, xx, yb, zh, zi, zk, zl, zm, zn, zq, zr, zs, zt, zu, zv, zz.

G6BT,

MANAGER,  
QRA Section.

# Correspondence.

## Instructions to Correspondents.

*We are always glad to hear from members. Correspondence published in these columns should be written clearly on one side of the paper and marked "For Publication."*

*All correspondence should be addressed to the Editor, T. & R. BULLETIN, who reserves the right to refrain from publishing any material which is lacking in general interest or for other reasons. Correspondence for publication will not be acknowledged.*

*Correspondence must be kept reasonably brief.*

### 2SH IN ICELAND.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—Last night I was QSO with Mr. Hogg, 2SH, signing in 2SW, QRH 43 metres (about), and he asked me to let you know that he is working.

He will be on at 10.30 p.m. B.S.T. each night.

Yours truly,

A. C. SIMONS.

### AREA NOTES AND NEWS.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—I agree with 5NJ's letter on the subject of "Area Notes and News" in the September BULLETIN. I would suggest that notes should appear as follows:—

"G6EE will be working on 45 metres during December at 20.00-21.00 G.M.T. Reports wanted from stations beyond 100 miles, giving details of QSS and WX."

Then BRS1001 sees a chance of co-operation with someone investigating the same subject as himself and knows that his QSL card will be of use to 2EE. The cutting out of useless "padding" regarding Jones' DX would leave more space for technical material. When a station owner has collected any interesting data, let him publish it as a short article.

At present it is difficult to know when a QSL will be of service to a transmitter, as there is no indication of the power used. Could some code not be devised to indicate the distance beyond which reports are required?

With regard to a letter on QRM\* in the same issue, I think that call signs of alleged offenders should not be published, as that will cause bad feeling in the society.

I should like it if the "new call signs" were published as a loose leaf, which could be pasted into the call book. Cutting out the list of calls may spoil an article kept for future reference, and it takes some time to hunt through back numbers.

Yours sincerely,

ALEX. M. ROBERTSON,  
GCBRS62.

27, Ladysmith Road, Edinburgh, September 15, 1927.

ED. NOTE.—\*This is agreed, and the fact that the letter in question quoted a call sign of a station escaped our notice when preparing the issue for press. We feel very strongly that letters should be impersonal and request members to help us by refraining from such a practice. The fact that one member is unable to understand what another member is doing should not be taken as evidence that the other station is not performing useful work.

### QRM.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—The letters of G16WG, GW11B, 6QB and 5YM in the "Notes" of the September issue of the BULLETIN were interesting, and with which most amateurs will agree, though I have no knowledge of the case G16WG cites. Generally speaking, high-power fone transmissions, in conjunction with gramophone musical items, during the greater of the free hours, by QRO hams, certainly causes a great deal of interference and annoyance to QRP amateurs, the QRM of which is much greater than the rawest of A.C. QSB's.

I have found, for roughly seven or nine months of the year, it is easily possible to establish and maintain contact on 45 metre transmission. With the bulk of the continental countries using an input of not exceeding one watt, I have 21 countries to my credit on that power, 14 of which have been regularly worked on .4 of one watt. With these powers the effects of QRM from powerful fone stations can be well imagined.

May I suggest, in all seriousness, that the next QRP tests, instead of 5 or 10 weeks, "shall be held soon," and that the input source be "one standard type high tension receiving battery." I feel sure the results would convince many hams of the desirability of reconstructing their "Perkers." 500 to 1,000 miles working is quite easy under "normal" conditions using the above inputs.

I certainly do not agree with 5YM's statement that "all they

(QRP) want to know about a certain transmitter aerial, etc., can be learned within a year."

The study of extreme QRP is worth extended study and experiment with slightly modified valves, etc., whilst the resultant data is more reliable than is possible with high power.

With a "certain" circuit on 45 metre, say, using 3rd harmonic and a LS5 valve, 5YM will find five years' food for activity in his leisure hours in erecting and effecting transmission tests up to 1,000 miles and collection of data on prevailing conditions, etc., "both sides" with an input of not exceeding .1 of one watt. This can be, and is done, on power less than the above by a "nought."

I am, yours, etc.,

A. H. WILSON.

8, Stanley Street, Hanley, Stoke-on-Trent.

### WHAT IS WRONG?

To the Editor of T. & R. BULLETIN.

SIR,—This is my maiden excursion into the correspondence columns of the BULLETIN, and I should still be on the slips but that 5YM has raised a question on which I feel compelled to make a few remarks.

I would remind 5YM that amateur radio has now taken a broad social aspect—an international social aspect, priceless to the mutual toleration and understanding of races, nations, creeds, classes and other factions superficially at variance with one another. And this splendid reconciliation, which we call "hamship," has found a concrete expression in the QSL card. No experimenter need be ashamed of papering his walls with these cards, for they are symbols of humane fellowship.

Cannot "QSO and QSL and real experimental work go together," hand in hand like lovers? I flatter myself that this station is purely experimental, and yet QSL cards roll in in dozens. "Conditions" experiments do need a stabilised transmitter, but at this station both stabilised and flexible transmitters are run. The stabilised transmitter is busy with angular propagation experiments, fulfilling schedules and working stations in all directions, and in the process (horrors!) generally propagating QSL cards as well. The flexible transmitter works into an A.A., as 5YM would wish, but sometimes it is coupled to a radiating aerial for special purposes.

I estimate the time which must elapse before my results can be usefully summarised in years. For two QSO's my note may be D.C., but at the third H.F. fading may be present turning it into R.A.C. I may QSO the States four times on certain days and at certain hours, but what about other days, other months and other hours? Unfortunately, I am not always in a position to feel justified in committing a station to a schedule, for my time is not my own. Therefore I must transmit whenever opportunity offers, working throughout years until the chain is complete. And this, I take it, is the position of many other amateurs.

Is the QRM on the 43-46 metre band really as bad as some people make out? Looking through my communications for the last eight weeks I find that only 3 per cent. were entirely cancelled on account of QRM and about 7 per cent. necessitated repeats on one or both sides. May I suggest to those who shudder at QRM a course of 600 metres under ship's operating conditions, and the reception of GFA and GBR on a heterodyned crystal set?

Yours sincerely,

G. H. RAMSDEN, G6BR.

Overdale, Ilkley, Yorks.

### CALIBRATION WAVE SERVICE.

To the Editor of T. & R. BULLETIN.

DEAR OM,—As a provincial member, I am very pleased to see 6CL's renewed agitation for a calibration wave service. As he points out, we get nothing but the "BULL" and the QSL service, not even a ham to chew the rag with, here at any rate! I have twice calibrated my wavemeter, on NU1XM, but it is a difficult job, both to find him at each QSY in the QRM and to take accurate readings on such QRZ signals as his are so often. Also, when I do get up for half the night I prefer logging DX to chasing around the scale after one station only; it seems a waste of time. Please do show some signs of activity, even if it is only to say "sri ND OM."

To change the subject, cannot something be done to stir up G ops to cut out the QSZ business? Normally unless QRM or QRN is bad or the other fellow has a particularly chirpy QSB or ghastly fist, QSZ is quite unnecessary on a QRK above R5 to 6: all hams ought to be able to do 12 per at this strength. Why not try out the suggestion made by Miss Lorentson, NU1AID, in QST for July, 1926? This was for a new Q signal . . .

"QWP."—Please send to me at . . . words per minute, with the corresponding question. Thus, a new ham could sign off . . . test G2NEW at qwp 12 k; so an old hand would not start off at 20 per and have to say it all over again. Similarly a fast man would get fast stuff without having to ask for it. How about giving it a trial, gang?

And another thing, why do people send "pse rpt" or "pse rept" for "please repeat" when there is a perfectly good Q signal in "QTA." "Rpt" is also used for report, why give it two meanings?

Vy 73 es best luck for the "BULL."

K. E. BRIAN-JAY,  
(EG2HJ, T. & R. A.R.R.L.).

Ed. NOTE.—Arrangements are now in hand for the sending out of calibrated waves. Details will be published in due course.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—Just a line to say that I have been granted a licence for artificial aerial transmission. Call sign 2BPH. Best 73's, OM.

Yours sincerely,  
A. RAYMOND PARKER, Associate I.R.E.

QSL'S.

To the Editor of T. & R. BULLETIN.

DEAR OM,—Referring to the letter of ENOLY with regard to QSL's, I shall be glad to receive his QSL for QSO of May 13, as up to the present same has not come to hand.

The following now owe me cards for QSO's many months old:—SMWR, SMWT, SMRA, SMVG, SMVH, SMYG, ED7BX, ED7XU, LAIJ, EIIWW, EIIGN, ENORZ, EN2PZ.

If any of the above have not received my card I shall be very pleased to forward another.—73's,

R. F. BARTLETT (G6RB).

To the Editor of T. & R. BULLETIN.

DEAR SIR,—May I record my general agreement with the letters of Messrs. F. R. Neill and E. H. Robinson in the September issue of the BULLETIN?

As some of your readers know, I spend all my time studying Fading, and I am much too busy to transmit. But I have often asked myself what useful purpose is served by the notes section and also by some other parts of the BULLETIN. Of course, if members are content to treat the Society as a sort of "Fishing Club" the notes section will furnish them with an opportunity of recording the triumphs which they have made in their art, which, I think, has more than one point of resemblance to fishing. To give but one example: There is a certain type of fisherman who ties a fly to the end of his line and all day long whips the river, indulging in the game of "Chuck it and chance it." It seems to me that a lot of DX work is "Chuck it and chance it." I am fully prepared to believe that DX reports are at least as veracious as the average fisherman's yarn. But I do not think that they have any greater scientific value. It has been proved *ad nauseam* that with quite low power it is possible to communicate over immense distances on low wave lengths. Individuals may amuse themselves by repeating the experiment, but no scientific purpose is served by these "Chuck and chance it" methods. Working to schedule is, of course, an advance, but it does not go to anything like the heart of the matter. To some people the idea of research in radio is linked with that of transmission. They are mistaken. Many of the problems of transmission have already been solved just as have many of the circuit problems of reception. Transmission is (as far as a non-transmitter can see) almost entirely a question of circuits, aerials, and "time spent at the key." But there is probably more to clear up about reception (apart from circuits) than there is about the whole of transmission. Who knows anything about fading, swinging, night-distortion, re-radiation, blind-spots (not much heard about these last nowadays, I notice). Herein lies the opportunity of the amateur.

It will be well if the R.S.G.B. organise something in the way of definite research work. What lines should be first tackled is a matter for consideration. But problems capable of being tackled by amateurs exist in plenty. Personally—if I can help—I will, if wanted.

Yours faithfully,

H. A. P. LITLEDAL.

To the Editor of T. & R. BULLETIN.

A.C., QRM.

DEAR SIR,—In the July issue of the BULLETIN you were kind enough to publish a letter from me asking for stations who would be prepared to undertake not to work *raw* A.C., QRM factories to drop me a card to that effect, and I promised to publish the result.

The result was most disappointing, and I received only four cards, one of which was from an A.A. man, which hardly counts, although it shows that he is not so apathetic as many transmitters.

The nucleus of the "anti-raw A.C." club is GW17C, G2FB, GI5MO, GI6YW, and G2ABA.

There are two reasons possible for the small returns, viz., either laziness or opposition. To think of opposition to a campaign against raw A.C. from the countless British stations who have complained to me about it seems foolish—but there is the result of a vote before you. Nevertheless, the four stations above adhere to their undertaking and will not work *raw* A.C.

My good friend Mr. Carlisle (6WG) replies to my letter in the September number, and I cannot but agree with his remarks, in general and in particular, about 'fone interference. His remark about taking the "beam out of our own eye" (ear?) is singularly appropriate to those attempting to work on 32 metres!

I am still ready to receive cards *re* "raw A.C." resolutions.

Yours sincerely, T. P. ALLEN (6YW).

GREETINGS FROM POLAND.

To the Editor of T. & R. BULLETIN.

SIR,—While QSO with ETPKV (Poland), I took the following message: "Best 73 es luck to all British hams.—(Signed) ETPKV."

Please put this in the "BULL." OM—TNX.—Yours hamfully,

E. R. COOK (G6UO),  
M.R.S.G.B.

Crooked Billet Street, Morton,  
Gainsborough, Lines.

CHANGE OF QRA.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—Please note that G6HF is now transmitting on 45 and 23 metres from the temporary address below, and will be obliged if you put a note in the "BULL." to that effect.—Yours faithfully,

M. H. WYNTER-BLYTH (G6HF).

c/o Miss Dixon,

"Whinwood,"

East Boldon, Co. Durham.

September 19, 1927.

KNOTTY KNOTS!

To the Editor of T. & R. BULLETIN.

DEAR SIR,—In his reply to my little criticism of his use of the word "knot," Mr. Wilson quotes such eminent authorities that I feel it is almost akin to presumption on my part to pursue the matter further; more especially since my only poor qualification is that at one time I earned my living on the sea.

I am always ready to learn, and I am sure Mr. Wilson, who appeals so earnestly for truth and accuracy, will not mind taking a little further trouble to rescue me from the depths of error. His reply so far is not sufficiently explicit. On the contrary, he has only succeeded in making me wonder what length of knot-marked log-line a ship usually carries if, as he states, a "knot" is a division of the knot-marked log-line and the distance from London to Capetown is 5,721 "knots."

Further, I am genuinely anxious to know how your contributor converts 5,721 knots into 6,625 miles.

May I, in conclusion, express the hope that my language is not, this time, too expressive and forceful for Mr. Wilson.—Yours faithfully,

F. W. BANNISTER.

6a, Pendennis Road, Streatham, S.W.16.

September 27, 1927.

## Calls Heard.

January 30, 1927, to May 31, 1927, by T. H. HARRIS, "Westhoek," 56, Mintaro Ave, Enfield, near Sydney, N.S.W., Australia (via G6CL).—G—2sz, 2lz, 2od, 2dx, 2xy, 2jb, 2rg, 2cc, 2vj, 2qb (?), 2kf, 2nh, 5yk, 5by, 5nw, 5tz, 5wq, 5hy, 5xy, 5kh, 5ma, 5jw, 5rz, 5ls, 5dh, 5vl, 5qv, 5o (c or k), 6uz, 6al, 6nh, 6bd, 6qh, 6wm (?), 6zm, 6td, 6br; GI—2it, 5nj, 6mu; GW—18b.

Lieut. F. RODMAN (AI2KT), Jubbulpore, India, May to July, 1927. Receiver 0-V-1. 5-metre vertical aerial (indoor, with no earth). 19 to 23 metres: G—2ao, 2lz, 5by, 5yu, 5yx, 6ko, 6yv, 6yk; GI—2it, 6mu; EB—4aa, 4ww, 4zz, 4rs; EF—8ct, 8fd, 8ft, 8cl, 8yor; EM—smuk, smtn; FO—a3z, a4e, 14f, a5x, a8v, EI—1ay; SB—1ap, 1ib; NU—1ii, 2or, 2nm, 2agn; VS—1ab; AF—1b. 30 to 45 metres: EG—2kz; EF—8jf; ER—5ab; EN—ofp; EK—4uu; EL—1f; SA—cb8, en4, bal; SB—1ap, 1al, 1ar, 2af, 7ab, snni; SU—2ak, f; FO—a5o, a9a, 3sr.

ayg, lpl, naw, ndm, vdc, ef, 8est, 8nn, eg, 5mq, gkt, ei, 1ay, fl, 1ab, nc, 1ap, 2bb, 2bj, nm, 9a, nq, 2cf, 2cu, 2ro, nr, 2fg, nz, ez5, sa, cb3, cb8, sb, 1ah, 1ar, 2ax, 6qa. Forwarded by BRS29.—Calls heard from August 7-20, 1927, by Mr. WALTER H. WERTH (NU2BDJ), 610, West 136 Street, New York City, New York, U.S.A.

EB—4yz, w1; EE—ear6; EF—8af, 8eo, 8fiz, 8fj, 8jc, 8jf, 8jj, 8qrt, 8sm, 8tis, 8yor; EG—2ah, 2cc, 2dr, 2oq, 2zz, 5dh, 5xy, 6mu, 6pu, 6td; EK—4uah, 4uu; EN—0ja; EP—1ae.—Forwarded by BRS29.—European calls heard by Mr. Gus Lux (NU2CS), 1396 Avenue A, New York City, New York, U.S.A.

Heard by NC3JL, J. B. Lyon, Woodroffe, Ontario, Canada:—EB4AR, EF80EO, EG2IT, EG2SW, EG5NW, EG6OO, EG6YQ, EG6YV. All cards answered.

Heard by H. R. Griner, 121, Harrison Avenue, Baldwin, L.I., N.Y., U.S.A., April 25 to May 25, below 35 metres:—EB4AC, EB4WW, EF8JF, EG5HS, EG5XY, EK4UA, EK4UAH, EP3FZ, ES2CO.

These were extracted from the *New York Telegram*.

A. W. G.

EG calls heard from July 11 to August 27 by EUO5RA (Moscow): 2gf, 2dn, 2rk, 2xy, 2hk, 2mg, 5cv, 5ml, 5jo, 5ja, 5pd, 5up, 5fs, 5tz, 5sz, 5iu, 5cd \*, 5wi, 5ad, 5kn, 6xg, 6fd, 6cl \*, 6nf, 6ut, 6pu, 6ktd, 6hp \*, 6cc \*, 6ry, 6nx, 6yd, 6uo, 6xp, 6at, 6cy \*, 6al, 6yk, 6oo, 6pi, c6wl, c6nx \*. (\*) QSO with EUO5RA.

# The Mesny Circuit.

By HENRY PIRAUX (ef-8PY).

It seems quite strange to several amateurs that the Mesny circuit is not known as it would be by the English amateurs. This state of things is more strange, when we see that it is popular in all Europe, and it is my aim to give some views on it and to describe it.

First, the name. In France, it is called *Mesny*; in England there is a strong tendency to call it *Eccles-Mesny*, while in the States, they put on it the name of *Mesny-Vallauri*. We know by experience how the priority of discoveries, especially in radio, is running in this world, and that many disputes arise. The fact is that several experimenters worked in the same time on the same subject, *i.e.*, the generation of oscillations by two valves working simultaneously, each on one-half of a cycle. M. Mesny himself, who, like all scientists, is more than modest, doesn't like to see his name backing his circuit; in fact, the great majority of amateurs *do* back it, and it seems they are right.

The circuit by itself is not as simple as all the other one-valve circuits (Armstrong, Colpitts, Mahoux, Hartley, etc.), but it oscillates far more easily.

Consider an ordinary Hartley circuit as an example. The constancy of oscillations is ruled by the position of the filament clip, and by it alone; by its move, one can give the grid or plate coil the greater number of turns, hence in some cases the oscillations cease promptly. Experimenters have noticed that this filament clip was not always satisfactory.

Looking at the Mesny, one can see that this difficulty is avoided. There are two coils, grid and plate, tightly coupled together, with the peculiarity that each end of the coil is connected to an electrode of same name.

Here is an application of the old Armstrong circuit, well known by the amateurs; if two coils, of suitable sizes, respectively placed in the grid and plates circuits of a valve, are coupled together, local oscillations take place, without any damping at all, by the plate-grid feed-back effect. This can be applied to the Mesny; if we couple the coils, we see that oscillations set up. But the comparison ceases here, for we have two valves functioning together; by the repetition of the current in each coil, one can see that of one cycle, each half is produced by a separate valve. Besides, the current clips are placed on a neutral point of the coils (the middle), so that, theoretically, they carry *no high-frequency current*.

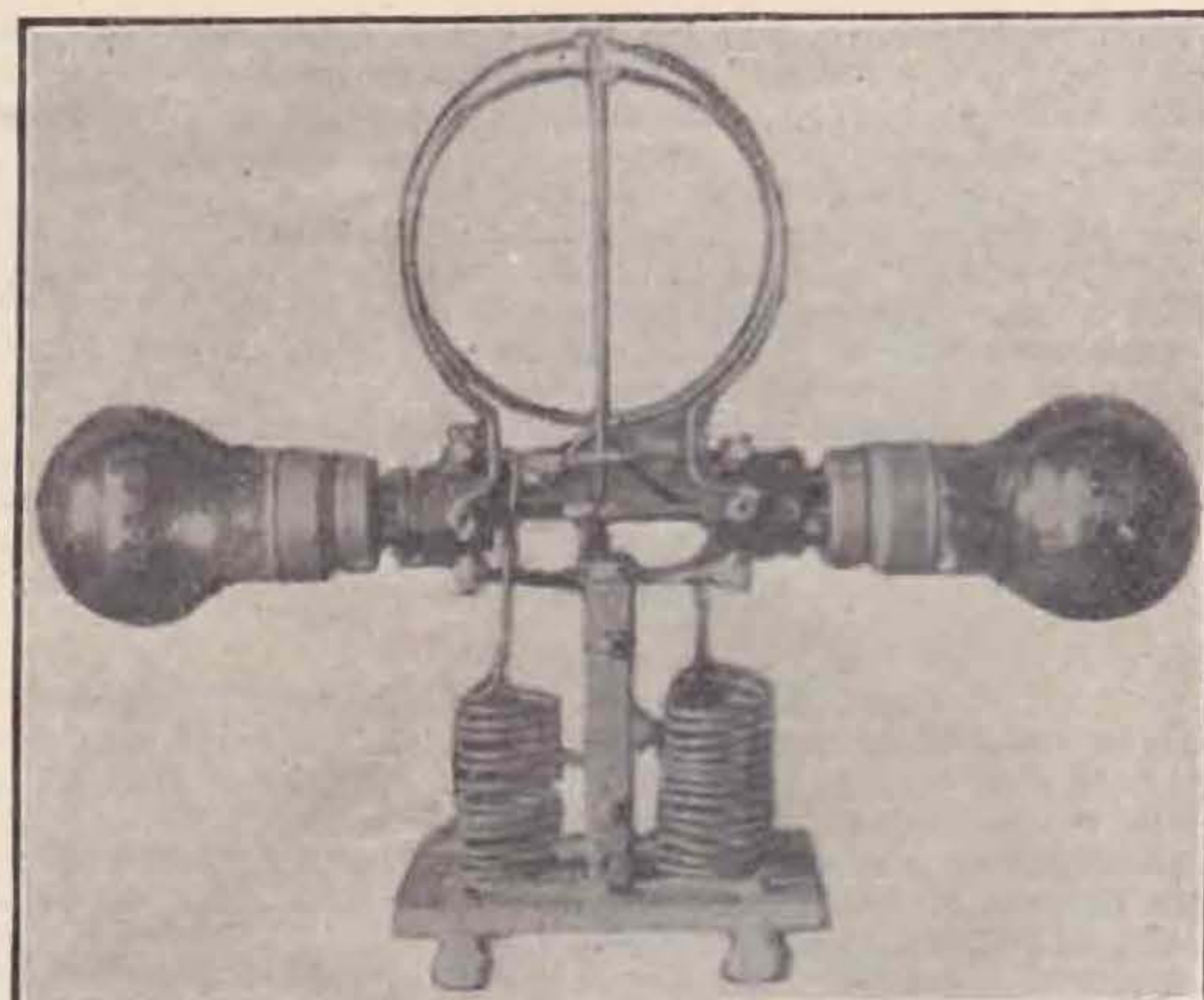
If the clip is placed too far from the middle, the set will not cease to oscillate, but the losses will increase, due to stray H.F. currents in the H.T. sources.

Normally, with a good Mesny, no choke coils in the H.T. leads are necessary; this quite good, for a good choke coil is difficult to design and keep efficient on S/W.

The grid coil receives its current in the same manner; a clip in the middle, and that is all.

The coils must have their flux reversed; in general, the plate coil must have 1-3rd more turns than the grid coil.

Generally, the resonant coil is the grid one, the plate coil playing the rôle of pick-up; so, its number



## Data on EF8PY's Ultra Short Wave Transmitter.

Mesny circuit, using two 20-watt Fotos valves.

Grid coil 4-5ths of a turn, 4 in. diameter.

Plate coil 1 1-3 turn, diameter slightly superior to the grid coil.

Wire for the coils, No. 9 s.w.g.

Filament chokes, 13 turns of No. 19 s.w.g., 1½ in. in diameter; wire d.c.c.

Behind stands the H.T. panel, giving from 200 to 500 volts R.A.C., or from 800 to 1,200 volts A.C.

of turns is not at all fixed by a law. With a Mesny tested once by the writer, the grid coil had eight turns, and the plate coil was changed from 10 to 20 turns without any change in the oscillations.

Of course, no blocking condenser is required, the H.T. being cut off by the space separating the two coils.

A thing that would seem a disadvantage in this circuit is the fact that it requires two valves; but this is not quite true, for here the two valves add their output power, while a transmitter having two valves in parallel gives an output quite inferior to what is expected. The Mesny, because it is so efficient towards the full use of each valve, can oscillate with valves having different characteristic curves; so, one of them may be of the 45-watts type, and the other a 60-watts affair; of course the 45-watts "bottle" will support more heat dissipation, but the oscillations will not be affected at all, and, if runned normally, the total wattage would be 105 watts.

Should one of the valves blow out while "pumping," the set *doesn't cease to oscillate*, because the general scheme is then a sort of R.F.B. circuit; but to get the best results, it is necessary to readjust the coupling.

In fact, the Mesny circuit is nothing other than a push-pull system arranged for transmitting.

All systems of antenna coupling can be used, and in this, the amateur who would like to try the Mesny may use the coupling he has the habit of using.

Here is some data on the building of a Mesny oscillator:—

For the 23-metres band, the grid coil will have six turns of thick bare wire, 4" in diameter, each turn being separated from the following by ½"; the plate coil will have nine turns of the same wire, but 5" diameter, and the aerial coil, with a 6" diameter, will have two turns.

For the 45-metres band, use same wire, diameters, and method of spacing, give the grid coil nine turns, the plate coil 12 turns, and the aerial three turns.

For those interested in the 90-metres band, the coils will have the following number of turns: grid 15, plate 25, aerial 6.

The best way to build a Mesny is to have the coils wound one on the other, the grid coil being the inner one, and the aerial the outer. Sometimes, grid and plate coil are wound on the same cylindrical form, two turns of the plate coil being separated by a turn of the grid coil.

On higher wavelengths, the Mesny, though working perfectly well, doesn't seem to become superior to any other classical set. Its working advantages are put into evidence when going down the scale of W/L.

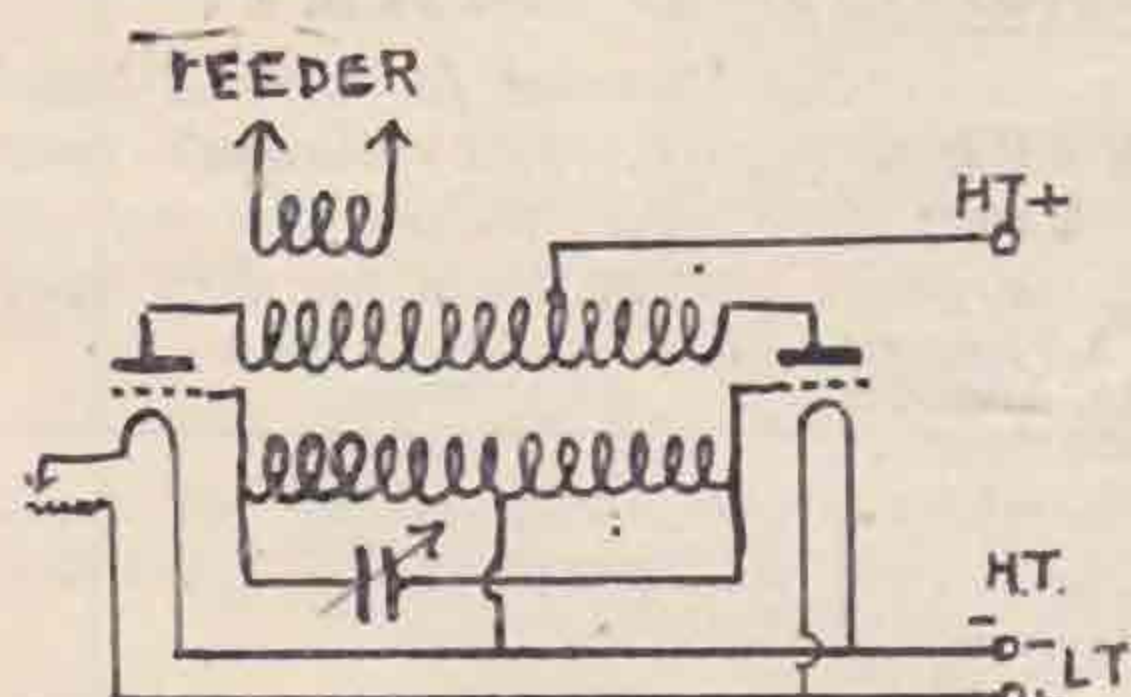


FIG 1

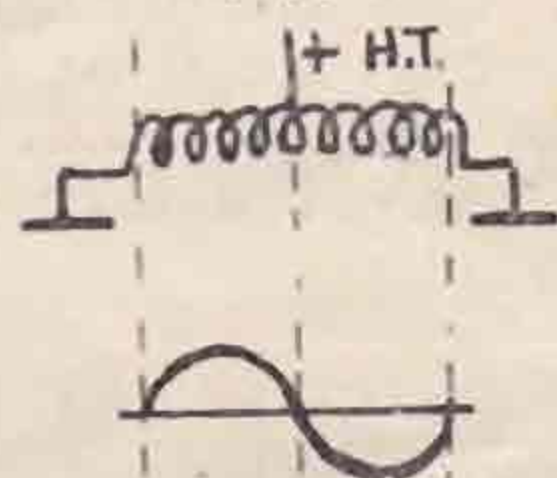


FIG 2

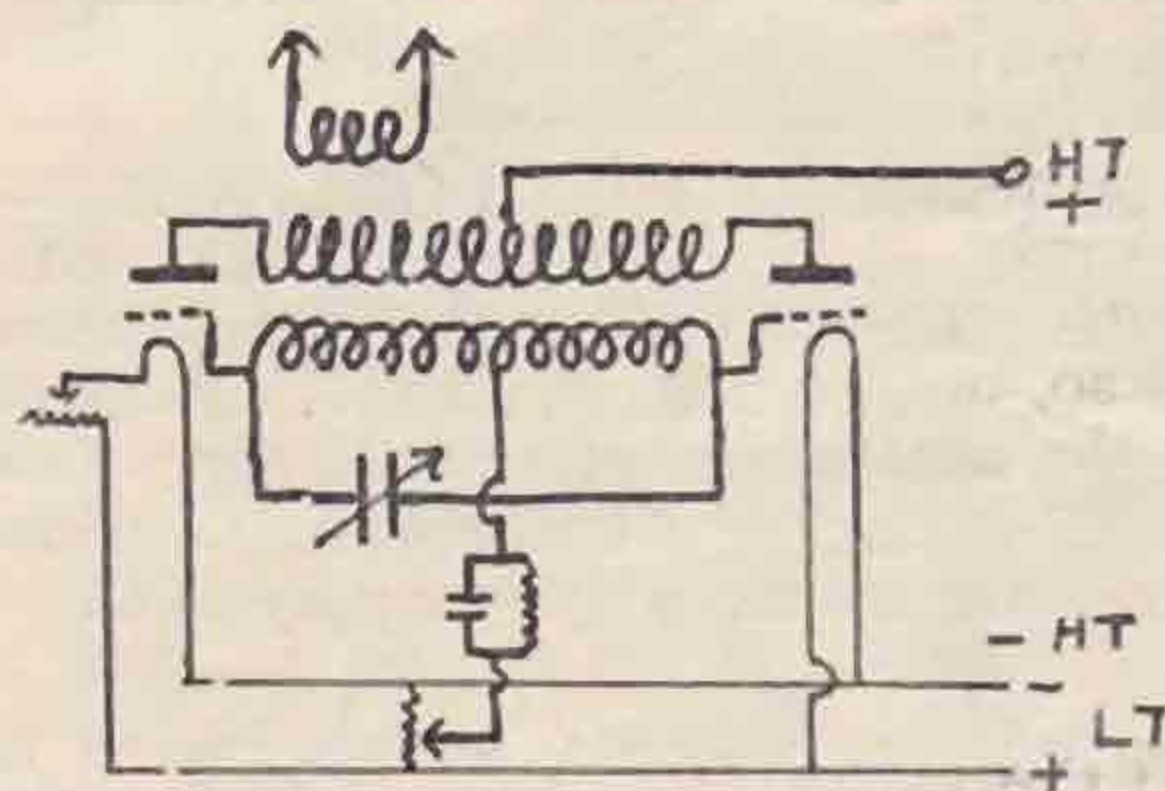


FIG 3

This circuit is the best to be used on ultra-short wavelengths; the writer possesses a Mesny oscillator, on QRH 2.7 metres, which functions quite satisfactorily (though the valves are not of the low-loss types); using special valves and smaller coils, it is quite feasible to work below 1.0 metre.

A last advantage of the Mesny is that the variation of the tuning condenser gives no "oscillation holes"; the oscillations are to their utmost from the beginning to the end of the variation, save of course the damping created by the higher values of C; also, if the maximum value of this condenser is too high, the oscillations cease, but this is a phenomenon which is well known in radio, and which need not to be discussed here. Compare this

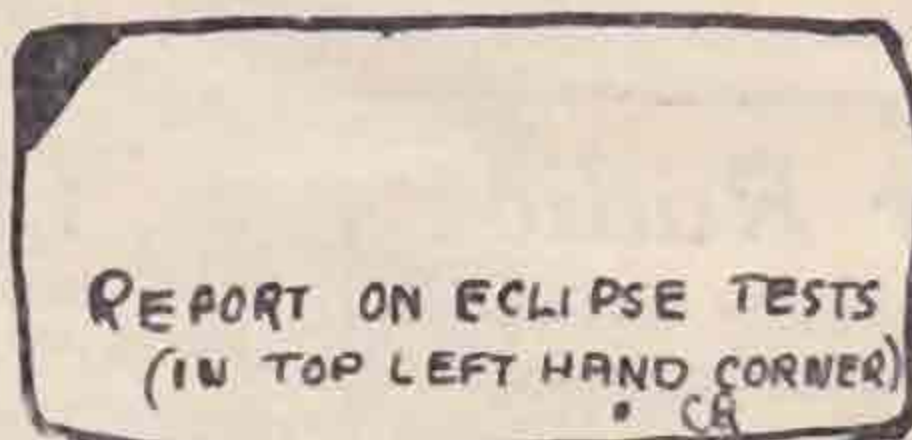
advantage of tuning over a complete band by the variation of the condenser without "holes," with the re-tuning, change of clips and coupling required by other circuits!

The principle of the Mesny can be applied to receiving purposes. The theme is the same, unless the usual shunted condenser is inserted in the return of grid, and the telephones in the H.T. lead. To obtain the cessation of local oscillations the necessary damping can be got by the throttle method; it is more easy to make the grid return to the arm of a potentiometer shunted across the A battery.

I should be happy if these few notes could have brought some new ideas to our British friends, and am at their entire disposal for such new details they should require of me.



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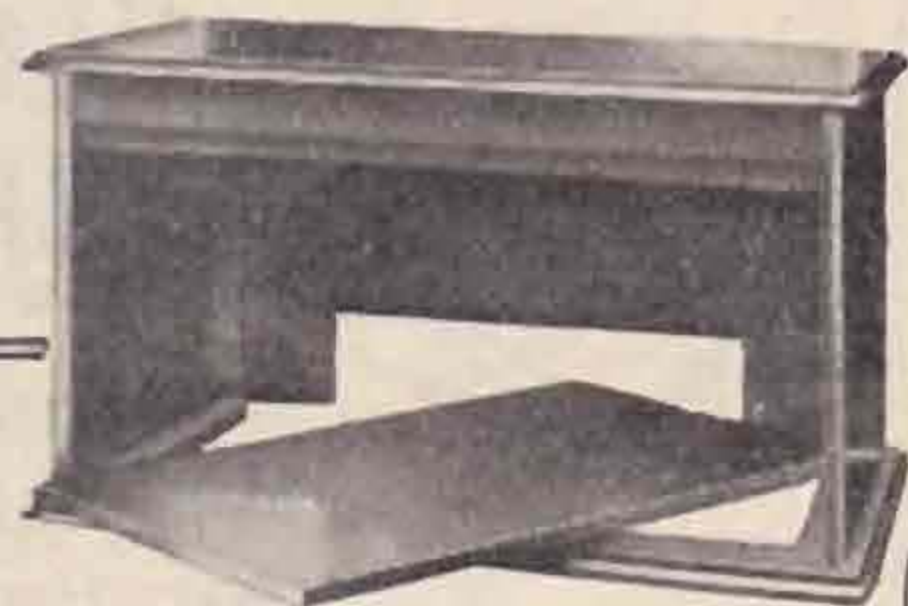
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## Insulating Properties of Wood.

By 6YZ.

Wanting some supports for transmitter inductance one day, as ebonite will not "stay put" but soon sags, I decided to use wood. Possessing a first-class Megger, I decided to carry out some tests, and some very interesting results came to light. The different woods were planed up, and dry, but not baked, as I wished to discover their chance of working and remaining satisfactory. Here are the results:—

KIND OF WOOD.	Distance of Contact Pins driven into Wood apart.			
	2"	1"	$\frac{1}{2}$ "	$\frac{1}{4}$ "
1. White Deal, Box Wood ...	100 MO	75 MO	75 MO	50 MO
1. Mahogany ...	6 MO	3.5 MO	3 MO	2 MO
2. Mahogany ...	5 "	4 "	4 "	4 "
1. American White Wood ...	100 MO	75 MO	75 MO	50 MO
2. American White Wood ...	Infinity	Infinity.	Infinity.	100 MO
1. Spanish Oak ...	20 MO	20 MO	20 MO	20 MO
1. Red Pine ...	Infinity.	100 MO	75 MO	75 MO
Three-ply White ...	75 MO	75 MO	50 MO	50 MO
Three-ply Chestnut	9 MO	9 MO	9 MO	7 MO

It will be noticed that two things are evident. First, that leakage extends over a long distance; that mahogany is very dangerous; white wood and red pine O.K. in first place, and after being boiled in paraffin wax, tested infinity at 1-16th in. apart. Three-ply wood is N.G. on account of glue joints, but white wood panels test infinity after boiling in wax, but panel should be thin 3-1/6ths in. and no more. In the case of mahogany, if one used copper ribbon and fastened it at end with a screw and finished up on this same bar with the other end, they stand to lose badly. This may save someone an unseen trouble.

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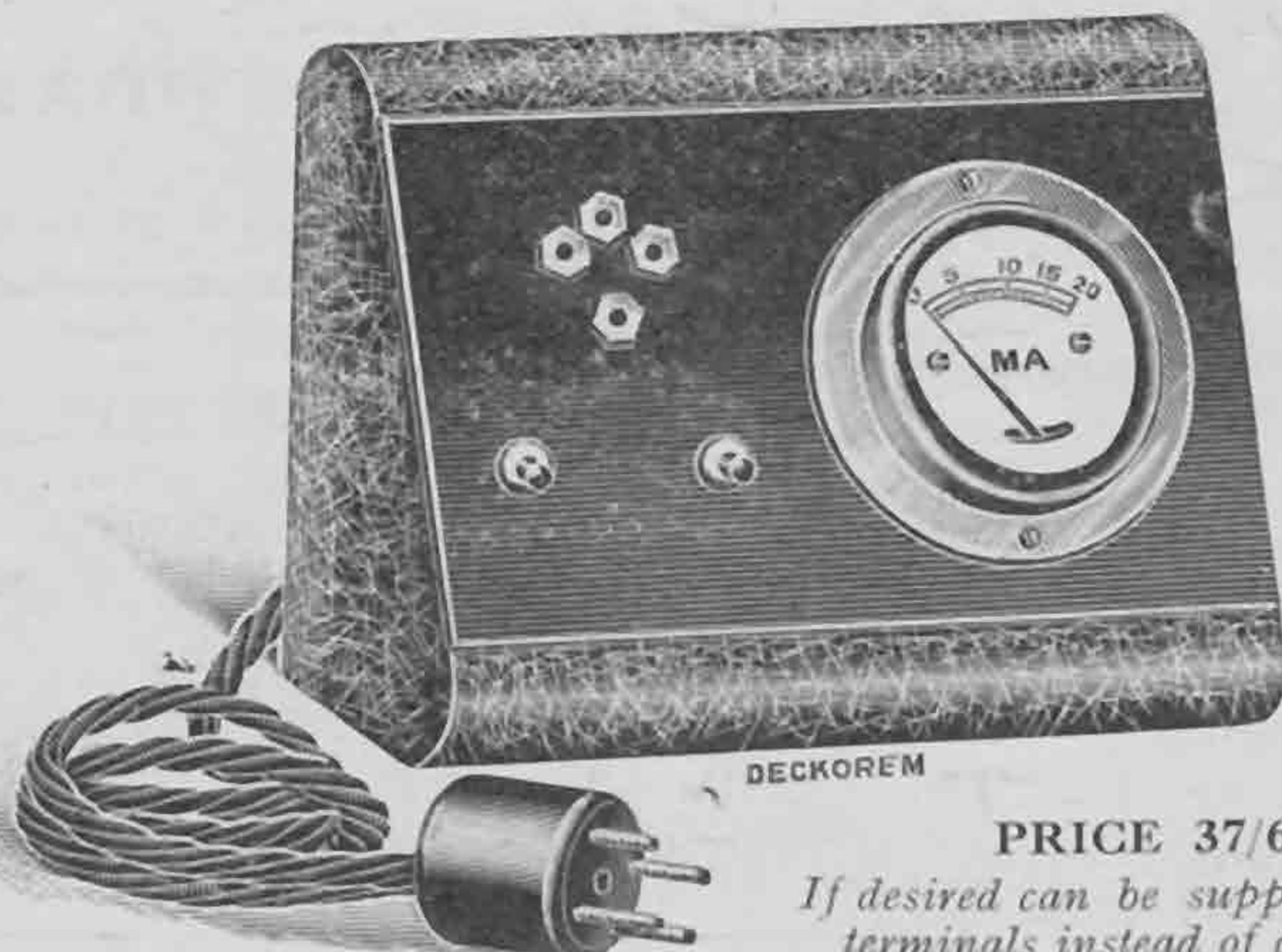
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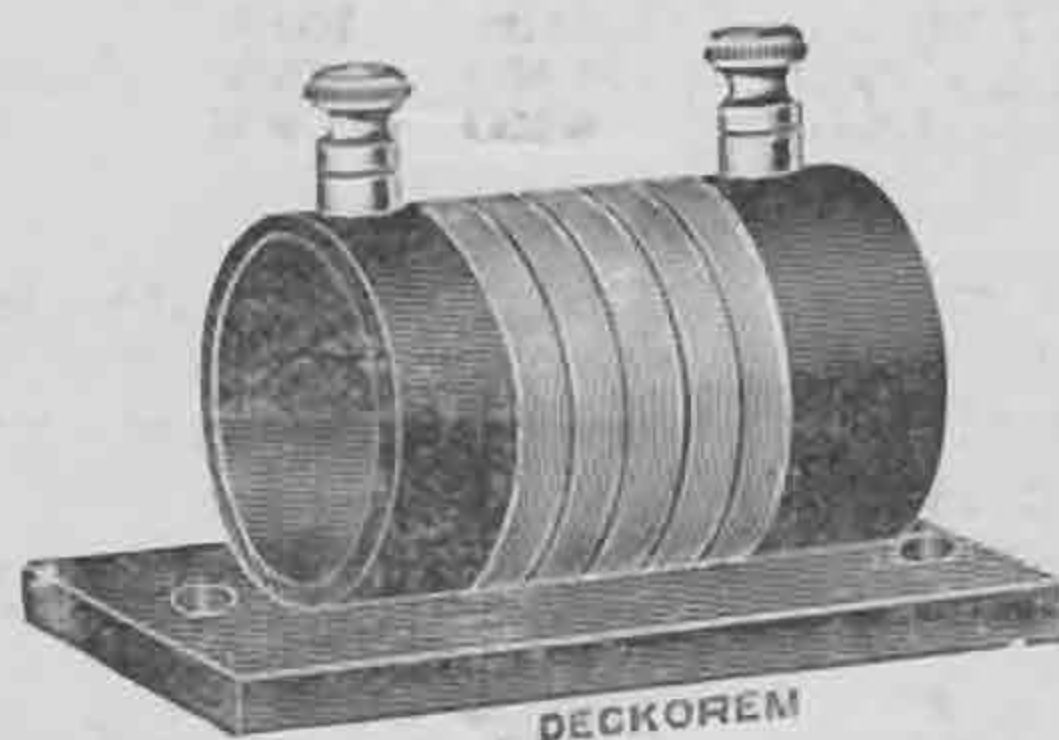
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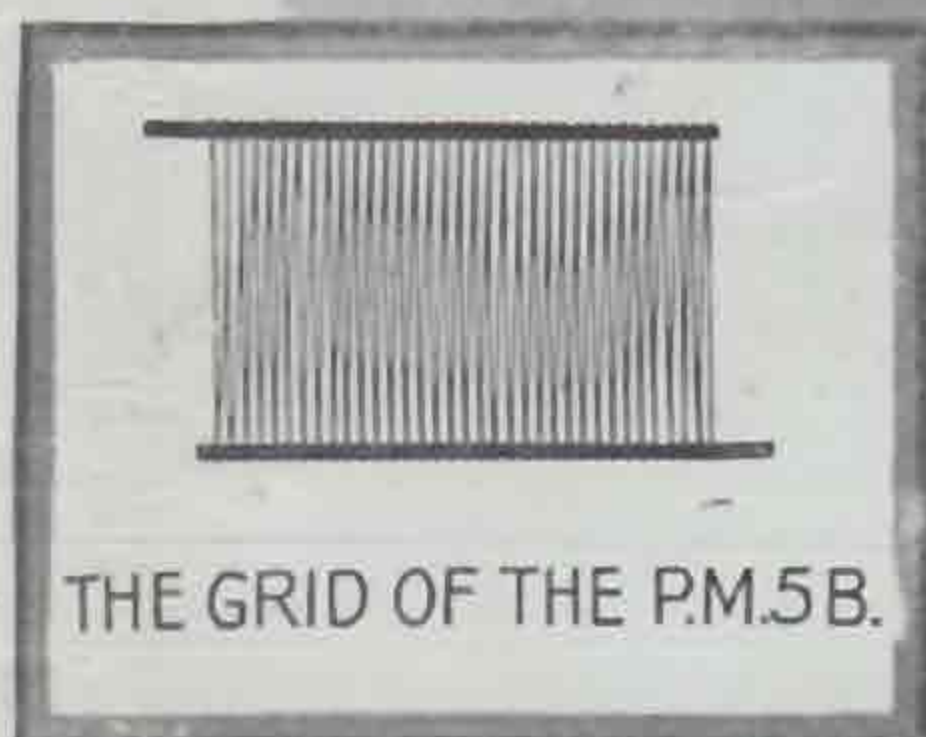
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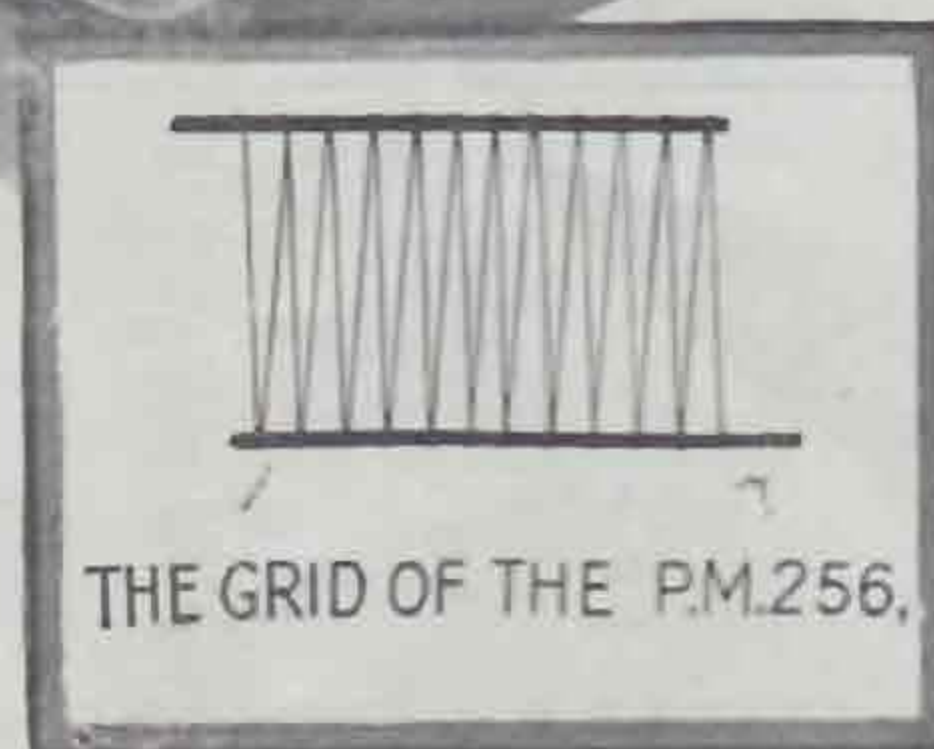
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