



T. & R. Bulletin



Incorporating

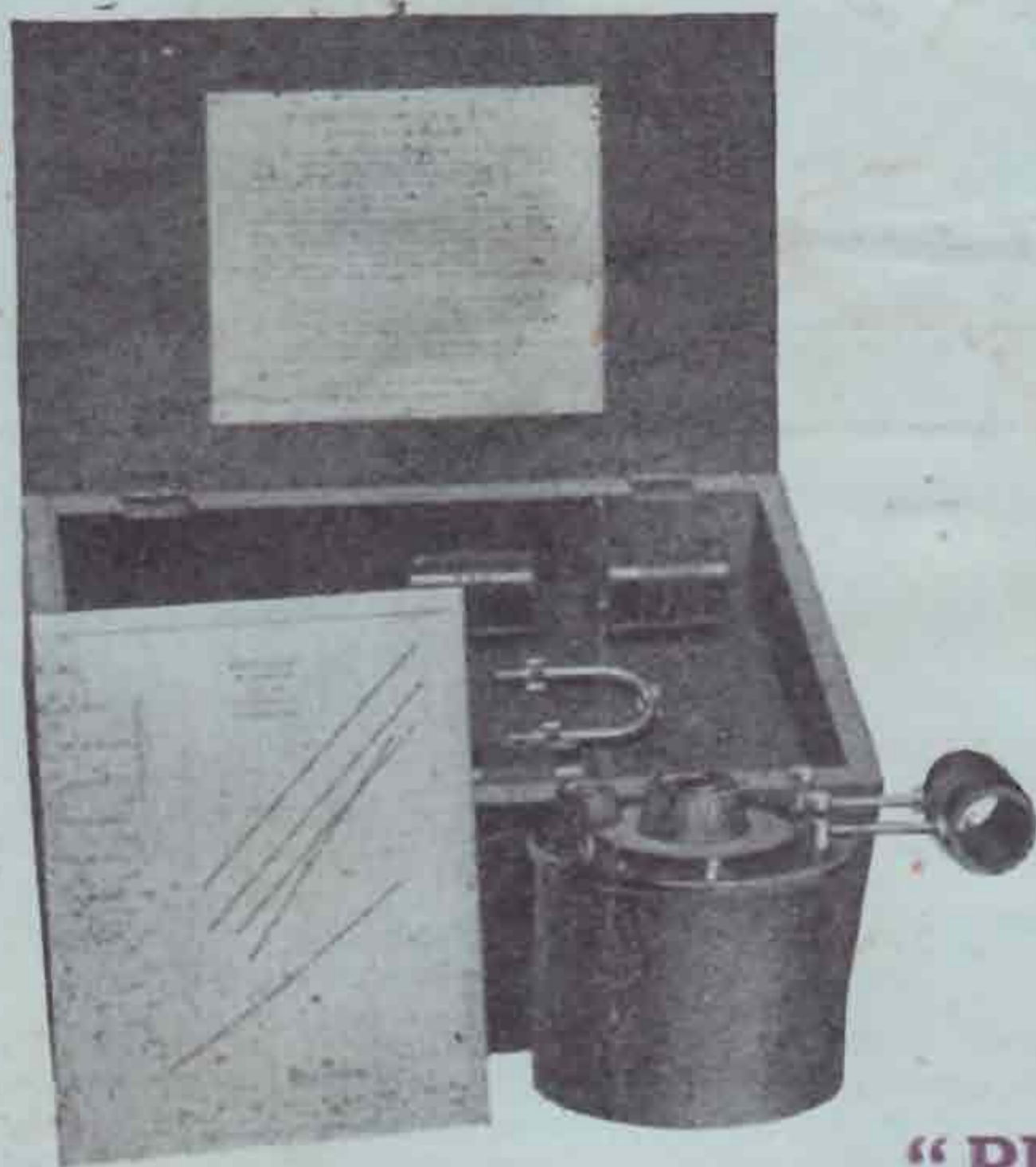
The Journal of the Inc. Radio Society of Great Britain

(BRITISH EMPIRE RADIO UNION)

Vol. 5. No. 1.

July, 1929 (Copyright)

Price 1/6



"APPROVED" by the P.M.G. THE NEW 558-P Amateur-Band Wavemeter

Our 558-P. AMATEUR-BAND WAVEMETER covers the 5-, 10-, 20-, 40-, and 80-metre Wavebands with a guaranteed accuracy of better than 0.25%. It has been exhaustively tested by the competent G.P.O. Engineers at the Dollis Hill Radio Research Station, N.W.2, and our claims were found to be justified.

Under P.O. Reference 119,165 of 28/2/29, "wavemeters of the type quoted (558-P) will be regarded as satisfactory for use in measuring the frequencies used at experimental wireless transmitting stations in this country."

At last the "Amateur" is freed from the vagaries of crystal control and from the expensive Piezo Oscillator. Large Stocks. Immediate deliveries.

LIST, £6 complete ; to "HAMS" £5.

Carriage Paid.

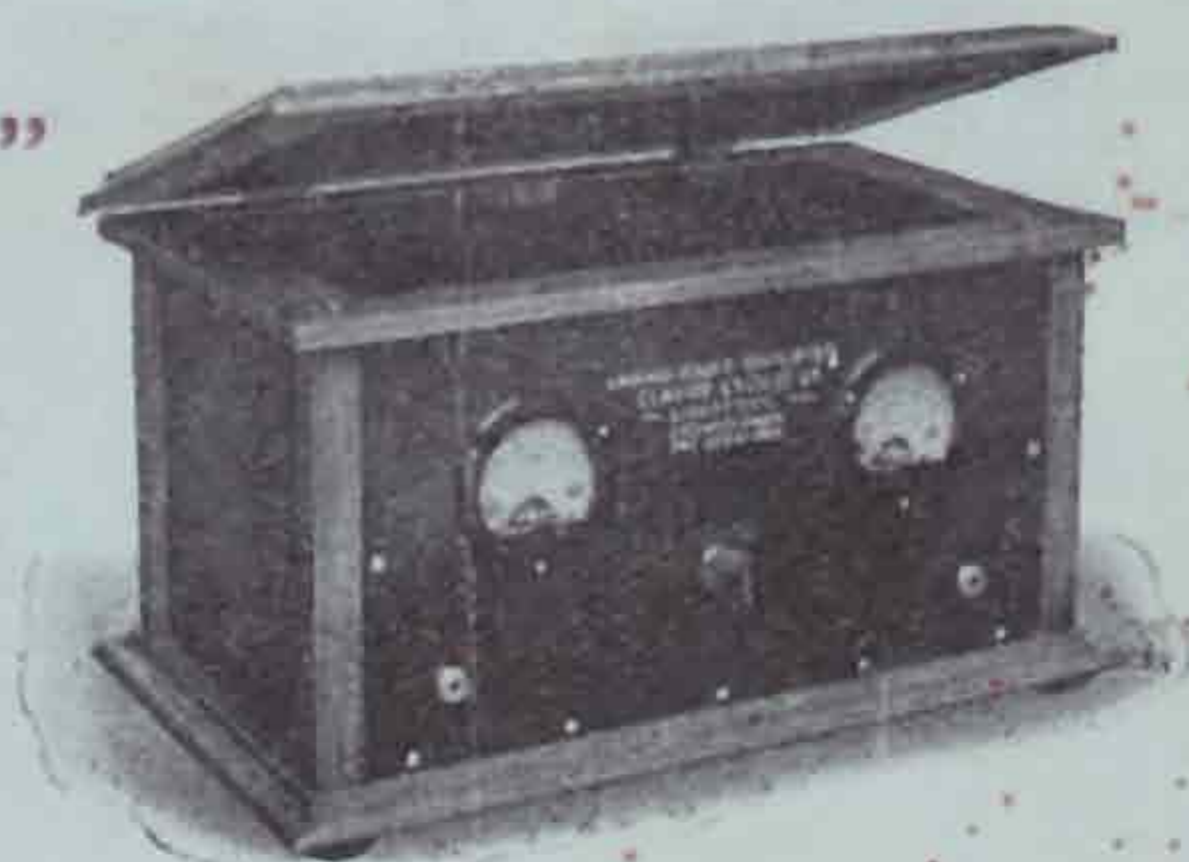
"Ham" price applies only on direct orders to us.

A NEW

"PUSH-PULL"

2-Stage "De-Luxe" AMPLIFIER.

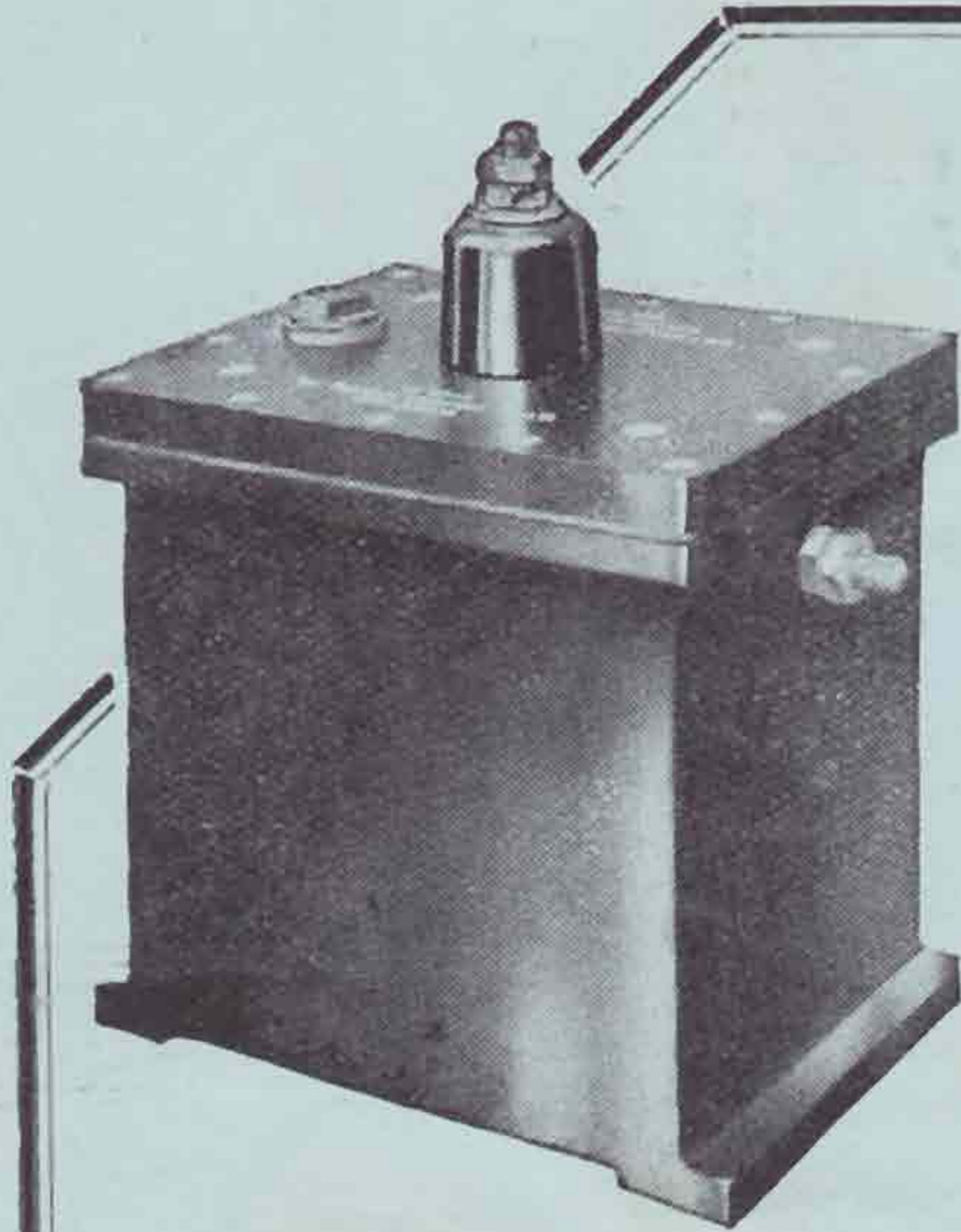
Our "B.A.T." (Registered Trade mark) New 2-Stage Push-Pull Output high quality "De-Luxe" Gramo-Radio Amplifier is now released. Fully Licensed under Patent 275 of 1915 and other Letters Patent. Price £14 14s. in oak or mahogany cabinet. Scale Drawings 1s. 3d. post free. Complete Kit of parts, including two Ferranti Meters, lists at £10 17s. 6d. Built in one evening. Results easily beat all competitive instruments we have had through our Laboratories. Entirely British-Built.



SUPPLEMENTARY CATALOGUE NOW IN PREPARATION. SEND A P.C. RESERVING ONE AND ASK FOR OUR CURRENT, FREE, 488-PAGE BULLETIN.

CLAUDE LYONS LTD, LIVERPOOL

Advt. of Claude Lyons, Ltd., 76, Old Hall Street, Liverpool



T.C.C.

TRANSMITTING CONDENSERS

The Condenser illustrated has a capacity of .0002 and is required to pass 5 amps. at 50 metres and work at 10,000 volts D.C.

Condensers for all purposes, including Power Factor Improvements, Wireless Reception, Smoothing, Telegraphy.

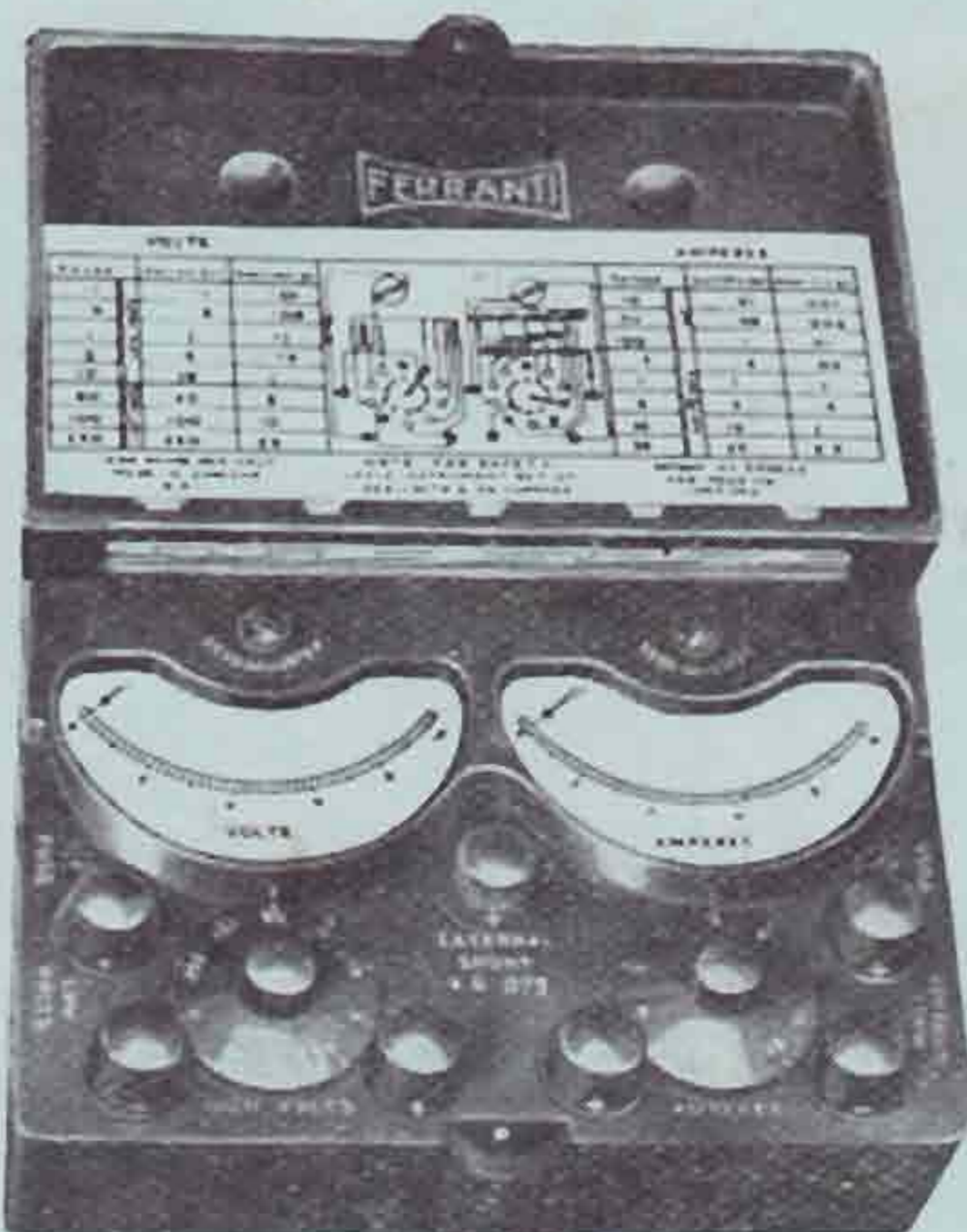
“T.C.C.” Transmitting Condensers have been working at Post Office and Broadcasting Stations for years and have given satisfaction. We invite your enquiries giving details as to capacity and voltage, etc.

TELEGRAPH CONDENSER CO., LTD., Wales Farm Road, North Acton, London, W.3.

9229

FERRANTI

MULTI-RANGE TEST SET



The Multi-range Test Set is the latest addition to the range of Radio Meters. It fully maintains the high traditions of scientific design and manufacturing skill for which the makers of the famous AF3 Transformer are renowned, and it has many applications. In fact, there is no direct current measurement—current, pressure, power, or resistance—up to 25 amps. 250 volts, that may not be measured by this instrument. An even greater and almost unlimited range may be obtained by the employment of external shunts and resistances.

It comprises two of our Radio Meters—an ammeter and a voltmeter—mounted side by side in a moulded bakelite case with terminals so arranged that current and voltage readings may be taken simultaneously. By means of rotary switches mounted on the instrument a wide range of readings are obtainable, namely:—

VOLTS.		AMPERES.	
0-0.1	0-10	0-0.01	0-1
0-0.5	0-50	0-0.05	0-5
0-1	0-100	0-0.1	0-10
0-5	0-250	0-0.5	0-25

Size ... 5 1/2" x 4 1/2" x 1 1/2". Weight only 1 lb. 14 ozs.

PRICE. For set only £7 : 15 : 0
 Complete with case, plugs and leads £9 : 5 : 0
 Extra for Resistance box to increase range to
 500 volts £1 : 10 : 0

FERRANTI LTD.

HOLLINWOOD

LANCASHIRE

ALWAYS MENTION THE R.S.G.B. WHEN PURCHASING.

TRAR

BULLETIN.

The only British Wireless Journal Published by Amateur Radio Experimenters

*All correspondence and matter for publication to be addressed to the Hon. Secretary, 53, Victoria St., London, S.W.1.
Tel.: Victoria 4412.*

Officers and Council for year 1929.

President: GERALD MARCUSE, Esq. (G2NM).

Acting Vice-President: H. BEVAN SWIFT, Esq. (G2TI).

Honorary Treasurer: E. DAWSON OSTERMEYER, Esq. (G5AR).

Honorary Secretary: G. F. GREGORY, Esq. (G5PZ).

Honorary Editor: G. W. THOMAS, Esq. (G5YK).

COUNCIL:

K. ALFORD, Esq. (G2DX), D. P. BAKER, Esq.

(20Q), J. CLARRICOATS, Esq. (G6CL) A. HAMBLING,

Esq. (G2MK), CAPTAIN K. HARTRIDGE (G5CB),

A. HINDERLICH, Esq. (G2QY), E. MEGAW, Esq.

(GI6MU), J. W. MATHEWS, Esq. (G6LL), R. L.

ROYLE, Esq. (G2WJ), A. WATTS, Esq. (G6UN).

JULY, 1929.

Vol. 5. No. 1.

EDITORIAL.

With this issue the BULLETIN enters its fifth year. Looking back on the four previous volumes one cannot but realise that the BULLETIN is growing in both size and quality. The summer months are necessarily lean ones for any publication, but we look forward with confidence to another leap towards our ultimate goal with the coming of the autumn months, bringing, as they do, a renewed interest in Radio, without the diversions common during the summer. To our various contributors of past years we extend our thanks for their efforts in assisting us to keep the BULLETIN in a secure position among the foremost amateur radio journals of the world, and we are confident we shall receive continued support in the future. No publication, such as the BULLETIN, without a heavy financial backing, can be produced unless a substantial support is received from advertisers, and no advertiser will place contracts with us unless he in turn receives a steady response from our readers. If members would bear this fact in mind they will be doing more than they realise to help their own interests. We hope to see the fifth volume of the BULLETIN the biggest and best yet produced, and members will, we feel sure, do all they can to assist us to achieve this end.

We feel sure we are voicing the sentiments of our readers, both at home and abroad, when we offer hearty congratulations to Mr. J. Noden (G6TW), of Nantwich, and to Mr. E. T. Somerset (BRS125), of Burgess Hill, who, on May 19, 1929, marked off another mile in the history of British Amateur Radio. Mr. Somerset was successful in receiving a test call transmitted from Mr. Noden's station on 56,000 K.C. The distance between the two stations is approximately 175 miles, and G6TW thus qualifies for Mr. Somerset's prize offer as previously announced in these columns.

With a Contact Bureau Group already working on 56,000 K.C. problems, we are confident that British stations will be well to the fore when international work on this frequency becomes an established fact. The banding together of members working on similar problems through the agency of the C.B. Groups was largely responsible for the success of British stations when 28,000 K.C. was leaving its mark in history, and we are hopeful that C.B. will again justify itself in the near future.

Details of Mr. Noden's transmitter are to be found in the C.B. notes of last month's BULLETIN, and we are assured by a member who visited Burgess Hill that the receiver there leaves nothing

to chance. Without wishing to convert this into a technical article, we should like to point out to readers that the 28,000 K.C. band is 2,000 K.C. wide and that the 56,000 K.C. band is double this width; under these circumstances a tuning condenser that just covers the band is to be advocated. With a limited tuning range the reception of weak signals is vastly easier, and this point was fully appreciated by Mr. Somerset. The general use of these two H.F. bands for two-way amateur communication will do much to relieve the congestion at present only too obvious on the other bands suited to long distance working. We can thus only hope that they will prove to be the gold mine that is expected of them, the opening up of which will be another piece of work to the credit of the Radio Amateur.

We remember a cartoon in QST some years ago in which the various amateur wave-bands from 200 to 5 metres were each portrayed as an animal. Mr. "Ham" was seen stroking the smallest animal, with the others jealously looking on; the cartoon was aptly called "The Latest Pet," the truth of which is slow but, we hope, sure in coming. Exactly what the future holds in store for us on the 56,000 K.C. band, and also on the still nebulous 28,000 K.C. band, we can but surmise.

At this time it might be well to review some previous work that has been done on 56,000 K.C., or, as it was called in those days, 5 metres. Considerable activity took place during the summer of 1925, the stations chiefly concerned being 2SH near Rickmansworth, 2SZ at Mill Hill, and portable 5VG (operated by Messrs. F. L. Hogg and E. H. Robinson). The 300 watt 5 metre set at Rickmansworth was heard by the portable receiver along practically the whole route from the transmitter to Highgate, the maximum distance between the two being 16 miles; one or two small blind spots were encountered. This test took place through sunset in July, 1925. Stations 2SH and 2SZ held two way communication on 5 metres, the distance being 12½ miles. Portable 5VG was taken to Ely in August of the same year, and with the receiver (a super regenerative) operated at Ely by 2VW, the portable transmitter was heard up to a distance of seven miles. The valve was a DET1, with an input of 30 watts, and the aerial was a half wave horizontal current-fed Hertz slung between two 6ft. supports at either end of the car. Power supply was obtained from a generator working off the car engine. It should be mentioned that keying and driving were performed simultaneously on the test run from Ely. During their visit to Cambridge, 2HK, using 6 watts to an LS5b, was heard up to seven miles by the portable receiver. Although transmission over a distance of 16 miles was obtained by Mr. Hogg and others in 1925, we understand that they have no intention of claiming Mr. Somerset's prize, especially in view of the enormously greater distance now covered.

* * *

The present T. & R. Committee resigns from office at the end of September and a new one will be elected to take office from October. Committee is composed of Representative Members and District Representatives. The former will be elected at Convention. The latter are the representatives on Committee of our provincial members, and we should

like to draw the attention of each area to the desirability of electing a real live amateur who can and will look after its interests. The majority of areas have good representation, but we are unable to say this of the whole country. Between now and the first of August members will have an opportunity of selecting, in their own minds, their representative for the coming year. *Nomination forms appear in this issue on page 16.*

* * *

With Convention a matter of weeks ahead we must give consideration and thought to the matters to be discussed. To ensure a full measure of success in the coming year it is essential that every amateur in Great Britain be represented at Convention. Many, we feel sure, will make the journey to London, but to those who are prevented we address our remarks.

You as a member have elected one of your near neighbours to represent your interests on the T. & R. Committee of R.S.G.B. It is up to you then to see that he is able to be present and furthermore to assure yourself that he has your grouses and praises to pass on to his fellow district representatives.

The object of Convention is to promote better understanding between amateurs, and to show means whereby present-day difficulties may be overcome. It is the ambition of those in London to provide an opportunity during Convention when the district representatives may meet together to discuss the problems affecting their areas, but in order that such a suggestion may be fruitful it is hoped that every D.R. will do his best to be present.

* * *

We convey to our fellow amateurs in Holland hearty congratulations on their success in obtaining recognition by their Government. For many years amateur radio in the "land of bulbs and windmills" has been fraught with difficulties, and it says much for the enthusiasm of the N.V.I.R. officials, who have at last, after many disappointments, carried the negotiations to such a satisfactory conclusion. We look for a continuation of the present close co-operation which exists between the amateurs of our two countries.

* * *

In this issue we publish the first contributions from our Colonial friends in New Zealand. We take this opportunity of extending the freedom of our columns to all other amateur organisations who have at heart the extension of the British Empire Radio Union. The future of the B.E.R.U. will be discussed at Convention; we look forward to welcoming in the near future every Colonial amateur as a member of the Empire Union.

* * *

Copies of the index for Volume 4, July, 1928, to June, 1929, are available from this office on receipt of a stamped self-addressed envelope.

* * *

A further supply of K.C.-metre charts are now available at the price of 6d. per copy, post free. These charts, which make a useful adjunct to any station, give the conversion of kilocycles to metres, or vice versa at a glance. There are in all 3,000 conversions worked out, extending from 10 to 30,000 K.C., or metres.

Interference on Amateur Bands

There seems to be a certain amount of misunderstanding, and I am sorry to say, through an oversight, the question of the Post Office's attitude regarding commercial stations working on the amateur bands was somewhat misrepresented. The actual fact is that complaints have been lodged by area managers and others that certain commercial stations have been operating within the exclusive amateur bands, but when efforts have been made to ascertain the actual call-sign, frequency and time of the operations of these stations, no definite proof has been forthcoming. I, as your president, have taken the matter up with the Post Office and they are only too anxious and willing to investigate any authentic complaint about any commercial station working within the exclusive amateur band, provided, of course, it is backed up by the fullest particulars.

Therefore, any members sending to me the call-sign of the station, frequency, day and time of any such transmissions, I shall be only too pleased to take the matter up with the Post Office, who, in their turn, will investigate the matter to the full. It must be thoroughly understood, however, that certain frequencies which are mobile frequencies cannot be taken into consideration; it is only these frequencies which are exclusively allotted to amateurs. I would mention that there have been certain experimental stations working on the amateur bands which were quite justified, and these must not be confused with commercial stations working traffic or tests.

*Have you introduced
that new member?*

Forthcoming Events.

July 20.—Visit to Hillmorton Radio Station. Timetable will be sent to each applicant. There are still a few vacancies.

September 23 to October 3,
RADIO EXHIBITION AT OLYMPIA.

September 27 to 28,
FOURTH ANNUAL CONVENTION.

The Second Conventionette at Bristol.

Members of No. 9 District met at Bristol on May 25th for their second annual Conventionette, which, like the first, was a very great success.

The party was not a very large one owing to the difficulty in finding a day suitable to everybody and to the long distance to be covered by those in the extreme South-West.

Members met at Queen's Café for lunch, after which a demonstration was given at the Merchant Venturers' Technical College by Professor David Robertson, D.Sc., M.I.E.E., who is Professor of Electrical Engineering at Bristol University. The stroboscopic examination of the mercury vapour lamp was very thrilling, and gave a wonderful picture of the property and action of this piece of apparatus. Among many other very interesting experiments were some which showed very clearly various difficulties encountered in television. The whole demonstration was intensely interesting, and the appreciation of the audience was evident from the loud and prolonged applause. Our best thanks are again due to Professor Robertson.

Following the demonstration, 5FS had on view his new all-wave receiver which functions efficiently and easily down to 9 m. Several of us have already or are now building a similar receiver, and I hope to see a detailed account of it published in the BULLETIN for the benefit of everybody.

Tea was served at Carwardine's Café, and then members reassembled at the Technical College to hear an excellent address by our worthy President (G2NM) on "Amateur Radio."

The D.R. then opened a business meeting—the chief topic being the 7 M.C. band. It was decided not to bar phone on this band, but to appeal to all members to use as little phone as possible on this band during week-ends, also to use D.C. notes with no spacers, and to give every consideration to the low-power man on Saturdays and Sundays. The general feeling was that, as far as this country is concerned, it is only a matter of a little consideration for the other fellow that is required. It was agreed that quite a lot of short-distance phone work and all local phone work should be done on the 1.7 M.C. band. A suggestion was made that next year's Conventionette should be held at a seaside town, when a bigger attendance would be likely, and we could combine our radio activities with a jolly week-end by the sea. Will some seaside member therefore please consider the undertaking of the local arrangements. It is essential that a good train service be available, and that the town chosen is not too far from London, so that we can get a good number from Headquarters.

Dinner followed at 7.45 at Queen's Café. Our President was in the chair.

Our best thanks are due to Mr. Marcuse for his attendance and address, to Mr. Andrews (G5FS), who made all the local arrangements, to those who came long distances, and to those who gave hospitality to some of us who remained in Bristol overnight and who also spent a thoroughly good day there on Sunday.

Dull Emitter Valves as Laboratory Oscillators.

By MAURICE GIBSON (2BAA), F.T.S.

PART II. MODULATION.

As has been mentioned before, increment modulation and grid control modulation were experimented with. The increment modulation system used was similar to that employed by 6GM, consisting of three turns of rubber-covered flex round the A.T.L., so that the turns of the modulation loop are at right angles to the lines of force through the A.T.L. (See Fig. 5).

Increment modulation, although it simplified the circuit considerably, was not quite as good as grid control modulation, and was finally abandoned in favour of the latter. The circuit used for grid control modulation is shown in Fig. 6.

At first a 4-volt dry battery was used with the microphone, but later two in series were found to give better results. Three different microphones have been experimented with. The first was an ex-Government inset type: this was not very sensitive, and gave a good deal of trouble through "packing."

The second was an ex-Government microphone button that had been mounted on a Stalloy diaphragm. This was much more sensitive, but almost too sensitive for good steady speech.

The third was an ex-R.A.F. solid back microphone giving excellent results. Various methods of actuating the microphone for testing the modulation in the local receiver were tried. At first such means as electric bells and clocks were tried, but these were found too loud when listening in the laboratory. It was then found that the only possible method of carrying out these experiments alone was to use an upper C tuning fork (vibration frequency 512) and sound it near the microphone. An upper C tuning fork, although inaudible when vibrating in air (especially with phones on), is

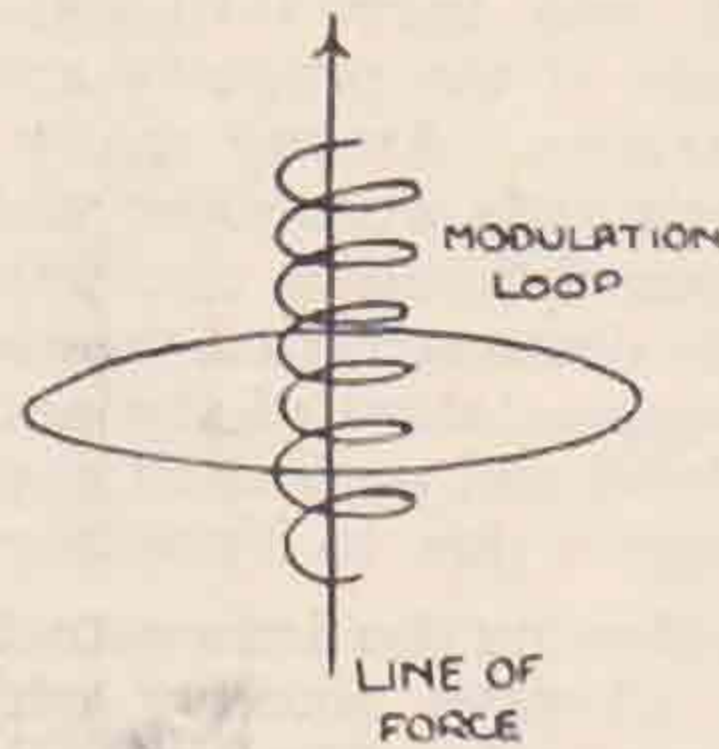
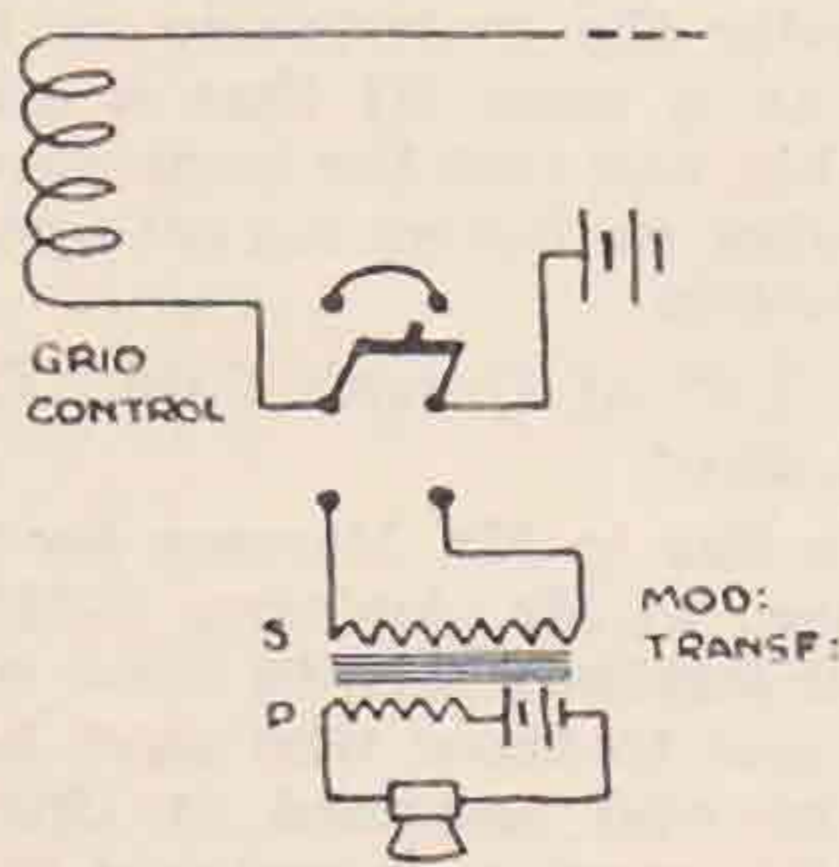


FIG. 5.

quite audible through the microphone when the microphone and the base of the fork are in contact with the same material medium. Gramophone speech and music were experimented with in turn, with great success, the local receiver being in the laboratory and

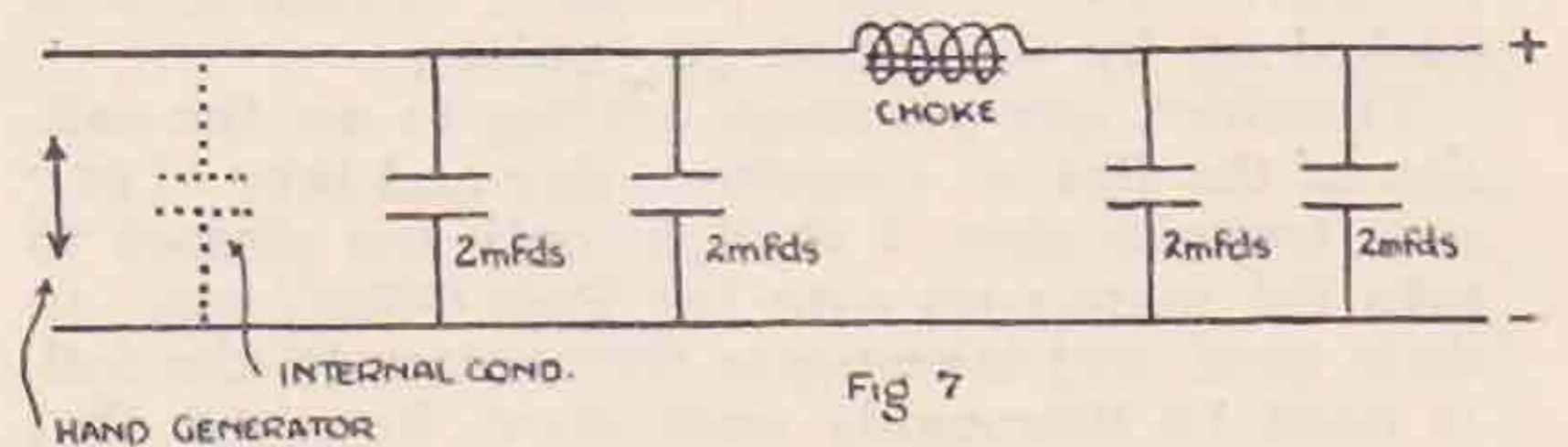


GRID CONTROL MODULATION UNIT

Fig 6.

the phones, connected to it by a long lead, on another floor. The reports on the modulation were received by line telephone and adjustments made accordingly.

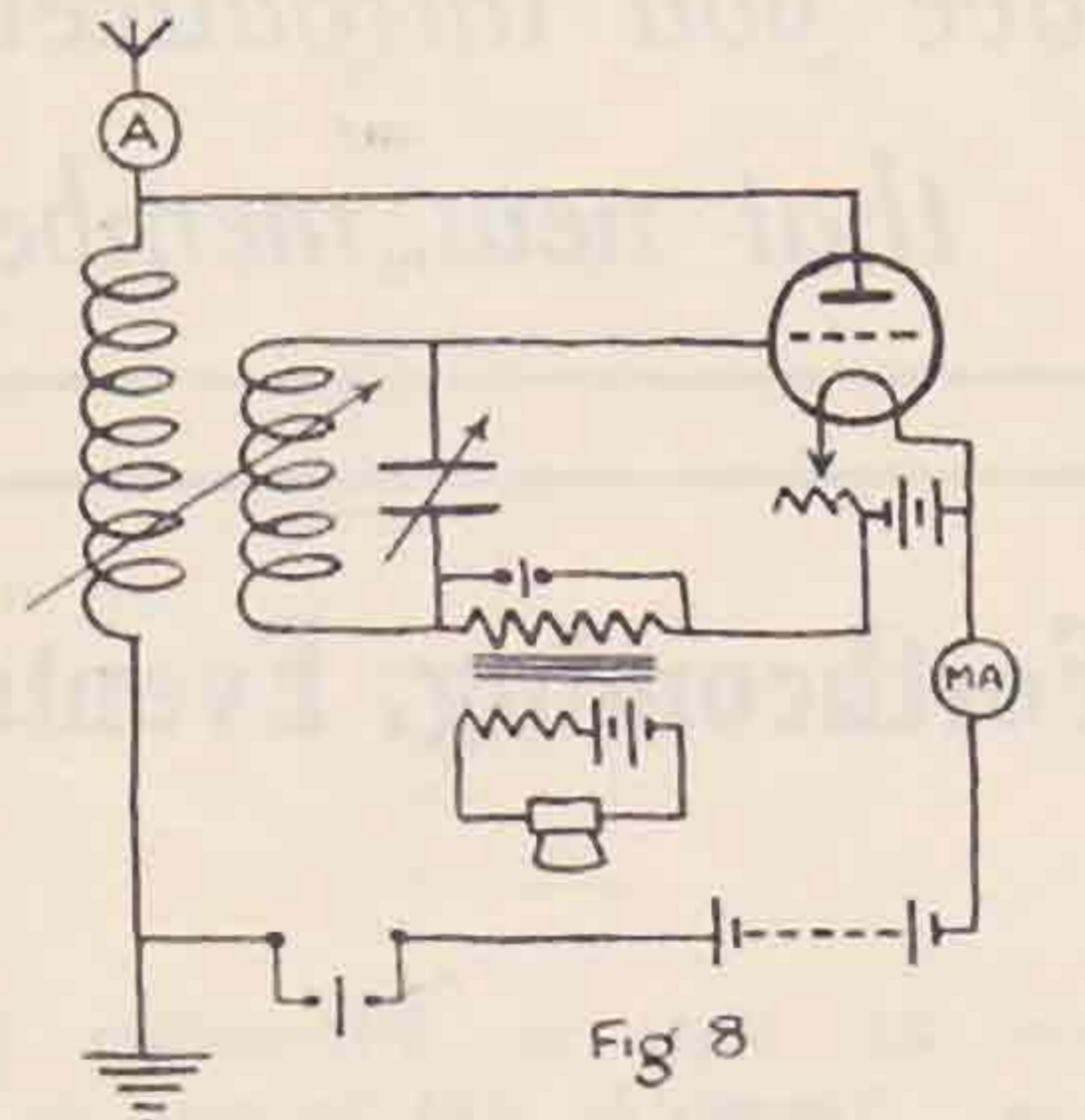
It was found most convenient to place the microphone and modulation unit next to the loud-speaker of a broadcast receiver on another floor. The modulation current was then conducted to the transmitter in the laboratory, and the re-transmitted broadcast music received on the local receiver. This is practically the only possible method of working when using a hand generator.



TRANSMISSION POWER.

As has been mentioned before, the first experiments with D.E. valves as oscillators were made with dry batteries for the plate current. This gave wonderfully smooth working and pure results, but insufficient power.

Rectified and smoothed A.C. was then used from 150-212 volts, the D.E. valve working surprisingly well. Rectification was obtained by means of chemical rectifiers (see "Efficiency in Chemical Rectifiers").



SHOWING COMPLETE CIRCUIT USED DURING THESE EXPERIMENTS

The third source of power experimented with was an "R.B." hand generator. The output was 400 volts at 25 watts (i.e., at 1/16th amp.). The generator was fitted with a large mica smoothing condenser, and smoothing circuit was added to it (see Fig. 7). This gave perfectly smooth D.C. at about 400 volts.

Using the D.E. valve mentioned before, clear, well-modulated speech and music could be transmitted turning the generator at moderate speed—

(Continued at foot of next page, col. 1).

My Visit to Mallorca.

By F. D. CAWLEY (BRS152).

One hundred and thirty miles south of Barcelona lie the Balearic Islands, the largest and most important being Mallorca, or Majorca, as, for some reason unknown, the English prefer to call it. The principal town is Palma, and here it was that we (there were four in the party) settled down for a week's holiday at the latter end of April. Mallorca is one of the most interesting places we have ever visited. There are ancient churches, palaces and old Roman walls enough for anyone, while the cathedral in Palma is a wonderful example of the architecture of olden times.

At a distance of about ten miles from Palma is Establiments, and this is where the nightly CQ arises on 42 metres in the midst of a garden containing orange, lemon and fig trees and all kinds of flowers, most of which were unfamiliar to me. Truly a heaven on earth. The station is EAR62, and Señor Picallo, the owner-operator is a low power DX hound! We were fortunate indeed in having in the party a gentleman who speaks Spanish, otherwise our "QSO" would not have been half so pleasant.

We spent an afternoon and evening at the station, and I had the opportunity of operating both the receiver and the transmitter. The receiver is delightful to operate. There is not the slightest trace of hand capacity, and it is operated with only 20 volts on the plate of the detector valve, and 45 volts for the two amplifiers, the circuit being Bourne. Although normally only two valves are used, a third is ready at the turn of a switch if loud-speaker reception is required. We were agreeably surprised to hear 5SW coming in comfortably on the speaker, that station being received well until about an hour after dark, when signal strength drops. It was jolly to hear Big Ben at 7 o'clock, and you should have seen the watches come out! After the time signal we had a wait of about three minutes, after which came the usual string of talks, so we switched off. Señor

Picallo pathetically asked whether there was ever any music broadcast from London.

The transmitter is worked exclusively on 42 metres, and uses a single valve in a direct Hartley circuit. Plate current is obtained from an A./c. generator which has a maximum output of 1,000 volts, the valve being an Osram "Metal" 50-watt type. EAR62 uses 400 volts and gets an input of 8 watts and an output of pure D.C. that is often



reported as C.C. The aerial is a standard half-wave horizontal type about 50 ft. high, while a four-wire indoor counterpoise 8 metres long is used. With this equipment the station has worked Australia twice, U.S.A. over 100 times, and also Brazil, Egypt, Madeira, Siberia and almost all Europe. A report of reception has been received from New Zealand.

In conclusion, I must convey to Señor Picallo the sincerest thanks of the entire party for the wonderful welcome he gave us, and also for the trouble he went to in order that we might see all the good things that Mallorca has to offer.

(Continued from previous page.)

giving about 300 volts. In C.W. transmission it was observed that there was a fall in the aerial radiation just before 400 volts were reached, showing that this was the maximum voltage the valve will handle for good oscillation. The meter used for measuring the plate current was a large ex-R.A.F. moving coil type that was roughly recalibrated in milliamps, after various internal resistances had been removed. It was interesting to note that with ripple D.C. (partially smoothed) mains hum was experienced, but only at one setting of the coupling of the tuner, and that was not the setting for best oscillation. Presumably when a hum is experienced at one point, as in this case, it is due to the oscillatory circuit of the transmitter being in resonance with the frequency, or a harmonic, of the ripple still present in the D.C. With reference to the Radio-micro. D.E. valve used in these experiments, there is a super-power double valve on the market now that should give better results than the old pattern used by the author.

Portable Stations.

G6XJ will be operating a portable station using the call XG6XJ, from July 27 until August 10 on the East Coast and Norfolk Broads, and welcomes reports and contacts; 10 watts on the 7,000 and 14,000 K.C. bands will be used.

Two special portable transmitters have been built for the Oxford University Exploration Expedition (which is visiting British Guiana from July until December of this year) by G5BJ and G6XJ, in conjunction with Messrs. Stratton & Co., Ltd. A 50 watt set will be used to keep in touch with the British Isles and a 10 watt set as a means of contact between the survey party and their base. 14,000 K.C. will be used for D.X. working. British stations are asked to look out for these stations, and the call will probably be OUX. All reports should be sent to G6XJ, c/o Messrs. Stratton & Co., Balmoral Works, Bromsgrove Street, Birmingham, from which address further details will also be available.

A Few Notes on South Africa and 3SRB.

3SRB is now on the air with receiving equipment, after an absence of over a year and a half.

Transmission is not yet possible, I grieve to say!! I find very little difference in the ether—except for multitudes of commercials, between 50 and 15 metres. (Sorry about the "metres," everybody, but one lives behind the times here, and I never did fall in love with K.C.)

As regards general conditions, I can only say that static is TOO APPALLING FOR WORDS. No one has a correct impression of what static really is unless they have worked in the tropics.

It is usually continuous on the B.C. bands. Early morning is the only quietish time—from dawn till 8 a.m.—S.A.S.T.—usually on all wavelengths.

On W/L's between 500 and 300 metres I notice that during the evening a sudden storm of static will brew up, and after reaching a maximum, will die down, in a short time, until the discharges are at their former strength and number.

Admittedly this is the hot season, and therefore the worst possible period of the year to report upon; however, I will comment on our winter conditions when June arrives.

In saying that the static discharges are of the same intensity on all wavebands, I should make this reservation: on the whole the wavelengths round 18,000 metres suffer the most. Also, as in England, when static is extremely troublesome on broadcast frequencies, on the high frequencies it is not bad, and *vice versa*, although below 20 metres there doesn't seem to be any static worth worrying about.

I will divide my remarks into four groups:—

- (a) S/W reception—remarks on receivers.
- (b) Broadcast reception.
- (c) Antenna and earth system in use.
- (d) Long wave commercial reception.

(a) I am not using the S./G. valve for S/W work yet, being rather sceptical about its real utility below 35 metres.

A4V declares it to be invaluable; 6SRA and A4Z, however, are dubious as to whether it is worth while.

I use a perfectly ordinary Det. and 2 L.F., nothing freakish about, but it does its work.

"RE THRESHOLD HOWL"

I have always used either "D.E.Q." or V24 valves as S/W detectors, and using only ONE L.F. stage have NEVER met it. With 2 L.F. transformer coupled, I have had it, but not very badly, on various sets since 1924.

I consider it entirely a case of R.F. in the L.F. side of the receiver, and not, as some hold, something obscure in connection with the functioning of the detector grid.

The R.F. choke does not function as it should, especially at certain frequencies: it consists of 100 turns on 1 inch diameter test tube.

The use of a potentiometer across L.T. + and L.T. —, with the moving arm connected to the end of a very high quality variable grid-leak, did not cure T.H. at any setting, but was found very useful. However, I shunted the primary of the first L.F.

transformer with a .0005 mfd. fixed condenser, and the primary of the second L.F. transformer with a .005.

That measure has cured T.H. Experimental adjustments of the voltage on the plate of the detector should be made; I find 60 volts O.K. on a V/24.

I also use a R.F. filter in the phone circuits. This absolutely eliminates capacity effects.

The receiver coils are supported on glass tubes.

Two T-shaped pieces of ebonite, 6 inches high, are mounted on the baseboard 8 inches apart. Two slots are cut in each, so that the glass tubes drop into these, and the distance between the outside edges of the tubes is 3 inches, so that 3 in. diameter inductances are beautifully supported.

Infinite variation in coupling between grid and plate inductances is obtained, likewise between grid and aerial coil, if the latter is used.

Connections are made by clips, and flexible leads, the ends of the inductances being turned up at right angles for $\frac{1}{2}$ in. to facilitate a good grip. This system was used by G2OD in 1925, and is the best I have ever used, though coil changing is slow, and H.T. and L.T. must be cut off from the receiver when it is effected.

Using a 2 turn grid coil and 4 turn reaction—3 in. diameter—the receiver oscillates below 14 metres, the lowest limit to which my General Radio "358" wavemeter will record; however, a special wavemeter coil covering 9 to 14 metres is on its way from Claude Lyons, Ltd., Liverpool. With this and some 2 in. diameter inductances the 10 metre band will be easily covered.

Let me advise anyone who does not use a .0001 mfd. variable condenser (or less) for tuning the grid circuit of the detector to use one at once. They will never look at anything over .0001 again, for the low capacity makes tuning a pleasure.

For results, 2XAD is received very well from 17.00 to 20.00 G.M.T. (7 to 10 p.m., African time); modulation is excellent; fading is very bad as a rule, but at enormously high speed.

5SW is not too good; under-modulated; fading very bad; usually received well from 9 to 10.30 p.m. (African time).

PCJJ is about the same as 5SW; better modulation.

2XAF bad in early morning—5 to 6 a.m. (S.A.S.T.). Bad fading.

7LO—Nairobi good from 7 p.m. till 8 p.m. (S.A.S.T.); modulation good; fading very bad, and high speed.

5SW on 25 metres, and 2XAD both fade out after 10.30 p.m. (S.A.S.T.), that is 20.30 G.M.T. They go "clean to pieces."

2XAD is the best S/W broadcast for us at this time of year, but in three months' time, during the winter, they will all be better.

The one thing wanted—English daily news—is, of course, thoughtfully omitted by 5SW.

The night, when one has some leisure time to listen to him—Saturday night—he is not transmitting.

English amateur stations come through, also

MENTION THE R.S.G.B. AND IDENTIFY YOURSELF.

Europe in general, at 17.00 to 20.00 G.M.T., on the 20 metre band.

I have little time to listen, but heard, a few nights ago, in about five minutes, on 20 metres: F8JFF, G5ML, G6WP, G6VP.

Commercials very strong from the East, especially U.S.A., 6th district, KEL and various Pacific stations.

GBO also very powerful at night.

The Australian stations broadcasting round about 32 metres have not yet been heard, probably because I usually work only from 18.00 to 22.00 (S.A.S.T.).

(b) Broadcast reception is good during our winter. The ranges covered by the three stations here are very great.

At present I am only using an antiquated, but very low loss, detector + the audio stage — a six-valve supersonic is being made, for both broadcast and S/W work—when completed I shall give its performance in the BULLETIN.

Have not taken to S/G. valves for broadcast work; upon inquiry it was found that suitable coils, screening boxes and variable condensers were unobtainable in S. Africa.

The O-V-1 is really designed for long-wave press reception, and has the antenna direct coupled to the grid inductances; this having .001 mfd. variable condenser in parallel. For B.C. work it is an antiquated atrocity.

However, Johannesburg is received at overpowering strength on phones—distance 600 miles approximately—after dark. In daylight he is too weak to resolve.

Durban, about 900 miles, and Cape Town, 1,300 miles, are also receivable at good strength on the O-V-1, but unless the static is very little, are not worth listening to.

I am told by 2SR that Continental stations are received fairly often after 11 p.m. (S.A.S.T.), that is 21.00 G.M.T., but conditions must be good, and

the set a very powerful one. As yet have not tried for them.

(c) At first I erected an L type antenna, intended for 5SW, length on horizontal span being one $\frac{1}{2}$ wavelength, *i.e.*, 12 metres. However, he changed to 25 metres, and boshed the show.

Now I am using an L with horizontal span 120 feet + lead-in; height, 30 ft. at lead-in end, 45 ft. at free end. Oriented N.E. by S.W. Free end pointing N.E. This gives extremely powerful signals on all waves.

No trouble is experienced in making the S/W receiver oscillate at all frequencies, there being no dead spots.

Earth system, when used, is very good and direct, consisting of buried petrol cans ($4\frac{1}{2}$ gallon size), four in number.

(d) Long-wave commercial Morse reception is a wash-out here. The much-vaunted GBR cannot be heard at all—at least, I cannot find him anywhere.

The French station at Bordeaux is fairly strong, formerly LY. Also a high power commercial at Rome. GBL I never hear.

Ongar and Carnarvon are also missing. A Japanese commercial on about 18,000 is strong.

However, these new call signs have made a mess of everything, and I don't know who is what among the commercials now.

Nothing much of interest to retail now, and I am afraid most of what has been written is inclined to be tripe.

Can I appeal to some brainy members to let us have an article in the "BULL."

(a) On a superheterodyne for S/W work.

(b) An S/W receiver using an S/G H.F. stage.

In conclusion, very hearty congratulations indeed to the Contact Bureau—6YW and all his members.

This is the most interesting information obtainable. QST is nowhere in the picture these days.

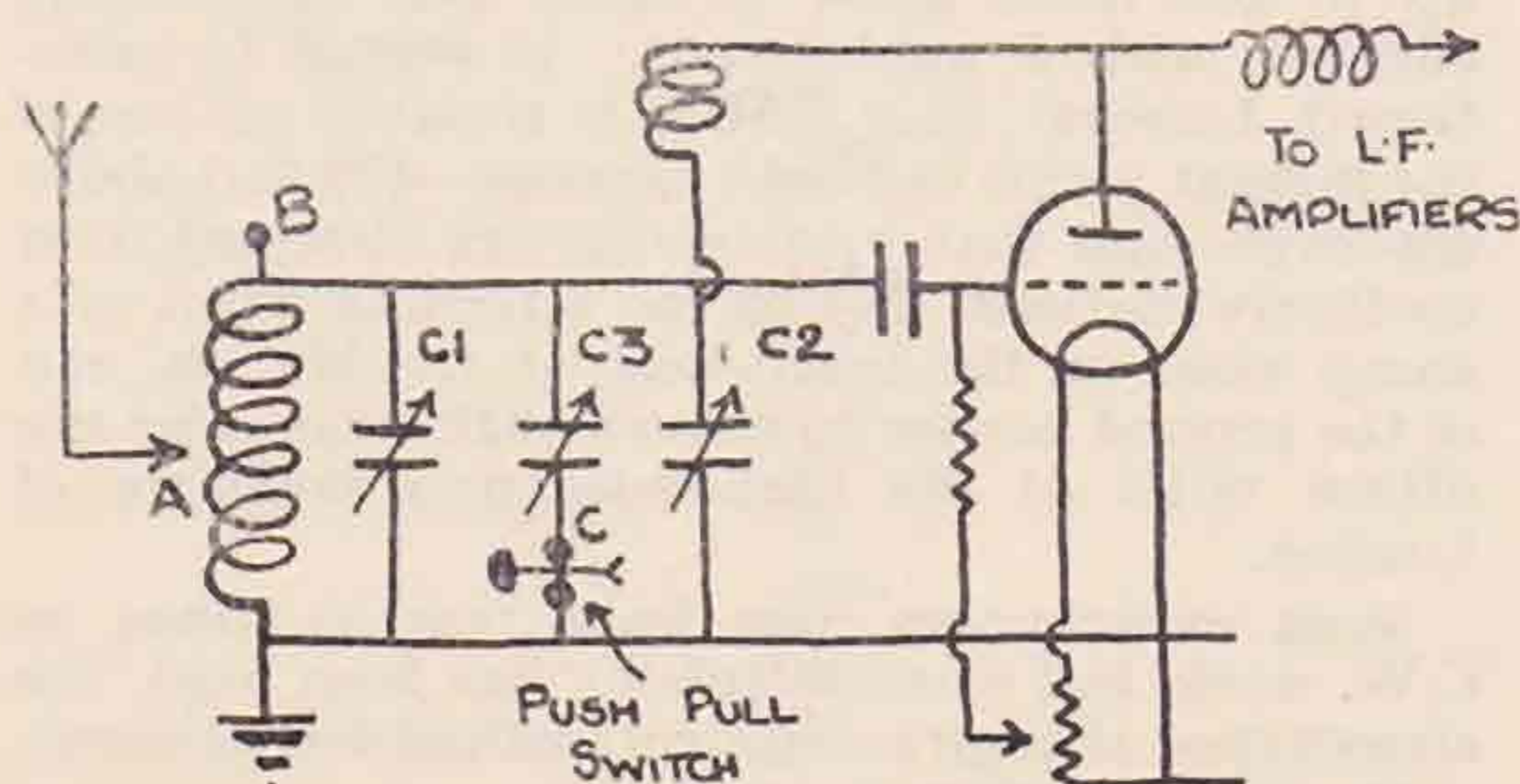
28 M.C. to B.B.C. Tuning.

By R. C. HORSNELL (2ABK).

It is very seldom one finds a circuit which will efficiently cover all amateur bands from 28,000 K.C. downwards, and also B.B.C. waves, without winding special B.C.L. coils.

This idea was conceived when I decided to adapt my S.W. set for B.C.L. work, and wished to use standard size coils.

The circuit itself is quite familiar to all.



The condensers C1 and C2 being the grid tuning and reaction ones and of .00015 and .00025 capacity respectively as conventionally used.

C3 is a Formo-denser with a range from .00015-.0005.

This is wired as shown so it can be paralleled with C1 with the switch pulled out.

With this arrangement there are three methods of use.

For 28,000 K.C. work C1 only is used, and the aerial connected to point A.

Then for 1,750 K.C. work the aerial is clipped on to point C with the switch pushed out, and the Formo-denser is then acting as a variable series condenser and C1 used for grid tuning.

For B.C.L. work the switch is pulled out and both C1 and C3 used together for grid tuning, C1 being used for fine and C3 for rough tuning. Aerial connected direct to grid (Point B). This enables 28,000 K.C. work to be done, and by changing coils, one can get any B.C.L. station desired in a few seconds.

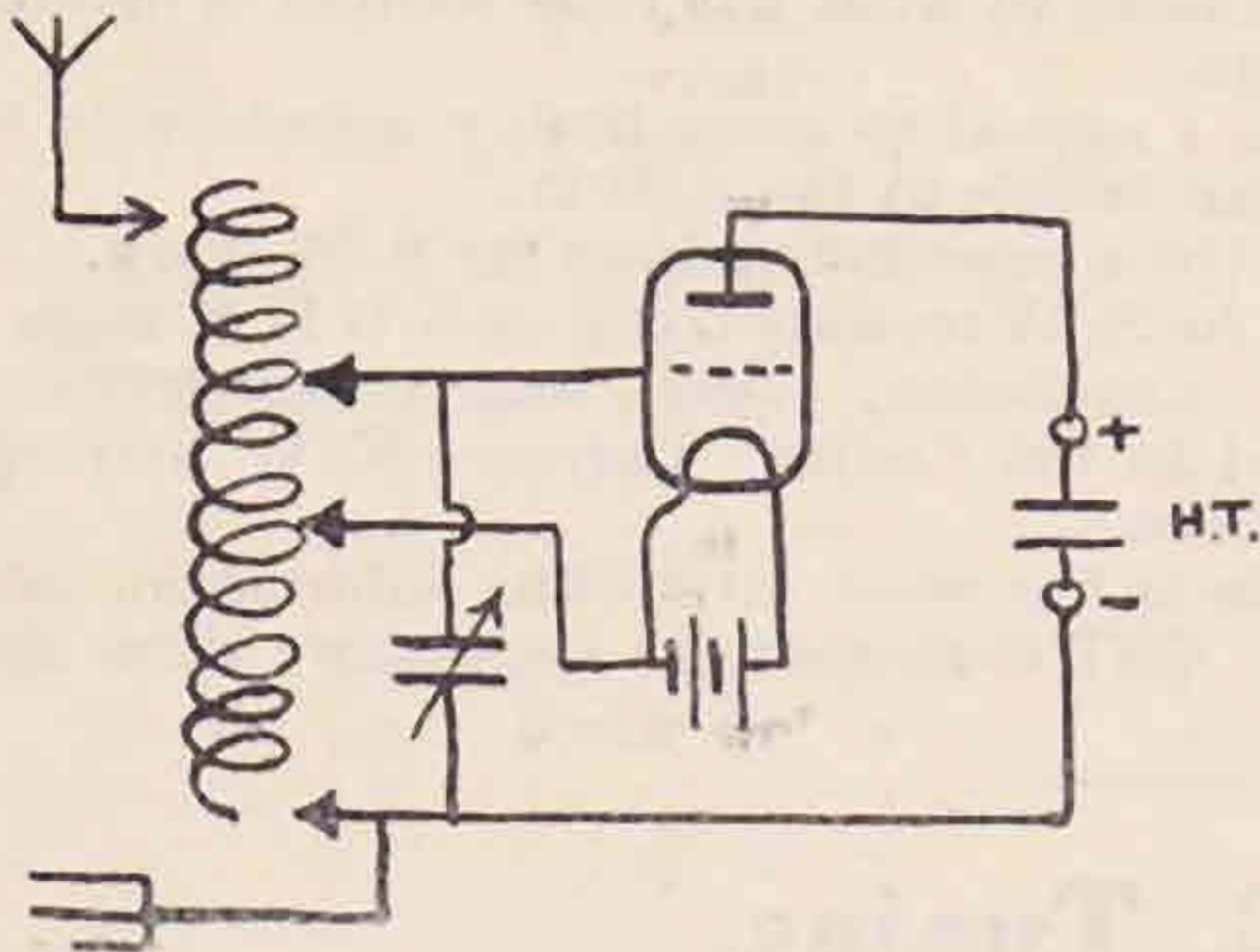
Working on 1875 K.C.

By J. HUM (G5UM).

During the past three years G5UM has been engaged on a number of lines of experiment exclusively on the longest amateur waveband and, although details of these experiments cannot possibly be given in one short article, it is thought that some notes on 1875 K.C. operation may be of interest, especially as this frequency channel is becoming more and more popular.

A large number of transmitting circuits have been tested, but for consistent and stable operation, the modified series-feed Hartley has been found to be most satisfactory, with the R.F.B. a good second. A CT25X valve is used, and functions extraordinarily well. It does not heat up very much, even with 300 volts on the plate, though it is inadvisable to key in the H.T. circuit if too high a plate voltage be used, on account of the considerable flicker that takes place, and the consequent chirp.

The series-feed Hartley is easily adaptable to crystal-control, the procedure at G5UM being to place the crystal in parallel with the tuning condenser, and to use a high impedance valve, such as the DE5B. When on C.C. keying is done in the counterpoise lead.



Dry batteries are used for plate supply on the transmitter, and, when keying in the negative H.T. lead, last some six months. The voltage drop, though considerable, has been found to be uniform with each battery (Lissens are used), and this in spite of currents of up to 50 milliamps. having been taken at 200 volts. It should be noted at this point that, when using the S.F. Hartley, it is essential to use a by-pass condenser across the H.T., a satisfactory value being .25 mfd. Not only will this condenser keep the H.F. energy in its correct path, but will also greatly increase the aerial current. The latter factor is very important on 1875 K.C., and it is fairly safe to say that, on this band, the aerial current is an indication of how signals are getting out, though the distance to which such signals will reach is, of course, greatly affected by local topography and conditions. Both H.T. and L.T. batteries are very efficiently insulated.

With regard to aerial systems for 1875 K.C. work, the various forms of short wave antennæ, such as the Hertz, are suitable, though the most efficient aerial is undoubtedly a simple inverted L

type, erected as clear as possible from all obstructions. By the sole expedient of raising the aerial six feet higher to clear a lead roof G5UM was able to work DX stations with much greater consistency and ease. Owing to lack of garden-space the aerial is but 30 feet long, and is slung from the top of a tree 30 feet high, while the counterpoise consists of the two wires which are used as extension lines for working the loud-speaker downstairs. The self-capacity of these extension wires is fairly high and a very satisfactory counterpoise is thus available!

Much time has been devoted to the examination of aerial coupling systems on 1875 K.C. Very poor efficiency resulted with the aerial direct coupled to the grid, and little improvement was noted with loose coupling, this being due to the small radiating system. The method eventually adopted was to tap the aerial on to one end of the A.T.I., the grid on to the tenth turn from the aerial tapping, the centre tap on the twelfth turn, and the counterpoise and negative H.T. on to the other end of the coil. The A.T.I., it should be remarked, consists of fifteen turns of 7/22 aerial wire wound on an eight-inch cardboard former, the turns spaced $\frac{1}{4}$ inch. A .0003 mfd. condenser tunes the grid-to-counterpoise section of the coil, while the remaining ten turns on the aerial-to-grid portion of the coil are untuned. This system gives nearly .5 amp. radiation with 5 watts input, and is well worth consideration by amateurs working on 1875 K.C., especially by those using small aerials.

A few words regarding receivers for 1875 K.C. work will not be out of place. A straight O-V-2 throttle control set is in constant use at G5UM and utilises fixed plug-in coils. Considerable panel and cabinet space was wasted when the receiver was constructed, as one solitary valve is contained in a very large cabinet, with the 2-valve amplifier on a separate baseboard! Nevertheless, extremely efficient results are obtained, and the set tunes from well above 30,000 K.C. Ferranti transformers are used, as these give far greater volume than any other make, despite the bugbear of threshold howl, which, however, is only noticeable above 30,000 K.C. Belgian, French, Dutch, Danish, and, of course, British, amateurs are received with ease on this set on the 1875 K.C. band.

Results on the transmitting side are very gratifying, and two-way communication with stations up to 200 miles away is easily and consistently effected, with 5 watts input. It should be mentioned, however, that G5UM is situated on one of the highest points in North London—400 feet above sea-level—and that best reports are obtained from northerly stations, due to the screening effect of a damp wood on the south-west of the station, and of the general barrier to radio signals caused by the fifteen miles of the carbon-laden atmosphere of London.

Most experiments here have been confined to C.W. work, but when telephony has been used, the stereotyped absorption control method was adopted, with quite satisfactory results.

An Easily Constructed Polaroscope

By SYDNEY C. PARISH, M.A. (G2ZW).

In the article "Concerning Pebbles" by 2BFA and G5MU in the March BULL., a suggestion is made that amateurs should ask an optician to examine quartz pebbles by polarised light. This led the writer to hunt up his old home-made polariscope, and perhaps a description of it may interest others.

The Polariser is merely a quarter-plate cardboard box (without lid) filled to the top with old glass negatives from which the film has been removed.

The analyser is made out of a white metal cylindrical shaving-stick container of such internal diameter that it can hold without pressure a bundle of very thin rectangular microscopic slide cover glasses each $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. at an angle of 33° . This particular container bears round the lid the words "The Sanitas Co., Ltd., Limehouse, London, E.," and is a shade under $1\frac{3}{16}$ in. internal diameter. It also happens to have a stamped raised ring on it level with the bottom of the cap. This ring is useful, as will be explained below. A larger container could be used, but the following dimensions would have to be altered accordingly.

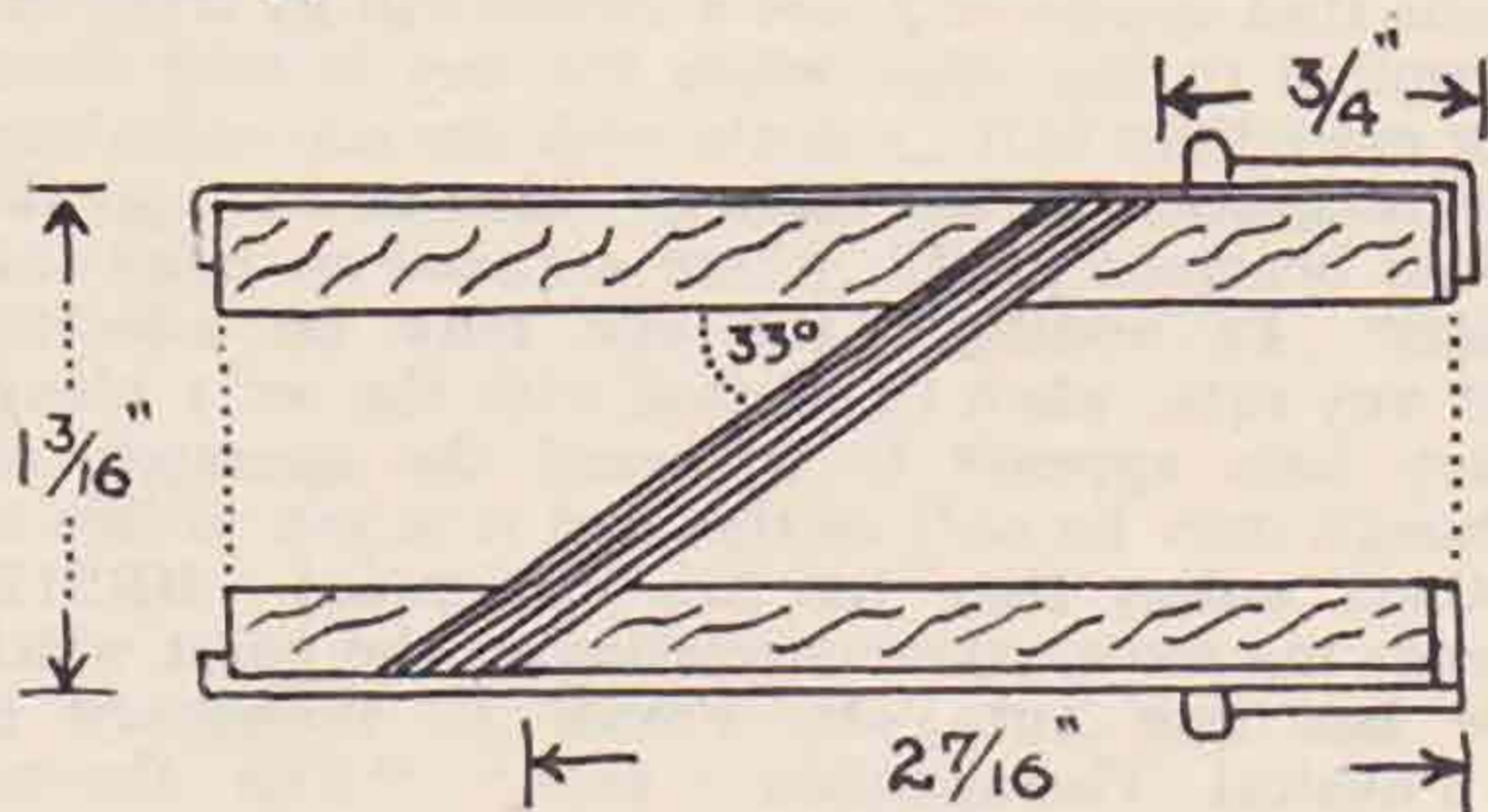


Fig 1

Remove the cap and with a brace and bit (or lathe) make in the top of it a central hole about $\frac{3}{4}$ in. diameter. The bottom of the container probably has a central hole, but, if not, make one about $\frac{7}{8}$ in. diameter. Obtain about 3 in. of wooden rod of such diameter that will make it a nice sliding fit inside the container (a piece of broom stick or of the garden rake handle might do!) Square one end and drill a central hole about $1\frac{1}{16}$ in. diameter right through the entire length of the rod, thus converting it into a wooden tube. At $\frac{3}{4}$ in. from the squared end make a pencil mark, and at $2\frac{7}{16}$ in. from the same squared end, but on the other side of the tube (*i.e.* 180° from the mark) make another pencil mark. Join the two pencil marks together in both directions and cut right through the wooden tube on the line with a fine saw. The angle of the cut should be 33° to the axis of the wooden tube. Smooth the oblique ends with fine glasspaper. Place the squared end part of the wooden tube into the metal container, squared end down, and on to its oblique end gently lower a dozen (or more) of the microscope slide cover glasses mentioned above; tapping the side of the container will assist in getting them into position. On to the top of the glasses carefully

lower the other part of the wooden tube, oblique end down, rotating it if necessary to make it touch the uppermost glass. Make a pencil mark round it level with the top of the metal container, remove it, saw off square and smooth. Replace it in the container, put on the cap and the analyser is complete (see Fig. I), but for a mounting, if one is required.

Fig. II gives one idea of how it could be mounted, and is almost self-explanatory. The hole in the upper block is of such a size that the container (but not the ring on it) can slip through it and be rotated easily from the lower end. The ring prevents it slipping through. A little graphite rubbed inside the hole in the wood will aid smooth rotation. On one side of this block is screwed for a few turns a $\frac{1}{4}$ -in. engineer's set screw, the head of which is then cut off with a hacksaw. A washer is slipped over the projecting screw which is then passed through a hole in the stand and held in any position by a winged nut.

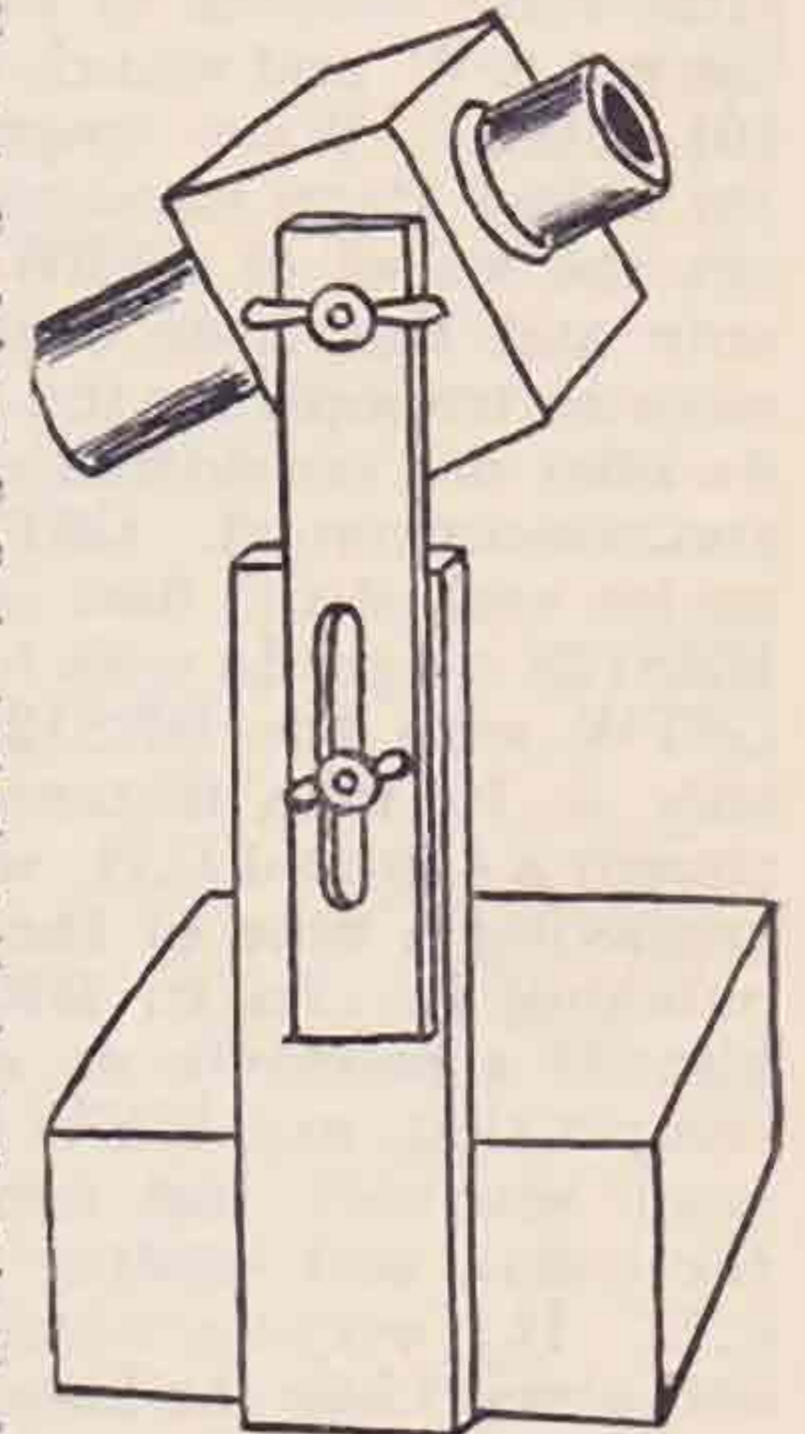


Fig 11

If the polariser is placed on a table before one facing a window or other source of light, and the light reflected from it is viewed through the analyser from a low angle, and the analyser is rotated slowly round its axis, it will be seen that the light will gradually lessen, becoming least at two positions. Set it at one of these positions. A glass lens placed between analyser and polariser shows no change of luminosity even when the glass lens is rotated. A quartz lens in a certain position will show no change, but if it is rotated it will become light in two positions. Also if the analyser be rotated so that the light is bright, the quartz lens in two positions will become dark, whereas glass remains light. Some pieces of quartz show colours. (See article above referred to.) Mica shows wonderful colours—especially some of the rather thick pieces used in front of certain types of gas stoves—which change to their complementary colours as the analyser is rotated, but this, OM, is not wireless.

If your Subscription is due, you will help us by remitting without further demand.

Contact Bureau Notes.

By H. J. POWDITCH (G5VL).

It's a funny thing how all radio happenings come in batches. Up to last month I think I am safe in saying that most people looked on the 56 M.C. band as impossible for any but the shortest distances. G6TW and BRS125 wrecked that idea after some months of patient work. Now, G6TP has got C.W. and speech to G2NI over a distance of $10\frac{1}{2}$ miles! Wave length, 5.01 metres. I fear I am a bad stage manager or I would not have let out the secret of G6TW's success in last month's note and this issue could then have been a real surprise triumph for the 56 M.C. people. Anyhow, we offer our considered congratulations to the four stations concerned. G6TW has sent C.B. some notes on his end of the first successful transmission and BRS125 weighs in with his experiences. Of course, G6TW wins the BRS125 prize (which called for only a 10 mile distance) hands down. He has chosen a cup and C.B. will have great pleasure in engraving a note of the event thereon before dispatching it. As to BRS125, well, he can't give himself a memento as was offered in the original competition, so GI6YW and myself are providing a small souvenir, just enough to carry a record of the event, and sending this along in the name of C.B. It is very hard luck for G6TP that both G2NI and himself lose the honour by a few days. Perhaps some arrangement can be arrived at whereby such feats can be officially acknowledged and registered. I cannot better emphasise the importance of the G6TW-BRS125 effort than by quoting a letter from Mr. F. E. Handy, communications manager of A.R.R.L. "Mr. Kruse, our former technical editor, carried on experiments for many months with Mr. Phelps of W2EB, the distance from Hartford to New York being just in excess of 100 miles. Two-way communications over this distance were occasionally possible, although the consistency of the communication was very poor. While other work was attempted, reception of 5-metre signals at other more distant points has never been substantiated, so I feel your experimenters have certainly achieved something in covering this distance at this frequency with low power transmitters and hope and trust that a further record of the behaviour of signals between these stations may be made. Quite possibly the mention of the work that has been done will stimulate work among our own experimenters on this band."

G6TW transmitter was shown in C.B. notes for May and a photo appeared with the June notes, although "Mr. Printer" failed to insert the description thereto. Further than this, I cannot give you many details for the moment, as I understand G6TW will supply a full article later. He sends, however, some special notes on the subject. The radio frequency choke must not exceed $\frac{3}{4}$ " diameter (this is very important). Do not experiment with expensive valves! The valve must be worked up to its maximum to make it oscillate and this means a short life at such frequencies.

Choose a valve with very little metal in its interior. For receivers, use only a single vane variable condenser with about 100 to 1 vernier. With two valves and the receiver inside the station it is possible to miss the carrier wave of transmitter, although the receiver only covers 1 metre and has a 20 to 1 dial. Further points are that the Mullard 0/20 valve is still keeping up to it. However, it gets tired after a time and has to be put away for an hour or so after which it again carries on (this is fact, not fable). Five valves had gone west before the present one was found. One of the departed had a hole $\frac{1}{2}$ " diameter burnt through the glass, but the filament still lights! The valve that actually did the trick was an old W.D. AT 40, de-based, with 1,000 volts on plate.

There is another series of very interesting effects which I think we should all bear in mind when experimenting on this band. G6TW refers to the effect as "some kind of ionization" which occurs when the valve is being used at full power. He finds that sparks of 3 and 4 inches will fly from one terminal to the other when the key is held down for more than half a minute with the set oscillating, disintegration of the plate of valve occurs and the glass becomes plastic where exposed to bombardment. In addition, the eye may be affected. At any rate, when in contact with the set a bluey-grey halo appears to surround the operator, although only he notices this and it is not visible to others unless they too are in contact. BRS125 sends me some extracts relating to the point which he has dug out. Dr. Frank T. Woodbury in "Physical Therapeutics" says: "The electromagnetic energy of 2 to 6 metres has been shown to possess marked physiological stimulation, some of it not at all safe for human experience." J. Henry Hallberg in a paper to the Electrotherapeutic Society says: "The most minute amount of electro-magnetic energy in wave-lengths between 3 and 7 metres can cause a human body to increase the temperature of its blood to a greater extent than can be accounted for by heat absorption . . . the entire body may act as a resonator when excited by such radiation."

Now as to the receiving end. BRS125 sends the following dope: "Report of reception of 5 m. signals. (Probably a world's record.) From about the middle of April, 1929, G6TW got perking in the 5 m. band and immediately fixed schedules with me and shortly after a preliminary bout arranged that Group 7a should QRX every Saturday afternoon and thrice daily on Sundays. For my part I had some special schedules as well, namely, 07.30 B.S.T., to endeavour to find out something about the skip on these frequencies. After spending very many hours hearing nothing, not even an atmospheric or a motor-car, and trying different aerials and making adjustments to the aerial, we hit upon what seemed to me a likely sort of day as things were pretty hopeless on the 20 and 10 m. bands, and generally the unexpected happens.

This was Sunday, May 19, and shortly after 11.00 I was to receive my reward, for, at 11.12 B.S.T., to my utter amazement, I heard a series of "V's" with what occasionally appeared to be "test," and then complete fade out. At 14.25 B.S.T. again back came the "V's" and mutilated "test," and again a fade out. The mutilation was apparently caused by the sluggishness of the transmitting valve which, after a dash, seemed to be oblivious to a dot at this frequency. G6TW confirmed that 11.12 B.S.T. was the exact minute by log when transmission was started and "test" was sent out at 14.25 B.S.T., so I, personally, have no doubt that what I heard was G6TW, 170 miles away. QRK R1 to R2, pdc., QRH 58.7 M.C. QSS with very rapid fade-out within a few seconds."

So far as C.B. can trace, BRS125 does hold the world's record, as he suggests.

Some experiments as to the ground wave with BRS152 at receiver showed that at one mile no signals could be heard, at one-tenth of a mile signals were R3, and at one-fifth, R1.

The later results achieved by G6TP and G2NI were on June 8. G6TP transmitted CW and gramophone records from his station to G2NI, who had a receiver at Swettenham Hall, 10½ miles away. The transmission was between 16.00 and 17.45 B.S.T. and reception R5 to R6, phone quality good. I have only these bare details at the moment, all these interesting things appear to happen just as C.B. notes are due at the printers.

As to the older group work, one or two of the 28 M.C. groups are sticking to their jobs, and the same applies to various other groups. Unfortunately, I cannot pay the same compliment to all. Wonder what you would all say if C.B. manager decided to spend this gloriously fine evening down on the beach instead of pounding away at a typewriter? Because he has little in from the G.C.'s wherewith to make up his notes! Well, OM's, that is just what you tell me, yet I must find something which I hope will interest some of you.

For the brighter side of life I am glad to say G2ZN has filled his group for QRP and sends a preliminary report of work on fractional watts that should boost the sale of dry batteries. There are also volunteers for another group of QRP enthusiasts, and more are wanted to complete this. Please drop a note to C.B. if you are interested.

With reference to my note for 1,750 kc. phone work. G6OT will run a group if we can find members to support him. If anyone is willing to come in we can make this group cover code work as well, at any rate, for the time, until we have enough for separate groups. Roll up, all the enthusiasts.

And last, but by no means least, that aerial group looks like going off in fine style. Q.M.S. Roberts, of "R" Signals, Portsmouth, is on this job, and all those who spend their spare hours pulling down the last aerial for something better (?) are invited. The group's work, when formed, will be a search for the best all-round aerial for ordinary amateur work. It has a big job and plenty enough things over which to argue and experiment. Vacancies are still open; please write C.B. direct.

GI6YW sends me some notes from our most distant CB-ite, ZL2GA. He is attempting to form a C.B. in New Zealand and to keep a column going

in their paper, "Break-in." The N.Z. hams have all come into line and amateur work is now under the NZART, with over 100 transmitters working. GI6YW's recent 28 M.C. tests were published in "Break-in," and ZL2GA personally wrote to many of their men (for which GI6YW tenders thanks), but no results were reported. ZL3AR built a special transmitter, but nil results. ZLIFT has been working Australia and ZL202 (a listener) has logged J1TX fifteen times on Sundays during daylight hours. He has also heard W23457, K, ZL, VK23457. He says that VK3MY copied G5BZ recently, but there is no confirmation of this. Well, ZL202, if you ever see this, accept our congrats on the FB log. It almost tempts us to chance your earth tremors and come out to N.Z.

BRS242 tells me that CE2AB is now on 28 M.C. and wants reports, but gives no further details as to times.

And—I nearly missed another bright spot. G5UQ is starting a group for WX/RX observations. He is getting promises of reports from our Continental friends as well as G stations, and wants some more G stations who will agree to transmit regularly on 14 M.C. band and keep strictly to these schedule transmissions for a period. All possible data at both ends will be collected and graphed, and if the scheme succeeds I hope to have some interesting data for publication in these notes. Transmitting and listening stations are wanted. Drop a card to C.B. with your offer of help.

Our good pal, GI6MU, sends me a copy of a paper read by Mr. T. L. Eckersley before the I.E.E., entitled "An Investigation of Short Waves," for circulation in C.B. There seems to be something in it to interest every group. Will G.C.'s who wish to circularise it to their groups please write me, and I will get out a mail list in order of these applications.

G5PL sends me a note of some experiences with A.C. hum on 50 cycles. He was using the older type of lamp with filaments similar to a series of V's in shape and A.C. QRM was bad. On changing the lamps in his den to the tubular filamented gas-filled type, hum disappeared. I seem to remember a note of this effect being published before, but cannot trace it now, so pass on the cure at the risk of repetition.

28 M.C. GROUPS.

Group 1B.—G.C., G5SY, has only heard "one or two suggestions of C.W." G6LL has been keeping his skeds with PK4AZ and VE2AC, but has not been successful yet. (G.C. wishes the best of luck, he deserves it!) G5LU has heard one weak station, and the rest of the group envy his luck. G5ML and BRS136 do not report. G5VL has only had time to make up a new S.G. set with metal panel and finds this far inferior to the old sets with usual panels. G5SY agrees that metal panels are a bit upsetting and is himself vacillating between R.C. and transformer couplings. Also at yet another transmitter, T.P.T.G. G5LU is not satisfied with transmitter (too high feed) and wants to know best receiver circuit. Probably G5SY's answer that it's the lay-out and not the circuit is about right.

Group 1C.—G.C., G6VP, regrets the loss of PAODU from his group. He reports conditions

poor with no contacts, but has been heard by G6WN pretty regularly on sked. The best aerial of the many tried seems to be an inverted L with full wave roof and full wave down lead tapped direct to anode coil. He heard VU2KT on 12th, 19th, and 26th. QSA3. Steady D.C. On 26th G5WK was R7 on a harmonic! A C.C. set now building. G5YK heard YIIMDZ on 12th, but this proved to be harmonic. G6WN has been on Sundays with G6VP, using a C.C. set and C/F Hertz. OK2YD has heard only commercials during May. He is rebuilding to Ultraudion with 50 watts D.C. BRS15 does not report.

Group 1E.—G.C., G2OD finds a very short vertical tuned aerial and superhet interference. He finds conditions very poor on 28 M.C.

Group 1F.—G.C., G2CX, has had to shut down temporarily owing to change in QRA. He expects the new one to prove better for radio. G5WK has only heard G2OD, with whom he was QSO. An Australian station tells him that the 28 M.C. tests were not heard, though watch was kept. G6HP is trying a D.E.T.1 in place of L.S.5D. Output goes up, but he fears a breakage at pinch. Rebuilding with some listening without success. BRS125 is still keeping his vigil in spite of bad times. He also got YI2MD harmonic on 12th and logged VU2KT on 5th. A weather log is being kept, but at present there is too much weather and too few stations. PAOCX has found some new Phillips valves for 28 M.C. transmission and sends details. He hopes to visit London for the Convention.

Group 1H.—G.C., G6OO is up against the hardest of hard luck. Four of his stations retire together. G6DR is selling up in preparation for his marriage and only intends to keep a QRP set for 1,750 k.c. rag-chews. G6NG is away travelling. G5DR is only home for odd nights now and then. BRS77 is swamped by the magnetos. G6UJ has the bus QRM, but has a new L.S.5D. and tries to carry on. G6OO is expecting a new L.S.5D. and is going to try it in a new T.P.T.G. in place of Ultraudion, which has not given any QSO's. C.B. will find a job for the active members; they are too good to lose.

Group 2A (Skip).—G.C., G6LN and BRS98, have just completed one series of tests and the former is working out results. G6NK has business interference. Other members do not report.

Group 4A (Best Times).—G.C., 2AUH send his usual forecast.

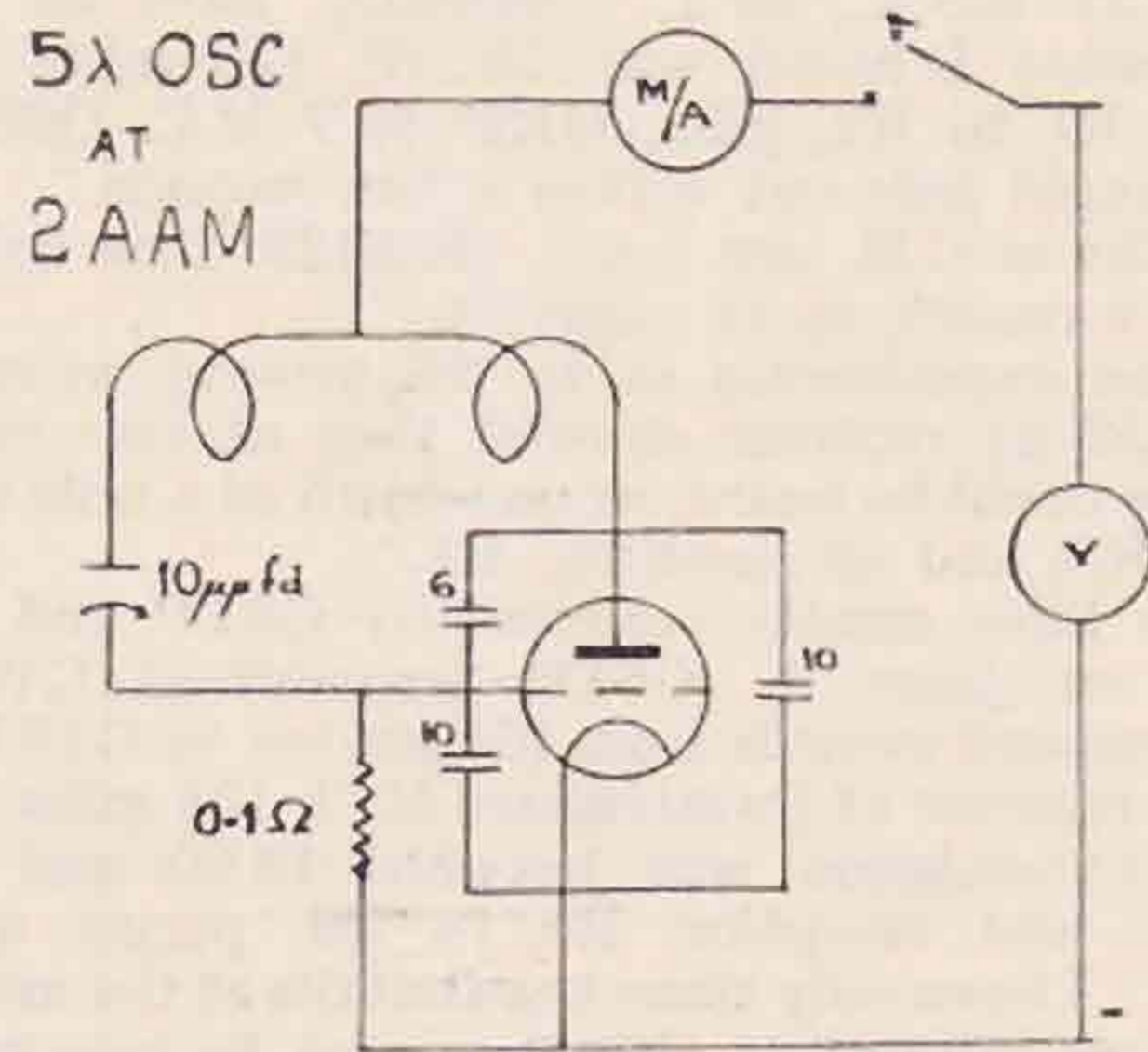
GROUP 4A D.X. FORECAST.

	7 M.C.	14 M.C.
North America	22.00-07.45	19.00 onwards
South America	20.15-24.00	21.00-24.00
North Africa ...	Any time	Any time
South Africa ...	FQ at 22.30	Sunday,
	nil	about 17.00
Asia ...	19.30-23.00	—
Australasia ...	19.30-22.00	About 07.15
	05.30-07.30	

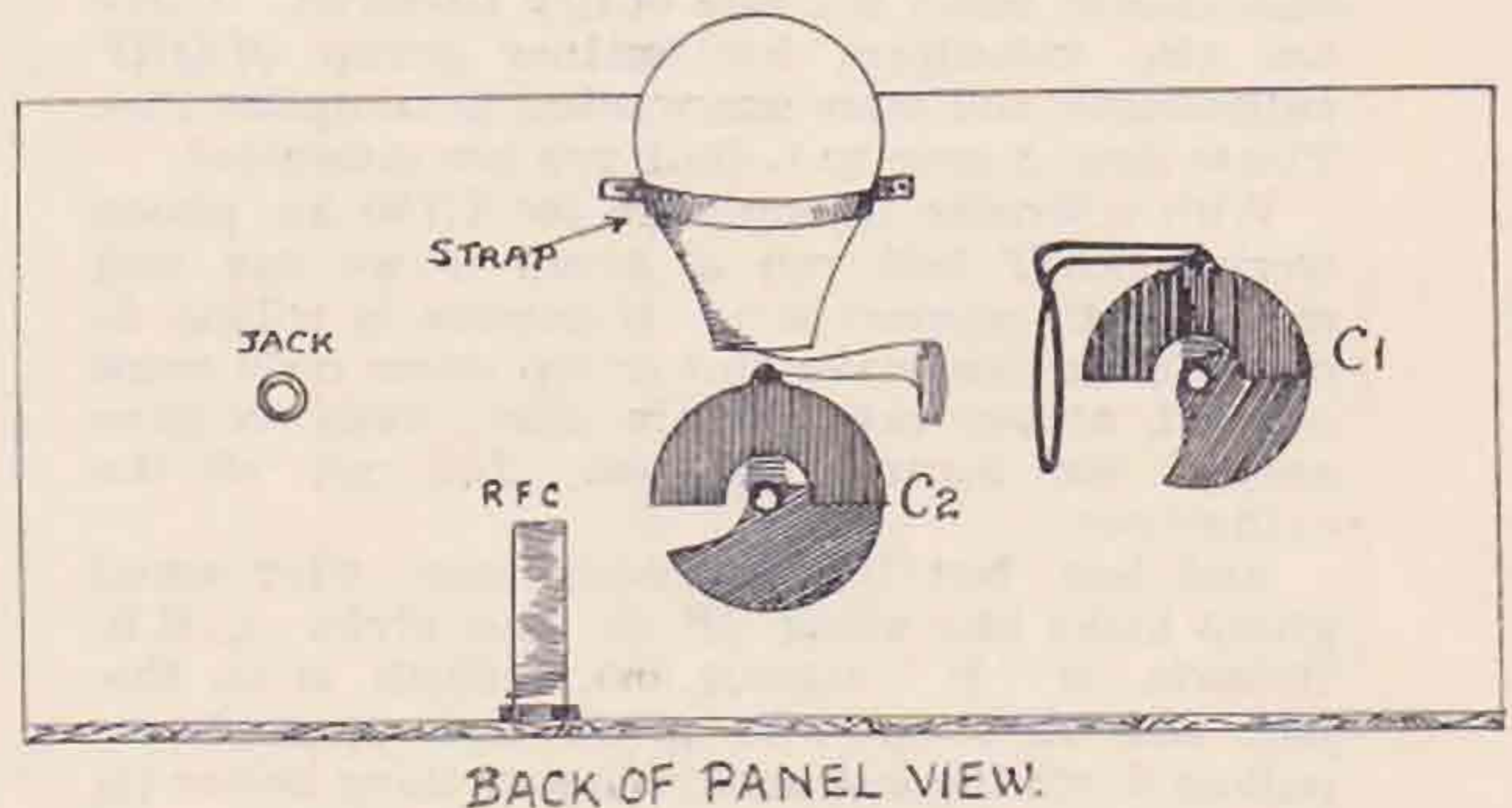
All times G.M.T.

Where there are blanks we have no information. Group 5A (3,500 k.c. fading).—We are glad to hear from G.C., G6FY, that the licence question looks more hopeful and that he hopes to get official permission to carry on.

Group 7A (56 M.C. Work).—G.C., BRS125, welcomes W8DHW to the group. BRS107 falls out, business QRM. G2AAM sends in details of his 2.5 and 5 metre transmitter. The grid condenser is an old style 10 $\mu\mu\text{f}$. "Colvern." It balances the grid-anode capacity across the coil, making a total of 5 $\mu\mu\text{f}$. across the coil. The 2.5 metre inductance has two turns and the 5 metre four turns of 14 swg. 6 cms. diameter spaced 6 mm. The aerial may be straight or right-angled (depending on which polarisation* is required) and is



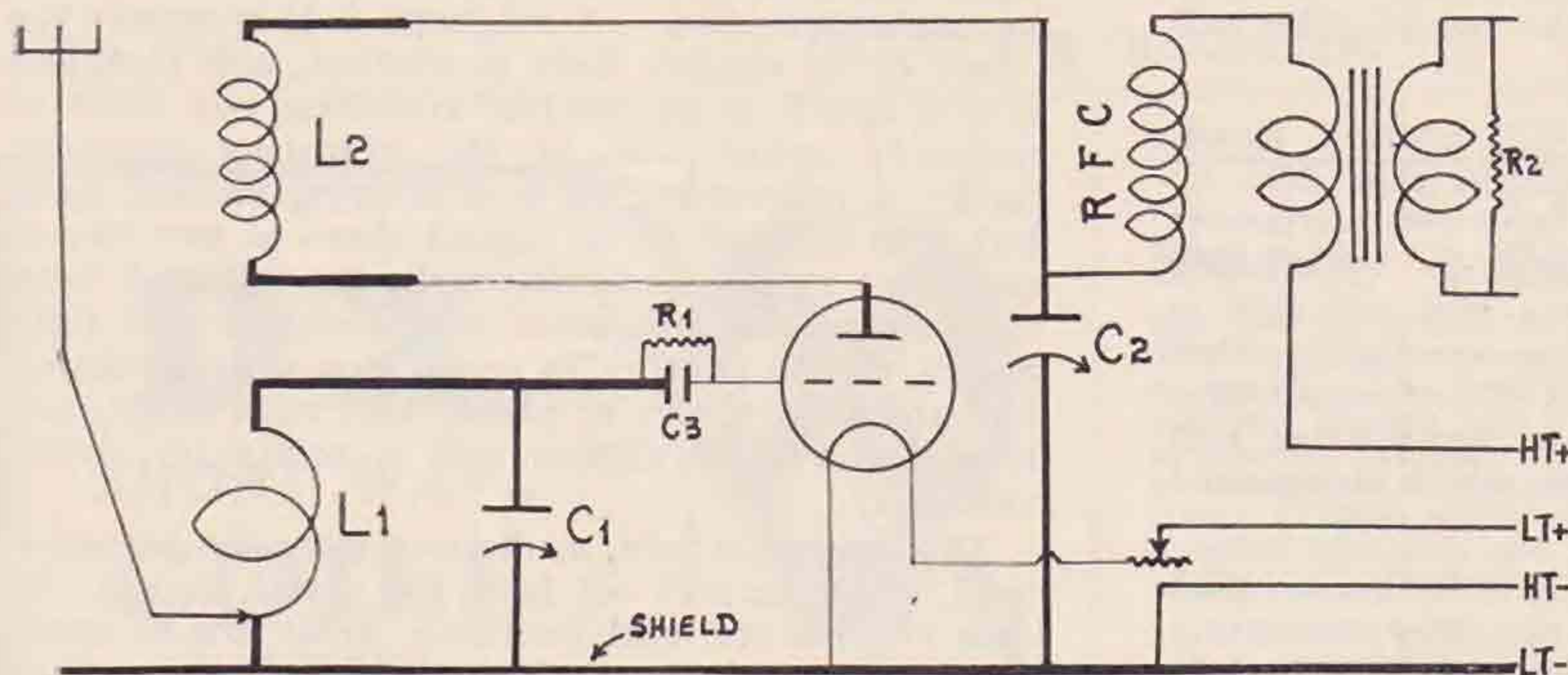
brought to within 10 cms. of coil. Suggested length for aerial is 8ft. 4ins. Sketch of the oscillator is reproduced herewith. His receiver is a "BRS125" type, but uses a 2 turn grid coil with 10 $\mu\mu\text{f}$. variable condenser. Reaction 5 turns, 2 cms. diameter of 28 ssc., close wound. Valve DEH610 with no condenser or bias. This receiver gives a steady T6 note from the above oscillator. G6HX has not received anything, but hopes to have a transmitter going soon. G6DH is now on the air on Sundays, 11.00 to 11.30 B.S.T. with 8 watts. G6LK sends no report, but the G.C. suspects a dark horse. G6TW has gallantly stuck



to various skeds and has learnt a lot of funny things about valves and meters. In addition to the May 19 success with G6TW's signals, BRS125 again picked these up on June 9, but they faded before

* The polarisation of the radiated wave after it has travelled a short distance is practically independent of the aerial used at this frequency. "Angular radiation" is probably what is meant. —[Ed.]

the call sign. He is altering receiver in view of experience gained and also experimenting with aerial couplings. The Group letter budget seems to be an interesting publication, and I give a few notes of what G.C. terms "the salient features." Aerial coupling to receiver (G6DH). One or two turn coil with 4 to 5 in. coupling and vertical aerial, 4.5 and 9 metres long. Receiver a Ultraudion circuit with chokes in all feeds, coil 3 turns, spaced $\frac{1}{2}$ in., $2\frac{1}{2}$ in. diameter and tuned by 2-plate condenser. W8DHW says: "The aerial will be a



HEAVY LINES = RIGID WIRING. THIN LINES = FINE FLEX WIRING.

5λ RX AT BRS 125.

directional one, and doubtless a critical angle will be found at which the waves will be reflected . . . to descend in the vicinity of England." W9CKI hopes by June 20 to join in with our group in these experiments. He will use a UX852 and $\frac{1}{4}$ kw. G6TW finds that with the aerial disconnected the meters still register, and "where does it all go?" Also finds that insulators are not insulators when the high frequencies get to work. He points out that the frequencies are getting toward the infra-red rays which, in addition to other unpleasant things, cause sunstroke. Query: What would be the doctor's diagnosis if called to a ham who stated he had contracted sunstroke through working in a dark room at midnight? One guess only allowed and no prize offered. G6TW uses two equal length wires at angle of about 45 degrees to vertical connected through .001 variable condensers direct to coupling coil for his radiator. G2AAM uses a 8ft. 4in. vertical with ammeter in centre and no coupling coil. BRS125 receiver is shown herewith. Details are: L1. One turn of $\frac{1}{8}$ " copper, $1\frac{3}{4}$ " diameter soldered to C1. L2. 4 turns of 24 swg. D.C.C. $\frac{7}{8}$ " diameter, and self-supported from C2. The coil is cotton tied. C1 was originally a 50 $\mu\mu\text{f.}$, but is now altered to a 16 $\mu\mu\text{f.}$, C2 100 $\mu\mu\text{f.}$, C3 and R1 100 $\mu\mu\text{f.}$ and 7.5 meg., direct on to C1. R2, 100,000 ohms. Panel and baseboard are covered with thin metal. Valve is a baseless D.E.5 held against the panel in cotton wool by a strap and placed, as shown, above C2.

R.F.C. consists of a 1" winding of 32 ssc., 2" long. Filament leads are wound into a $\frac{1}{8}$ " spiral, plate and grid leads of fine flex. The valve is quite silent in action. H.T. 90 volts. With the original 50 $\mu\mu\text{f.}$ condenser the set covered 64 to 55 M.C.

The latest sked of transmissions which has reached C.B. from 7A says that G6TW is on QRP each evening from 21.20 to 21.30 B.S.T. He is also testing from 14.00 to 14.30 B.S.T. on Saturdays, and Sunday's times are 11.00 to 11.30, 14.00 to 14.30, and 18.30 to 19.00 B.S.T. G6DH, using 8 watts, will be on Sundays from 11.00 to 11.30 B.S.T. and 14.15 to 14.30 B.S.T. Also at odd times during week.

C.B. hopes that the dope given this month will start off some more stations on the 56 M.C. band.

The G stations appear to have beaten the world at the start of the affair. Let us get down to it in earnest and keep our lead.

Group 8A (Q.R.P.).—G.C., G2ZN has now filled his group, which consists of himself and G5AZ, G5PJ, G5RV, 2AUT, BRS245. He sends in a preliminary summary of QRP work. First, he claims that QRP signals on 7 M.C. in day-time will often gain the same QRK from the distant station as that at which the 20 watts or so from the distant man reach here. He and G5RV notice this, and suggest "aether inertia" or a trigger action—

that some minimum power is required to overcome the initial inertia, and beyond this additional power is wasted. Both G5RV and G5PY have been working on good notes with rigid construction and the high resistance key shunt method. Fading troubles are being debated. G5AZ wants a simultaneous transmission and G5PJ objects to QRP being considered a freak after an hour's QSO with OH5NG, input .6 watts. Various members are covering the 7 M.C., 14 M.C., and 1.75 M.C. bands. To stimulate interest in the work G2ZN gives a summary of what has already been done by his group. G5RV on 7 M.C. with 3 to 4 watts has EU3BN and EAR16 to his credit, together with OZ, CT, RY, G5AZ on 7 M.C. claims most of Europe, and EU2 on less than 2 watts and on 14 M.C. with 2 watts has FM, CT, UO, LA, SM. G5PJ with 1.8 watts also covers most of Europe with CV5AF and the .6 watt QSO with OH. G2ZN has pushed 1.2 watts to EU3BG and EU3CF on 7 M.C. and covers 20 miles with phone, R3/4, on 1,770 kc. band with .8 watts. I suppose if C.B. wishes the group "More power to your valves" it will be taken as an insult! Perhaps I had better make it "More miles to your fractional watts."

This month's roll of new members: W8DHW, G5AZ, G5RV, G6OT, BRS245, BRS242, G5PJ, 2AUT. Not so bad for the summer months!

**DON'T FORGET
OUR SALES
DEPARTMENT!**

Strays.

OZ7HW is testing with telephony every night after midnight both on the 7 M.C. and 3.5 M.C. bands. He would appreciate reports from R.S.G.B. members.

A Mexican News Service is broadcast in Morse code and in the English language daily at 06.00 G.M.T. on 32 metres by the 20KW station at Mexico City. Although these broadcasts are effected by private enterprise no charge is made whatever for the publication rights of the news. The call sign is XDA.

Mr. H. A. Savage, G2SA (53, Station Road, Burnham-on-Crouch, Essex), states that Mr. L. O'Clery, Chief Radio Engineer to the Government of Liberia, West Africa, is anxious to arrange schedules with British stations. His call sign is FLIAB and schedules may be arranged either direct or through G2SA. Mr. O'Clery would also welcome reports on a new 2 kw. transmitter, call sign ELD, wave-length 19 metres, which is expected to be in operation shortly.

Mr. Clacy, G6CY, would like it to be known that he disowns all transmissions supposedly emanating from his station on a wavelength of approximately 38 metres. He is unable to reply to cards referring to "pirate" transmissions on this wave, though he appreciates reports on his transmissions on 152 metres, which is the only wave used at his station.

Mr. J. R. Beeton, ex-BRS247, is now operating on 7,000 K.C., using the call GAXB.

A Conventionette is being arranged for July 20 at Swansea. Will all intending visitors please let Mr. H. Andrews, G5AS, know *immediately*, as an interesting programme is being arranged.

G5SL would like members to note his complete QRA. He has not been able to get into touch with the previous holder of the call sign now allotted to him. Reports welcomed.—W. H. Slough, 46, Station Road, Finchley, London, N.3.

CTIBK wishes it to be known that his address is now 2, Travessa da Fabrica das Sedas 1°, Lisbon, as many letters and cards from abroad are going to his old QRA.

Reports Wanted.

G5UM requires reports on C.W. and phone on 1,950 K.C., Sunday mornings and evenings.

G5RV will be operating an ultra low power transmitter (portable) from a new QRA near Chelmsford early in July, and would be glad of contacts and reports.

Obituary.

We regret to have to record the death of one of our members, Mr. S. A. Rock, 41, London Road, S.W.17 (BRS66). Mr. Rock has been a member since 1926. We extend our heartfelt sympathy to his relatives and friends.

A Reply.

(The following letter was received by a member in reply to a series of queries sent to another member. The writer has allowed this letter to be published in case it clears up some points for others, but prefers to sign himself "Inconnu.")

DEAR OM,—You are right in that an electromagnetic wave is two oscillations at right angles to one another, one an electric and the other a magnetic oscillation; that is, you are correct in the general description. A magnetic field is merely the effect of an electric field in motion, and therefore if you speak of an electric vibration you must of necessity speak also of the vibrating magnetic field; a magnetic field is a moving electric field, but it is convenient to regard them as two effects occurring at the same time. In the radiated wave the electric and magnetic components are at right angles to one another in space (space quadrature), but are at all times in phase with each other, *i.e.*, they reach a maximum and a minimum simultaneously.

The induction field, as distinct from the radiation field, surges in and out from the aerial, and in this case the electric and magnetic fields are in space quadrature and also in time quadrature, *i.e.*, they are 90 degrees out of step.

It is obvious that the radiation fields will be in time phase, because the moving electric field is setting up the accompanying magnetic field and when one is a maximum the other must also be a maximum.

You ask if they are of the same amplitude? One is a magnetic and the other an electric disturbance, so one cannot use the same scale for measurement. If we take the velocity of the radiation field as 300 million metres per second, it is not difficult to show that the relation between the electric and magnetic components is

$$E = 300H$$

where E is the intensity of the electric field in volts per centimetre, and H is the magnetic intensity in gausses.

The E component will always be at right angles to the H component in space.

When a wave is said to be vertically polarised it means that the electric field is vertical, and when the plane of polarisation is rotated both fields will, of course, be rotated because one must always be at right angles to the other.

Yes, horizontally polarised waves can be radiated, but I think it has been shown experimentally that however polarised the wave leaves the aerial it will be vertically polarised after travelling a short distance. This, I feel, depends on the frequency in use; it is probable that a 28 M.C. signal from U.S.A. will be largely horizontally polarised even at this distance, and it might suggest further work with receivers using horizontal aerials.

It is interesting to note that atmospherics are entirely vertically polarised.

If you wish to study the subject of polarisation of S.W. signals, you might refer to Pickard's work as described in *Radio News*, Vol. 7, pp. 1540-1541.

Yours faithfully,

"INCONNU."

DX

SHORT WAVE COILS

Pat. 305702.



As used by members all over the world for transmitting and receiving.

SPECIFICATION

Wound with 16 gauge tinned copper wire, 3" diameter.

PRICE

7/6 PER SET

4 coils; 3, 5, 7, & 9

or any number of turns up to 9 supplied to order within 24 hours post free.

**DX COILS LTD. Kingsland Road
London E 8**

CLIX HOOK TERMINAL

This new Clix product is just the thing for certain and quick make-and-break connections to terminals. The hook design prevents this connector shooting away when screwing down or loosening terminals. It incorporates, of course, the Clix patented method of wiring which ensures a strong grip, a perfect connection and no exposed wires. Lead-coated or Nickel-plated.

Write for the Clix Catalogue containing details of 21 aids to perfect contact.

LECTRO LINX, LTD.,
254, Vauxhall Bridge Road London, S.W.1.



2^d.
EACH

QUARTZ CRYSTALS

STANDARD . . . £1. 0. 0.

POWER . . . £1. 10. 0.

Our Power Crystals are guaranteed
TESTED with 500 volts H.T.

CRYSTAL HOLDERS 4. 6.

Full particulars on request:

THE QUARTZ CRYSTAL CO. (G2NH & 5MA),
63a, Kingston Road, New Malden, Surrey.

R.S.G.B. Sales Department

The following can be obtained from Headquarters on application:—

A.R.R.L. Handbook, by Handy ...	4/-
Citizens' Radio Amateur Call Book (4/- to Members)	4/6
Enamelled Coat Badges of Emblem	2/6
Members' Headed Notepaper (per 100 sheets)	2/-
Enamelled Car Plaques of Emblem	3/6
Call Sign Brooches... ..	2/6
Rubber Stamps of Emblem ...	1/6

"T. & R. Bulletin." ADVERTISEMENT RATES.

	Per insertion.		Per insertion.
Full Page ..	£5 0 0	Half Page..	£2 10 0
Quarter Page	1 5 0	Eighth Page	0 12 6

Series Discounts—5% for 6 or 10% for 12 consecutive insertions.

Advertisements specified for Facing Matter Positions are not subject to series discounts.

The T. & R. BULLETIN is published on the 14th of each month. Orders, Copy and Blocks should be received by us on the 30th of each month preceding month of issue.

All applications for space or specimen copies should, please, be sent to Advertisement Manager,

PARRS ADVERTISING, LTD.,
Craven House, Kingsway, W.C.2.

Telephone: Holborn 2494.

OSCILLATING XTAL COMPANY

QUARTZ CRYSTALS FOR AMATEUR TRANSMITTERS

We invite enquiries

STANDARD CRYSTALS - - - **20/-**
HEAVY DUTY do. - - - **30/-**

CRYSTAL HOLDERS (OPEN AND SEALED TYPE), FREQUENCY STANDARDS, ETC.

88 DE FREVILLE AVENUE, CAMBRIDGE.

District Representative Elections, 1929-30.

It has been decided by the T. & R. Committee that new D.R.'s shall take office as from September 27, 1929.

In the present issue a nomination form is published which shall be returned to Headquarters not later than August 1.

In the August issue a ballot form will be issued for the use of members in districts from which more than one nomination has been received. These forms shall be returned to Headquarters not later than September 1.

The September issue will contain a list of new district representatives so that members may (prior to Convention) make arrangements for their new D.R. or a deputy to attend as a district delegate at Convention.

District Representative Elections, 1929-30.

NOMINATION FORM.

I wish to nominate Mr.....
 call sign....., of
 as representative for District No.....

I have ascertained that the above gentleman is willing to accept office.

Signed
 Call Sign
 Address

Trade Notice.

From Messrs. Claude Lyons, Ltd., of Liverpool, we have received details concerning their new De Luxe Push-Pull Output Amplifier, a brief announcement of which appeared in the advertising columns of the June BULLETIN. The instrument, which is entirely British built, is for use following the detector stage of a radio receiver or can be coupled directly to a good electrical pick-up. Two metres are included on the panel as well as a signal attenuator so that smaller valves than those specified may be used when permissible, besides acting in its more humble role as volume control. One PM5X and two Mazda PX650 valves are specified and a high tension supply delivering 180 to 250 volts at 35 to 50 milliamps is required, which may be easily obtained from one of their "B.A.T." D.C. or A.C. units, when mains permit. More complete details concerning this amplifier, including a few words about push-pull amplification, may be obtained from the manufacturers at 76, Oldhall Street, Liverpool.

Small Power Transformers.

By W. J. H. KEMPTON (G2AI).

The writer recently obtained transformer cores from Mr. W. Bryan Savage, of 146, Bishopsgate, E.C., and, being thoroughly satisfied with them, hopes that the following few details will be useful to members.

The cores are made of a good quality Bakelite, and the stampings go approximately 18 to the inch and are paper covered on one side. These are made up in parcels with the right number for the bobbin, or can be supplied by the gross. One size which I purchased has about two square inches of iron or over, and winds 3.5 turns per volt, being a useful size for the average amateur for power supply or eliminator work. It is capable of handling about 100 watts at 50 cycles. There are several other sizes, one having a core 1½ ins. by 15/16ths in., which when wound makes an excellent choke. The bobbin is 2 ins. long, and will accommodate about 1½ lbs. of wire, if 30 gauge wire used, having about 40 henries inductance at 50 milliamp. rate. This size bobbin or iron requires 6.5 turns per volt, and will handle 30 watts, making an excellent filament transformer for at the most 12s. 6d., including the wire. A detailed list of prices can be found in this issue, and for the guidance of those wishing to wind transformers the following details should help them. First to calculate the turns necessary. The stampings above have 65,000 as the maximum flux density.

If we knew the number of turns we could calculate the induced voltage in the primary, but since we wish to oppose the mains the induced voltage must be equal to the mains voltage:

$$E = \frac{4.44 \times \text{turns} \times \text{max. value of flux} \times \text{frequency}}{10^8} \text{ volt}$$

$$\text{Max. value of flux} = \frac{\text{area of core in inches} \times \text{lines per sq. in. allowable}}{\text{Frequency} = \text{cycles per sec.}}$$

$$\text{Substituting to find the number of turns required—}$$

$$\text{Turns} = \frac{\text{Primary volts} \times 10^8}{4.44 \times \text{area of core} \times \text{constant} \times \text{frequency.}}$$

When this has been determined one must consult tables to estimate turns per inch of winding—say if six turns per volt are required for 200 volts = 1,200 turns at 100 per inch on 2-in. long bobbin = six layers.

Enamelled wire can be safely used, and it is recommended to place a layer of paper between every layer. It must be remembered that in transforming, say, from 200 volts down to 10 volts, although only 1/20th of the number of turns are required on the secondary, the winding space occupied by the secondary is greater than the primary, as the turns do not pack in so tightly, due to the heavier gauge of wire used.

In winding a secondary, say, for 6 volts at 3.5 turns per volt about 24 turns would be necessary, as it must be remembered that the end turns do not induce so much as the turns towards the centre.

The writer regrets that these notes are brief, but it was not intended to give a complete article on transformers, but this should contain sufficient for anyone to build a transformer using the laminations and bobbin advertised.

Activities on 28 M.C.

Another country has been worked this month, though only a local. On June 23 at 13.35 G.M.T., G5YK worked D4UE for 30 minutes, signals being steady QSA5 each way. G5YK also logged UOXY both before and after the contact with Germany, but it appeared that an automatic transmitter was in use as no intervals were observed and no ARK was given. BRS36 and G5YK ran a schedule with LU2AA at the beginning of the month, but without success. BRS36 has heard the harmonic from CTIAA. 2ABK has heard CTIAA and PCP, both presumably harmonics. BRS72, on June 15, logged UOXY, R7 rapid fading to RO; on the 23rd he was R7-8, fading to RO; on the same day he heard D4UE working G5YK, R9 fading to R2. On the latter date G5YK noticed some fading on UOXY, but almost none on the D station. BRS72 also heard harmonics from FY, CTIAA and YIIMDZ. G6WN has heard G6VP several times, G5WK on June 9 at 10.00 G.M.T. and harmonic of GKS at 20.12 on June 21. BRS25 says that June 23 was the only occasion during the whole month that he was able to hear, except an occasional sig. from G2OD. He heard UOXY at 14.08 G.M.T. (steady RAC R6) and at 14.45 G.M.T. D4UE (steady T8 signals R7). BRS250 also heard D4UE working G5YK, and later heard the German station calling G6HP, who was one of a number of locals (probably harmonics) heard by BRS250. G6LL and G5YK will be pleased to receive all reports of activities on 28 M.C. for inclusion in the monthly report. Active stations are interested to know what luck members have had in other parts of the country at times when conditions for them have been dead.

Calibration Service.

Calibration waves will be sent from G5YK on July 28 and August 25 as follows:—

13.00 G.M.T. 7,050 K.C. (nominal).

13.05 G.M.T. 7,250 K.C. (nominal).

A similar schedule will be transmitted on August 11, commencing at 09.00 G.M.T. The call will be R.S.G.B. DE G5YK, followed by a two-minute dash and the frequency used. The accuracy may be taken as better than plus or minus two kilocycles.

Errata.

Page 278 of June issue, col. 2, 4th line from bottom, *fade* should read *bad*.

The Editor regrets that a number of short articles submitted for publication have been unavoidably held over owing to lack of space.

Book Reviews.

"THE RADIO MANUAL." By George Sterling. Published by the D. Van Nostrand Company of New York. Price six dollars. 666 pp.

The publishers in introducing "The Radio Manual" claim it as being the most complete handbook on radio ever published.

In a few hours' perusal of its 666 pages we can but agree with their statement. It is complete to a remarkable degree, and the author is to be congratulated on his ability to crowd into one volume such a wealth of information covering so many varied phases of radio.

The chapters devoted to amateur radio and measuring apparatus are of particular interest, but the discussions covering the various modulating systems in use and the fundamental circuits employed in valve transmitters are worthy of consideration as classics on these two subjects.

Within its pages will be found very detailed descriptions of present day broadcast equipments and marine and aircraft beacons.

An excellent kilo-cycle metre conversion table and a complete list of new Q code signals is contained in the supplement, whilst many pages are devoted to a fundamental treatise of electricity and magnetism, motors and generators, storage batteries and charging circuits, and no less than 60 pages are given over to the theory and application of the valve.

The book is profusely illustrated and clearly printed, and should find a place on the bookshelf of all amateurs who have still something to learn of the wonders of radio.

QSL Section.

By J. D. CHISHOLM, G2CX.

As it is evident from the response to the last list of calls published in these notes that members like to know when they have run out of envelopes, it is intended to continue such monthly lists of stations for whom the section has cards but no envelopes.

The kindness of some members in sorting their cards into the various countries before sending them for distribution is much appreciated, and others would do well to follow their example. The saving of time at this end if everyone did this would be considerable.

Will members please note that the ONLY address for cards is 53, Victoria Street, S.W.1, as many communications and cards have been held up because they have been sent to my home address or that of my predecessor.

The following have cards for them at headquarters but no envelopes:—2: agt, agx, bod, af, ao, ay, bz, cs, gg, ho, iz, lv, lz, mf, od, og, oq, ql, rx, ss, to, vq, xd, za, zm; 5: ac, ad, ag, bl, bq, bx, cg, gx, gy, ja, nn, ps, pt, qt, ra, ro, rr, su, tc, uw, vf, vz, wb, wg; 6: av, bh, br, cd, cs, cw, dp, di, dn, dz, fh, fi, fo, qa, hj, ia, io, md, oi, qo, qw, qs, rl, rn, re, rs, sy, td, th, tq, tx, ug, uu, vv, wo, wx, wz, xy, yu, zs; BRS: 102.

QRA Section.

By M. W. PILPEL G6PP.

A few cases have come to my notice recently of members changing their addresses or relinquishing their call-signs and failing to notify me of the fact. Now I am doing my best to keep the G list in the "Call Book" right up to date, but if things like this occur it makes my task an almost impossible one. Therefore I appeal to you all just to drop me a line on a post card if any change takes place to make your published QRA incorrect. It will only take a moment of your time, but it will greatly help your fellow amateurs.

The prefix VP—Ceylon, published last month, has been changed, as stations in that country have been notified by the local authorities that all call-signs are being altered and the prefix will be VS. The calls will be VS7AA, VS7AB, etc., so that no confusion can arise with other countries using the same prefix.

Other new prefixes are:—

RW—Persia. TI—Costa Rica.

All new QRA's, changes of address and relinquishments to G6PP, 54, Purley Avenue, London, N.W.2, please.

New Members.

- A. C. WILBERFORCE, Plaze del Angel, 34 Salamanca, Spain.
 P. W. MACFARLANE, 81, Loveday Road, Ealing, W.13.
 G. EDWARDS (G2UX), 159A, Hillingdon Street, S.E.17.
 S. REES (2AWT), 39, Brynhyfryd, Aberbeeg, Mon.
 J. E. ARMSTRONG (YU2DG), 4th Q.O. Hussars, Meerut, U.P., India.
 G. E. PRANCE (G5RN), 1, Holyrood Terrace, The Hoe, Plymouth.
 D. REES, "Maesgwyn," Neath Road, Briton Ferry, S. Wales.
 C. C. PARTRIDGE (G2RT), Government House Gardens, R.M.C., Camberley.
 A. H. MASON, 30, Marlborough Road, Cathcart, Glasgow.
 J. D. PAUL, 8, Hartfield Gardens, Dumbarton.
 E. J. ARMSTRONG, "Quisisana," Folders Lane, Burgess Hill, Sussex.
 T. B. GREGORY (G5GY), 34, Royston Avenue, Wallasey, Cheshire.
 A. E. BROOKES (2BVL), "Cleve House," Cleve Woods, Downend, Bristol.
 CLAUDE LYONS, 8, York Avenue, Sefton Park, Liverpool.
 W. LUCAS (2ABQ), 64, Worsley Road, Winton, Patricroft.
 R. T. PURSEY (2AHU), 2, Northdown Way, Margate.
 F. GEE, "Harrowdene," Welford Road, Wigston, Leicester.
 CADET M. F. SOMERVILLE, R.N. College, Dartmouth.

B.R.S. NUMBERS ISSUED.

255. Q.M.S. C. S. ROBERTS, R.S.
 256. P. W. MACFARLANE.
 257. E. J. ARMSTRONG.

258. J. D. PAUL.
 259. F. GEE.
 260. M. F. SOMERVILLE.

B.R.S. NUMBERS RELINQUISHED.

- 223 (now G6ZS). C. GRUNDY.
 65. H. W. RUTLEDGE.
 99. F. P. CROWTHER.
 122. H. A. BARTLETT (now G5QA).
 195 (now G2DH). H. N. WATTS.

New QRA's.

- G2AW.—W. F. C. GERAGHTY, 5, Benson Street, Norton, Stockton-on-Tees.
 G2CJ.—S. TOWNSEND, Barnwood House, Gloucester.
 G2KU.—A. J. SELBY, 12-13, Borough Road, Burton-on-Trent.
 G5DF.—J. D. PINCHBECK, "Summerfield," Wadsworth, Hebden Bridge, Yorks.
 G5JF.—G. WEBSTER, JUNR., 311, Bolton Road, Darwen, Lancs.
 G5NC.—H. OSBORNE, 77, Barrett Road, London, E.17.
 G5PO.—H. J. POLLARD, c/o 35, Beresford Avenue, Bebington, Cheshire.
 G5SL.—W. H. SLOUGH, 46, Station Road, London, N.3.
 G5ST.—R. R. MORRISON, Spring Grove, Kilbarchan, Johnstone, Renfrew.
 G6KA.—K. F. HARDIE, 117, Evering Road, London, N.16.
 2BXM.—F. C. MASON, 37, Abbey Road, Bush Hill Park, Enfield, Middlesex.
 G5QA.—H. A. BARTLETT, 9, Springfield Road, St. James, Exeter.
 BRS174.—W. A. KEITH, 2, Park Street, Horsham, Sussex.

The following are cancelled: G6PU, 2AHX, 2AZD.

Notes and News from the British Isles.

DISTRICT No. 1.

Representative: J. C. HARRISON (G5XY).
 G6ZS is running a weekly schedule with G6QA, G5VN and G6AX on the 1,750 band. He is using a Cleartron CT25X with 300 volts R.A.C. on the plate in a Hartley circuit, and has had fine results. His modulator is not working quite so well as the oscillator. 2AJC has now finished with exams. and will have more time to devote to radio. Has just applied for his full ticket. (Best luck, OM.) G5MS has come to life again, and reports that he has been trying out circuits on 14 M.C. with low power—10 to 15 watts. Has worked SU, PY and local W's, also RWIG, who gave his address as Persia. 2AUH has very little to report. Meets 2AJC and BRS245 in Manchester about once a week for a

little rag chew, and wonders if any other hams would care to join them. G5CI, whilst in District No. 2, asks if it is in order to send his report in to No. 1? (Yes.—ED.) (Say, OM, you are in Lancashire, so I think you will be in No. 1. Shall be very pleased to see you any time.) G5JF sends in his first report as such. He has at long last received his ticket, and has been getting out in fine style on about 3 watts. Is busy trying different radiators. G5XD has, on 14 M.C., worked W1 and W2 with 7 watts input. On 7 M.C. he finds conditions for local work very poor. G2DH is another good AA man gone west. However, he is now a lively transmitter, so no one worries. Has already worked EU. No power stated, but his antenna is a half-wave Zepp. G5WQ, still on board s.s. "Ixion," has received word from the powers that be that ham transmitters are absolutely verboten. Very hard lines, OM. Keep up with those letters! G5XY still too lazy to dust the ole 250, but often thinks about it.

DISTRICT No. 3.

Representative: J. NODEN (G6TW), Coppice Road, Willaston, Nantwich.

I think the holiday spirit has overtaken the most of our members in my area, or are you tired of sending in a report once a month?

Cheshire.

G2SO is getting busy again, but has had trouble with C.C., resulting in the destruction of a number of his meters. BRS152 preparing for transmission, and is undergoing his morse exam. BRS186 reports conditions on 7 and 14 M.C. have not been too good, although ZL4AM was logged on 7 M.C. in the early morning. A crystal oscillator has been built, and an attempt made at crystal grinding. Reception work done on 1.75 M.C., but results rather meagre. 2AZN has passed morse test, and waiting call sign. G2OA, a new reporter. Welcome, OM. This is a QRP station, using dry batteries. The circuit is the "Hartley (1929)." He has worked a number of Continental stations, using only 2 to 3 watts, also logged on 28 M.C. W2JN, W1CMF, W1BW, G5MG and G2II. G6IW.—Practically all my attention is turned to the 56 M.C. band, and if anyone does want to be interested in radio, my tip is: Try this band without fail.

Monmouthshire.

Sub-Representative: HAROLD HARDING (G2HH), Treve Cottage, Ebbw Vale, Mon.

The outstanding event was a visit of 6PF, 2AWT, BRS237, BRS239 to 2HH's station, where we had a pleasant chat on radio. It is with regret that I remember that 6PF and 2AWT promised to write reports to me on the 13th of the month, but I forgot which month they meant, not June, 1929!!! Rising out of the meeting at 2HH's the Ebbw Vale men made an attack on 14 M.C. on the Friday night and were rewarded well.

DISTRICT No. 4.

Representative: E. R. MARTIN (G6MN), Castle-mound, Worksop.

BRS245 has found conditions bad, also QRN; has joined C.B. and hopes to do a little more serious work than DX logging. BRS225 found conditions bad also, but has managed to get a good log of phone stations. G6HK is now active on 7 M.C. band, QTU 07.00 daily. G6LN still using 2.7 watts,

and has had good reports from Russia. G6MN practically shut down owing to valves failing.

DISTRICT No. 5.

Representative: D. P. BAKER, Crescent House, Newbridge Crescent, Tettenhall, Wolverhampton.

Reports from Staffordshire this month are nil, owing, I fear, to holidays, and a certain amount of slackness in sending in reports. I am afraid reports take too much getting in: it should not be necessary to ring up every station to get a few notes.

Warwickshire.

Representative: G6CC.

G2YX has been doing telephony with 2OP on 1,700 K.C. and some DX on 7 M.C. band. G5BJ has worked five continents and now awaits contact with Antipodes for W.A.C. Has worked lately CE, CX, CM, W6, W7, and had good report from Tasmania. G6CC is in the midst of rebuilding his receiver, but has found business claiming too much time. G6CI DX on 14 M.C. band still continues in fine shape, PY1AW, LU3DH, LU2FI, PK4AZ (Sumatra) and RVIG (Persia) being new stations added through the month. Some tests are being made on 1,787 K.C. (167.8 metres) with CW, and reports are welcome. Also QRW with building a multi-valve speech amplifier. G6MC is a new member. Welcome, OM. His report is as follows: Work on 7 M.C. very poor, due to bad QRM, but most European countries have been worked with 5 watts on LS5. Conditions on 14 M.C. have been much better. The following countries have been worked:—Australia, Chile, Argentine, Brazil and Canada, and the usual "locals." Asia has only to be worked for WAC, but very little time is available for this. A DET1 with 10 watts is in use on 14 M.C. Reports on 28 M.C. nil. G6XJ has fair local DX, but conditions in Midlands hopeless lately at this station. Now busy working on XG6XJ with able help from G5UW and G5BJ. This portable transmitter will be working from July 27 to August 10, and reports will be welcome. Station located on East Coast and Norfolk Broads. See other note in this issue. Had phone with W2, getting R6.

DISTRICT No. 6.

Representative: G. W. THOMAS (G5YK), 169, Hills Road, Cambridge.

Summer is here with a vengeance, which must be the reason for the few reports for the month's notes. I should like all members to think over the future of their district as new elections take place before Convention this year. You may remember that I took over the job as District Representative upon the request of Committee, as no member had been nominated for that office. I have done what I could for the district, but I really have not the time to give to the job in order to do the district justice, apart from the fact that I am away for five days of the week and am quite unable to keep in personal touch with the members. I would therefore ask you to think about nominating someone else to take office from October 1 onwards. G2XV, in spite of a rectifying valve having blown up when rebroadcasting Hilversum, has had very good results from the sixth district and other parts of North and South America. Phone tests on 7.208 K.C. will be recommenced soon on Sunday mornings and reports will be welcomed. G5YX and G6CR have been doing good work with various

parts of the world. G2HJ, G6DG and BRS77 have been unable to spend much time on the air, though their attentions have been turned to other offshoots of radio. G5YK has worked D4UE on 28,000 K.C., but has otherwise nothing else to report. BRS204 sends in his first report, and I hope others will follow. He is very busy, but has had time to do some reception and covered the world well. He is another prospective 10-metre listener, and we wish him all the best luck for the future.

Essex.

Sub-Representative: R. C. HORSNELL, "Hepani," Wickford.

G2SA has been busy on 7 M.C., and found DX poor, best for month being OH. 2BVR has been busy with a mixing amplifier from two detectors and gets both sides of QSO's without re-tuning. Also tried 60 M.C. set by G5WF, but T.H. bad, and no oscillation below 8 metres. G6DH has been improving 14 M.C. TX and has had good reports on 15 watts—R6-8 from W6FK (four mornings running), R8 from LU2CA, R7 from OA4P and K4KD, R8 from PY2BC and W4EC, and R6 from VE at 17.00 G.M.T. (Congratulations, DH.—G5YK.) BRS231 also sends a good log of about 30 countries heard, and reports rotten conditions. BRS233 has been on holiday with portable RX in Devon, but no report is to hand. BRS191 has been assisting again with "mangle" for G5QK. 2ABK has been on air again with G5QK and has been getting good reports on 1.7 M.C. phone from good distances. Busy with RX on 14 and 28 M.C. Good on 14 M.C., but not much on 28 M.C.; SG set being built. G5SN said he had been busy on 7 M.C. and also has been on 1.7 with good fone. G6WI has had some good DX on 14 M.C., and is experimenting with 100 per cent. modulation on 1.7 M.C. with successful results. G2LZ ($\frac{1}{4}$ mile away) has been heard on 1.7, 14 and 28 M.C. at all times, but no reports.

DISTRICT No. 7.

Representative: H. C. PAGE (G6PA), Newgardens Farm, Teynham, Kent.

Now that the summer has come one would expect a fall in the number of reports, but I am glad to say that is not the case. Our star station this month is BRS125 with his 56 M.C. work. I have seen his receiver and am very impressed. He has put a good deal of work into the problem, and deserves his success.

Surrey.

By G2VV.

G5CM reports best DX this month on 14 M.C. being SP3EW. Now working on low power of about one watt, and is getting good local reports. G5WP has been active on 14 M.C., but reports conditions very patchy. Considerable difficulty has been experienced in making contact with W stations. South Americans were worked a good deal, average reports being:—LU, R7; PY, R6; CE, R5; K4, R6. Has now got his chemical rectifier working well and says it is very satisfactory. G6LK is still only on during week-ends. He is using lower power, as the dry batteries are beginning to weaken. BRS188 has heard the world again on a one-valve set. G2VV has found conditions bad on all frequencies. Telephony has been practically impossible during the month. On 14 M.C. best DX was UOCM ($4\frac{1}{2}$ watts), who reported R7, fone R4. He is still trying to work W on low power. He is

anxious to form a 5-watt group for C.B., and asks anyone interested to write to him.

Sussex.

By G5UY.

BRS125 is our star man with his 56 M.C. work. On May 19 he heard G6TW twice at about R1 to R2. Fading was very rapid. He is shortly redesigning his receiver, so as to spread the 56 M.C. band out a little more. Has been for his Morse exam., but is rather doubtful of the result. Has got three new members for R.S.G.B., two of them South Africans. G5AQ has not been doing so much this month. Best DX was LU. An Ultraudion transmitter is now under construction and will be testing on 1,783.5 K.C. shortly (C.W. and fone). He would appreciate reports of his transmissions on this band. G5UY has been experimenting with different types of aerial coupling, and finds that an aerial tapped straight on to the transmitter is the best. Still testing with crystals across the grid coil of his T.P.T.G.

Kent.

By G6PA.

G2MI has been doing some fine "Duplex" on the 2 M.C. band. He uses a very short aerial on the receiver, and finds tuning very sharp. He says it is absolutely necessary to use grid rectification. G6PA has also been trying "Duplex" on 2 M.C. with G2LZ. Results have been excellent. Strength at both stations being good land-line. Most of the time has been spent on the 14 M.C. band, where a little DX has been done. Local W's have been worked, also local VE's. Other DX includes PY, LU, RV, YL and FM. All Europe has been worked fairly easily.

DISTRICT No. 9.

Representative: G. COURTNEY PRICE (G2OP), 2, St. Anne's Villas, Hewlett Road, Cheltenham.

Reports should reach me on 23rd of each month, and should apply to the month 22nd to 21st, otherwise it takes two months to get into print. G5SF has been keeping a schedule with FK4MS. G6RB has been on 7 M.C. and 14 M.C., where he has found conditions good. Has some interesting DX. The D.R. has to confess that he has mislaid the report. I very much regret, OM. Please accept apologies. G6RR is now back on the air for about three months and is working break-in on 7 M.C. G6WT is very busy, but will send report next month. G6XB will shortly be on 56 MC. Has been finding conditions on 14 M.C. excellent. G5QA has had licence reissued and will shortly be on the air on 7 M.C. and 14 M.C. G2OP has been away, but built a G5FS receiver and got excellent results. BRS122 has found conditions good on all bands during evenings until June 17, after which atmospherics became very bad. BRS145 has hooked a new member and is swotting hard for his ticket. BRS212 has been active for two weeks only, but logged 54 countries, including 24 European. Will be reporting from Rugby during July and August. BRS242 is the early bird of the area, having been listening often at 05.00. Has logged 10 countries outside Europe. Found best conditions for 7 M.C. between 05.00 and 06.00. BRS254 is a new station, but has logged 26 different countries. Will be pleased to run skeds on Saturday afternoons and all day Sundays.

DISTRICT No. 10.

Representative: J. CLARRICOATS (G6CL), "Ciel," Hartland Road, N.11.

G6XN awaits his W.A.C. All W districts have been worked. Is now making a rectifier that does not boil away with each QSO. Will be testing on ultra-short waves as soon as exams. are over. G5UM has increased his input to 9 watts. He has been testing relative efficiencies of various circuits and finds the T.P.T.G. the most satisfactory on the 1.5 M.C. band; he has joined the new 1.5 M.C. C.B. group recently formed by G6OT. The latter station does not report this month. G5HJ has been inactive, but proposes shortly to experiment with the relaying of B.C. G5QF raised W with his first call from his new home, using 5 watts. He has been off the air most of the month. G2AX was on holiday for part of the month and was inactive for the remainder except for some fone work at week-ends. He has been visiting D, F and ON. G6CL has done less this month than ever before owing to the call of the sports field. G6UO was a welcome visitor to his station. G6PP has had trouble with his new aerial, but with present poor conditions it has been difficult to make exhaustive tests. He and G5QF have rebuilt his transmitter. Many known active stations have failed to report.

DISTRICT No. 11.

Representative: L. H. THOMAS (G6QB), 66, Ingram Road, Thornton Heath, Surrey.

I have come to the conclusion that this is *some* area—for talk. Hardly one of the usual consistent stations has reported this month, and there has not been a solitary entry for last month's "competition." Apparently the gang are too keen on card-collecting to go in for a serious low-power test now and then. G2UX reports for the first time. He is using an "A.O.G." aerial with low inputs and a CT25 valve, and has worked Poland, Spain, Denmark, etc. G5PL reports pressure of work, but promises regular reports. G6KM has made his first W QSO (with WIBUX), using 8.5 watts D.C. He wants to get in touch with someone that can help him in some snags with gramophone pick-ups and amplifiers. G6NT is the star turn, having worked almost everything he has heard, including YI (R9), LU (R9), K4 (R7), K5 (R6), PY (R6), W 6th (R8), also CM, CE, SU, ZL, VU, CX, etc., etc. (FB, OM.) G6QB has again worked all districts U.S.A. and Canada, including eleven 6's and eight 7's. Otherwise not much except a few new countries such as K4. BRS25 has had a visit from FKILM, who is here till August, and wants to meet some more amateurs before he goes. No competition this month, for obvious reasons!

G2CX has been off the air owing to his change of QRA, but hopes to be going again by the time these notes are in print. Trouble is being experienced in erecting an aerial in the restricted space, but mast is being erected with the help of the local "Hams."

DISTRICT No. 12.

Area Representative: L. J. FULLER (G6LB), 13, Seagry Road, Wanstead, E.11.

Reports this month are very scarce owing, no doubt, to summer activities. G2ZN is still busy on 7 M.C. and 1.5 M.C. Tests have proved that contact is possible at 100 miles using .03 watts. G6LL has done nothing beyond working SU on 14 M.C. G6LB has lost his aerial, and has been

forced to use one indoors. This is a half-wave "end-on" Hertz on 14 M.C., and has been quite O.K. for European work. G6FY has also done little work beyond a few Europeans. G6UT is still testing aerials, being unable to decide which type is best for his station.

DISTRICT No. 13.

Representative: H. V. WILKINS, 81, Studland Road, Hanwell, W.7.

G6VP still finds conditions good on 14 M.C. Has again W.A.C. and is being heard well off the coast of Japan. Is busy with crystal control. Using 84-metre crystal and only two valves, gets good output on 14 M.C.; is also trying grid bias from the mains. G5LY has been busy and not much time for radio. A few QSO's with Europe and Egypt. Is using Hertz aerial in place of Zepp., and finds it better for European working, but not DX. Is building frequency meter and a monitor. G5RV is holiday-making, but sends a report. He found 7 M.C. completely dead for reliable QRP work. Has built a combined portable transmitter and receiver, as he is going to a new QRA (Chelmsford) on his return from holiday. G6WN is still working DX on 14 M.C., having been QSO AR, W, SU, K4, LU, CT2, VU, Tunis and most of Europe. CT2 gave R7 and LU R6. Not much is to be heard on this wave during the early morning. Experiments are still being carried out on 28 M.C., but very little is heard. BRS72 has been listening on 28 M.C., but reports conditions still poor. Heard UO and harmonics of CT and YI. Using home-made L.F. transformer in receiver and finds it compares very favourably with one of well-known make.

REPORTS WANTED.

G5RV wants reports on his signals from his new QRA.—R. L. Varney, 12, Hall Street, Moulsham, Chelmsford, Essex.

DISTRICT No. 14.

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

Summer (*sic*) is with us once again, bringing in its train an inevitable slackening of radio activities, and consequently a lack of interesting data for reports. May has been chiefly noticeable in Scotland for its almost overpowering brand of "X." So bad were conditions, in fact, that it was found impossible for days on end to effect contact with any but the most powerful stations. Curiously enough, the 14 M.C. band, which, in comparison with the 7 M.C. band, is relatively free from this sort of trouble, was little or no better than its kilocyclic inferior. Another pronounced feature observed was the phenomenally acute and rapid "fade," R7 to R2 in a few seconds being frequently noted. Thundery conditions prevailed in Scotland for a considerable portion of the month, and the effects of the magnetic storms are still very evident. The 28 M.C. band also produced almost entirely negative results, the only circumstance worthy of note being the local telephony work of G6WL on this band. The usual monthly meeting took place at 5YG, when we had with us for the first time our old friend 5ST, recently returned from London. Following the meeting of June 26, these will be discontinued until Wednesday, September 25, as my house will be closed during July and August. While on this subject, and in view of the fact that these meetings have now been going on for over

six months, before starting up a new session in September, I should like very much to know if it is your wish that they be continued. Speaking for myself, I have found them very helpful, both from a D.M. point of view, also from the personal aspect, and should regret their discontinuance. I, however, am only one of many, and I would welcome your opinion. In conclusion, I should like to thank G6BX for his response to my request for information regarding XAU2BJ. No reports have been received from "B" and "D" Districts.

"A" District.

Representative: DAVID D. MARSHALL (G2MA), 41, Kelvinside Gardens, Glasgow, N.W.

G2FV has spent the bulk of his leisure time experimenting with talking film apparatus. He has just got delivery of his heavy duty crystal and hopes to make use of it at an early date. His QRA is now changed and reads as follows:—Mr. W. Scott Hay, 38, Netherlee Road, Cathcart, Glasgow. G2IA is thought to be transmitting, but has not reported. G2MA, after a year's experimenting, concludes that it is next to impossible to get a good note when making use of rectified and smoothed 25-cycle A.C. plate supply unless crystal control is employed. He will be on the air shortly with a new C.C. transmitter, making use of the Goyder system. G5CL.—Experiments are continuing with the M.O.P.A. circuit with about 7 watts input to the amplifier. He has had some difficulty with "chirp," but this has now been put right, and most of Europe worked during the month on 7 M.C. G5ST.—Professional duties will keep him off the air till the autumn. G5XQ temporarily QRT. G5YG has been rebuilding and improving (so he hopes) his transmitter for the autumn, and consequently has not been much on the air. He had the misfortune to burn out the armature of his battery-charging "genny." The station will now be QRT till September. Ex-G6MS (Mr. Mason) has returned this month from South America. He has applied for a re-issue of his permit, and will probably be on the air with a new call sign ere these notes see print. G6NX has been experimenting with a new B.T.H. 600-volt 80 M.A. "genny." He finds, however, that his old LS5's will not stand up to it, and has reverted to the D.C. mains until a new 50-watt valve can be obtained. Using 20 watts he contacts freely (on 14 M.C.) with South America, but has difficulty in raising W stations. G6WL has been from home a good deal. Experiments were carried out with ex W.D.A.T. 40 valves, which functioned fairly well on 7 M.C. and 14 M.C., but only when 8 volts had been applied to the filaments. The valve absolutely declined to work on 28 M.C. Generally speaking, the performance of these valves is very inferior to that of modern dull-emitter valves. Much higher anode and filament voltages are required for a smaller output. Telephony experiments were also carried out on 28 M.C. These were definitely successful up to three miles, and on one occasion transmission was carried on for 15 minutes continuously without "climb" or undue heating of the valves. G6WZ.—The transmitter has now been completed, and a start will be made shortly.

"C" District.

Representative: J. B. STURROCK (G6KO), Kirkbuddo, Forfarshire.

Once again no reports from transmitting stations in this district. G6KO is now on 14 M.C. with

crystal control, and is very satisfied with the transmitter. North and South America and Canada have been worked, the best report being a Brazilian one of R7-8. BRS158 continues DX phone experiments, and is getting satisfactory results.

DISTRICT No. 15.

Representative: H. ANDREWS (G5AS), Wireless Depot, Ystradgynlais, Wales.

There are only two active transmitters in the area and there are no BRS stations, so come along with those reports, please. G5PH is using choke control on 7 M.C. Now busy grinding for 14 M.C. and would welcome reports. G2AV is back amongst us, having just returned from sea. What about a report? G5AS has been off the air for two months, but is now working on 14 M.C. every night at 23.00 and requires schedules. Will the following let me have a report?—G5TJ, 2AV, 2ASB, 2AMI, 5GJ, 5OC, 2AOI, 2NHA, 2AKG, 6WB, 6BN, 6PF, 2BG.

DISTRICT No. 16.

Representative: C. MORTON (GI5MO), Simla, Glastonbury Avenue, Belfast.

Northern Ireland has gone "dead" this month, as far as wireless is concerned, and I regret a complete absence of reports. A meeting of the R.T.U. was held on June 14, and only a few of the members were present, and they all said they were doing little or no radio. I hope some of the GI's will buck up during July, and that I will have at least one or two reports for next month.

IRISH FREE STATE.

By Col. DENNIS (EI2B).

There is little to report this month, most stations having been more or less inactive for various reasons, such as counter-attractions out of doors and exams. In the writer's experience, and judging from the few reports received, conditions have been very poor for some weeks. There is at present an epidemic of unlicensed stations over here, and these have adopted calls which in most cases are more than colourable imitations of those of licensed stations. The writer has received several cards for a station using the call sign EI2BX, which is usually interpreted by the senders as XE12B. As this station is very frequently off wave, he has written to the Post Office informing them that it has nothing to do with EI2B. It is to be hoped that these stations will either alter their calls to something less likely to get others into trouble or, preferably, take out licences and cease to be "pirates." Now for reports, such as they are. EI3B has been rebuilding and is not yet on the air, whilst EI5B and EI6B are both inactive. EI8B, in spite of exams., is the only station with anything to report. On 14 M.C. he has worked PY2AZ (I am not sure whether this is the same QSO as that referred to in last month's notes), FK5CR, XVO8FD, XAU2 BJ, RW1G, and several W stations (districts 1 and 8). EI3C is waiting the receipt of an "approved" wavemeter, and EI4C is in the air again but is doing little until July on account of exams. EI5C is inactive at present, but has had a report of R5 from YI2CQ on 7 M.C. EI2D is C.C. on 7 M.C. and has also a report from YI2CQ. EI4D is inactive, whilst EI2B has been testing his Zepp. on 14 M.C., but has not yet got it working to his satisfaction. At such times as he has been able to work this band has been practically dead, and only some European DX has been worked.

NEW MEMBERS ARE WANTED.

B.E.R.U. News.

Congratulations to the N.Z.A.R.T. on the success of their Convention held in Wellington, New Zealand, at Easter.

In a cheery letter from the Honorary Secretary of the Wellington branch, Mr. H. C. Dixon, we have received a series of most interesting snapshots taken on this occasion, and judging by the enthusiasm shown by all who took part, we feel sure that this will be the forerunner of many future gatherings of our Colonial colleagues.

We are delighted to hear that N.Z.A.R.T. is progressing rapidly, and we look forward in anticipation to the day when every New Zealand amateur is a member of the British Empire Radio Union.

Mr. Dixon mentions that British signals have recently been very good on the 14 M.C. band, but he finds that the 7 M.C. band is not so good as the old 10 M.C. band. A general clean up of stations is in progress and improved signals from ZL can be expected.

Notes and News from Europe.

HOLLAND.

By Dr. KOHN.

By the time these notes appear, the Dutch amateurs will have, at last, become recognised by the Postmaster-General, who is now prepared to accept applications for amateur licences. The old pirate "Zero" calls will still be retained, and have been accepted by the Government as the official amateur calls. The first licensed station was PAOAA, the station of the N.V.I.R. The transmitter from this station was exhibited on the N.V.I.R stand at the Scheveningen Radio Exhibition, and during the show was examined by many high Government officials. Conditions on the 7 M.C. band during the month have only been suitable for local European working. On 14 M.C. many long-distance communications have been carried out, many of our low-powered stations being in contact with our East Indian colonies. The 28 M.C. band has been quite dead all the month, and nothing at all has been accomplished.

DENMARK.

By HELMER PETERSEN.

Conditions were excellent during the first half of May, but during the latter half atmospherics were troublesome.

Several European and American stations were heard on the 3.5 M.C. band during the first half of the month, but towards the end atmospherics were very bad, and even local stations were difficult to work.

The 7 M.C. band was satisfactory for local working during the day, and at nights American stations were audible.

On the 14 M.C. band conditions were excellent during the first part of the month. Many distant stations were heard, but it was found to be very difficult to establish contact with them. Stations in North and South America, Porto Rico, and the Phillipine Islands were heard in the evenings, and stations in Australasia in the mornings.

On the 28 M.C. band OZ7T and OZ7GL continue with their experiments, but so far with little success. OZ7GL has heard SP3KX on this band, and has been in communication with G6SQ. Nothing at all has been heard since Whitsun. Both OZ7GL and OZ7T would greatly appreciate reports on their transmissions on this wave.

Calls Heard.

G: 2ay, 2cb, 2km, 2xv, 2zp, 5bd, 5by, 5bz, 5ml, 5xd, 5vl, 5yx, 6cl, 6cr, 6dh, 6dr, 6lk, 6mc, 6pa, 6pi, 6vp, 6wl, 6wy, 6xb, 6xn, 6xj, 6xq, 6yq, 5rm, gi5wd. F: 8aap, 8acj, 8axo, 8cp, 8ct, 8dot, 8ef, 8eo, 8fd, 8fk, 8hr, 8hz, 8faf, 8jcb, 8mrg, 8mst, 8lgb, 8orm, 8pam, 8pro, 8rko, 8sm, 8toy, 8xh, 8xyo. ON: 4ar, 4bt, 4di, 4fe, 4fp, 4ft, 4jj, 4uu. D: 4al, 4uj, 4uo. CT: 1aa, 1as, 1bx, 1by1, 1cc. SM: 6ua, 7us. OK: 1ab, 1na, 1rv. PA: 0du, 0fp, 0gw, 0qf, 0vn, 0wim. E: ear10, ear98, ear116. Su8rs. YI2gq. — P. H. B. TRASLER (ex-G6TR), Pointe à Pierre, Trinidad, B.W.I., April 5 to May 6.

M. S. KILLEN, W.U. Radio Club, Horta, Fayal, Azores.—7,000 k.c.: G—2ao, 2dn, 2dx, 2nu, 2nz, 2vq, 2vv, 2vw, 2zc, 2zn, 5az, 5bi, 5cl, 5cy, 5is, 5jo, 5lw, 5ml, 5ph, 5pj, 5sy, 5uf, 5vm, 5vo, 5wp, 5xd, 6ax, 6cl, 6ko, 6py, 6qa, 6so, 6vj, 6wt, 6wy, 6xg, 6xj, 6yc, 6zs, ei2b, ei2d, ei3x, ei6c, ei8b, ei8c, gi5hv. 14,000 k.c.: G—2ao, 2bm, 2gf, 2hh, 2ii, 2ju, 2kf, 2km, 2lz, 2ma, 2od, 2xy, 5bd, 5bj, 5bz, 5cy, 5fs, 5lw, 5ml, 5rm, 5ub, 5ux, 5wp, 5yg, 6ao, 6br, 6cr, 6dh, 6ko, 6mc, 6nf, 6nt, 6pa, 6qb, 6rb, 6rw, 6uj, 6vp, 6wn, 6wo, 6wy, 6xb, 6xc, 6xj, 6yv, 6za, ei8b, gbvj, gadw, gw2ao.

Correspondence.

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

An Invitation from Erin.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—At the June meeting of the Radio Transmitters' Union (Northern Ireland) it was decided—if an adequate response is received from members and friends—to hold a special meeting in Belfast on Friday night, August 16, the eve of the Ulster T.T. Motor Race.

A very successful meeting was held on the same occasion last year with the object of bringing together amateur transmitters from the U.K. and elsewhere who had arrived in the city on the day previous to the race.

We extend a similar warm welcome to all this year.

Will all who intend to be present kindly notify GI2CN on or before August 1, after which date particulars of the place of meeting will be sent to each.

I much regret having to resign from the hon. secretaryship of the R.T.U. owing to pressure of business, and wish to thank the members sincerely for our cordial relations since the formation of the society, and for their forbearance of my shortcomings.

Mr. C. B. Cleeland (GI2CN), of 31, Dufferin Avenue, Bangor, Co. Down, has kindly consented to take over, and was formally elected at the last meeting.

Mr. R. S. Holden (GI5HN), of 29, Colinview Street, Springfield Road, Belfast, has also been good enough to take over the QSL section of the R.T.U., and stamped envelopes from GI transmitters should in future be sent to him. We all wish them success in their new jobs, and that any grey hairs incurred may be due solely to length of service!

Yours sincerely,
JOHN A. SANG (GI6TB).

Belfast.
June 21, 1929.

Air Temperatures.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—I have read with great interest Mr. W. F. Floyd's comments upon my article in the May BULLETIN.

As I stated before, my theory is open to correction, as I have only a very superficial knowledge of meteorology. Since writing the article I have heard that during the frost the Imperial Airways pilots were reporting a steady rise in temperature as they flew higher.

What has to be borne in mind when considering the set of circumstances to which I referred, is that although the *actual* temperature in the higher regions may be low (as compared with ground temperature) this may be quite *normal for those regions*.

If we take the case of a layer of air high above the clouds, it will receive the normal heat from the sun, and it is reasonable to suppose that owing to its high altitude and screening it will be little affected by changes of temperature on the earth. Granted its *actual* temperature may be below freezing, but this may be quite normal for that altitude, and therefore the behaviour of the heavy-side layer when passing through it will be normal as well. If the earth is very cold the first rise of the layer will be much more rapid than is normal for the time of year under discussion.

I should like to thank Mr. Floyd for raising this interesting point.

Yours truly,
E. PHILIP ALLEN (G6LN).

"Meadowcourt," Radcliffe-on-Trent, Notts.
June 15, 1929.

Two M.C. Work.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—I read with much interest the article on 2 M.C. work by G6PA in the June BULLETIN. I also have found the CT25X an excellent oscillator, and can run it continuously at 10 watts without heating the plate more than a faint red. I have had one of these valves in use now for fifteen months, and it is still as good as ever.

For consistent results, with a freedom from QRM and very little static, the 2 M.C. band is hard to beat, and there is no reason why a few of the nearer European countries should not be worked on C.W., using less than 10 watts. The writer's best DX is, as yet, two-way communication with

G2NF (Colwyn Bay) and G6AX (Rochdale) when using 5 watts input, though a very poor radiating system is used.

It appears that, with an ordinary L type of antenna, it is quite safe to take the aerial ammeter reading as an indication as to how one is getting out on the 2 M.C. band.

Would it be possible in the future to organise a series of 2 M.C. C.W. tests for 10 watt stations? The opinions of other transmitters would be welcome on this point. Co-operation is all that is needed.

Yours faithfully,
J. HUM (G5UM).

17, Eastwood Road, Muswell Hill, N.10.
June 15, 1929.

EXCHANGE & MART.

Rates 1d. per word, minimum 1/6. First line in capitals if desired. 2d. per word where all capitals are required. Minimum 3/-.

TRANSFORMER LAMINATIONS AND BAKELITE BOBBINS. No. 25 size giving iron area 2in. by 1½in. (requires only 3½ turns per volt at 50 cycles) and winding area of over 3 sq. ins. Core and Bobbin complete 14s. 6d. post free. Smaller sizes available. Winding data willingly given.—SAVAGE, 146, Bishopsgate, London, E.C.2. 'Phone: Bishopsgate 6998.

SURPLUS GEAR.—1,500-volt Generator and 1-5 h.p. Motor, 230 volts, mounted on base plate; also 50-watt Mullard and 150-watt Mullard, the latter unused.—Offers to G6CC.

TANTALUM AND LONIUM.—Make your own Battery Chargers for alternating current. Simple, reliable. Lionium Rectifying Electrodes, 2-4 amps., 10s., 5-10 amps., 15s. Also Transformers, Blue Prints, 1s. each, and complete Chargers.—BLACKWELL'S METALLURGICAL WORKS LD., Liverpool.

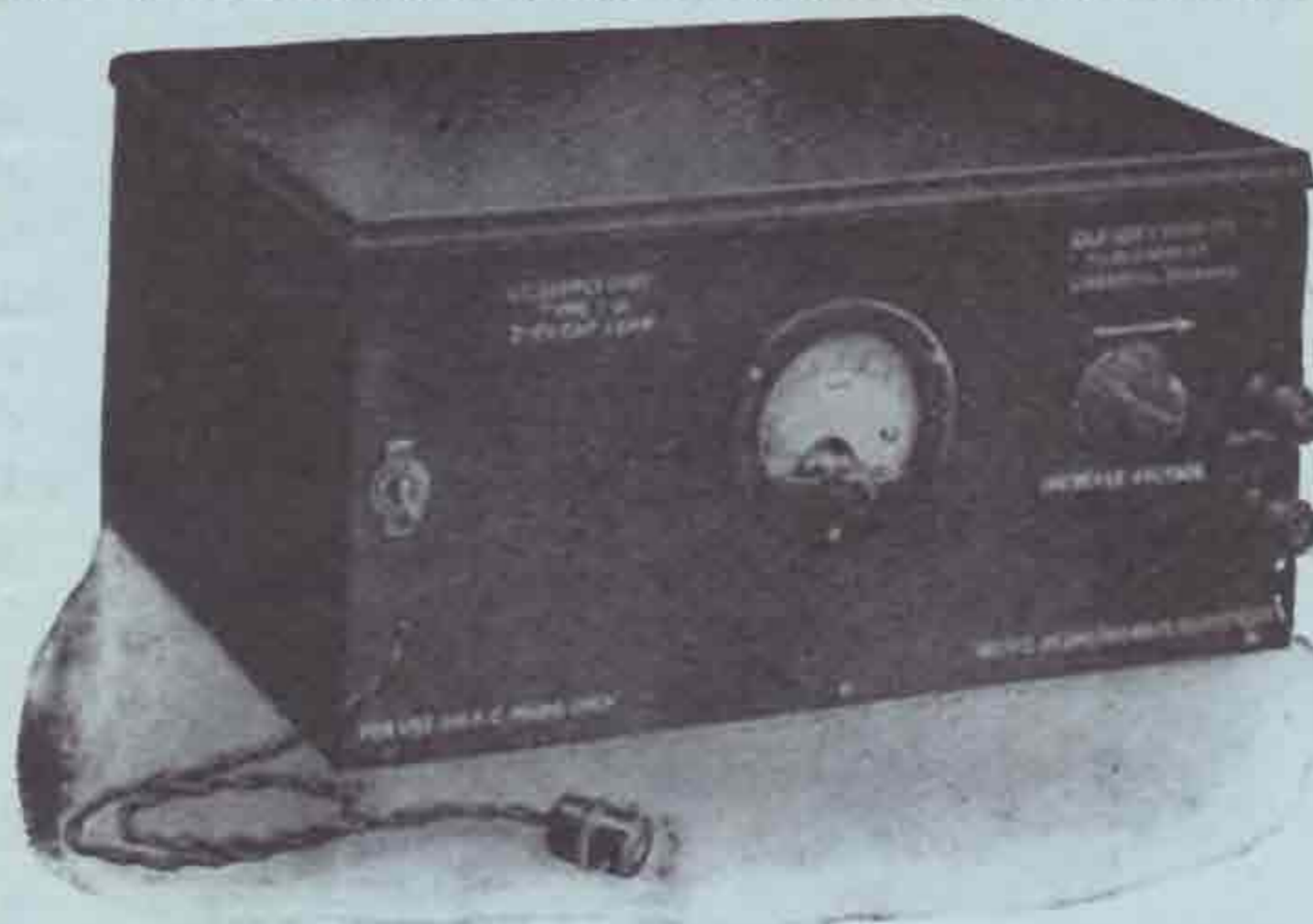
PATENTS obtained, Trade Marks and Designs registered, British and Foreign.—GEE AND CO., Patent and Trade Mark Agents (H. T. P. GEE, Member R.S.G.B., A.M.I.R.E.), 51-52, Chancery Lane, London, W.C.2. Telephone: Holborn 1525.

"HAMS!" Grind your own Crystals and save money. 300 unselected lenses, 5s. per 50; post 6d. Also high-power transmitting gear for sale, including valves, transformer, etc. Write lists.—2XV, 117, Victoria Road, Cambridge.

YOUR next QSL Cards from G6MN—better printing and better cards.—BRS Cards a speciality.—E. MARTIN, Bridge Street, Worksop.

"DON'T FORGET YOUR LOG PADS—6CC."

UNIVERSAL AC INPUT



"L.T SUPPLY UNIT."

Model S-IA (N/M)	...	2, 4, 6 or 7.5 V:	up to 1.0 Ampere.	...	LIST £7 10 0
Model I-A.	...	2, 4, 6 or 7.5 V:	up to 1.0 Ampere.	...	LIST £8 15 0
Model S-2A(N/M).	...	2, 4, 6 or 7.5 V:	up to 2.0 Amperes.	...	LIST £8 15 0
Model 2-A	...	2, 4, 6 or 7.5 V:	up to 2.0 Amperes.	...	LIST £10 10 0

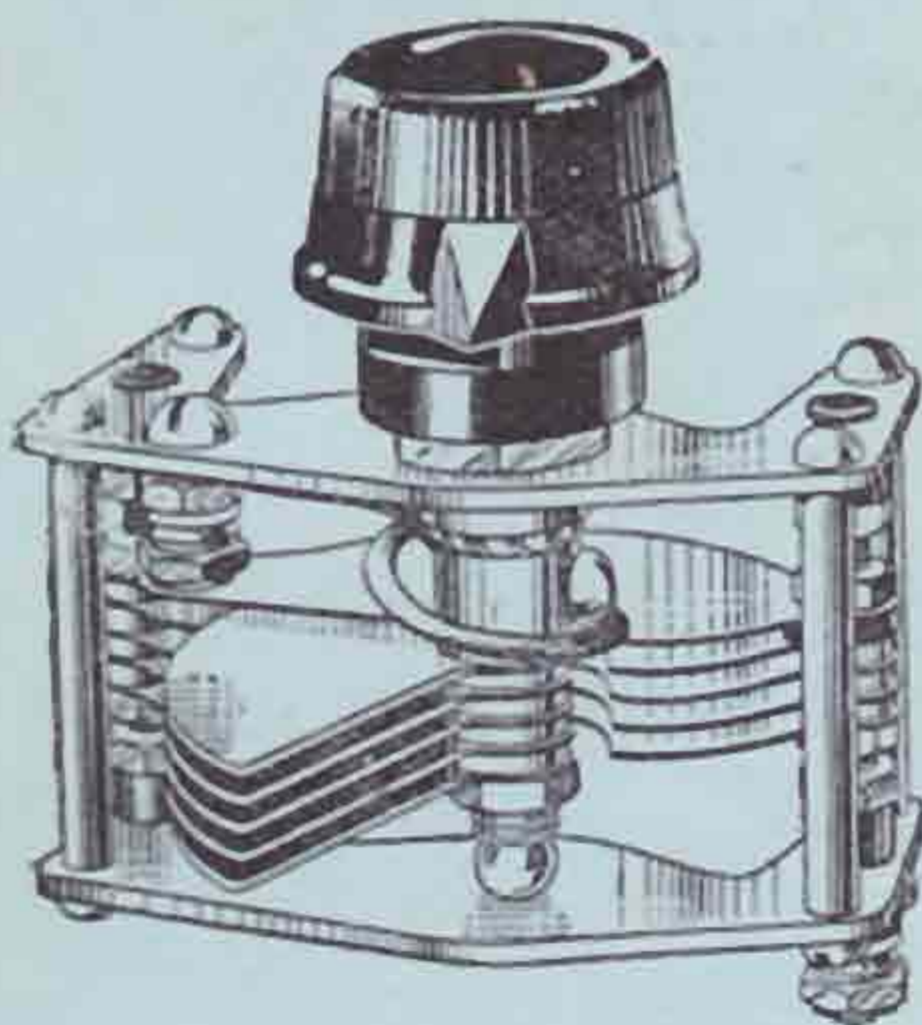
The Models "S"—(N/M) are without the FERRANTI 200 Ohms per Volt moving coil voltmeter; Every model has Westinghouse Metal Rectifier, "B.A.T." 750 Watt Snap Switch; POWER CLAROSTAT for precise adjustment of output voltage; Superior Case; Belling-Lee's Terminals; "TCC" 3,000 MFD ELECTROLYTIC CONDENSER; "BAT" 1.0 or 2.0 AMPERE LOW VOLTAGE SMOOTHING CHOKE; "B.A.T." "UNIVERSAL" LOW VOLTAGE TRANSFORMER (suitable for any AC. Mains from 100-250 VOLTS, 40/60 CYCLES. ("KITS" ALSO SUPPLIED.) FULL-SIZE CONSTRUCTIONAL BLUEPRINT, post free, 1/3.

UNCONDITIONALLY GUARANTEED ONE YEAR, AND FOR ALL TIME AGAINST "LATENT DEFECTS"; ONLY "FAIR WEAR AND TEAR" IS NOT COVERED BY US. IMMEDIATE DELIVERY. NO OBJECTIONABLE "HUM." WHY NOT DISPENSE WITH YOUR TROUBLESOME, WIELDY AND EXPENSIVE ACCUMULATORS NOW? RUNS ANY RECEIVER.

SOLE MANUFACTURERS:

CLAUDE LYONS LTD., 76, OLDHALL ST., LIVERPOOL, ENGLAND.

POLAR AND SHORT WAVES



The Polar "Volcon"

For Short Wave working, "Polar" is supreme. Polar condensers and chokes are continually being specified for inclusion in short wave receivers because of their accurate and careful construction.

POLAR H.F. CHOKE. (Specified for the 5-metre receiver by Mr. Floyd in the June "T. & R.") This is specially designed and built for Ultra-short waves (10-200 metres). It is compact, neat, easily fixed. Inductance 380, h. PRICE 4/-

There is also a Polar Standard Choke which ensures a choking effect being definitely maintained over a range of 50-5,000 metres. PRICE 4/6

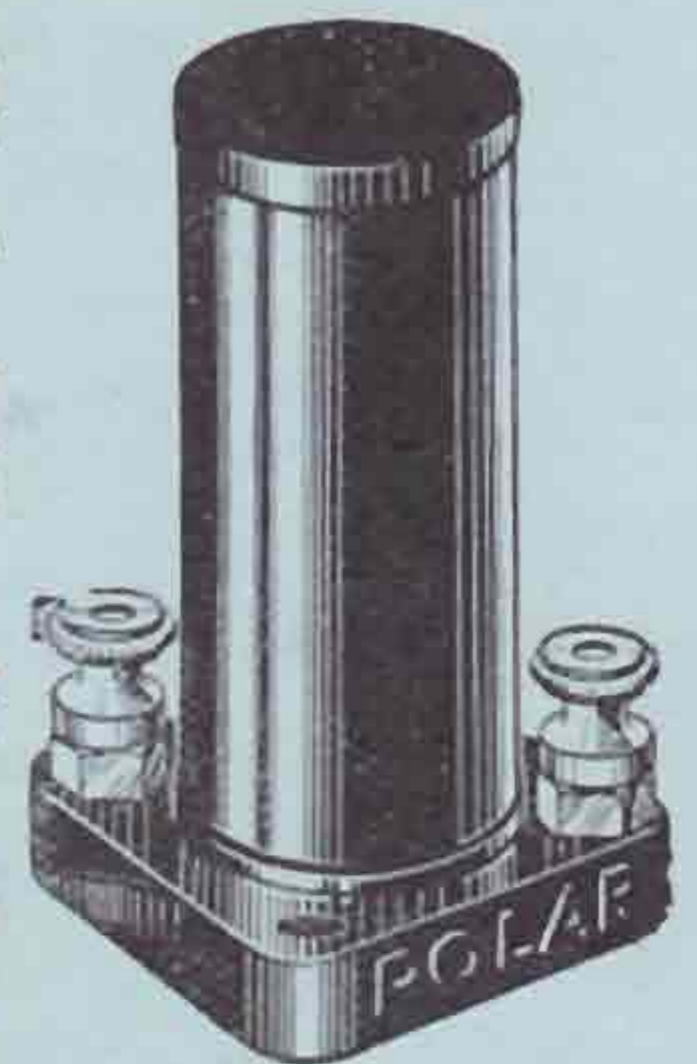
POLAR "VOLCON" CONDENSER. A condenser for reaction control where slow motion is not essential. Phosphor-bronze ball bearings at each end make it absolutely silent in operation and really smooth to control. Pigtail connection. Fitted with ebonite fixing nut and washer for use when the condenser is mounted on metal screen or panel. PRICES: .00025, 6/-; .00015, 5/9; .0001, 5/6

With Pointer-Knob. With Knob-Dial 9d. extra. Obtainable from all dealers.

ILLUSTRATED CATALOGUE "T.R." FREE.

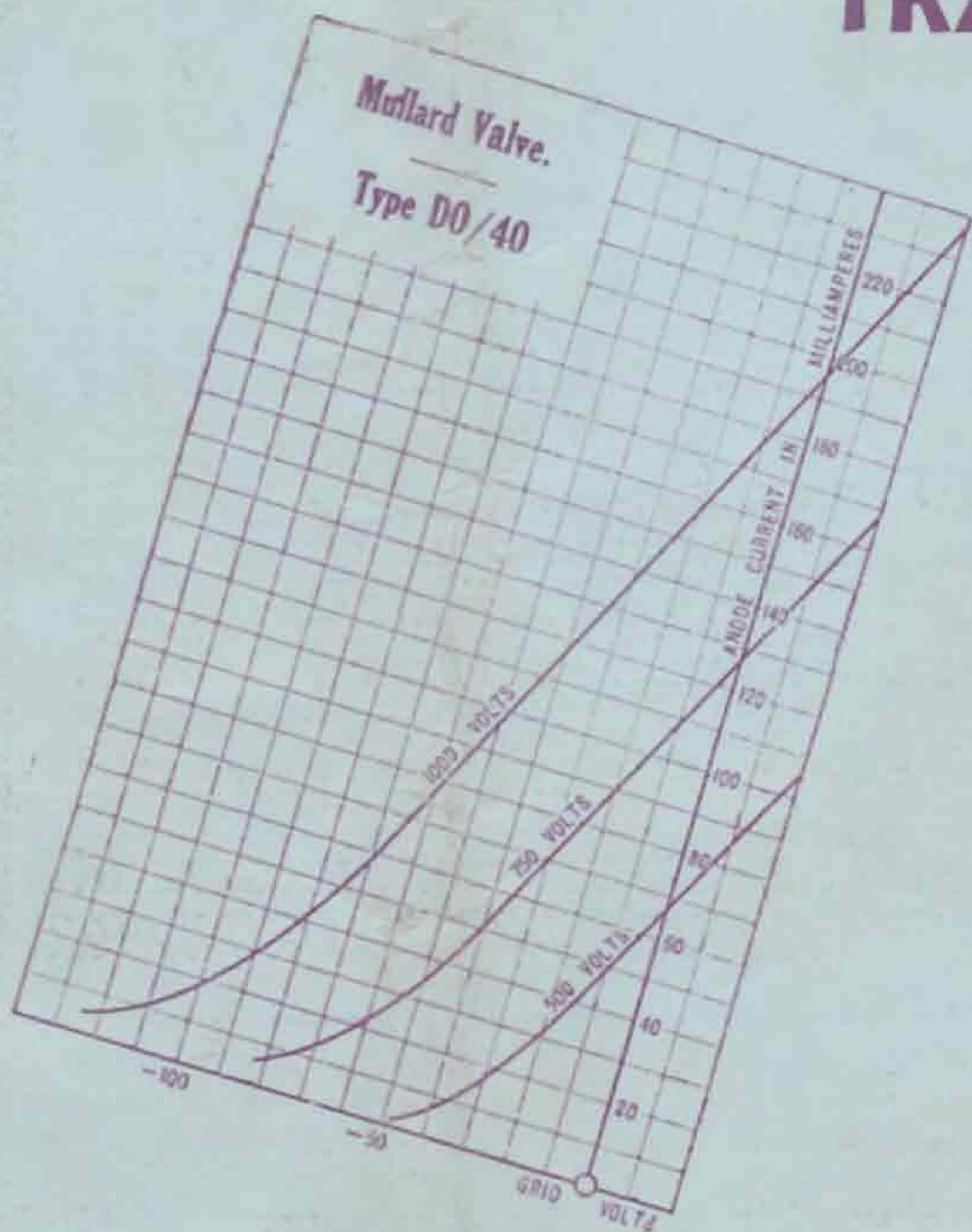
Gives details of the full range of "Polar" Condensers, Dials, Potentiometer, Coil Unit, Coil-holders and H.F. Chokes.

WINGROVE & ROGERS, LTD., 188-189, Strand, London, W.C.2



"Polar" Short Wave Choke.

LOW TEMPERATURE FILAMENT TRANSMITTING VALVES.



The Mullard D.O/40 is a dull emitter transmitting valve capable of working on anode voltages up to 1,000 volts and tested dissipating 40 watts at the anode.

The D.O/40 has a low impedance, and is suitable for use as a modulator in choke control transmitters. It is also suitable for short wave transmission (down to 40 metres).



Max. Filament Voltage	...	...	...	6.0 volts.
Filament Amps.	...	...	...	2.0 amps.
Max. Anode Voltage	...	...	...	1,000 volts.
Total Emission	...	...	...	300 mA.
Impedance	...	...	...	4,000 ohms.
Mutual Conductance	...	...	...	2 mA/Volt.
Amplification Factor	...	...	...	8

PRICE £5-5-0

Mullard

THE · MASTER · VALVE

The Mullard Wireless Service Co., Ltd., Mullard House, Charing Cross Road, London, W.C.2.