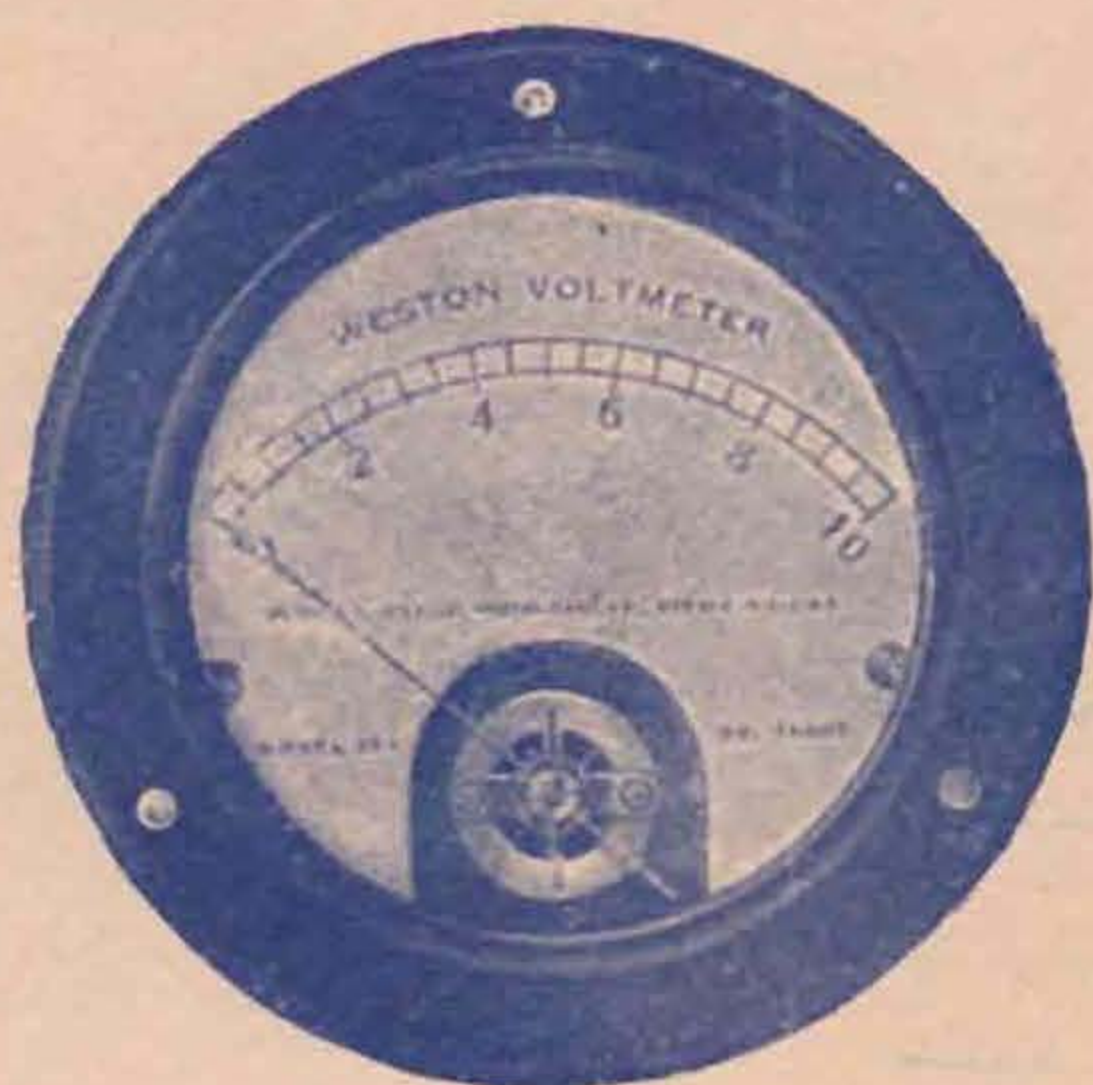


No. 7. February, 1926.

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"LOW POWER."—By C. N. Naylor

See Page 10.



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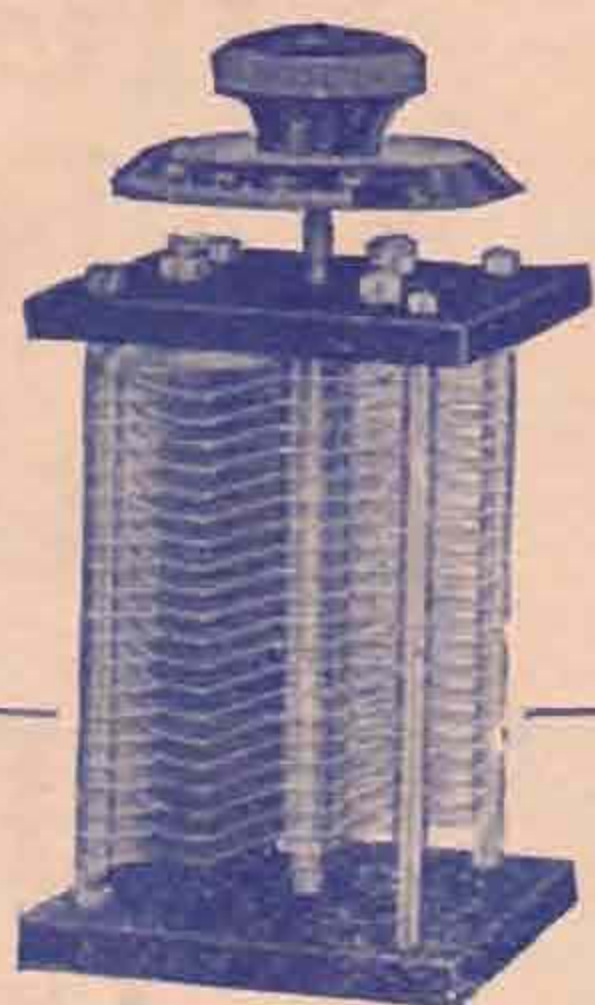
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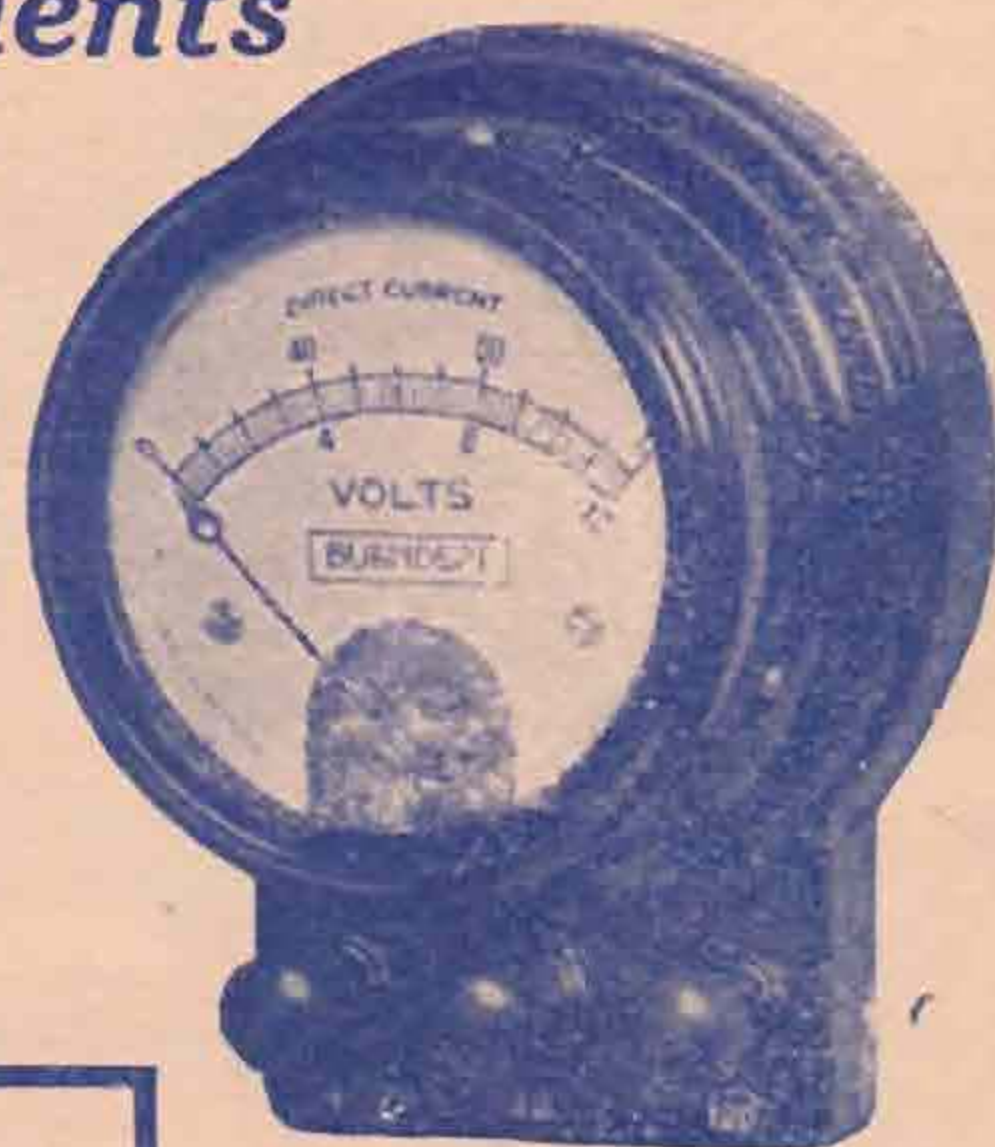
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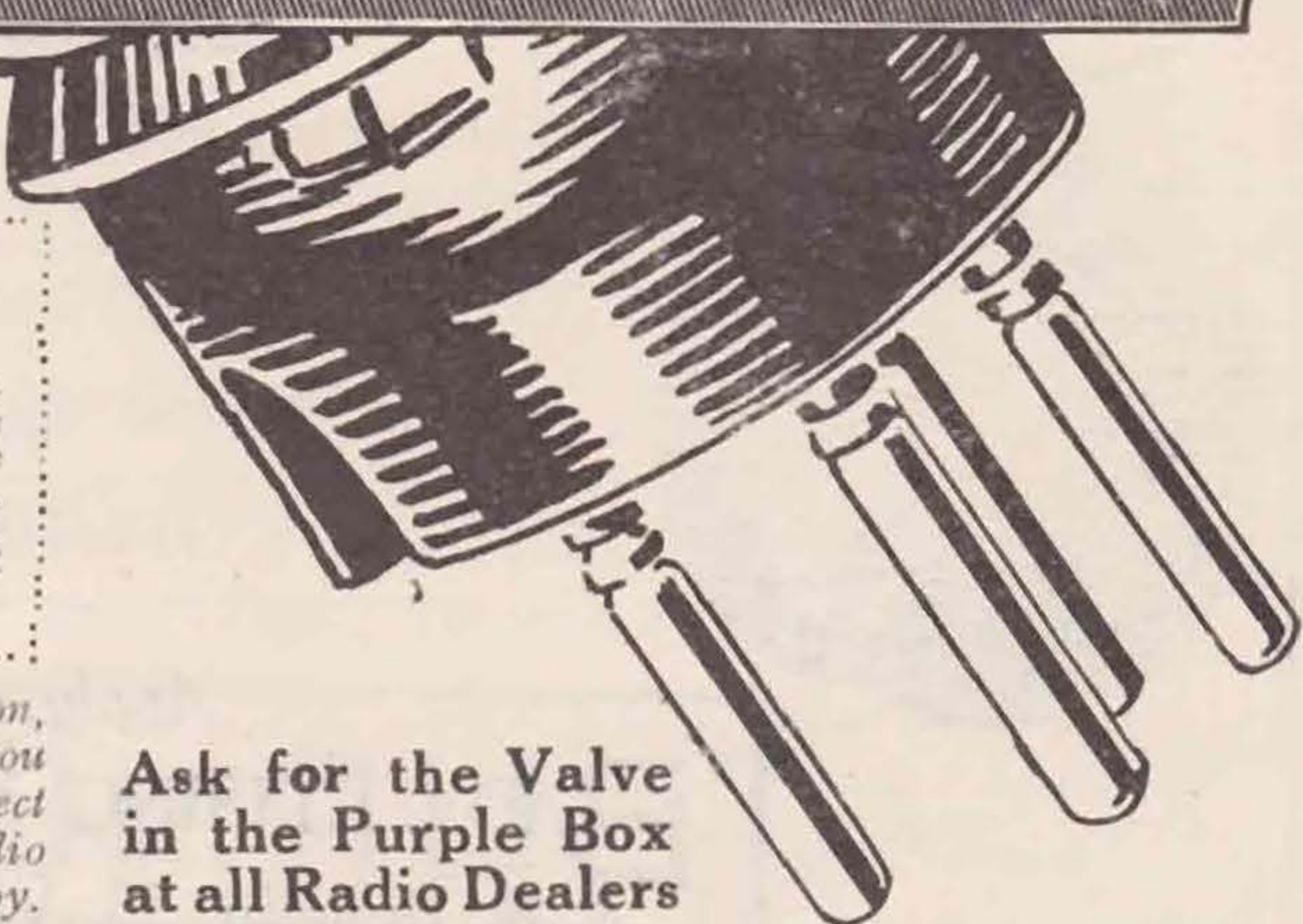
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53, Victoria Street, S.W.1



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T. & R. BULLETIN

The only British Wireless Journal Written and Published by Amateurs

FEBRUARY, 1926.

No. 7.

Broadcasting Committee, 1925.

**Memorandum of Evidence submitted on behalf of
The Radio Society of Great Britain by Brigadier-
General Sir Capel Holden, K.C.B., F.R.S., M.I.E.E.,
Acting Vice-President of the Society.**

1. The Radio Society of Great Britain (hereinafter referred to in this memorandum as The Society) was founded in the year 1913, and is essentially a technical body.

2. The Society's principal object is to further the interests of those who are its members, and who are students of radio science, either as amateurs or otherwise.

3. The Society has for its patron His Royal Highness The Prince of Wales. Many of the men who have rendered pre-eminent service to the science of radio telegraphy and kindred subjects are among its past-presidents, vice-presidents and officers. Its present membership numbers 844, and includes persons in most countries of the world. In addition there are 200 local and several foreign and colonial radio societies affiliated with it, with a total membership of approximately 10,000 persons.

4. Further, in addition to the main body, there are two important sections of the society, each with separate management committees, namely, the Schools Radio Section and the Transmitter and Relay Section. The former actively encourages the study of radio science amongst numerous schools in this country, organises periodical exhibitions of apparatus, and arranges lectures, etc. The latter represents those persons of considerable technical qualifications who are mostly actively engaged in experimental transmission over great distances, and who have done exceptionally valuable practical and theoretical work since the war in advancing the general knowledge concerning the possibilities of short wave transmission and reception, about which practically nothing was previously known.

5. The Society claims, therefore, to represent, although perhaps a relatively small proportion of the listening public, a minority of the greatest importance to the country, whose work requires the utmost consideration and help.

6. Members of the Society use the Broadcast Service not so much for purposes of entertainment, but as a means of enabling them to carry out numerous experiments and tests of new designs of apparatus. The early work of the Society was influential in starting the large industry which at present exists in the manufacture and retailing of components for wireless apparatus. This influence is still a very active force,

7. The Society is recognised by the Post Office and by the Naval, Military and Air Force authorities, as voicing the needs of the radio experimenter. In this respect it has frequently given advice and made recommendations which have been acted upon, but it may here be mentioned that since the advent of Broadcasting some of the facilities that the experimenter previously enjoyed have been very much curtailed in important directions, and the erection of high power transmitting apparatus, together with long uninterrupted programmes in large centres of population, have done much to detract from the usefulness of the work of the Society's membership.

8. Whilst it is the fact that the first experimental Broadcast Service in this country was inaugurated at the instigation of the society, it is to be regretted that there was no opportunity for the society to be represented on the organisation which was subsequently formed to conduct regular broadcast transmissions. It is unfortunate that that section of the public, namely, the members of the society and of its affiliated organisations, which took the initiative in requesting the Postmaster-General to inaugurate a broadcast service, should have been unduly hampered in their work as a result of that request. It would seem to have been useful and possible for the society to have been represented on one or more of the advisory committees of the B.B.C. Although the society has, through its organisation and affiliated societies, helped the company to make the service efficient, there have been instances when the B.B.C. has unnecessarily withheld valuable assistance which might have been given. Steps should be taken to ensure that, in whatever form broadcasting is controlled, the views and needs of the experimenter are given adequate consideration.

9. The Society, having regard to the future development of this new art, and the varied trade and public interests involved, desires to draw particular attention to the constitution of the British Broadcasting Co., Ltd. The remarks to follow are in no way intended to cast any reflection on the manner in which the Company have carried out their difficult task. The Society considers that the following features of the constitution of The British Broadcasting Company are anomalous:—

- (1) That there is no representation on the Directorate of the Public, who supply all the revenue, all the costs of collection by the Post Office, and who have, in effect, supplied nearly the whole of the capital for building the stations.
- (2) That the Directorate consists solely of representatives of manufacturing interests, which

(Concluded on page 5)

EDITORIAL

The "Useless" Amateur.

THE *Wireless World* recently published a letter in which a correspondent asks whether or not it is now time to cease lauding the amateur. The correspondent further stated that the amateurs had in fact been of no service to the Radio Art, and that whatever services had been rendered by so-called amateurs had in fact been performed by professionals working under the guise of amateurs. We think that this correspondent is disgruntled for some obscure reason. One would hardly expect anybody who gains a living by the art to pose as an amateur, for surely such a procedure would be fatal to the professional worker. Nobody would pay an amateur a professional fee, that is if his services were not compatible with such munificence. On the other hand, when does a wireless worker cease to be an amateur and enter the ranks of the professional? If a member writes articles for the technical press and receives a guinea or two in return is he no longer an amateur? On the other hand, was it not Marconi himself who but two years ago stated that he still considered himself an amateur?

Whatever the answer to these questions, we emphatically deny that the "amateur" has been of no service. He has done much to assist serious research work, and it cannot be gainsaid that it is only his extreme patience, perseverance, and self-sacrifice that has demonstrated to the world that short waves are a practical proposition under certain conditions. It was but a few months ago that eminent scientists pooh-poohed the idea of a man working in London with but a few watts of power and exchange messages with America, but now this is done every night. This is but one illustration of the usefulness of the amateurs, there are many others, far too many to enumerate here in detail. In the meantime we reiterate that though perhaps the amateurs of the present day cannot be credited with the discovery of radio, he is certainly an asset to the community, and his experiments and enthusiasm are therefore to be encouraged.

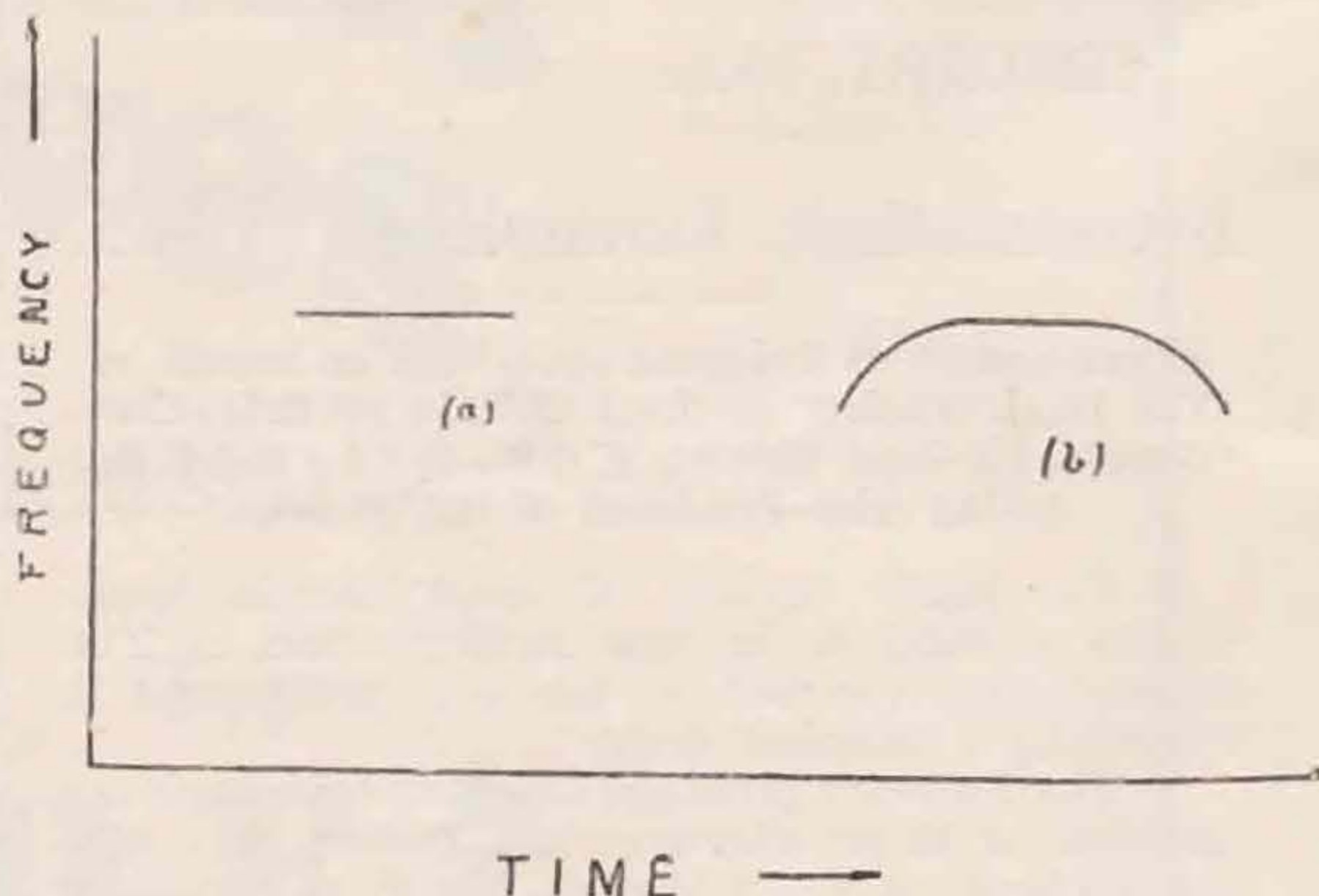
Our Organisation.

Unfortunately we are somewhat late with this month's BULLETIN. We offer you our sincere apologies, but would ask your indulgence, since your Editor is extremely busy these days on certain special experimental work. At the same time we are able to announce that we have been fortunate enough to secure the personal services of Mr. Arthur Hamblin (2MK) as our Honorary Advertising Manager, and it is hoped that all members, trade and otherwise, will give Mr. Hamblin the support which they have hitherto been kind enough to extend to myself. Mr. Hamblin is one of the oldest members of the Radio Society of Great Britain, and in times gone past has done much hard work on the Secretarial side of the Society in conjunction with Mr. McMichael and Mr. Maurice Child. We therefore feel that Mr. Hamblin will be of material assistance in extending the activities of our Section and the BULLETIN.

"Keying."

By C. W. GOYDER, 2SZ-2HM.

KEYING is always a difficulty on these short wave lengths, due to the requirement that the initial and final voltage applied to the valve during a dot or dash shall be constant if the notes to stay constant in frequency.



(a) Represents the ideal note (only attainable by quartz crystal-controlled sets).

(b) Represents the type of "chirpy" note. Produced by keying in the primary circuit of a transformer.

In experimenting with various methods of keying, the writer has had the following experiences:—

Keying in the aerial circuit works very well on low powers, and even on powers up to 150 watts if the key happens to be placed where there is a current node. On higher powers sparking becomes troublesome, and also considerable strain is put upon the valve when the aerial load is removed. There is then a tendency for the glass to melt, due to the excessive H.F. current in some parts of the valve. Two cases are known in which the extra strain imposed on the valve, by removing the aerial load, has caused the glass to melt.

Keying in series with the grid circuit is also satisfactory on low powers. In cases where the valve is working at its full-rated capacity, or when overloaded, trouble is experienced with overheating, due to the necessity of dissipating all the anode power passing, in heat, when the key is up. Keying in series with the grid leak or in the filament centre tap has the same effect, which is to reduce the plate current to zero, due to the large negative charge produced on the grid. On high powers this entails a considerable electrostatic strain in the valve. However, this is usually unimportant. The main trouble comes from the increase in H.T. voltage when the key is up, due to the bad regulation of a transformer (which is the case at 2SZ, where an ex-Government transformer designed for different conditions is used), or due to the voltage drop caused by any unusual load on the house wiring. If the ever-patient condenser stands the strain, there is every probability that the note will be chirpy.

(Concluded on page 13)

Super-Het Intermediate Transformers.

By 5CB.

THE required characteristics of an intermediate frequency amplifier for use on broadcast music transmissions and short waves are very similar.

To reproduce good quality music a 10 kilocycle side band must be evenly amplified, for good high quality speech 6 kilocycle, and for commercial speech 3 kilocycles.

A great many commercial transformers work on about 8-10,000 cycles, i.e., 33-30 kilocycles, probably on account of the much more easily obtained stability.

Ten kilocycles on these wave-lengths is equal to a band about 2,000 cycles wide, so that the amplifier should amplify evenly from, say, 8,000-10,000, and then cut off sharply in order to obtain selectivity.

There are two or three American iron-cored transformers on the market which will give this even amplification, but there is no so-called "filter" transformer which will pass the required band and cut off sharply. These transformers will give good quality reproduction, but rather bad selectivity on broadcast, but they should be quite useful on wave-lengths of 5 kilocycles on the transmitted wave-length. Even this is hardly enough for some stations.

The remaining transformers are mostly "air core," either matched or provided with condensers for matching.

The resonance curve of these transformers is far sharper than the true "iron-cored" type, and if a resonance curve of an amplifier is taken, using, say, 3 stages of these transformers, it will be found to amplify evenly a band of only 2-3 kilocycles, so that musical reproduction will not be faithful, and when used on short waves a transmitter must keep wave-lengths with a tolerance of plus or minus $1-1\frac{1}{2}\lambda$.

This latter type will be most unsuitable for even medium short wave-lengths.

From the above it will be seen that the shorter the wave-length of the intermediate amplifier the easier it will be to pass the necessary 10 kilocycle side band.

On a wave-length of, say, 3,000, the sideboards will occupy a band of approximately 550-600, which is much more easily dealt with by a transformer without sacrificing all its amplification.

Further, a single filter transformer can be designed to give quite fair selectivity.

There is another side to look at. The longer the wave-length of the intermediate amplifier the nearer is the oscillator tuned to the received signal.

As the received wave-length is decreased the percentage difference of the oscillator tuning is also decreased, until a point is reached when the tuning circuits of the first detector are unable to keep out the oscillation, which drags them into step with itself.

Hence the lower the wave-length of the intermediate amplifier and the greater the percentage difference of tuning of the oscillator and the received signal, the lower the wave-length will a particular set work.

(Concluded on page 6)

Notices.

Owing to the fact that many members have complained that these notices are not given sufficient prominence we have decided to display them somewhat prominently each month. Will all members kindly note that this notice is the sole intimation which they will receive concerning forthcoming meetings.—ED. NOTE.

January 29—Mr. Kenneth Alford on "Power Super Heterodynes."

February 19—Mr. Hugh N. Ryan on "The Valve Voltmeter."

March 19—Vacant.

April 16—Vacant.

May 7—Vacant.

May 28—Vacant.

June 11—Vacant.

June 25—Vacant.

Members are asked to volunteer to open discussions on the remaining vacant dates as outlined above.

Broadcasting Committee, 1925 — (Continued from page 3).

are thereby in a position to dominate the direction of wireless development in this country.

The society considers it highly undesirable that this state of affairs should continue indefinitely.

Seeing that broadcasting is or may be used as a powerful weapon for propaganda of any sort, the society is strongly of opinion that it should not be entrusted to the hands of a private limited liability company.

10. The difficulty of the experimenter in the past has been the uncertainty regarding the times during which it has been possible to carry out tests free from all interference by the Broadcasting Service, and tests in connection therewith made outside the normal programme hours. It would be to the utmost advantage to the members of the Society if definite silent periods free from all B.B.C. transmissions, experimental or otherwise, could be guaranteed, and it is suggested that these silent periods should be fixed so as to fall in with the requirements of the members of the Society and its affiliated organisations, particularly as it is they who would make most use of such silent periods.

11. The Society has periodically been allowed to broadcast information of interest to its members and the public, and it is considered that, in view of the interest shown by the public and the membership, this facility should be continued under whatever organisation may control broadcasting.

12. The Society considers it very desirable from all points of view that provision should be made for the Society to have adequate representation on whatever controlling body is set up, in order that it may watch the interests of scientific investigators in technical matters; to be kept *au fait* with what is going on; and be in a position to criticise any proposal that may be inimical to the interests of its members.

(Concluded on page 16),

Irish Notes.

Prepared by 5NJ.

AS this is the first collected report of the activities of the Irish experimenters, we should like to say at the outset that we appreciate very much the kindness of those responsible for the management of THE T. & R. BULLETIN in allowing us space to record our activities month by month, and although as yet very few stations are "on the air" as compared to other countries, we shall try and make these notes as complete and as interesting as possible.

It must be remembered that owing to the trouble in Ireland we were not allowed to make ourselves heard until June, 1925, so naturally we have a lot of DX to do to make up for lost time. In this connection we hope to be able to record steady progress month by month.

The stations at present "on the air" in Ireland are 11B, 2IT, 2WK, 5NJ, 6MU, 6QD, 6TB and 6YW. Of these 11B is in the Irish Free State and uses "GW" for a prefix, while the others are in Northern Ireland and use "GI." The latter prefix has been sanctioned by the Post Office.

And now for the reports proper. 11B uses from 2-5 watts on an L.S.5 valve, and is already QSO many parts of the Continent. He is the only transmitter that I know of in the South. 2IT is putting out a strong signal and has worked nearly all Europe, also North Africa and the U.S.A. He is shortly making some changes and hopes to QSO the Antipodes soon. 2WK spent a considerable time on 9 metres, but has had no apparent success as yet. He is coming up to 150 metres meantime. 5NJ is reaching out, although only on the air during week-ends as a rule. In addition to working Australia, New Zealand and the U.S.A., I have now worked South America, South Africa and French Indo-China, these last three being first "two-ways" from Ireland. The station has also maintained touch with A3XO and Z2AC through December and early January, which, of course, is a bad time for DX with the Antipodes owing to the QRN there. Maximum power 100 watts. 6MU has not been doing much of late, but is increasing power, and we expect to hear great things from him shortly. He has already worked an A and a Z, also U.S.A. and North Africa. 6TB is QSO many stations in England on 2 watts. 6YW has done excellent work on low power, and is the "star turn" this month. He uses a receiving valve with 180 volts H.T. supplied from flash lamp batteries, and has worked the whole of the North of Europe as far east as Germany, where he is reported as R6! He sends me a long report of stations worked, which does him great credit. It shows what can be done on such low power. F.B.O.M.!

May I ask all Irish stations interested in DX to let me know their news by the 10th of each month? We want to make this report as interesting as possible, so don't "hide your lights under a bushel," gang—let us know what you are doing!

Super-Het Intermediate Transformers—(Concluded from page 5).

For 40 metre work the writer would recommend an intermediate wave-length of between 1,500 to 1,800 metres.

The Manchester and District Radio Transmitters' Society.

DX work in the district has, judging from reports received, been restricted to a very few stations. Other and more important events have taken place which will be chronicled first.

On Tuesday, January 12, the Society held its annual general meeting. For some time everyone had realised that unity amongst English amateur transmitters was the ideal to be effected. This desirable state of affairs has been brought substantially nearer by the recent meeting of the M.R.T.S. It was unanimously decided to request the T. & R. Section to regard the Manchester Society as a branch of the Section. With its 60 members, this should form a valuable addition to the strength of the T. & R. Section. The interests of amateur radio will be materially helped by this move.

Details of the arrangements will be given at a later date. Now that Manchester has shown the way, we hope that other bodies of transmitting amateurs will rally round the T. & R. Section, so that at long last it may be truly "National" and not merely "Southern."

There will, of course, be many difficult points to clear up before everything is working smoothly, but the new "ham" spirit that is beginning to pervade the atmosphere is very marked. We are glad that we have been able, after over a year of patient effort, to achieve this very desirable end.

The hon. secretary, 2KW, tendered his resignation. He is shortly taking up an important post with *The Irish Radio Journal*, and, therefore, could no longer act as hon. secretary. His place will be filled by Mr. B. L. Stephenson (5IK), who will be assisted by Mr. F. Brockbank (6PL). Mr. W. C. Barraclough was also compelled to resign the office of hon. treasurer, and his successor is Mr. H. Bailey (2UF). All hams in the counties of Lancashire, Cheshire, Westmorland and Cumberland should communicate with 5IK for particulars of the society.

As I have said, DX work is somewhat sparse this month, yet some very good work has been done on 10 watts by 2QB, who has been assisted by 5HG. A Marconi LS5 valve is used with an input power of 10 watts to the anode. With the aerial nearly down CS OK1 was worked. 2QB has been qso several Americans, while the first Canadian was worked a few days ago. Many European countries have connected with 2QB. 2KW has been a little more active, having worked several districts of the U.S. on 44 metres. FIZA (Morocco) and MAROC were qso 2KW recently, while New Zealand 4AV, 4AG and Australian 3BM have been worked. Stations all over the world have been heard. 2KW effected two-way communication with the Canal Zone, Panama, the station being 99x. This occurred on January 1, and was the first two-way working between England and this station. Some days ago FI8qq was added to the list of stations worked. After January 17 2KW will not be heard on the air except at rare intervals. It is hoped, however, that old associations may be renewed from the Free State.

2PC and 2PP have no aerial at the moment, owing to the attention of the recent gales. 2PC had such an uncomfortable experience on his roof

(Concluded on page 7)

Northern Notes.

Prepared by 2DR.

SO far as I can see, a considerable portion of the Northern Hams have been busy keeping themselves warm this last month, with the result that reports of DX working are few and far between.

Certainly the weather we have had of late has been hardly conducive to either sitting up late or getting up early, and those of us with outside "shacks" have been shivering in coats and scarves trying to "key with one hand and stoke the fire with the other," as 5DA aptly puts it.

Talking of outside shacks, the writer, being a possessor of one of these villainous affairs, has suffered a loss of about twenty pounds' worth of apparatus entirely through excessive "steaming" or condensation of moisture on the walls and apparatus, the result being that any nickelled parts were quickly covered with a sticky green form of corrosion. Every conceivable cure was tried—more ventilation, less ventilation, and so forth *ad lib*—but all to no purpose.

A complaint to an architect friend brought about a visit of inspection, and immediately he condemned the paraffin stove which was kept in night and day for heating purposes. The use of this was discontinued and electricity used instead, with the result that the trouble was at once eliminated. This is evidently a point to be watched, so shack occupiers beware.

The outstanding feature of the month is the peculiar variation in the reception of U.S.A. stations. One night the ether will be thick with them around about 40 metres, and then for two or three nights they can be counted on the fingers of two hands.

Swedish stations have been very active this month; no matter when one listens, a goodly crew of them seem to be busy.

DX Reports.

2XY (Leeds) has worked Z2AC, BZ1AB, 7HBK, U's 1AXL, 1AHQ, 2UK, 2AQQ, 3CHG, 5ATX (Texas) and 8RV. Can 2BE and XGB1. He reports hearing many A's, BZ's, one OA and packs of U's and PI's. 2XY is still going strong on the Hertz oscillator type of aerial, and from the above report finds it very satisfactory. The arm of the law who came and frightened 2XY last month in the small hours of the morning is now learning Morse code from 2XY's flash lamp bulb! 5KZ (Keighley) is using the low power of 14 watts and an L.S.5 Valve. He has worked some forty European stations during December-January, and also a 2nd District American station. A very satisfactory evidence of efficiency. He would be glad of reports.

5SZ (Morecambe) is awaiting delivery of a new Mortley Sprague generator, and has been reduced to a power of 20 watts, taken from a Mackie machine. His note is very good steady DC, and apparently gets there every time, judging by his report. He has worked UIAIR, GHA (Malta), LAIA (Lapland) and EAR21. He also worked a station which I have not seen mentioned before, P3FZ, whose QRA is Funchal, Madeira. Most of these stations have been worked in the early evening, about 20.00 G.M.T. 5SZ is also a Hertz oscillator, and finds it very good indeed.

2IH (Keighley) has been busy with constructional work, but has worked XGB1, PE6ZK, PE6YX (Palestine). 6YX reported very easy reception, and that it was the best he had had with England to date. 2IH's note is not as pure DC as it was, as he is using AC for filament supply. 5XY (Burnley) has also been using low power, as his 250 watter has been "up for repairs." Using a D.E.R. type valve and 200 volts H.T., he has worked six Italians, three Finnish, and lots of other Europeans, and wound up by working U.S.A. Very good work this O.M. He reports hearing some PI's, A's, Z's and "shoals of BZ's." 6YU has been reported as having worked F18QQ (French Indo-China). This is very F.B. 8QQ was reported as R5/6 pure D.C. note very steady by 5XY, to whom I am indebted for the above report.

2YO has not been very active this month, but has worked a few stations, using very low power.

2DR has been on the sick list for nearly a month, but "it is an ill wind," etc.; he found time to get his 45 metre set into working order. His note is not as good as it ought to be, and improvements are anticipated. The Hertz aerial here was not a howling success, and has given way to an inverted L, which is being worked on the third harmonics.

This month's question: "Is 2LZ going to pay for all the phones he has burned out up here?" Please note: Reports wanted from Durham, Northumberland, Cumberland, Westmorland, Lancashire, Yorkshire, Cheshire and Lincolnshire. Let them all come!

6KK (Blackpool) has, apparently, not worked very often this month, but on the two or three occasions he has worked, his signals seem to have travelled well. He reports working two Z's, one morning and in one night worked 17 U's and one BZ. He has also worked Canadian 3KP in daylight.

2IN (Blackpool) is awaiting his valve's return after rejuvenation, but has done good European work with low power. Another Hertzian fiend, this!

Manchester and District Radio Transmitters' Society—(Concluded from page 6).

one memorable afternoon that he shrinks from the thought of another just at present! 6PL would be glad of reports on his 45-metre transmissions. 5IK is now qso hon. secretary's job, so he will not have too much time to devote to brass-pounding. He hopes to be on the air very shortly again. Ex-2GW, of Lymm, is now in Canada, and is operating C2CC. He often hears British stations and would be glad of a call now and then.

Now gang, let us have your reports by the 10th of the month, so that these notes may be the more interesting. If you are not a DX merchant, but have any interesting theory to expound, send your dope along.—KW.

Trade Notes, Catalogues, etc.

Messrs. The Marconiphone Co., Ltd., have sent us some excellent and useful little log books containing valve data, etc. Readers may obtain copies of the books on receipt of a postcard or letter by the firm.

Trade and other members will be interested in the Chapman Book of the Four Valve de Luxe Broadcast Receiver. Copies may be obtained from Messrs. J. P. J. Chapman, Radio Engineers, Westbourne Grove, Bournemouth, England.

Southern Notes.

Prepared by G-2LZ.

NOTHING extraordinary in the way of new DX records have been created during the past month. In fact there is very little left now in the way of new records, as practically every civilised country has been worked by British amateurs. A great deal can be done in the way of low-power DX work, and I should like to hear from more of the low-power amateurs.

General conditions have improved very little. We get a few days during which some DX work can be done, and then the whole thing fizzles out for a time. The most consistent signals seem to come from an easterly direction just now. I have maintained two-way tests with Philippines IHR every day, although at times his signals are very weak and only just readable. He always seems to get my signals well although at times he complains of QRN. I have also on one occasion worked with U-6OI California at 3.30 p.m. There is a question as to which way the signals travel at this time of the day. Do they go the darkness path which makes the distance 16,000 miles, or over the Pole about 8,000 miles. We cannot work any Americans on this side at this time on the 40-metre band, so it is obvious that the signals miss them. At the same time we can work the Philippines, China, and Australia, and hear stations in Hawaii. I should like to hear opinions from amateurs on this point. I have had an interesting theory sent me by a BCL at Chelmsford, and will put this forward in the next issue of the BULLETIN together with any others I receive.

DX Reports.

6NF has just completed working his 250th American. He has been reported upon by every U district and four Canadian districts. The Antipodes and Brazil have been worked, and he has been QSO with five Continents in one day. He is now carrying out some serious experimental work, which prevents other than occasional DX; power 50 watts.

5QV has been struggling with a Hertz aerial which he now has working well. He is still maintaining a strict schedule with C-4GT, but so far has not heard him. This appears to be getting on his nerves, for he tells me he had a most awful nightmare one night, dreamt he was being chased by a Canadian 4, hi.

2MI finds DX better on 90 metres. He is only using low power and has worked East Prussia, Sweden, and other parts of the Continent with dry cells for H.T. and a dull emitter valve.

2MA is another low-power station, and is working all over Europe with the aid of a Hertz aerial.

6TD reports nothing extraordinary. He tells me he is very much handicapped by a limited power supply. Just when he is on the point of creating a new record the power fails. When this happens the entire village community assemble at the local power station and spout volubly in English, Welsh and other unknown tongues to the apprentice in charge. This local flea power outfit, as he calls it, is driven by a water wheel which had the misfortune to bust recently. When they do get a supply it varies in voltage between 180 and 260, and his note suffers in consequence.

(Concluded on page 16)

Mid-Britain Notes.

Prepared by 6JV.

I am pleased to announce the following county offices:—

SHROPSHIRE—G5SI, C. L. Naylor, 43, Hill Crescent, Shrewsbury.

CAMBRIDGE—G2XV, G. A. Jeapes, Chandos, Great Shelford.

NORTHAMPTON—G2VJ, B. J. Axten, 1, St. Michael's Avenue, Northampton.

STAFFORD—G2KK, R. H. Parker, Radio House, Smethwick.

RUTLAND—G6NO, H. E. Norris, 48, Cold Overton Road, Oakham.

This is fb O.M.S., and I want to thank you all. A word about this sub-area scheme. The area is too large to handle single-handed—hence the sub-division. I hope the scheme will provide just that friendly rivalry which is the spur to achievement.

We all want to extend the T. & R., and thereby to provide that bond of union between us all, which is strength.

In order to do this may I ask county offices, please:—

(1) Comb out a recent call-list and discover all stations in your area.

(2) Write a little note to each owner and point out why he should join the Section. A specimen copy of the BULLETIN should be enclosed. (These will be forwarded to county offices if they will inform me how many they require.)

(3) Keep a sharp look-out for new stations in your area, as frequently announced in various periodicals.

(4) Keep a record of all stations in your area and please make their good your interest.

(5) Collect reports from your area. Combine all into one and post to me so as to reach this office by 10th of month.

(6) Hunt up and collect articles on anything of interest to hams and forward with monthly report.

And so, if you are interested in ham radio (either as a transmitter or receiver), and if you are a member of T. & R., please post your reports so as to reach your county office by 7th of month. If you have no county office yet, post reports to me. If you are not a member of T. & R., you ought to be O.M.! Any office can rectify this for you.

County offices are still required for Leicester, Huntingdon, Warwick, Worcester, Hereford. Come along those counties. Look at perky little Rutland! What about it? Volunteers forward, please.

Now those reports.

5SI—That "lo-power star" whom we are proud to have in Mid-Britain—thinks but little of recent conditions. He has, however, worked HBK (India) on 12½ watts and has exchanged signals with the mysterious GBI [GB one].

He wants me to appeal for less of the QSZ business when sigs are QSA. He thinks some folk will soon QSZ during their ordinary conversation! The QRM on 45 has turned his attention to 23 metres, on which wave he has worked SMTN and SMZS, and is agreeably surprised at the way the juice goes out.

5SI uses an untuned aerial with a fundamental around 105 metres. He is not a Hertz enthusiast, and asks if others have noticed the hefty signal sundry Hertz men put out on 90 metres when they are working on 45 metres (read on a non-oscillating receiver by generator hum and fone, etc.).

The answer is in the affirmative, O.M. Until one such transmission ended with "45" I was deceived into thinking that a famous station had camped on 90 metres for the night.

Is the Hertz aerial peculiarly subject to this sort of thing?

6NO has just got his permit for 45 and 23 metres. DX to you, O.M.!

2XV bases his claim to being alive upon the fact that he has lately worked six U's and PR4KT with an input under 20 watts. Should you ask him how it's done he will tell you the first thing is to forget about your bed.

2VJ (note address above—no longer Wembley) is in difficulties. He has a transmitter but wants an aerial. Can anyone near by fix him up? He would like to run a joint station. Looks like a chance for someone. Applicants please write him direct. Meanwhile successful local fone transmissions have been made using his bed for aerial and the gas fire for earth. Hi!

6OH, of Lichfield, can only spare one night a week to the game just now. In spite of this he has managed to reach out more than 1,000 miles, and forwards a creditable list of A's and Z's heard. He simply hates the bath because it makes frightful QRM (apparently static charges) when turned on. Persuade the "junior ops" to "oil" instead, O.M.

2KK forwards a useful list of calls heard, including all but the first three districts U.S. Some half score of Australians and several Zedders and Brazils, etc. He has been off the air himself for some two months, but will be pounding the brass again shortly.

Mr. Hunt, of Sheringham, will be a T. & R. member by the time these notes appear, and so will 2BJP, of Cromer.

Will anyone who has suggestions to offer for the benefit of Mid-Britons please write me without delay?

Will every one of you make it his job to secure a new member, for only by individual effort will our little band "from strength to strength go on."

STOP PRESS.

5SI has been at it again! His latest is to work U2ANM on 4 watt [105v. 3-8 m/a.]

This was done on January 11 and smashes his previous record of .62 watt with UIPL.

U2ANM repeated everything O.K. 5SI wonders how he dodged the QRM on both sides, and says he was "sure lucky." That may be, O.M., but it's a fine performance, QRM or no QRM. Its real DX.

6UZ, Stoke-on-Trent, has worked most Europe, but is disgruntled because he has not yet worked A's and Z's. He is going to QRO very shortly.

£25,000.

A young radio engineer died, leaving estate value of £25,000, thanks to long hours, keen judgment, untiring interest in his profession, and a bequest of £24,998 from an uncle, who died just previously in Australia.

Oil-Cooled Valves.

By 6LJ.

If you are following 6TM's "£7 Hint" (page 8, November issue), don't pour half a gallon of oil into the top of the valve and trust to luck. When the valve is hot the oil has a habit of boiling over. Then, when you switch off, the valve cools and the oil condenses and trickles down the side of the valve. The next time the valve heats up you will probably have the good fortune (?) of witnessing the sight of a valve on fire! Before this stage is reached, however, the oil begins to smoke, so that you are given a fair warning.

You will find that when the oil has boiled down to a certain level it ceases to boil over the sides—the upper portion of the tube then acting as a sort of reflux condenser. This "safety level" in my 250 watter is about $\frac{3}{4}$ inch from the top of the valve, which means that the tube is about half full of oil. Under these conditions the oil does its work without becoming a nuisance.

G6LJ.

Cards for Delivery.

We have postcards from 5RW for Z2AC and A6AG. From U8CCQ for G2QB, and from U4JE for G6ER. From 3BCL (U.S.A.) for G6GH. Kindly claim and remit postage.

ZENITH

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"Low Power."

By G5SI.

THERE are many stations whose power inputs are necessarily limited, either by the lack of power mains, or of the "needful" to purchase the valves or apparatus. All these stations come under the category of "Low power stations," and it is to their owners that these few words are addressed.

The low-power man, no doubt, looks with envious eyes at the pictures of arrays of "big bottles" at the various high power stations, and sighs when he reads the long-distance communication tests they have carried out. Has he, however, thought that he may be able to do the same, or something approaching it, with his own few watts? When I say that this station, G5SI, has, with a maximum input power of 15 watts, communicated with stations in New Zealand, India, Porto Rico, United States, Canada, Palestine, Greece, and all the other distant and near countries of Europe, perhaps the "low-power" man may take heart and decide to try something in the same way himself. In case some may feel a doubt rise in their minds as to the extent of the "low-power" of this station, I will say that the only power source available is an early type M.L. anode converter, which will deliver 500 volts at 30 milliamps. (That will settle your mind, OM).

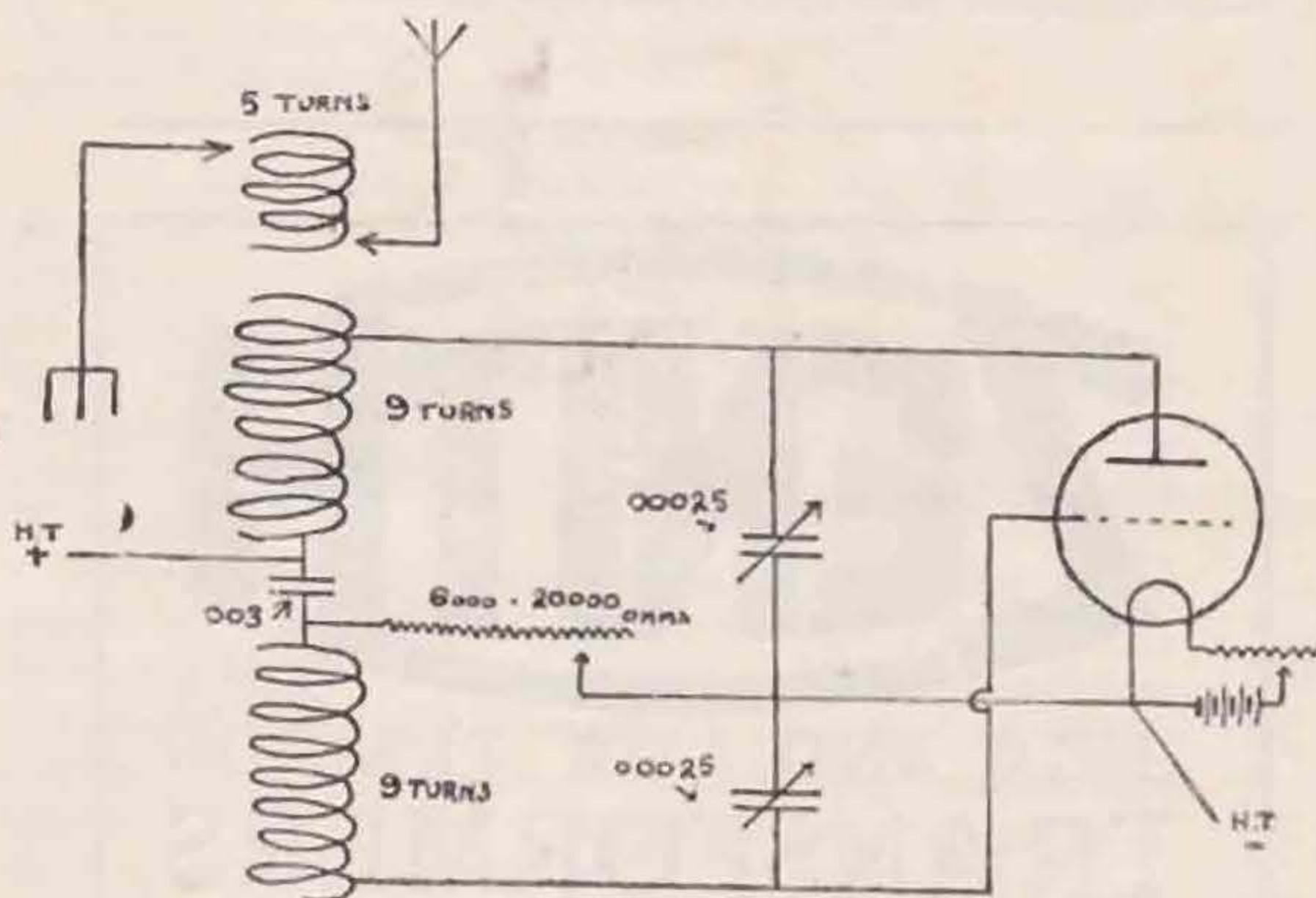


FIG 1

Now, what is the greatest necessity in this great game of low-power DX? Just confidence, OM's. Don't say to yourself, "What a hope I've got," but just get to work and say "I'll do it or bust"!!! Having obtained the right state of mind, start thinking of your apparatus. The unfortunate thing about ham radio is that "any old thing" stuffed with plenty of power will do wonderful things, but one does not feed petrol through an inch pipe to a modern motor cycle. Well, that is how you have to look at a ham transmitter.

Try to make your set as good as a motor-cycle engine, and then "a little juice will go a long way."

Most hams have their favourite circuit, although the selection is limited for work below 50 metres.

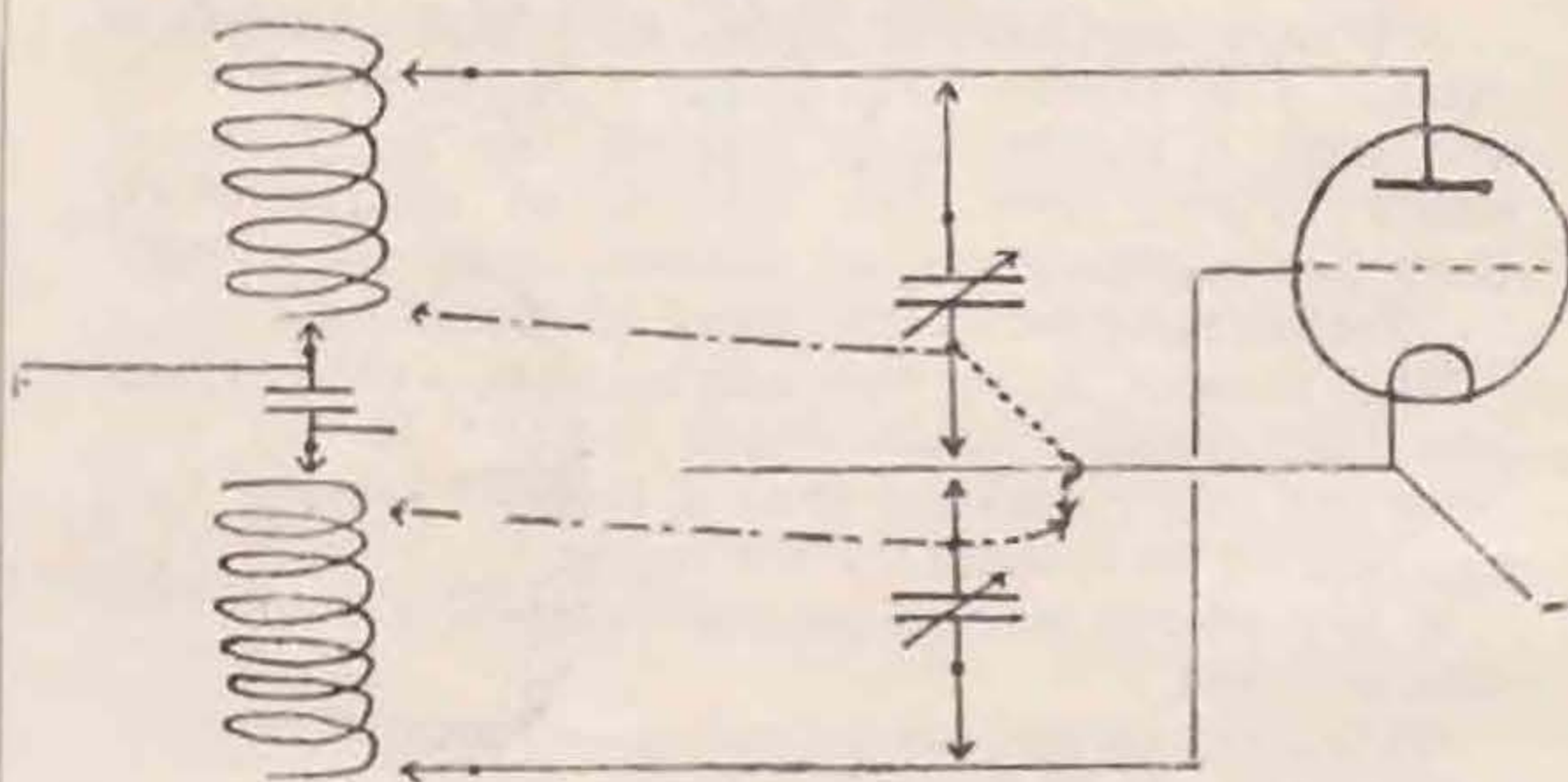


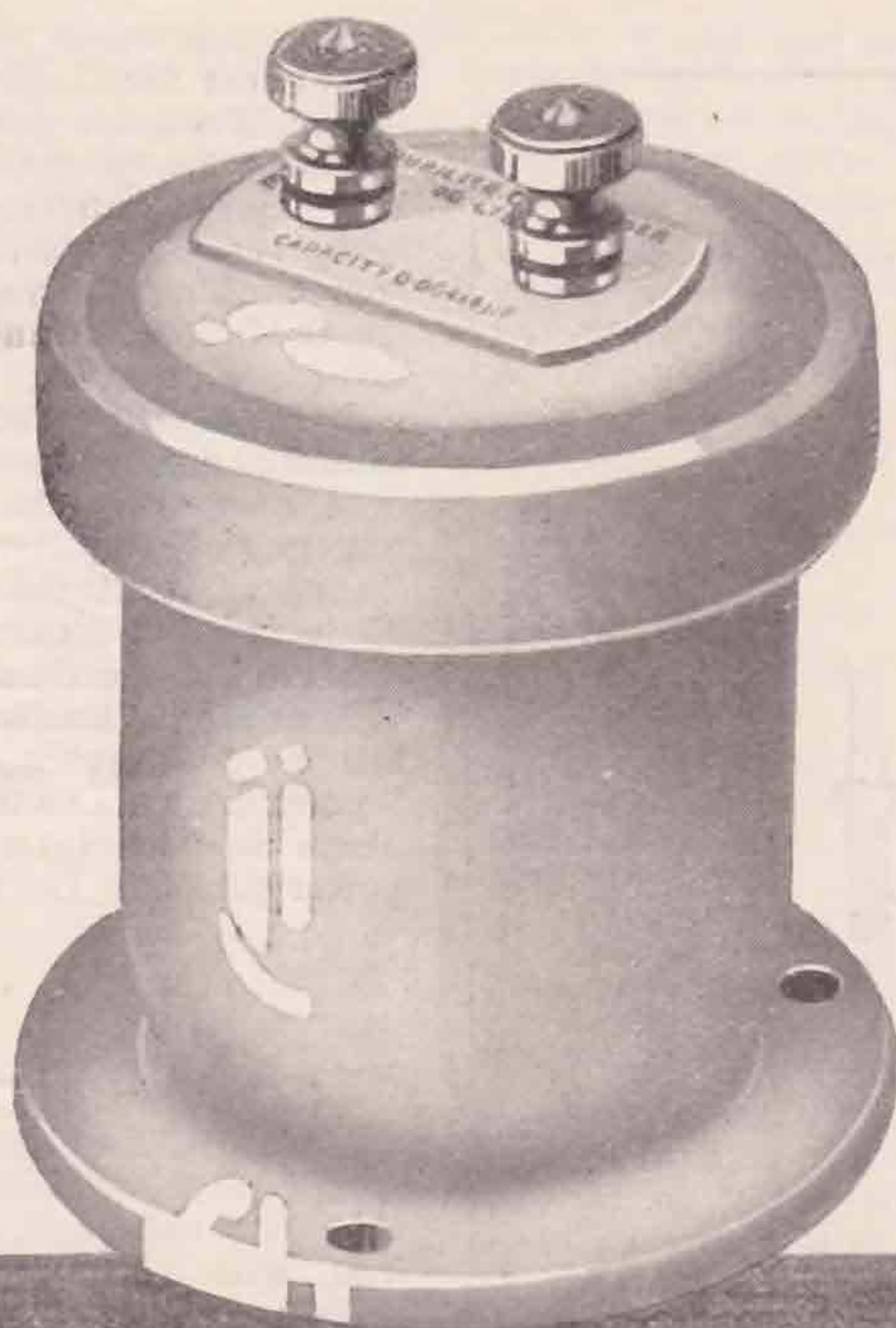
FIG 2

One looks after "favourite things" outside radio, so apply a little of this care to the set. Make a good firm set of coils, not flabby things which oscillate every time the table is touched and give the emitted wave a kind of icy shiver. No. 12 SWG wire is a good size to use, and winds well. Make the spacing between turns at least 3-16" to keep the capacity down, and support the coils either by ebonite strips, perforated for the desired spacing, or tie up with a good cotton twine spaced with glass beads. As to tuning condensers, this is where the low-power man scores—they need not be expensive ones, as long as they are of the low-loss type, and have good contacts. Do not, however, jam them right up against the coils, but keep them clear of the coil fields. For low power the fixed condensers are easy. A grid leak variable up to about 20,000 ohms is an advantage, and if the commercial variety are too much for the treasury, wind one on a slotted ebonite rod 1" diameter, reversing the direction of winding in each slot, and soldering the cross-over to a brass peg driven or screwed into a hole between the slots. This will be sufficiently non-inductive for the purpose, and No. 43 resistance wire is sufficiently strong to handle easily. A hand-brace will wind this in F.B. style—mine did, at any rate! A porcelain valve-holder is better than some of the doubtful ebonite holders one sees, and a filament resistance with a strong contact is a necessity—a bad contact will give an unsteady wave, even though you cannot see the filament flickering. Now fasten everything down on the base-board or panel *firmly* (condensers and coils which go for a walk occasionally will not give consistent results) and you have a set which will do the same thing on all occasions.

As some may like to duplicate the circuit used in this station, the diagram is given (Fig. 1) with a second showing how, by using clips, several arrangements can be used (Fig. 2). A sketch, also, showing how good firm clips can be made very easily (Fig. 3). This circuit has the advantage of requiring *no R.F. chokes*, and the original may be found in the April, 1925, issue of "Q.S.T."

Such is the set; nothing wonderful, but just "good." Now we get to other important things, likewise very controversial things, namely, the aerial system, and the method of coupling to the set. As I am not looking for trouble here, I will merely state what is used at this station, without

(Concluded on page 12)



DUBILIER

TRANSMITTING CONDENSERS

The small transmitting condenser illustrated here is one of the many specialised Dubilier products, and is particularly suitable for use in experimental and amateur transmitting stations.

Among the many purposes for which these condensers are used, we would like to mention the following:—

- (a) For use in low-power transmitters up to 100 metres as aerial series condensers, oscillating circuit condensers, grid condensers, etc. (Types S.W.A.F. 650, S.W.A.F. 700, S.W.A.F. 750, S.W.A.F. 800.)
- (b) As Anode Feed Condensers (Capacity range 0.00005 mfd. to 0.05 mfd. for working voltages up to 6,000 D.C.).

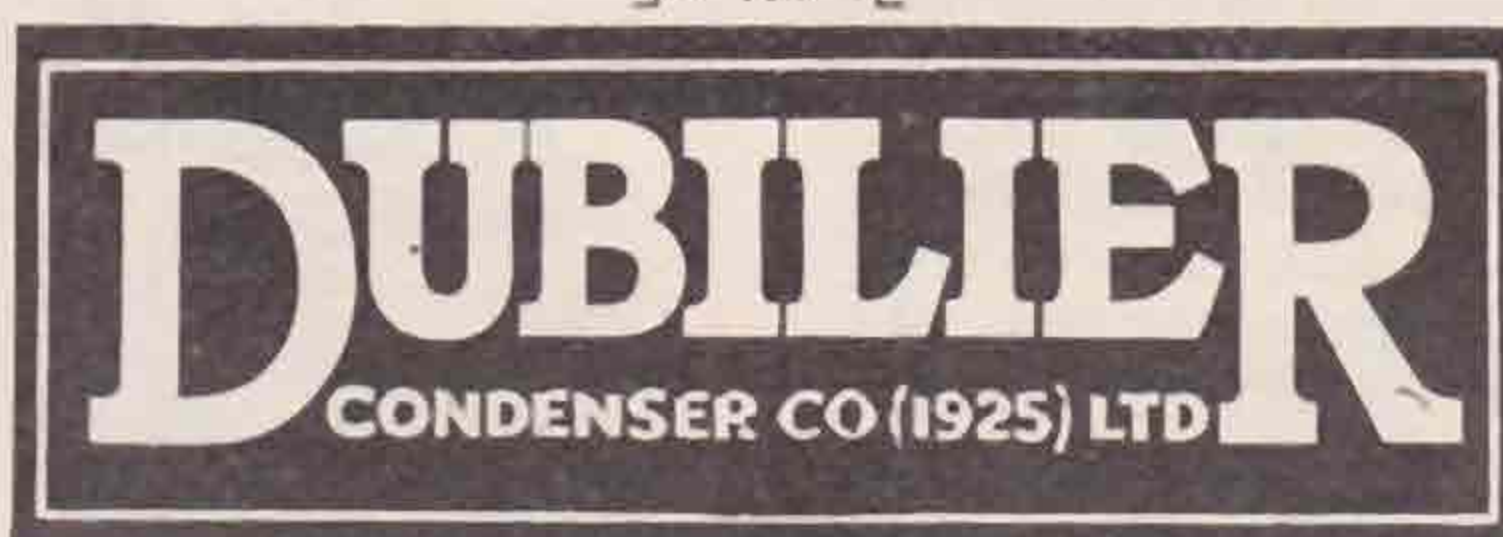
(c) As high-frequency by-pass condensers.

(d) As grid condensers.

Condensers for the last three purposes are scheduled as types A.F. 650, A.F. 700, A.F. 750 and A.F. 800.

They are enclosed in porcelain containers, so as to insulate the whole condenser when used at a high potential above earth (e.g., as in the case of Anode Feed Condensers). The terminals are mounted on the porcelain lid, and this type of condenser is a most reliable and convenient unit for experimental use.

Prices from 25/- to 60/-, according to requirements.



"Low Power"—(Concluded from page 10).

CLIPS

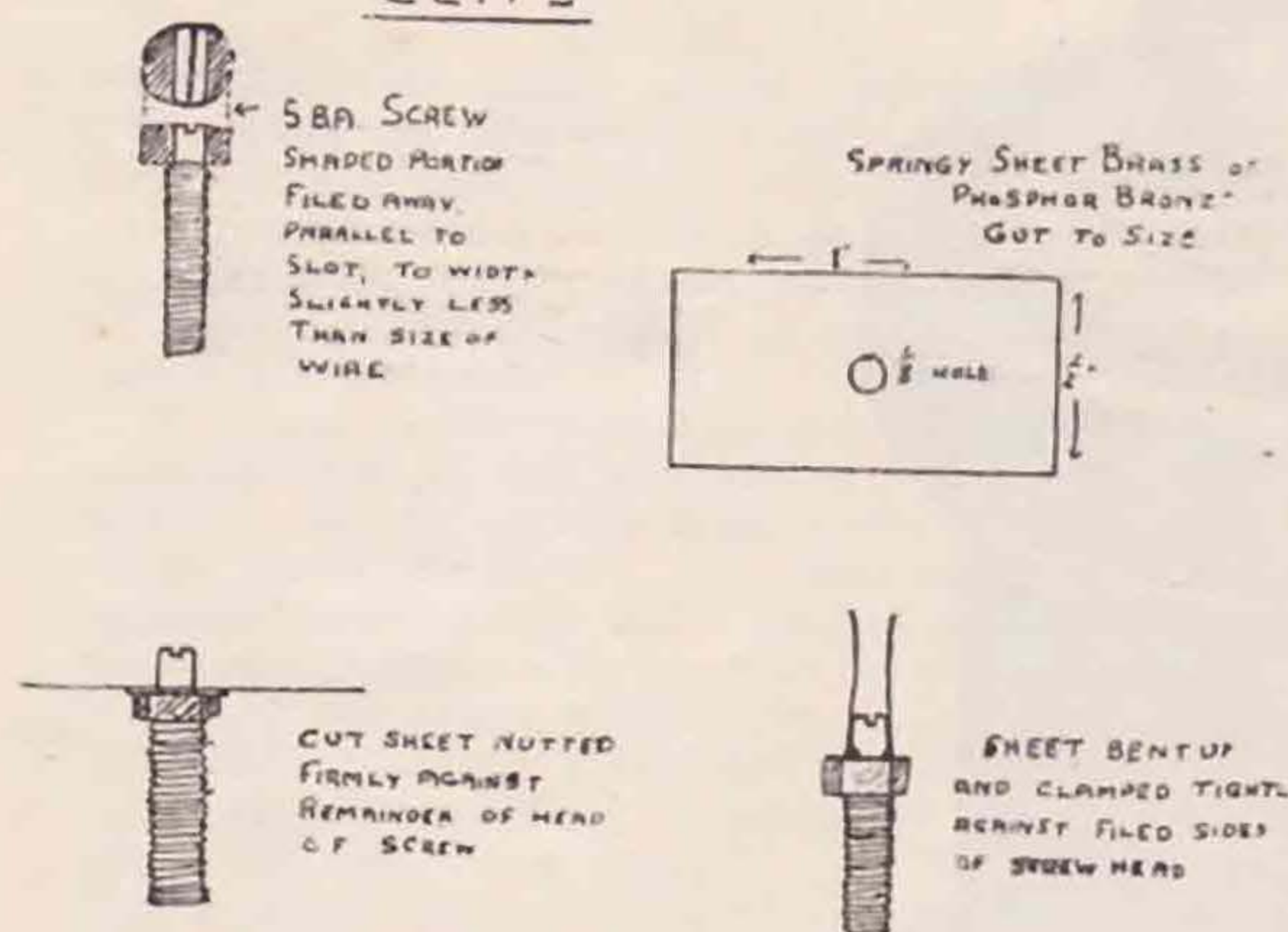


FIG 2

giving preference to any special system. As the 45 metre band is the favourite for general DX these days, the following details apply to that band. The aerial used at G5SI is a 5-wire cage, the top being 37' long, of 3' 6" diameter, far end 37' high and lead-in end 31' high. The lead-in is in two sections, one 25' of 1' 6" diameter, and the remainder (6') of 4" diameter. The lead-in is stayed away from the house at the joint of the two sections, and the importance of this is emphasised. The counterpoise is composed of 4 wires, each 50' long, spaced 4' and supported 6' above the ground, under the aerial. The aerial is of No. 16 SWG copper, quite heavy enough for low power. This system is coupled to the transmitter by a 5-turn coil of the same construction as the set coils, which are of 12 SWG bare copper, 4" diameter, and spaced 5-16" centre to centre of turns. Such is the aerial system.

Now for some debatable statements. The fundamental wavelength of the above system connected to the aforesaid coupling coil is approximately 106 metres, and although there are series condensers available in both aerial and counterpoise, these are generally shorted for work on 45 metres. The aerial coil is coupled to within an inch of the plate coil, and the juice pushed into it. The series condensers are sometimes put in circuit, but make no difference to the wave, and the signal at distant stations is unchanged, as is also the current. Thus, it will be seen that no harmonic tuning or specially chopped aerial is used, and yet this aerial put the result of an input of point six of a watt into the United States on two different occasions with 8 days intervening. I am not advising stations to use this type or size of aerial, that is too dangerous for one's peace of mind these days, but if one has enough room and time to try out other systems, there is a great chance of interesting experiment, but do not try one on a "dud" night and another on a good one, and then decide. Make your comparisons with stations which are, in your receiver, at a consistent comparative strength. Hasty decisions are ruining radio these days!!! I should like to do this, but cannot on health, space, and time reasons.

My "few words" seem to be growing ominously, and I fear Mr. Editor's displeasure!!! You may ask, "When are we to hear how to do this long-distance low-power DX"; well, didn't I say it was "just confidence," coupled with a common-sense set. That's all there is to it. Did I hear someone say "Freak location"? I don't think so, O.M. The usual signals are received as most men get, nothing phone-splitting, the location is only 250 feet above sea-level—although so far inland; ground rises all round; trees (60' high) on three sides, some nearly overhanging the aerial and gravel subsoil. Unless someone starts a new "theory" that the sigs slip down the river and along the sea, I cannot put anything down to the "freak" suggestion.

That's all, brothers. My best DX wishes to all low-power men, and may someone beat my "point six watt to the States" before 1926 expires. There is both interest and thrills in the "low-power game." Go to it, O.M.

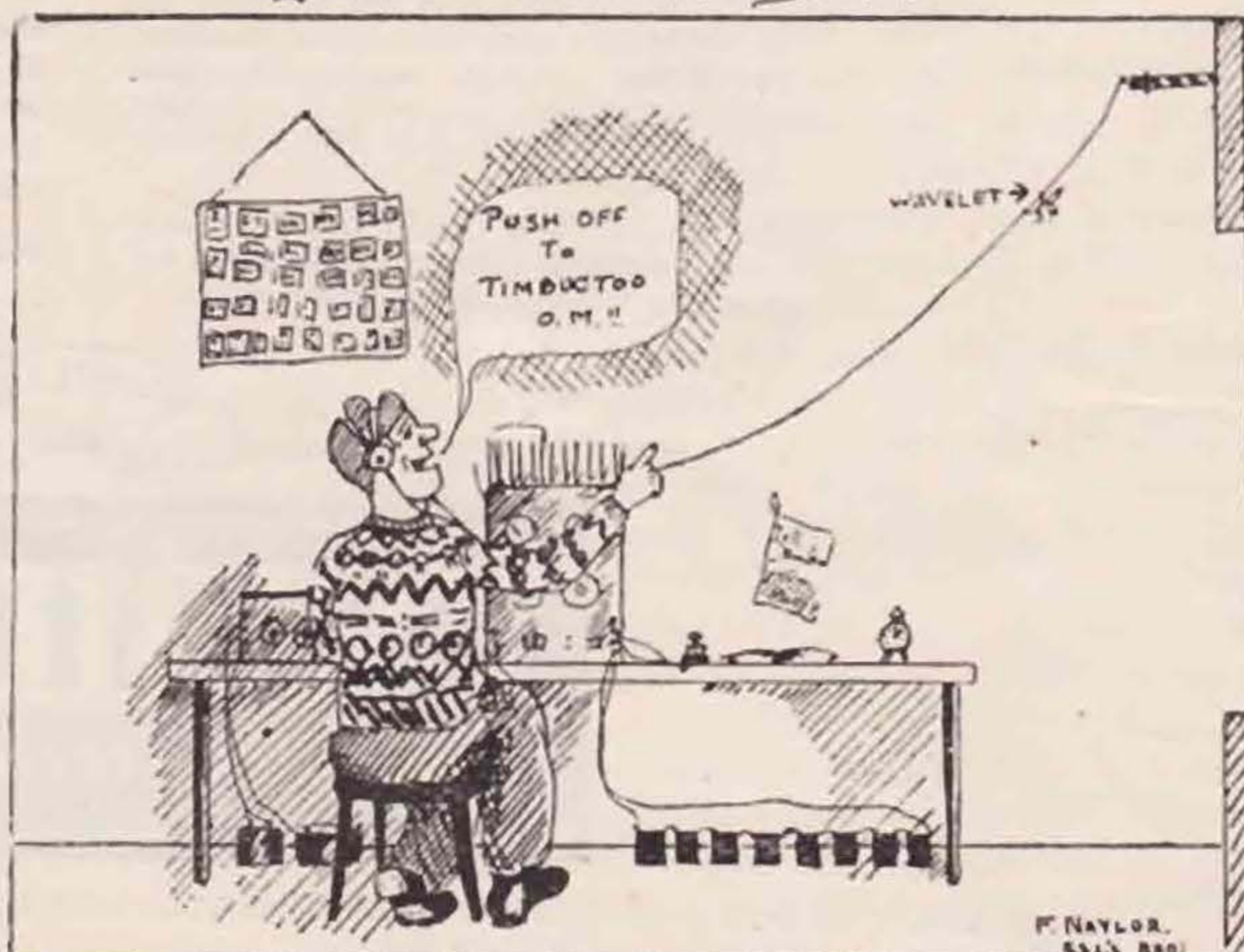
C. L. NAYLOR.

Stray!

Mr. E. A. Dedman, of "Rossmoyne," 65, Kingston Road, New Malden, Surrey, asks us to announce that the call sign, G2NH has been allotted to him, with permits to work on 2.5, 5, 8 and 23 metres. He is now working on 8 and 23 metres, and reports of reception will be welcomed by him. He also will be glad to hear from any member who will co-operate with him on 8 metre transmission and reception.

Have you sent your Contribution?

LOW POWER D.X

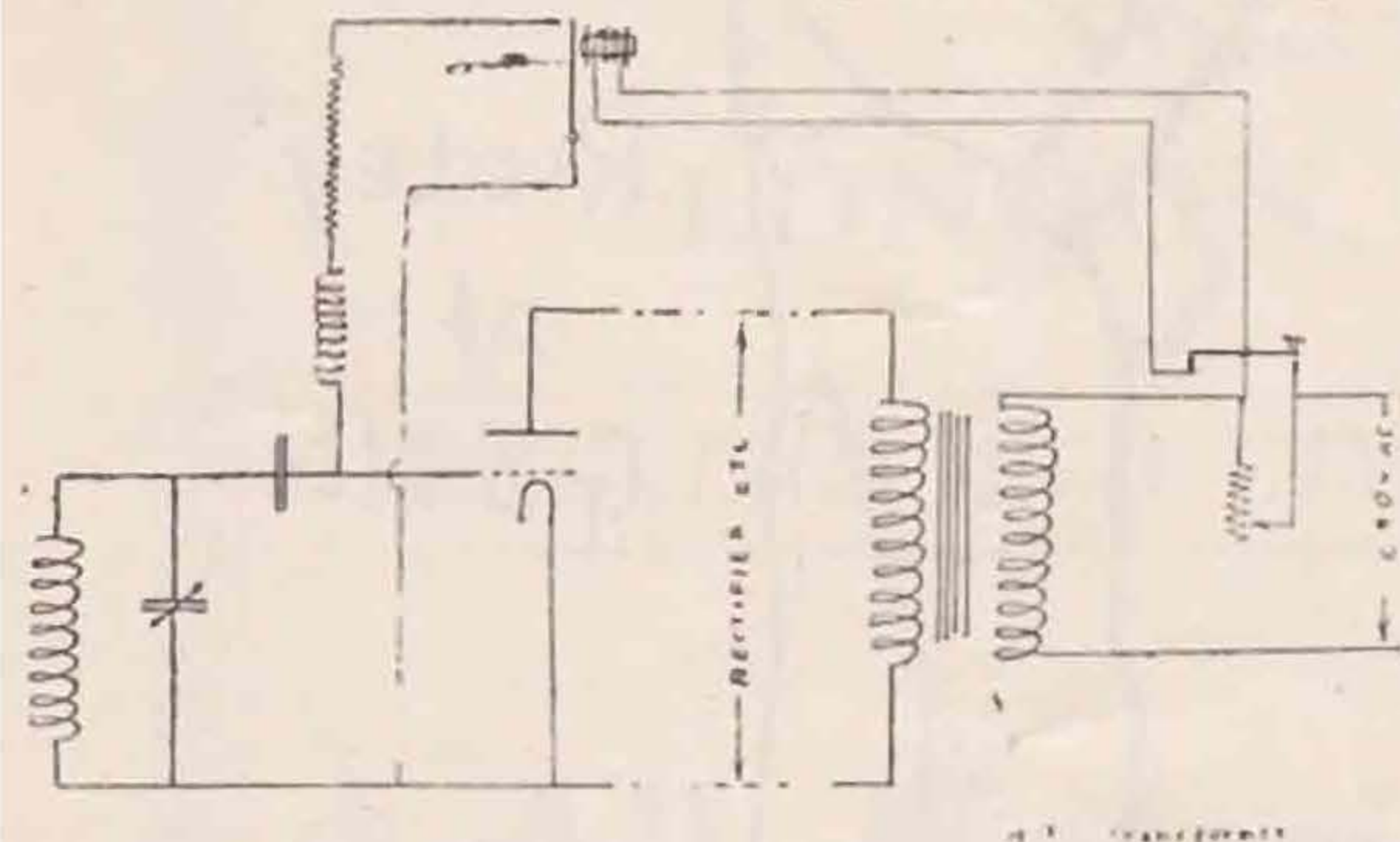


LOW-PWR HAM "PERSUADES" HIS SIGS TO GET OUT.

"Keying"—(Concluded from page 4).

Keying in series with the negative high tension lead may be good on low powers, or even on moderately high powers if low impedance valves are used, which require 1,000 volts or under; but in the case of our high impedance valves using around 2,500 volts, the fireworks obtained are quite extraordinary.

The method of using a spacing wave does not seem to the writer to come under the heading of keying, but is just a simple way of avoiding the difficulty. Is it fair to complain that foreign stations using unsmoothed H.T. supply cause undue interference when, by using a spacing wave, the wave is deliberately spread out over a band in which normally two stations could work? It must be remembered that there are about 100 active stations in England supposed to be working



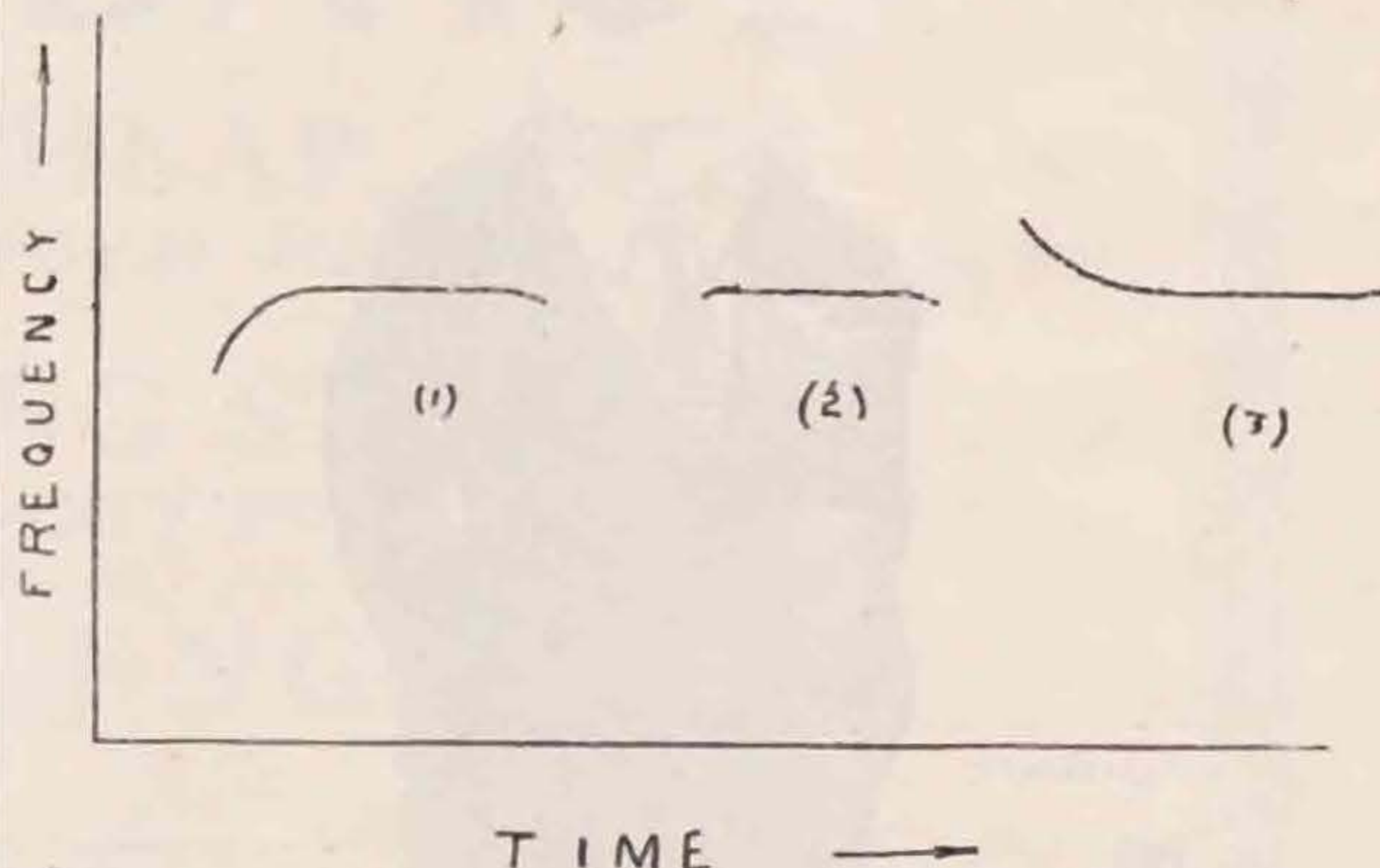
on 45 metres dead. Only a fortunate few are allowed the 44-46 metre band.

Keying in the primary circuit of the transformer is good in that the valve and condensers are not subject to any excessive strain. The difficulty lies in the chirp produced by the discharge of the condensers and due to the variation of plate potential during the charge and discharge of the condensers. It is quite simple to get over this difficulty by putting a second contact on the front of the key or, preferably, a relay working from the back contact which opens the grid leak or filament centre tap circuit. Then, when the key opens the primary circuit, the relay almost immediately opens the grid leak circuit. The grid builds up its negative charge, the valve stops oscillating, and the condensers, if they discharge, do not do so while the valve is oscillating. The note will not be quite satisfactory now, due to the necessity of charging the condensers each time the key is pressed, before the H.T. arrives at the plate. This prevents a sharp beginning of a dot or dash.

Now, if a high resistance is shunted across the key, some current will be going through the transformer primary. When the key is up, the grid leak circuit is broken, which prevents any large flow of plate current, therefore the H.T. produced by this small primary current charges up the condensers. The resistance should be reduced until the H.T. voltage on the condensers, with the key up and no load on the valve, is equal to that with the key down and the full keying load. The condition is now that the plate voltage on the

valve is constant every time the key is pressed, which makes a chirpy note impossible. The resistance across the key, at the same time, reduces the sparking at the contacts. A variable choke, if obtainable, is better than a resistance.

To find the correct value for the shunt resistance connect a variable resistance across the key as shown. Get a beat note in the wavemeter or receiver and send a series of V's. As the re-



sistance is gradually decreased the note will vary from (1) in which the resistance valve is too low, to (2) the correct value, and then to (3), where a chirp is produced due to the condensers being charged to a higher voltage than the normal full load voltage. A fixed resistance may be used once the correct value is found. However, it must be remembered that a leaky condenser or a slight leak in the grid circuit (which will allow plate current to pass when the key is up) will modify the primary current required to keep the condensers properly charged.

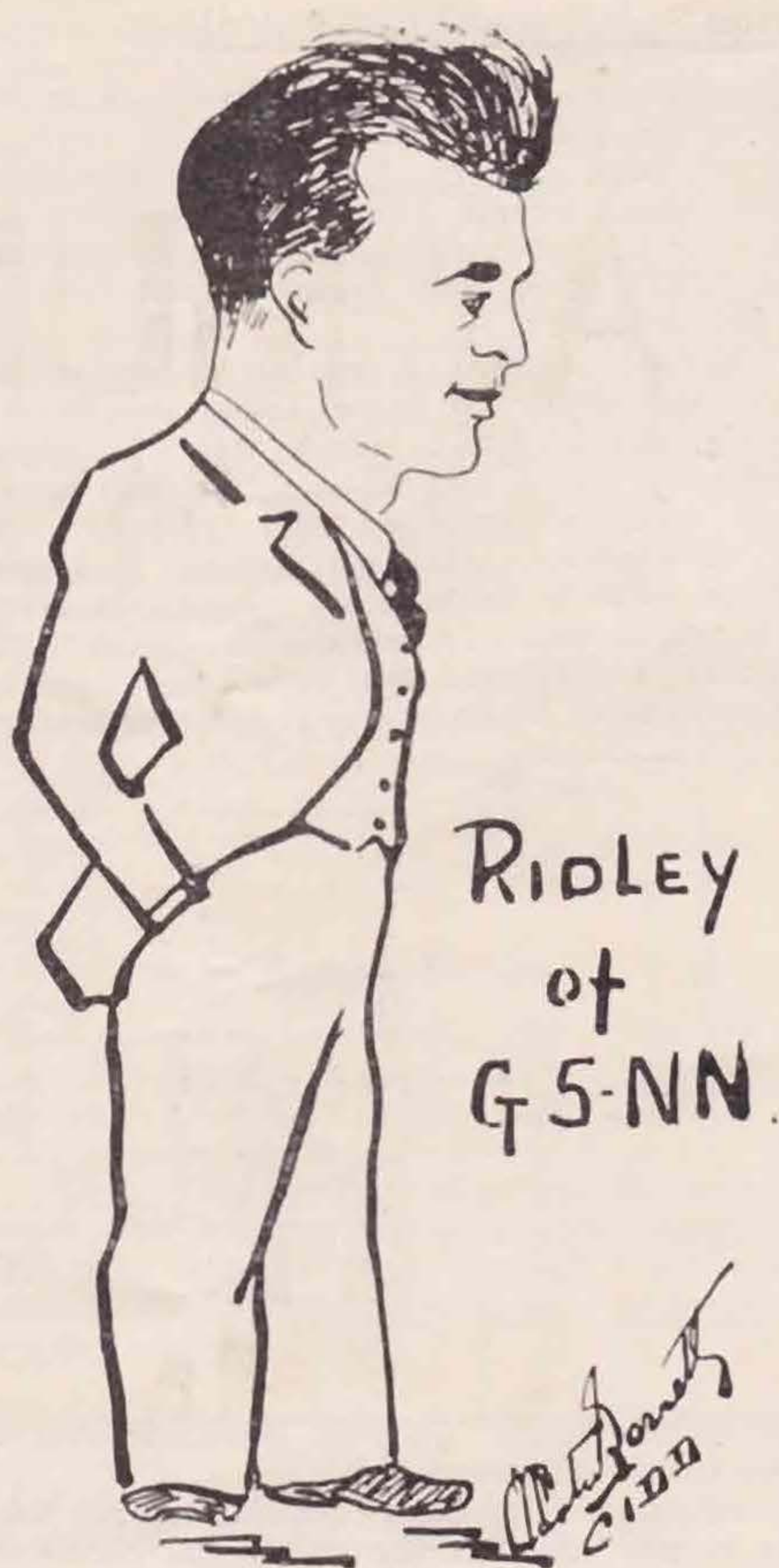
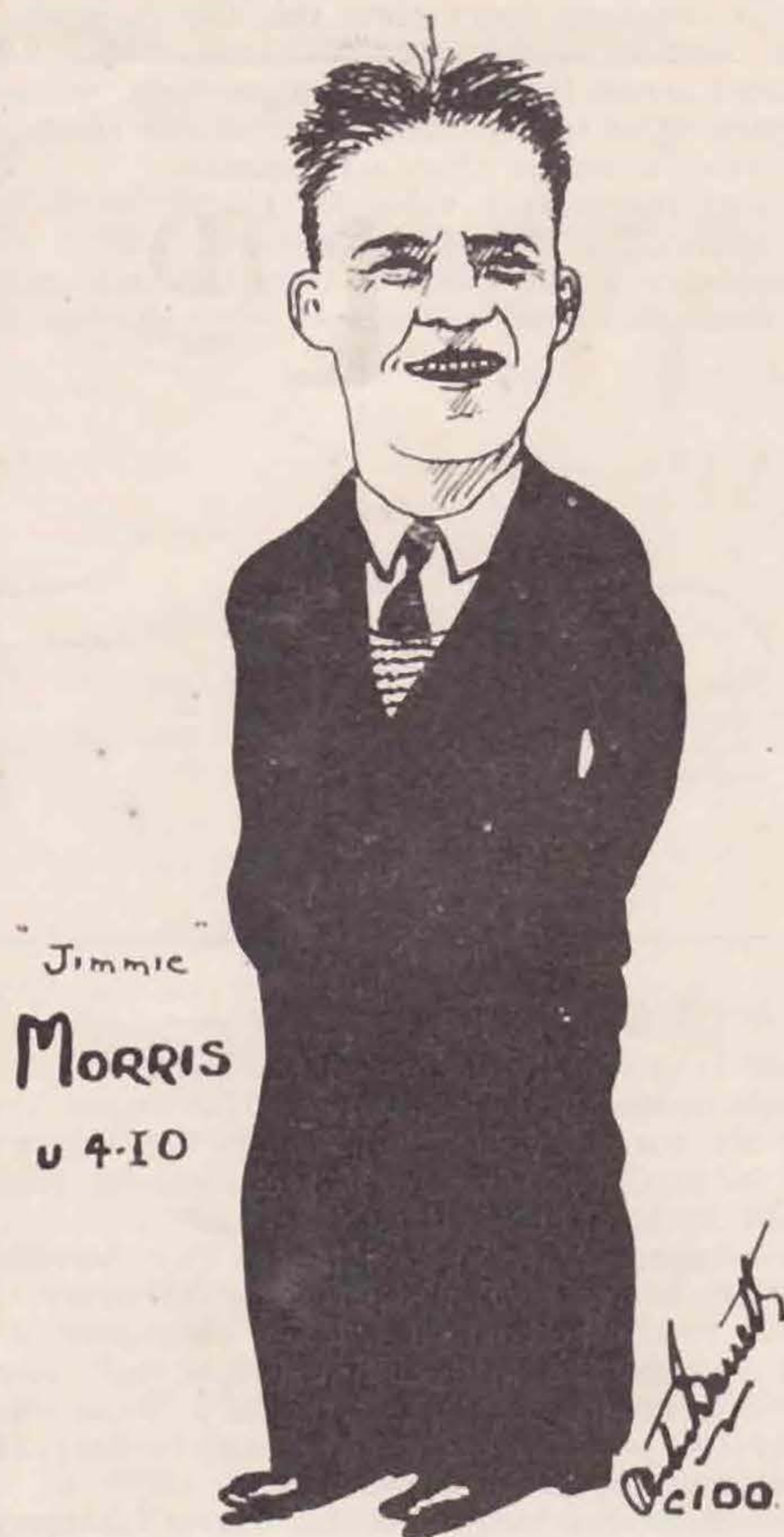
This method is very suitable for a circuit in which it is required to feed two valves from one H.T. supply, keeping a steady voltage on one while keying the other (i.e., when using a master oscillator). The only change will be a reduction in the value of the resistance. The relay breaking the grid leak circuit is, of course, placed in the circuit of the valve which is keyed.

If two different sets on different wavelengths require keying it is only necessary to shift the relay from one grid circuit to another. The same transformer is sure to be used for both sets, so the key connections remain the same.

This method has been used with great success on 90, 45 and 23 metres at this station. It was the only method found which would give a good, steady note. It is surprising how sharp the note can be made by careful adjustment of the resistance valve and the key and relay contacts.

The Radio Society of Great Britain.

The annual dinner will take place on February 3, at the Waldorf Hotel, Aldwych. Reception 7.15, dinner at 7.45 p.m., to be followed by a dance. Tickets, 12s. 6d., to be obtained from the Secretary, R.S.G.B. Members may bring friends and an early application, accompanied by a remittance is advised.



CELEBRITIES 'BY' A CELEBRITY.

Statics.

6SV, of 51, Pleasant Street, San Jose, California, will be pleased to give reports to British amateurs, and will arrange schedules on receipt of correspondence.

U-2bee has now had his call sign changed to U-2apy. His 2RA is as hitherto.

Change of Q.R.A. : G-5gf is now at "The Holt," Hare Hatch, Twyford, Berks.

List of American Government and commercial on short waves : Q.R.A.'s of these stations are contained in the "Commercial and Government Radio Stations," price 15 cents (United States money orders or coin only accepted), obtainable from the Superintendent of Documents, Government Printing Office, Washington, D.C.

Argentine, Chilean, Brazilian and Uruguayan calls are to be found in "Guia Radio," price half a dollar (Argentine), published by the Revista Telegrafica of Buenos Aires, Argentine.

Radio Rifts.

What comprised the blank verse of 2MI when a neighbour suggested "tipping" the mast (a big 'un) at the time the remaining portion of the halliard soaring up aloft became QRT R1 in the truck?

What 2TO likes about this time of the year is the cool of the evening and the rippling AC.

It was delightful the way 5XW effectually disposed of a local oscillator. Rumour has it the latter reciprocated by presenting 5XW with a Christmas hamper.

ETHERCOMBER.

BLANK SPACE

While you think of your Contribution?

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Southern Notes.—(Concluded from page 8)

6JO has installed his new H.T. generator, but so far he has not had time to do much DX work.

6BT is using the 200-volt main for H.T., and has worked the U.S.S. "Pittsburgh" off Marseilles on 90 metres. He is heard all over Europe. Four power valves in parallel are used with an input of 20 watts.

6LJ has worked Fi-8QQ Indo China, first on December 27. He thinks this is the first two-way working between England and French Indo-China. He has had reports that his signals are heard in America as late as 1 p.m. G.M.T.

2OF is working excellent DX with a Hertz aerial and only 16½ watts input. He is QSO all Europe, and has worked Palestine 6YX.

5YM has abandoned his hand generator owing to abnormal development of operator's left arm and rude QSB reports from everyone. He has now installed an ex-Government T.V.T. unit with full-wave rectification; power 20 watts. He is using a Hertz aerial and says it is sure FB in a gale. Best QSO is Finland on 15 watts.

5SZ is now QSO with New Zealand. He says he has sold his R.A.C. outfit thanks to an advertisement in the BULLETIN, and is investing in a 250-watt Mortley generator.

2LZ has been on the air daily, and is at present confining his experiments to DX reports on a Hertz aerial as compared with a plain untuned aerial. A change over is made with every DX station worked. Various powers are tried from the lowest that audible signals can be received the other end up to 500 watts. So far there has not been a single report that the Hertz aerial gives stronger signals than the plain aerial, but the Hertz is steadier in a gale.

Broadcasting Committee, 1925.—(Concluded from page 5).

13. As regards the control of broadcasting, it is the view of the Society that it should be in the hands of one organisation and one organisation only, which, in its turn, should be in the hands of the Government so far as its existence is concerned.

RADIO SOCIETY OF GREAT BRITAIN.

L.C.C. and Radio Lecturers.

The London County Council has addressed a letter to the Radio Society of Great Britain stating that lecturers on radio are required. Financial remuneration is offered, and full details are obtainable from the Secretary, R.S.G.B.

Have you a "Brain Wave?"
Tell us all about it!

Information Wanted!

If the sketch of G2WJ has not been reduced from natural length?

* * *

If the six-reel drama from B.C.L. to H.A.M. in the January issue can be read by the uninitiated as Broadcasting Lunatic to Had Any Mutt?

* * *

Who the Liverpool Transmitter is who WILL read fairy stories and grind out Records? And if he knows he is as loud as the B.B.C. on the South Coast?

* * *

Who the Lunch Hour Southampton operator is, and what the marine key bashers have to say about him?

J. P. J. C.

North-Western Transmitters' Society.

The above-mentioned society has entered into negotiations with this Section of the Radio Society, whereby its members shall become members of our Section, whilst retaining their former title.

Small Advertisements.

BURNDEPT ROTARY CONVERTER, brand new, 12 v. input, 1,000 volts output. £14. List price £25. Rectified A.C. Outfit for 1,000 volts, full wave R.A.C., comprising transformer with H.T. and 2 L.T. windings. 2 Mullard U/30 valves, holders, smoothing box, containing choke and 8 1 mfd. condensers. Filament Resistance for valves and switch for 500 and 1,000 volts. £8 complete.—5SZ, White Croft, Bare Lane, Morecambe.

FOR SALE.—Weston Voltmeter, Model 267, with External Multiplier to 500 volts. Weston Volt-Ammeter, Model 268, 10-0-10 volts, 10,010 amps. Prices on application. Both in first-class condition, and with manufacturers' seals intact. Mullard 0-250 T3A Rating 300 watts morse; price £6; not used more than six hours. Mullard 0-150 Rating 175 watts morse; price, £4 10s.; absolutely new. Mullard 0-50 Rating 70 watts morse, not used more than one hour; price, £3 10s. First come first served. All prices carriage paid in British Isles.—Box 268, T. & R. BULLETIN.

FOR SALE.—Mackie Generator, 700-850 volts, self-exciting, driven by belt by ¼ H.P. New Century split phase A.C. Motor, with centrifugal starter 230 volts 50 cycles, all mounted on a board, complete with terminals. Absolutely perfect condition. Price, £15 lowest.—RADIO 5SZ, White Croft, Bare Lane, Morecambe.

SALE. — 3-valve H.F. Amplifier (ex. Gov.), 2,000-5,000 metres; perfect condition, for super hets. 25s. Sullivan .001 Condenser, 5,000 volts; 5s.—5PZ, 3, Castle View Gardens, Ilford.

WANTED.—600-1,000 volt. H.T. Generator, 200 Watt Newton Alternator, Chokes, Condensers, etc., 220 volt ½ PP. D.C. Motor, must be cheap.—2AWL, 44, Demesne Road, Douglas, I.O.M.

Correspondence.

To the Editor of T. & R. BULLETIN.

SIR,—I do not wish to be drawn into an acrimonious discussion on the comparative merits of English and "Radiese," but Mr. S. K. Lewer's letter invites the obvious reply that there are many others besides amateur transmitters who have piles of correspondence to answer and yet find it possible to write in English. Probably a great part of the average transmitter's correspondence is by post-card where abbreviations are not so out of place. I do not agree with the contention that because the Americans adopted a good feature (the "R" code) from us, we should, in exchange, adopt a hybrid and often ungrammatical jargon of bad English and worse American in our everyday correspondence.

Terseness is not generally a prevailing characteristic of the lesser scientific stars but, if the saving of a few seconds is of vital importance, such superfluous ejaculations as "OM" and "hi" might, with advantage, be omitted.

Yours faithfully,

WILL H. MERRIMAN.

To the Editor of T. & R. BULLETIN.

SIR—After reading Captain Eckersley's very interesting article in the December issue, and the request that amateurs may try modulating the local oscillator of a driven set, I feel I should like to add a word or two on the subject.

The system advocated works extremely well if one or two precautions are taken.

It is essential to see that the "big bottle" amplifies but does not oscillate on its own. To test for this either turn off the H.T. or the L.T. to the local oscillator when all radiation should stop in the aerial circuit.

This happy state of affairs can best be assured by as far as possible limiting the fields of the local oscillator coils and main closed circuit coils, and then by "neutrodyning the big bottle."

This is easily done by moving up the earth clip three or four turns on the main inductance and then coupling the end of the inductance remote from the plate clip, through a variable condenser of, say, .0003 to the grid of the "big bottle."

Also, it will probably help the neutrodyning a great deal to wind the drive oscillator inductance in the form of a low loss "Torus" and then use capacity coupling between the grid of the amplifier and the plate of the driven oscillator via another variable condenser.

Such a suggestion as outlined above was in use at the writer's station for over a year and gave very satisfactory results.

K. HARTRIDGE,

5CB.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—Reference the paragraph headed "Irish Prefixes" in paper 14 of the December issue of the BULLETIN, it may interest you to know that when I was given my extended permit for external communication, the prefix G.W. was allotted officially by the Post Office in Dublin. Presumably, therefore, these letters are the official prefix for the Free State.

M. J. C. DENNIS,

Colonel, G.W.11B.

To the Editor of T. & R. BULLETIN.

SIR,—Through the courtesy of Prof. C. L. van der Bilt, of Delft College, where I am studying, I have obtained an official license for short wave transmission tests, call PG2A. I am going to run a series of tests during January and February of next year, concerning the influence of size and current distribution of transmitting aerials on signal strength on various distances.

It is generally known that a simple aerial oscillating in its natural frequency radiates the greater part of the energy in horizontal direction, and the horizontal Hertz aerial, and the grounded aerial which is excited in one of its harmonics radiate the greater part of the energy in upward direction, which, in the latter case, is concentrated in rather narrow beams, the number and elevation of which vary with the way of exciting. Either of the three systems can give excellent long-distance transmission, and it is the purpose of my tests to see if there is any remarkable difference at various distances, if either of the three systems is used in the same location and with the same input power.

I should like to have the co-operation of the British amateurs, and I thought the best way of reaching them was by putting a little announcement in the T. & R. BULLETIN, and I hope that you will be able to have the enclosed announcement published therein.

On the other hand, I will be very glad to write a report of my experiences for this paper.

Hoping to hear from you in the near future.

I am yours very respectfully,

JOHN L. LEISTRA,

Old OBQ, new PC2A.

SHORT WAVE TRANSMISSION TESTS WITH VARIOUS ANTENNA SYSTEMS AT STATIONS PC2A.

To the Editor of T. & R. BULLETIN.

SIR,—At my station PC2A, QRA, Walenburgstraat 4, Rotterdam, Holland, the following tests are going to be carried out:—

On January 16, 17, and 18 transmission with a vertical aerial on QRH about 36 to 39 metres.

On January 23, 24, and 25 transmission with a horizontal aerial on the same QRH.

The vertical aerial is 16 metres long and 30 metres high at the top, well insulated at both ends, and fed over a long high-frequency feeder. The natural wave is slightly over 32 metres, and this was raised to about 37 metres by inserting a small inductance in the centre. This was done only because there seems very little listening to be done in the U.S.A., and also in Europe, on 32 metres and more on the higher wave.

Between the two tests the vertical wire will be replaced by a horizontal one at about 22 metres height, the length of which will be adjusted to get the same QRH.

During the tests the input will be about 500 watts of kenotron rectified and partly filtered AC.

In the course of February a series of similar tests are planned to compare the present vertical aerial with a grounded aerial excited in an harmonic.

The co-operation of a great many amateurs will be needed to determine the signal strength as a function of the distance, and in those cases where the energy is radiated in upward directions to locate

the regions where the reflected, or rather the re-fracted, wave is reaching the earth again.

Reports from all distances, especially if they concern the reception of both transmissions, will be highly welcome.

The results of the tests will probably interest every transmitting amateur, and will be published in this paper.

The daily schedule is as follows:—

Fifteen minute transmissions beginning 0030, 1200, 1530, 1700, and 2230 all times in GMT. After each test, I will listen on 30 to 45 metres.

JOHN L. LEISTRA.

Rotterdam.

December, 1925.

45-METRE QRM.

To the Editor of T. & R. BULLETIN.

SIR,—Is it not time that some steps were taken regarding this matter? There are times when Babel does not describe the noise.

Can anything be done? Just by way of making a suggestion and opening the ball, could not some of our most famous stations, e.g., 2NM, 2OD, 2LZ, 2SZ, etc., lay their heads together and devise some scheme whereby districts or areas should take it in turns to have prior claim on the air? At present it is a case of the station with the biggest bottle gets through.

Naturally, any scheme of voluntary and self-imposed discipline would fail unless our neighbours could be persuaded to co-operate. But why not try some form of co-operation between the BULLETIN, "The Journal des 8," and "The Résean Belge." It is admitted that there are difficulties, but no one has more clearly demonstrated than the ham that difficulties exist only to be overcome.

The A.R.R.W. is at an advantage because it "governs" so large an area. In Europe, of course, a much smaller area would be controlled by many national amateur organisations, which fact leads only to the present babel.

Would it not be a most worthy object for the British section of the I.A.R.U. to investigate the possibility of a unified European control of amateur transmission?

It occurs to me that the first step to take is to issue a ban upon indiscriminate phone work on 45 metres and to assure the Row A.C. merchant that he is unpopular.

A couple of Sundays ago, while listening on 45, a G station, which shall be nameless, was "testing." He was not working anyone—not at all—merely pumping out rather poorly modulated phone on a "rough" carrier. Here marked that he was using an input of 97 watts and would be glad of reports. What on earth is the use of this sort of thing? Is it not desirable to stop it? It ruins D.X.

May I conclude by commending the whole matter to the attention of our I.A.R.U. officers—"for their attention and necessary action, please."

H. J. B. H.

(6JV).

WHERE ARE THEY?

To the Editor of T. & R. BULLETIN.

SIR,—Referring to my letter in the December BULLETIN and to Mr. R. W. Lodge's suggestion, in the following issue, that I should overhaul my receiver, may I say that I do not think my recep-

tion is faulty. I can receive most things that are receivable and can log large numbers of stations on 45 metres on a Sunday. But what about other waves and other times. A couple of years back one could rely on there being a fair amount doing every night after ten o'clock on 150-200 metres and also on 115-130 metres. Possibly when the 45 metre rush has subsided some of the stations will appear again on the longer waves for medium and short range work.

A. B. RICHARDSON,

(6FQ).

9, Quarry Road, Hastings.

January 10, 1926.

THE ADVANTAGES OF HERTZ AERIALS.

To the Editor of T. & R. BULLETIN.

SIR,—With reference to my article on the "Hertz" aerial in No. 4 of the T. & R. BULLETIN, I have had letters from several amateurs who cannot make the bulb light up. I should have stated that the particulars relating to the bulb were for powers of not less than 100 watts.

For the lower powers it is necessary to cut the aerial at the centre and insert the bulb directly in the aerial. For under ten watts a low consumption bulb should be used or it may be found necessary to insert an aerial meter in place of the bulb and read it by means of a telescope!

Judging from reports which I have received from amateurs, the "Hertz" aerial has given better results than the previous aerial in nine cases out of ten.

C. W. GOYDER,

(2SZ).

44, Hale Lane, Mill Hill, N.W.7.

January 14, 1926.

To the Editor of T. & R. BULLETIN.

SIR,—I take off my hat to 6JV. Before I read the description of his receiver (page 6, January issue), my arms used to ache with twiddling a couple of condensers with six-inch extension arms like pump-handles. At present I can't find anything wrong with 6JV's condenser control.

I haven't gone in for glass tubes, cotton reels, waxed thread, and jockey pulleys yet. All I have is a couple of 2B.A. brass rods, ebonite knobs, Meccano pulleys and strings. By using 3-inch and 1-inch pulleys, I get a reduction ratio of 3.1, and this, controlling a 3-plate condenser, covers 30 to 47 metres on one coil without being too critical.

6JV's control I can thoroughly recommend to all those who have developed aching arms and stiff fingers.

S. K. LEWER,

32, Gascony Avenue,

West Hampstead, London, N.W.6.

(6LJ).

To the Editor of T. & R. BULLETIN.

SIR,—Can any reader advise me of the QRA, or nationality, of a station C22, with international prefix BB?

I heard him on 93 metres last night, calling CQde BB C22.

If you can insert this notice in the BULLETIN, I shall be obliged.

B. J. AXTEN,

(2VJ).

(Concluded on page 20)

Delivery from Stock:—

H.W. Aerial Meters—0/2.5 amps. Ex. W.D.
Each **4/9**.

Dubilier .002 Mica Condensers, 20,000 volts.
Each **10/-**.

H.T. Transformers, all windings, from **17/6** to
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Nickel plated edgewise wound **Copper Strip**. **6d.**
per turn.

Smoothing Condensers.

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30-45 Metre Band.—4ask, 4bu, 4cu, 4gw, 4rm, 5ac, 5ok, 5oq, 6bpg, 6cmd, 6css, 6ji, 7nx, 7oj, 8aa, 8ada, 8afd, 8aly, 8aul, 8bnn, 8eb, 8al, 8jq, 8il, 8ll, 9cwx, 9dmj, 9dr, 9xn, c2bg, a2bb, a2bk, a2cs, a2cm, a2ya, a2yi, a5bm, a7ag, a7jb, ziac, ziao, zlac, z2ac, z4ar, z4as, bzlab, bzlaf, bzlan, bz2sp, rdm9, beber, ch2id.—RALPH H. PARKER, 2KK.

2cc, 2kf, 2kz, 2nb, 2nm, 2qb, 2qm, 2sz, 2wj, 5dh, 5pm, 5qz, 6iv, 6kk, 6lj, 6td, 6tm, 6nf.—Pse qrk? u2cje, G. W. LINN, 151, West 231 Street, New York City, U.S.A. Received by G6LJ via Radio, 11/1/26.

U.S.A.—9bv, 9cna, 8bf, 9adk, 8zr, 8ul, 8bpl, 8ebi, 8egh, 6oi, 5zl, 3bta, 3pf, 2rv, 2pr, 1bux, wir; Cuba—q-2mk.—December 30, 0130-0230 G.M.T. French—8na, 8hm; Norway—lala, 1ljw; Belgium—b2; Spain—eac9; Germany—k18; Italy—lbs, lay; Finland—s2co; Great Britain—2sz, 6bo, 6nf, 2kf, 2kf, 2cc; U.S.A.—laap, 2aim, 5ew, 8aix, 8coo, 9ak, 9xi, 9bqe, 9uv, 9duc, 9nk, 9axb, 9bv, E. G. INGRAM, 612, 18, Victoria Street, Aberdeen Scotland. January 9, 0030 G.M.T.

G (fone only)—6ah, 6yu, 6jw, 6yi; U—1ckp, 1cmp, 1cmf, 1sw, 1axa, 1si, 1ch, 1za, 1yb, 1bgq, 1aoi, 1cmx, 1aya, 1bvl, 1aap, 1amd, 1ga, 2xe, 2aky, 2afo, 2ekl, 2em, 2mk, 2bir, 2cvj, 3yx, 3bss, 3bz, 3py, 3bva, 4je, 4bu, 4iz, 4rr, 5acl, 5zai, 8dgp, 8dgl, 8bzk, 8aul, 8dfr, 8bww, 8ay, 8dto, 8dia, 8dem, 9dqu, 9eji, 9ff, 9baz, 9za, 9avj, 9egh, 9ado, 9bht, 9dng; C—1dd, 1dq, 1ar; Sweden—smxu, smzz, smuv, smzs, smui, smvj; Italy—lrm, 1gw, 1as, 1ay, 1bd, 1nk; S—5nb, 2nx, 1a4x, 2nn, 2co, sgt, ska, laia; A—3ak, 3bd, 3bm, 2cm, 2bb, 3lm, 3yx, 5bg; O—a6n, a3e, a4z; P.I.—1hr, 1fn, najd, naji; F.I.—8lbt, 8qq; Z—2xa, 2ac; M—1aa; BZ—5aa; R—fh4; Y—7xx; Various—gfup, ntt, nkf, gha, eibh, 1dh, pc7, lxl, da, 4av, neqq, 12bb, 1sl, egch, ber, ses, dtbt, ndx, e—a2. All requests for full qsl's will be answered gladly. qrk g60h?—G. S. SAMWAYS (G6H), London Road, Lichfield, Staffs.

G—2aey, 2akg, 2bl, 2cc, 2da, 2cc, 2fm, 2gy, 2jb, 2jp, 2qb, 2qv, 2to, 2xv, 2zb, 5by, 5dk, 5ec, 5ft, 5gs, 5hg, 5hj, 5hx, 5ko, 5ku, 5lf, 5mo, 5rq, 5rz, 5si, 5sk, 5sz, 5wq, 5yi, 6do, 6er, 6fa, 6fq, 6iz, 6jb, 6lj, 6pg, 6rw, 6su, 6td, 6uz, 6vp, 6xg, 6yc, 6yq, 6yu, 6yv; GI—5nj, 6mu; GW—11b; F—7vx, 8ca, 8gi, 8jc, 8jd, 8jl, 8jr, 8dk, 8dch, 8il, 8mmp, 8pex, 8pkx, 8pm, 8sz, 8st, 8th, 8tok, 8tk, 8xb, 8z3; K—kpl, k7, i8, 14, w4; LA—1a, 4x; S—2co, 2nd, 2nx, 5nf; B—c2, e9, g6, k2, l9, s2, u3, w2, w3; N—ocz, 0gg, 0px, 2pz, 12bb; D—7zm; H—9ad, 9br, 9kd, 9rna; YS—7xx; E—1bh, 3cm; gbl, gb2, P—1ab.—pse qsl: cards waiting.—L. H. THOMAS (G6QB), 33, Harpenden Road, West Norwood, London, S.E.27.

(On 30-45 Metre Band.)

1ac, 1ah, 1am, 1ch, 1fn, 1ga, 1hj, 1kw, 1lw, 1qm, 1rd, 1rr, 1si, 1sw, 1sz, 1wl, 1xz, 1yb, 1aae, 1aao, 1aci, 1aff, 1ags, 1ahg, 1aid, 1aiu, 1amf, 1ana, 1aou, 1apv, 1ary, 1atv, 1atj, 1avi, 1axa, 1azd, 1bgq, 2ag, 2bl, 2bm, 2bo, 2cv, 2gc, 2gk, 2gp, 2hh, 2kp, 2ld, 2uk, 2wr, 2xa, 2zv, 2agg, 2ahm, 2ajw, 2aky, 2ana, 2anm, 2apv, 2baz, 2bkr, 2bnc, 2bqb, 2bql, 2brb, 2bxj, 2cje, 2cnj, 2crb, 2cvj, 2cvs, 2cwj, 2cxl, 2xap, 3bf, 3ca, 3dh, Cio 3jo, 3kp, 3lw, 3adm, 3aha, 3apv, 3bhv, 3bss, 3bta, 3bwt, 3cjn, 3ckj, 3cnu, 4du, 4fl, 4fn, 4io, 4je, 4ll, 4oy, 4rl, 4rr, 4rm, 4sa, 4tv, 4ur, 4we, 5jg, 5kw, 5qk, 6aul, 6awt, 6cto, 6hm, 6ui, 7acv, 8aj, 8bt, 8es, 8rh, 8zu, 8ary, 8aey, 8awa, 8bgn, 8bmn, 8bpl, 8buk, 8byn, 8ccq, 8cjp, 8cy, 8don, 8dgp, 8djp, 8ek, 8bj, 9adk, 9apn, 9bht, 9bjc, 9bpb, 9bwb, 9dng, 9dqu, 9eji, 9egu, nism, nisp, nndm, nqgi, nuqn, nnb, ntt; Philippine Islands—1hr, najd, nuqq, neqq; FI (French Indo China)—8qq; Canada—lar, lak, 2ax, 2fo, 2bg, 3aa; Australia—2cm, 2rj, 2yi, 3bd, 3bm, 3ef, 3yx, 6ag; New Zealand—2ac, 2xa, 3ad, 3af, 3an, 4ac, 4as, 4ag, 4av; Argentina—af1, af3, bal, fc6, fh4, ga2; Brazil—1ab, 1ac, 1af, 1an, 1av, 1ax, 1ia, 2ab, 2af, 5aa, 5ab; Chili—2ld; Africa—3ae, 3ab; India—hbk; Bermuda—ber; Palestine—6zk; Miscellaneous—sgc, ghb, gha, 1dh, rcl, elbh, vis, aabz.—J. RODGERS (G6JO), Falmouth.

(On 20-50 Metres)

G—2go, 2fm, 2fo, 2zi, 2vq, 2qj, 5pm, 5sk, 5jw, 6op, 6yg, 6fa, 6yu, 6yq, 6qb, 6yw, 6iz, 6er, 6uz, 6gf, 6oh, 6vx; U—1ch, 1aof, 1hn, 1cal, 1yb, 1cab, 1aao, 1ajo, 1aiu, 1all, 2zv, 2gk, 2bbx, 2bsd, 2aes, 2kx, 3lw, 3cag, 5ew, 5ux, 5mi, 8xe, 8aix, 8ccq, 8cfq, 8doe, 9dez; F—See, 8ix, 8jx, 8xh, 8pkx, 8pm, 8ww; BZ—1ia, 5ac, 1ab, 1ay, 1ac, 1af, 6qa; A—2yi, 2cm; Z—4ac, 1ax; N—ocz, oca, oms; O—a4z, a6na; I—1pm, 1co, 1as, 1au, 1bd, 1ay; B—g6, u3, s5; K—4ly, y8; S—2nx, 2co, 2nd; Swedish—smxr, smzs, smur; Strays—rbal, d7zm, hbk, elbh, kpl, xgb1, pe6zk, 1sl, nrdm, lala, 1xl, p7, raa8. All on ovl. "A card for a card." qrk mi "aether shaker" on 45 oms. pse qsl.—G. A. JEPES (G2XV).

U—1yb, 1rf, 1cof, 1aci, 1abp, 2agq, 2bbx, 3lw, 3afq, 5ahp, 8gz, 9me, wgy, nisp, nve; BZ—1ab, 5ac, 1ac, rgt, 2sp; C—lar, 9al; SM—smvs, smzz; R—fa3; PR—4sa, 4rl; I—1rm, 1bs; K—kpl, k4pf, kxb; M—lax; A—5bg; YS—7xx; O—a6n; Palestine—x6y; Miscellaneous—xgbi, rb5aa. Cards waiting. 9rk mi c.w. on 45.—FOLLIFOOT (G6YR), near Harrogate, Yorks.

(DX Stations logged at C1DD, Dartmouth, N.S.)

S2co, ssgc, g5dh, f8gp, rge, nisp, g2qb, g5dh, g2nb, g2kf, g2wj, g2nm, g6yg, f8yb, f8ja, f8dy, f8ct, ilay, s2co, g5dh, ssgc, g2nm, g5dh, f8dd, pb3, g5dh, g2nm, pb3, ilbd, a3ef, a3lm, raa8, g5nj,

g2nm, g5dh, a3ef, rae5, g2nm, g5mo, a2yi, a2rj, a3ak, g2wj, g2cc, f8dd, f8ww, s2co, g6er, raa8, a2yi, g5dh, g2cc, a3bm, a3ak, u6bjd, g2kf, g2cc, g2sz, g2nm, g5lf, g2wj, g6tm, g2qz, g2cc, g6er, g6nf, g2nm, g5vl, ilas, f8gp, npb3, bxm, bb2, a3ak, g2in, g2nb, ssgc, a3ad, ilas, f8yor, g5pm, g2nm, g2cc, a5ah, g6lj, g2cc, f8gi, f8yor, f8gp, nfv, k4lv, a2rj, a2yi, a3jr, a2tm, u6cae, z2ac. Receiver used on the above was a two-tube set, using detector and one step of audio. The above gives some idea of the kind of DX that is an everyday occurrence nowadays. November 29 was a particularly fine day, and the English signals were being received here at 2.30 p.m. on the 45-metre wave, a very unusual time; in fact, I had the pleasure of working g2kf, 2cc and 5lf before 3.30 p.m., using an input of less than 70 watts. No doubt I could have logged many more had I been able to spend the time at it that day. Note: 1dd wieqsl with any stations worked at any time, and will be glad to make tests with any DX stations. It might interest the British station owners to know that the Canadians are to be given a wave-band around fifty metres for British Empire amateur radio work, and they are making tests around fifty metres now. Please ask all British Empire stations to keep an ear for them.—C1DD.

Correspondence—(Concluded from page 18).

POSTAGE DIFFICULTIES.

To the Editor of T. & R. BULLETIN.

SIR,—I have been wondering for some time why I have not received QSL cards from certain Belgian and French amateurs giving details of reception, etc., of certain tests I have carried out with them on S/W, especially as I know they have my QRA O.K., and as they promised to send fuller details of reception by card. It is left to the "Wireless World" to give me the reason for this, as in this week's issue I find that many French amateurs send their cards to the "Journal des 8," and to obtain these, British amateurs have to obtain an International Reply Coupon, and send same, together with a fully addressed envelope, when these cards are then forwarded.

This is the sort of information which I consider should be circularised to members, or at least published in the BULLETIN!

As these coupons cost 4d. each, and another 2½d. to send them over, it becomes quite an expensive item to get a few cards, which may or may not give you useful data on your tests.

I would like to suggest that some such scheme as that apparently used by the "R. B." and the "J. des 8" be inaugurated by the R.S.G.B. That our QSL's here be sent to the R.S.G.B. (possibly several cards in one envelope), and that the R.S.G.B. arrange with the "R. B." "J. des 8," etc., etc., to make a weekly exchange of QSL's in bulk, and those members expecting cards, at the same time send the R.S.G.B. stamped addressed envelopes for having them forwarded under one cover. Where members had cards (unclaimed) awaiting them, the BULLETIN could publish a list of calls for those whom cards were waiting, and I venture to suggest that this might still further attract members to join the T. & R., in order to obtain their QSL's, and to see if their calls were published in the BULLETIN.

Notices re this arrangement could be inserted in the various wireless journals, and I feel sure an influx of more new members must result, otherwise a great number would miss their cards.

Postage is a heavy item, and it would mean such a big saving to amateurs on both sides of the Channel (where postage is highest), that I think all would gladly welcome such a scheme. In particular, of course, it affects the low power man, but it might even prove of benefit to those using higher power, and working U.S. and Canada, as instead of posting five or six cards separately, they would all go under one cover.

C. A. JAMBLIN, (G6BT).

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Address

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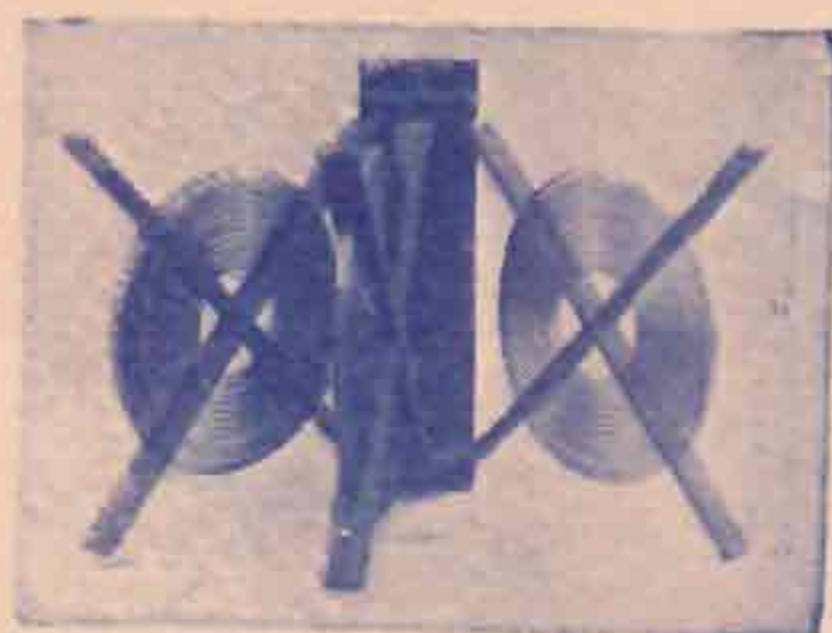
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