T. & R. Bulletin

THE JOURNAL OF

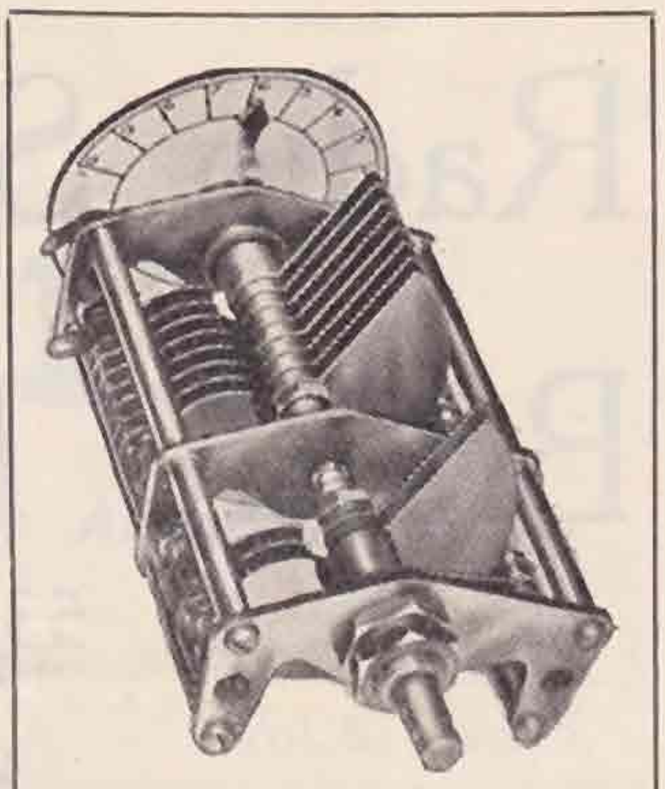
The Inc. Radio Society of Great Britain

AND THE

British Empire Radio Union

Vol. 6. No. 5. NOVEMBER, 1930 (Copyright) Price 1/6

Designed for 10 metres—



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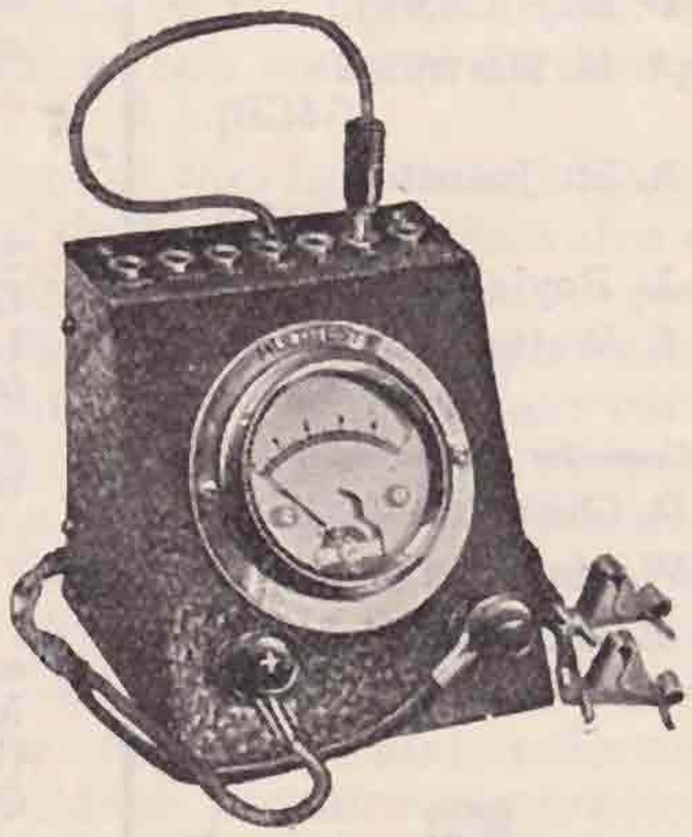

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R. S. G. B. CALENDAR.

November 21.—At the Institution of Electrical Engineers, W.C.2: Lecture by Mr. Woodall, of the M.-L. Magneto Syndicate, Ltd. Commence at 6.15 p.m. Tea at 5.30 p.m.

December 5.—At the Lensbury Radio Society Headquarters (G2IH), 16, Finsbury Circus, E.C.2: A Discussion on the "Goyder Lock," opened by Messrs. G. W. Thomas (G5YK) and F. Charman (G6CJ). Commence at 6.15 p.m. Light refreshments may be obtained.

December 19.—At the I.E.E.: Annual General Meeting, to be followed by a Lecture by Mr. W. D. Oliphant, of Burndett Wireless (1928) Ltd., on "The Theory, Design and Operation of Gramophone Pickups." Commence at 6.15 p.m. Tea at 5.30 p.m.

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T&R Bulletin

The only British Wireless Journal Published by Amateur Radio Experimenters

NOVEMBER, 1930. Vol. 6. No. 5.

EDITORIAL.

The Re-Opening of the Lower Frequencies.

In the Correspondence columns of this month's BULLETIN will be found a letter from OK3SK, of Czechoslovakia, concerning two-way communication between his country and England on the 3,500 K.C. band, and even on the 1750 K.C. band. This is a very gratifying achievement, and we offer our congratulations to the stations concerned. In 1930, when so much attention is being given to the higher frequencies, it is good to see that the lower frequencies are not being entirely neglected, and with a little perseverance from those who have grown tired of super-DX on very low power, communication on the 3500 and 1750 K.C. bands will come back into its own for local work, and relieve the congestion on the higher frequency bands. We hope that a fresh burst of enthusiasm will be evident in this country during the coming winter.

During the past year or two it must have been evident to those of us who have been engaged in Short Wave work for five years or so that an apparent general depreciation in the value of the 14 M.C. band for long distance communication has been taking place, and we have been led to wonder why, with the improved transmitters and receivers that are in use to-day as compared with, say, 1927, we are unable to effect such reliable communication with certain parts of the world now as we were then. Two theories have recently been advanced in the BULLETIN to account for this, one that the ether as a conducting medium for electro-magnetic vibrations of the order of 10 megacycles per second is becoming used up. The word " used up " may be interpreted in any way, either that the ether will no longer carry our waves, and that they are, therefore, dissipated some short time after leaving the aerial—or possibly that the ether and the Heaviside layer are no longer able to execute the refracting and reflecting action on our waves, upon which action we depend for our long distance communication. The second theory is concerned with periodical changes in solar activity, which changes follow a fairly definite 11.1 year cycle. An examination of meteorological data will show " sun-spot " cycles of approximately eleven years. These " sun-spots " are merely a visible form (to the naked eye) of periods of exceptional solar activity, and it is certain that the invisible results of the activity far exceed the visible. Now the summer of 1923 corresponded with a period of low solar activity, or, in popular phraseology, a " sun-spot " minima. The last maxima was in 1928, and the next minima should be in 1934. It is not unreasonable to suppose that bursts of solar activity can affect conditions on this earth, and more particularly the state of the Heaviside layer, which is, after all, supposed to be a layer of ionised gas. When we consider that around 1923 conditions for long distance communication on the low frequency bands, corresponding to wave-lengths of the order of 200 metres, were astoundingly good compared with conditions in 1927-8, which we may regard as a peak period for good conditions

(*Continued on page* 141.)

The Progress of 28 M.C. Transmission and Reception.

A discussion opened by MESSRS. J. W. MATHEWS (G6LL) *and* G. W. THOMAS (G5YK) at *the Fifth Annual Convention held at the Institution of Electrical Engineers, London, on September* 26, 1930.

(Continued from previous issue.)

Turning to aerials: In the winter of 1928-9 it was thought that the short vertical aerial would prove to be the most suitable type for this frequency, but events have since shown that the multi-wave horizontal, as used on other frequencies, is superior. Few amateurs are sufficiently well situated to erect a totally unscreened vertical aerial, and this is probably the reason why those vertical aerials tried have failed. The directional aerial certainly calls for a certain amount of interesting experiment, and the simplest form, *i.e.*, that of a vertical aerial with a similar length reflector $\frac{1}{4}$ of a wave behind, can often be put up, and it has been found that a considerable increase in strength in the intended direction has been obtained. From a constructional point of view, these aerials sometimes present a difficulty, as one would need a revolving reflector, unless work was only desired in one direction. The more complicated forms of beam antenna have been fully described before, and we need not mention them here. The question of angle of radiation arises, but we feel that too little is known concerning the correct angle for this frequency, so we do not intend to do more than mention it. Furthermore, few amateurs are able to arrange to vary this angle, although in our opinion, a lower angle than usual is necessary.

Much can be said regarding the method of aerial coupling, and it is our intention to deal with the well-known Zeppelin type first. It is found that a long multi-wave aerial with very short feeders coupled through a split-coil system, Fig. 4, is very efficient. By multi-wave we mean an aerial about double-wave or single-wave for 14 M.C. This has the advantage of being equally useful for 14 or 7 M.C. It has been found that an aerial containing an uneven number of half-waves will work just as well. Contrary to general practice, in 28 M.C. work the tuning condensers, either series or parallel, may be omitted. With longer feeders, however, some form of tuning may be necessary. We consider that the feeders should be kept as short as possible—round about 6 ft.—and would like to emphasise the point that this split-coil system can only be used when the anode coil is fed with H.T. at the centre, as shown.

The next system is that known as the "A.O.G." Little can be said of this system as results are in some cases very good, and in others very poor, apparently depending on individual situation. As most members present have probably used this system at some time or another on lower frequencies, we do not propose to describe it.

A refinement of this system in the shape of a definite length of aerial, say a half or full-wave, tapped directly on to the anode coil of the output circuit, has been found quite effective, but only using a moderately high-impedance valve, as, with a low-impedance valve the anode current rises excessively. In our opinion, however, this method of coupling is definitely not so efficient as a properly designed loose-coupled aerial with very short feeders. Long feeders are undesirable owing to the fact that, although they may be theoretically correct, practically it is extremely difficult to get them to function properly without radiating.

* * * *

Turning, now, to the conditions under which long-distance communication on this band is possible, we come to a field so vast that it is impossible to do more than touch the fringe in this short resumé. There is so little known about this all-important subject and so much assumed.

In the first place it would appear, from past experience, that the most suitable time for DX communication is between the months of October and March. It would also seem that signals are only audible in England during the hours of daylight, or for not more than two hours after sunset.

There are exceptions to both these suppositions, and we are left to wonder whether these exceptions are "freaks" or not. If they are not, then our supposition is incorrect and we are as much in the dark as ever.

Regarding weather conditions, irrespective of time of the year, it would seem from arguments put forward, and from the results of the March tests this year, that barometric pressure plays an important part. It has been shown that for good communication with the U.S.A. it is necessary for there to be a ridge of high pressure between this country and the States. Conversely, communication is possible, though not so easy, if there is a depression in the same place. This is, of course, only a theory, and you will probably by this time have studied the whole question in Mr. Sydenham's excellent article in the current BULLETIN. This is a definite attempt to draw some conclusions from the very limited amount of data available and deserves our highest praise.

The time of the year would also seem to play an important part, and one usually imagines the 28 M.C. season as running from October to March. The reception of G5ML's harmonic from 14 M.C. in Australia in June may or may not be a freak reception. There is no reason to suppose that it is, as the time was 23.00 G.M.T., which would correspond to a reception time of 09.00 G.M.T. in mid-winter, and it is known from experience that this is not an unreasonable time to expect signals from that part of the globe.

In considering the question of skip distance, it would be as well to turn our thoughts for a few moments to 7 and 14 M.C. The average skip under normal conditions for a 7 M.C. signal is, roughly, 500 miles, while that for a 14 M.C. signal under similar conditions is about 1,000 miles. From past experience it would seem that the average

skip for a 28 M.C. signal is about 2,000 miles. Might we assume, therefore, that the average skip on 56 M.C. is 4,000 miles, and that skeds should be arranged with American 6th District!

To return, however, this reckoning is of a necessity very vague, but it may serve to show what we may expect on this frequency. Facts appear to bear this out.

* * * *

We regret that we are unable to put before you any new theories, but we have tried to give you a few facts and ideas, possibly our own in some cases, on problems concerning 28 M.C. work. There is so little data to work on, that this may be used as an argument to induce more of you to take up series work at this frequency.

We look forward now to hearing someone else's views on this subject, for which purpose we have intentionally kept our opening discussion short.

Discussion.

Mr. Marcuse (G2NM) thanked the authors and asked whether they thought chokes in filament leads were necessary when batteries were used for lighting filaments? He found that the D.E.T.1 type of valve was very useful as an F.D. but thought a special type of valve might be developed with advantage. Capacity coupling was found to be the most satisfactory at his station. Mr. Marcuse

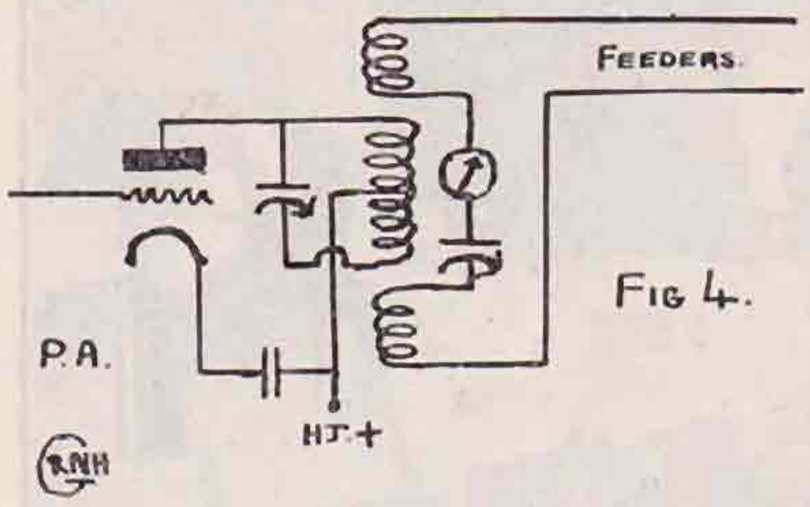


Fig 4.

mentioned that G2OD had received a report that his 28 M.C. signals had been heard in Australia. The lack of DX was in his (G2NM's) opinion due to amateurs' lack of interest at that particular time, as beam stations and other commercials were nearly always audible.

Mr. A. D. Gay (G6NF) stated that as it has been suggested that communication over short distances might be affected with the antenna disconnected, it would be interesting to note that the radiation from the closed circuits of the usual c.c. outfit, without an antenna, is sufficient to cause interference to local BCL's.

The use of a screen grid valve in H.F. stage increased the background noise ratio and with the exception of removing dead spots in tuning was of no other value at high frequencies.

In certain circumstances an L.S.5 type of valve made a better F.D. on 28 M.C. than the L.S.5B, the impedance of the latter being difficult to match with a sufficiently high output impedance this was particularly noticed when shunt feed was employed and an incorrect type of H.F. choke was placed in the anode circuit. It might be interesting to note that 8 ft. 4 in. of wire, wound single spacing on a glass tube, makes a theoretically and practically sound 28 M.C. choke, any other length of wire being noticeably less efficient.

An L.S.5D. type of valve is now used as a 28 M.C. F.D. and found to give 25 per cent. better efficiency.

Mr. Milne (G2MI) mentioned his experience with the S.G. valve as a detector. Using 25-30 v. on screen he had not found a better detector.

Mr. Floyd (G5WF) made some remarks to the effect that inductance coupling equals 180° capacity coupling and that in a receiver the best condenser size to cover band equals 15 m.m. farads. 20 m.m.f. just opens the band. He pointed out the losses in valve pinch being serious on 28 M.C., these losses being equal to about 8,000 ohms across the valve. Short leads increase eddy current losses and longer leads compromise.

Dr. Wortley Talbot (G6WT).—The use of S.G. valve certainly removes blind spots in the tuning and for this reason alone is worth employing. The reversal of the L.F. transformer in his receiver gave a very nice peaked effect.

Mr. Moxon (G6XN): Mr. Thomas has stated that the circuit to be used for 10 metre work is the one with which you are most familiar. It is certainly true at the lower frequencies that one circuit is as good as another, but it does not seem to me to be the case at the higher frequencies, where the admittances of the valve inter-electrode capacities are no longer negligible.

The effect of the grid-filament and anode-filament capacities is a tendency to fix a point, in nearly every case the wrong point, on the tuned circuit at the potential of the filament. Thus in the Ultra-audion circuit the coil is no longer free to find its own electrical centre, and in the Hartley circuit two different points are located at filament potential. A circuit should therefore be used in which the valve capacities are in parallel with the tuning capacities, and can therefore be balanced. The Colpitts arrangement is the only way in which this can be done without encountering any snags.

I have done very little work on 28 M.C., but the foregoing considerations certainly apply on 14 M.C., and to a much more marked degree on 56 M.C.

Mr. Charman (G6CJ) said that the S.G. valve stabilised the receiver beautifully and when employed as a detector gave more sensitive reception than the triode.

Mr. G. W. Thomas (G5YK), in replying, said that no chokes are necessary in filament leads. Capacity coupling was easier to adjust but not as efficient as inductive coupling. The use of a D.E.T.1 S.W. as an F.D. concurs with G6NF's suggestion of an L.S.5, but personally he had not used either valve.

We appreciate Mr. Moxon's remarks concerning the Colpitts circuit. Mr. Moxon has had considerably more experience regarding the ultra high frequencies than we have had, but we should have thought that 28 M.C. probably marked the turning-point where the "best circuit" changed from the most familiar one to that satisfying the requirements as outlined by Mr. Moxon.

Strays.

VE3ZZ (14, Bond Street, St. Catherine's, Ontario) will appreciate detailed reports of his signals on any band.

* * *

XG5SV, operated by G5SV on a boat in the Mediterranean, will appreciate reports on his signals. He uses 7 watts on 14 M.C.

Station Description No. 10.

G6WT.

By "Cheltonian."

IT is my privilege to give a description of Dr. Wortley-Talbot's station. His name is well known to all of you by the cup which he so kindly gave to the Society and also by the number of DX contacts which we hear him make.

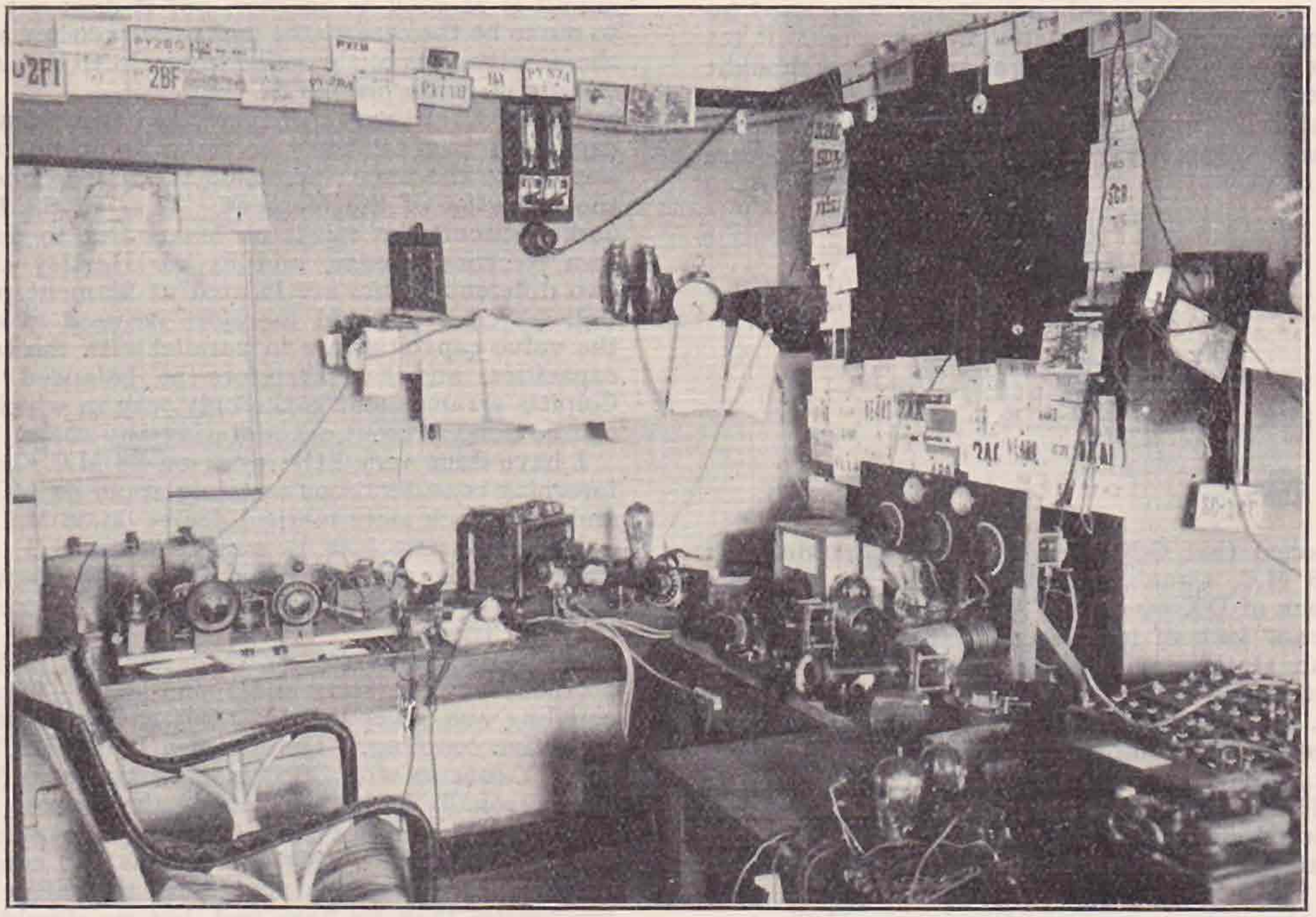
Both transmitters are of the T.P.T.G. variety and are crystal controlled. They are of the same design, but one operates on 7,069 KC.'s and the other on 14,138 K.C.'s. A description of one will therefore serve for both.

The valves used are DO40 and the H.T. is derived from D.C. mains and H.T. accumulators. Variable condensers are by General Radio and fixed ones by Sangamo. Inductances are ¼ in. copper tube mounted on insulators. The keys are one straight one and one special radio model vibroplex.

A monitor is always in use at the station and there is also a resonator for use when necessary.

The aerial coupling coil is ¼ in. copper and Zepp feeders with .00025 variable condensers and thermo couple radio frequency ammeters in each leg. The aerial itself is a twin wire Zepp fed 66 ft. 2 ins. long on the top.

For speech and music the amplifier consists of a push-pull outfit using an LS5b and two LS6a's with 450 volts on their plates and taking 97 volts grid bias. Sometimes push-pull input also is used with an AF5CC Ferranti transformer. The microphones are an Adolph and a Marconi, and Heising or choke control modulation is used. The modulators used earlier were DET1SW, but at the moment they are replaced by DO40's. The choke is of 50 henries at 120 m.a.



G6WT.

The short wave receiver is on the left with the 14 M.C. transmitter in the corner. To the right is the 7 M.C. transmitter, and a music and speech amplifier is in the right foreground. The 28 M.C. transmitter is, unfortunately, not shown.

The receiver in use is an untuned screened grid type with two stages of L.F., and operates from 9 metres to about 60 metres. Six-volt valves are used.

The antennas in use have had a great deal of thought and experiment put into them. There are two 45 ft. masts and one on the house which is 36 ft. from the ground, and any type of aerial can be put up. The aerial on which most of the DX

has been done is a single wire Hertz and was never more than 26 ft. from the ground, being a total length of 66 ft. 2 ins. On the 45 ft. mast a vertical aerial of 33 ft. 1 in. has also been put up for long distance daylight work, and this proved to be the best for this type of work by W1XV. The advantage of this type of aerial was again proved when Sumatra and Java were worked with ease at 3 o'clock in the afternoon, using a ¼-wave vertical rigid aerial with the Hoffman variation of the balanced Colpitts circuit with 24 watts input.

At the present moment the " Windom " aerial is on test and can be used in either a vertical or horizontal position, and proves to be good when correctly apportioned.

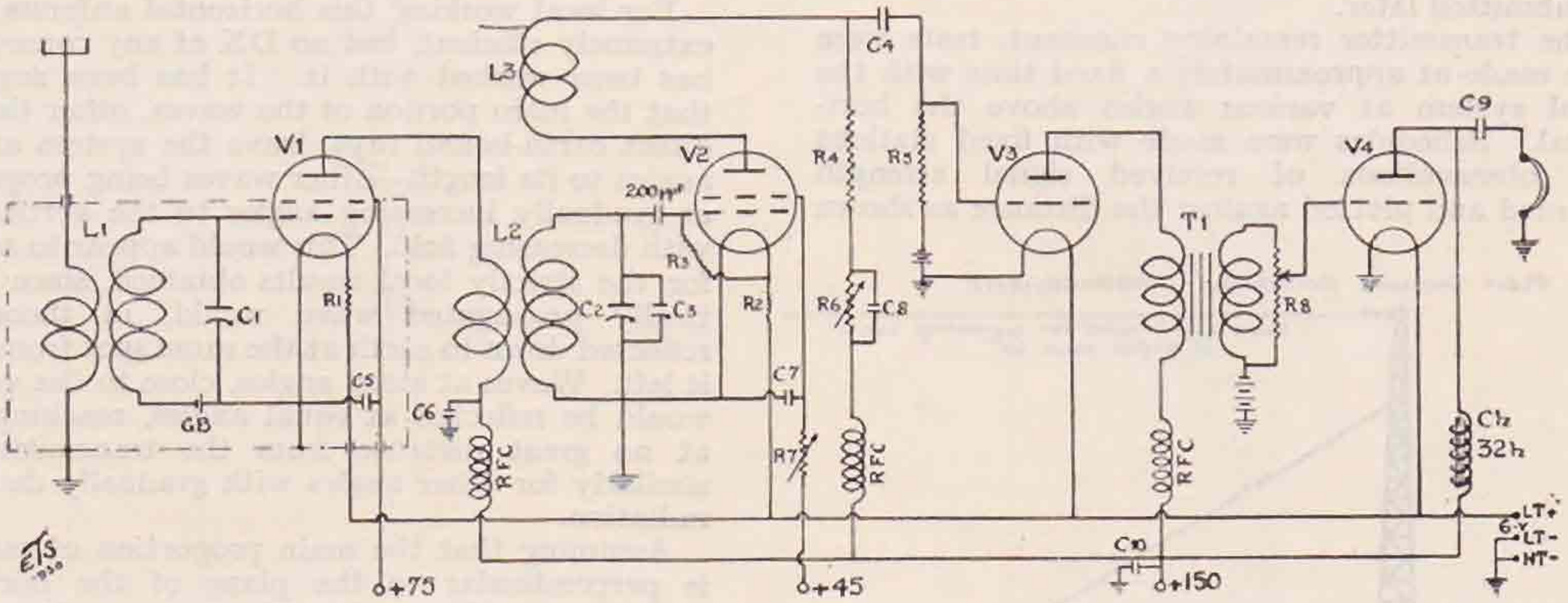
A short time ago a 10 metre T.P.T.G. set was made, but no stations were heard on this band on Sundays between 2 and 5 p.m., and it is not known how it will function when conditions are good. However, a harmonic was picked up on 21 metres by G5SY, who thought it was low power on that band. It seems, therefore, that it is getting out, but how far and where ? The valve in this particular set is the new Mullard S.W.9, which is specially made to oscillate down to 5 metres, and it is rated at 70 watts. Dr. Wortley-Talbot suggested that it would probably be impossible to surpass two of these in push-pull on 10 metres and 20 metres. He also expressed his great appreciation of the help given by his friends G5ML and G2CI. Like all other model stations he has frequent visits from brother transmitters and is always pleased to see anyone if they would advise him of proposed visits. To those interested the DX includes the Byrd Expedition, San Salvador, Jamaica, Bolivia, British Guiana, Peru, Ecuador, Chile, Argentine, Brazil, Paraguay, Uruguay, Porto Rico, Cuba, Yukon, all Canadian districts, and all American districts except 7th, South Africa and North, Kenya, Rhodesia, and the first amateur contact with the Ascension Island. Signals have also been reported R7 from Yokohama, although no actual QSO has been made with Japan.

The schooner " Bowdoin," WDDE, the schooner " Morrissey," VOQH, French Abyssinia FA8BAK, Martinique (NL8MRC and NL8SMI), and China (VS6AB) have been worked using a DO40 and single wire Hertz aerial 1½ waves long on 20 metres. This station hopes to resume phone, music and C.W. on 7,069 K.C. on Sunday mornings when the summer is ended and conditions on that band are normal.

G6WT is also licensed as a portable or fixed station by P.M.G.

The old saying, " If a thing is worth doing it is worth doing well," is truly carried out at G6WT, and I congratulate Dr. Wortley-Talbot on his station and results, which, after all, can only be obtained by patience and skill.

A Modern Battery Operated Receiver.



G2DT RECEIVER.

The Editor regrets that the following constants were omitted from Mr. Somerset's article in the last issue. The diagram is reproduced herewith.

CONSTANTS.

C1	100 mmf.	R1	Clarostat 25-ohm strip.
C2	Tank 100 mmf.	R2	" " "
C3	Vernier 20 mmf.	R3	7 Megohms.
C4	0·01 mica.	R4	100,000 ohms Mullard.
C5	0·1 mf.	R5	2·0 Megohm Mullard.
C6	0·5 mf.	R6	50,000 ohms.
C7	0·1 mf.	R7	25,000 ohms.
C8	2·0 mf.	R8	0/500,000 ohms Varley.
C9	4·0 mf.	T1	Ferranti AF5.
C10	4·0 mf.	Ch	Ferranti B1.

V1, V2 Mazda SG215. V3 Mullard PM5X. V4 Mullard PM6d.

	L1		L2		L3
	Primary	Sec.	Primary.	Sec.	Reaction
7,000 kc. ...	4	7	4	7	6
14,000 kc. ...	3	4	3	4	4
28,000 kc. ...	1¼	2	1¼	2	4

N.B.—For 7 MC. the primary and secondary windings are spaced 1-16th in., for 14 M.C. ⅛ in., and for 28 M.C. 3-16th in. ; whilst the space between primary and secondary windings in all cases is ¼ in. and this coupling appears correct.

The Zeppelin-Fed Hertz Radiator.

By G. W. Salt (VS2AF).

THE Zeppelin type of aerial was first employed at this station in 1927, though in a somewhat different form from that most commonly in use nowadays. The lines were used to feed a vertical half-wave aerial some 70 feet from the house, and though the system proved very successful on the 14 M.C. band, it could not be induced to give satisfactory performance on 7 M.C. This was probably due, in the light of knowledge subsequently acquired, to unsuitable feeder lengths, as good results are being obtained at the present time.

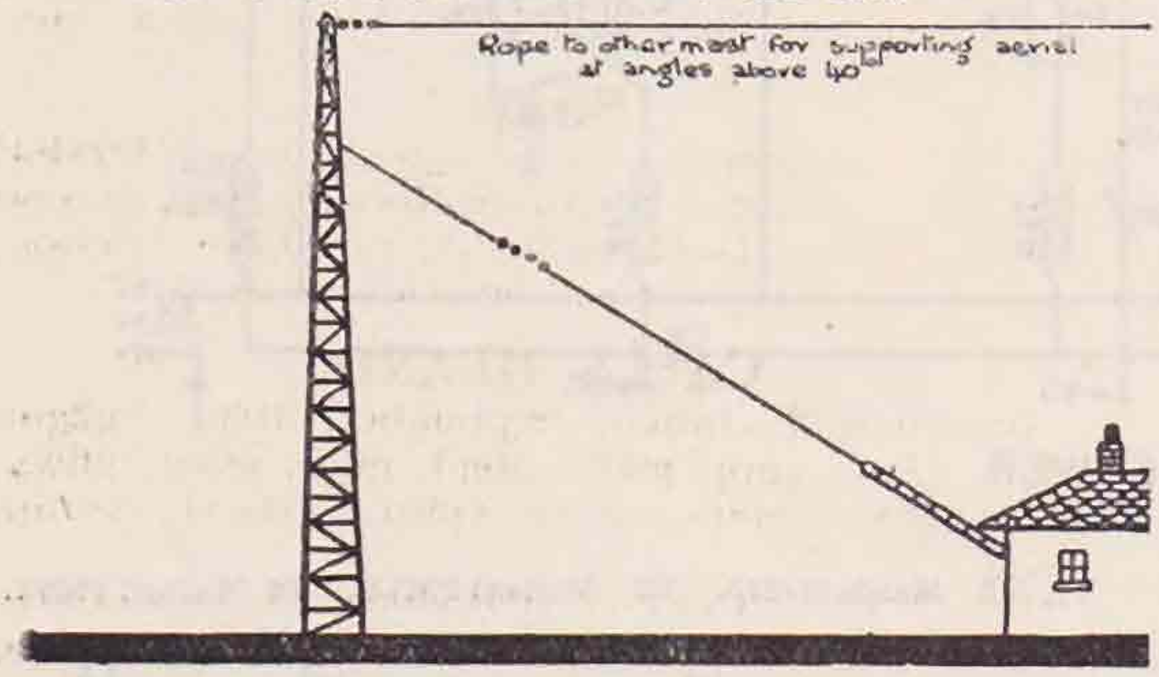
In 1929 a series of experiments was embarked upon using a more modern form of Zeppelin antenna—a 66 feet radiator with 33 feet feeders, both radiator and feeders being in the same straight line. The results of these tests are the basis of the present article.

It was noticed, very early, that the angle at which the aerial was suspended had a great effect on received signal strength at any one station; for that reason the transmitter was fixed at a frequency of 7,080 K.C., with constant input, and arrangements made to raise and lower the far end of the antenna, the near end remaining fixed at a height of 15 feet, thus varying the angle of the aerial.

Experiments were begun with the system horizontal and tests made at different times throughout the day with fixed stations. The figures relating to these "time" tests are not included in this article, but will, with other data when obtained, be submitted later.

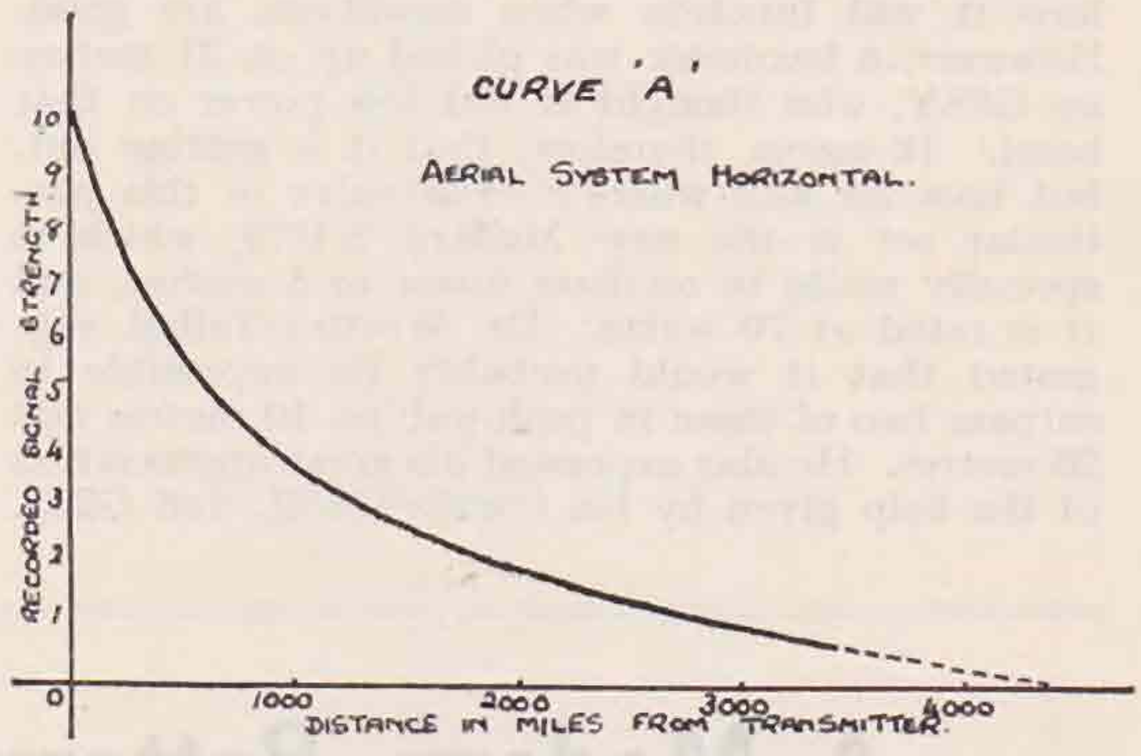
The transmitter remaining constant, tests were then made at approximately a fixed time with the aerial system at various angles above the horizontal. Schedules were made with fixed stations and observations of received signal strength recorded and plotted against the distance as shown

PLAN SHOWING ANTENNA ARRANGEMENT.



in the accompanying curves. As the curves are of approximately the same basic form, though differing in proportion, for the angles employed only one is shown here—that for an aerial inclination of 32° to the horizontal. Tests have been made up to an angle of 45°, and are now proceeding for larger angles up to a true vertical. Let us first take the case of a horizontal system.

Studying this curve ("A") we see that signal strength is at a maximum close to the transmitter and falls off fairly rapidly, regular communication with stations over 1,000 miles distant being possible but unreliable. These results are fairly constant in all directions, as are all figures herein—since to take only one direction lays oneself open to errors caused by local conditions and possible absorption of the transmitted rays in the neighbourhood of the set.



For local working this horizontal antenna seems extremely efficient, but no DX of any consequence has been worked with it. It has been suggested that the main portion of the waves, other than the direct earth-bound rays, leave the system at right angles to its length—other waves being propagated at gradually increasing angles to the vertical and with decreasing field. This would appear to account for the strictly local results obtained, since a vertically propagated wave would, in theory, be reflected down to earth at the same spot from which it left. Waves at steep angles, close to the vertical, would be reflected at equal angles, reaching earth at no great distance from the transmitter, and similarly for other angles with gradually decreased radiation.

Assuming that the main proportion of radiation is perpendicular to the plane of the horizontal aerial, it would seem logical to expect the same to occur with an antenna suspended out of the horizontal plane. Since the angle of incidence is equal to the angle of reflection, one should be able to project maximum signals to any distance by suitable adjustment of the radiation angle. This the writer has endeavoured, in a small way, to do, and with the following quite encouraging results.

Various angles have been tried, but only one curve, that for a 32° aerial slope, has been shown for the reason given previously.

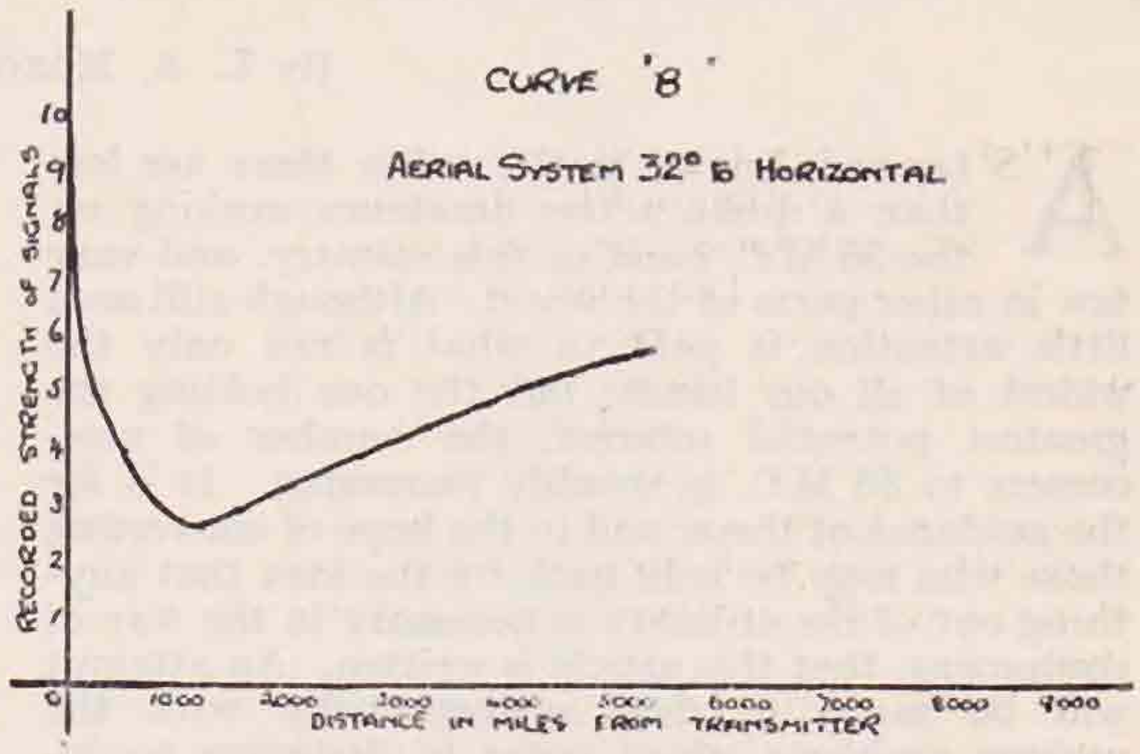
Studying this curve ("B"), the most noticeable point is, of course, the well-defined dip to minimum signal field at a distance of about a thousand miles. Had this dip occurred in the vicinity of the trans-

mitter it would have been put down to the gradual diminution in strength of the earth-bound wave, followed by increasing field as the fringe of the reflected rays was passed up to maximum strength at a point where the main reflected rays struck the earth.

As, however, the writer is under the impression that the range of the earth-bound wave is to a great extent dependent on the power employed, it is assumed that this dip at a distance of 1,000 miles is due to some other cause, since the power used is small, being in the neighbourhood of 25 watts. The extreme right-hand position of the curve shows signs of flattening out at about 9,000 miles; this is presumably the maximum range for direct reflection of the main rays with the power employed. Increased power would doubtless give increased audibility at this point, though at what distance the field falls to zero magnitude cannot be stated definitely; a study of the curve will give an approximate idea of the range.

Two things must again be clearly pointed out: one, that the results outlined are consistent over a fair period; and two, that they are applicable to transmission in all directions and not merely due to observations in one direction only.

Should any readers of these notes be interested in this line of investigation, the writer will be very pleased to co-operate with them, as it is an absorbing subject and one of which one reads but little;



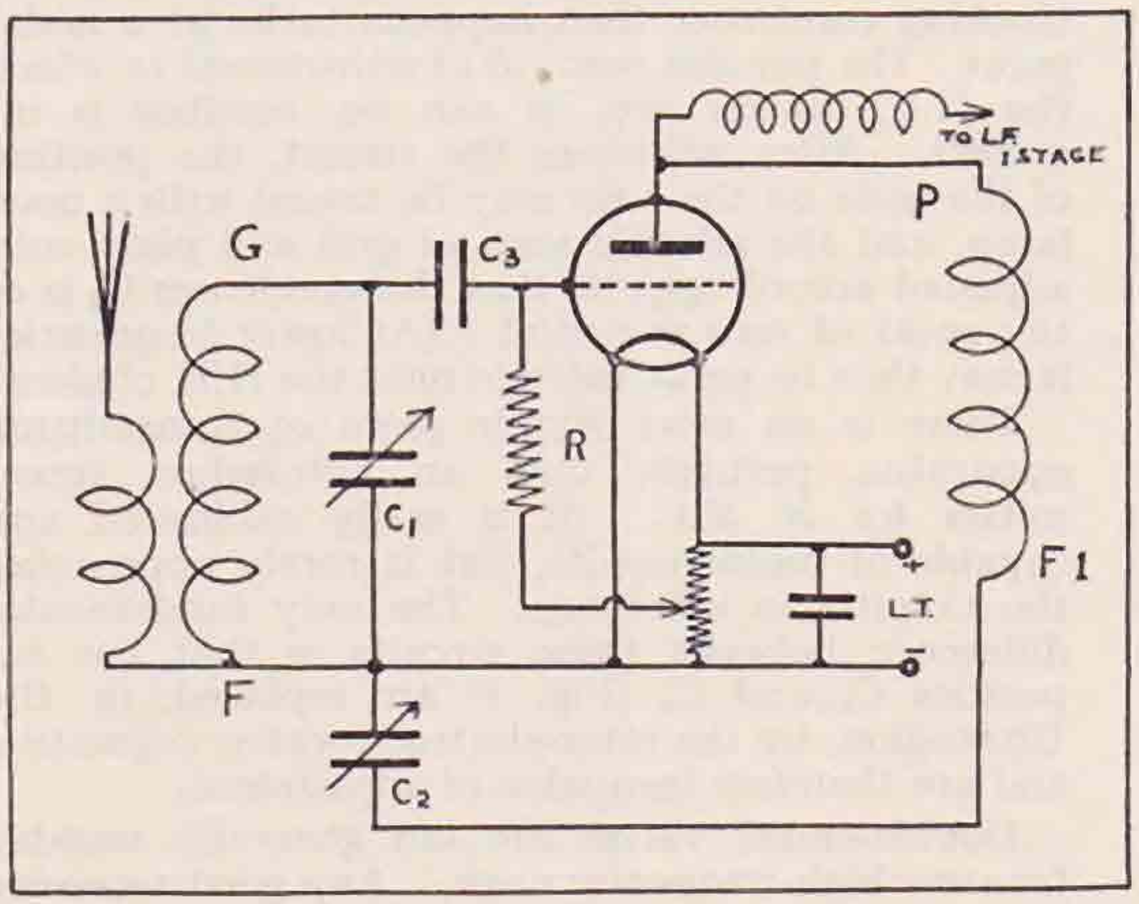
though why more prominence is not given to data on aerial design one cannot say. Surely it is the most important adjunct of the modern ultra-short-wave transmitter?

If this article does no more than arouse criticism or encourage others to put their ideas and results of experiments into writing it will satisfy the writer.

A 56 M.C. Conversion Receiver.

By H. B. Crowe (G6CO).

TO those who imagine that 56 M.C. needs a special or separate receiver, this short article may be of use, and convert another much-needed recruit to try his hand on 56 M.C.



C_1—2 fixed and one moving double spaced, S.L.F.
C_2—.00025 S.L.F.
C_3—Ormond air dialectric (reduced to 6 plates, total).
R—2 megohms.

The basic circuit is the "standard," as shown below, and uses valve base coils. As can be seen the only unusual part is the 1 mfd. across the L.T., which seems to make for easier reaction.

Now note the letters GF and F1P on the coils: these are the respective sockets of valve-holder for the coil.

To convert to 56 M.C. it is only necessary to put a 1½-turn coil about 1in. to 1¼in. diameter across G and P, short F1 and P, and the circuit is a *series* turned ultra-audion.

In operation it will be found that an *increase* in the capacity of the reaction condenser C2 will tend to damp out oscillation.

The valve used here is a 104-volt Mullard (D.C. heated) valve, but a PM4 or Triotron ZD4 have also been used. If the set is operated "just on" oscillation, the "tuning" effect of the reaction is very slight. This receiver has been in use here since CB group 7B was formed and was used for 7B "Field evening," receiving G2OL, of Ealing, R7 on Epsom Downs, and the steady carrier of G2OW R5 on two pairs of 'phones, the aerial being about 30ft. of No. 22 S.W.G. bare copper wire.

Stray.

If any member has heard signals from VP9SRB on 14 M.C. whilst in Southern Rhodesia will he send details to his brother, G6LI, c/o QSL Section, London. All reports will be acknowledged.

CALLS HEARD.

By BERS3 (India), September, 1930:—g2gm, g2vq, g5ml, g5pj, g6dh, g6gd, g6rh, g6wt, g6wy, g6yk, xg5sv, su8rs, su8wy, vp9sr, vq4msb, vs7ap, vs7ai.

By D. L. C. Creedy (BRS405), 75, Canterbury Road, Harrow, Middlesex:—1,75 M.C.: g2bm, g2ip, g2ja, g2ju, g2po, g2qi, g2zn, g5bc, g5kh, g5nc, g5rb, g5um, g5wb, g6fi, g6fo, g6gz, g6rc, g6ut, g6zh. 3.5 M.C.: g2bm, g2ip, g2nh, g2op, g2qw, g2ux, g5is, g5br, g5qy, g6fy, g6mn, g6py, g6qw, g6qx, g6so, g6wy, g6zs, ok3sk, d4raz, d4oyx, d4idu, d4xxa, d4iju, d4ali, d4zug, d4zp, uo1jf, uo1cm, uo3wb, on4gu, oh2nm, la2z, pa0sb, pa0qq, pa0of, veiaz, wimx, wibli, w2zc. 28 M.C.: g2ju, g6ll, ok3sk.

Transmitters and Receivers for 56 Megacycles.

By L. A. Moxon, B.Sc. (G6XN).

AS far as is known to the writer there are less than a dozen active amateurs working on the 56 M.C. band in this country, and very few in other parts of the world. Although still such little attention is paid to what is not only the widest of all our bands, but the one holding the greatest potential interest, the number of newcomers to 56 M.C. is steadily increasing. It is for the guidance of these, and in the hope of converting those who may be held back by the idea that anything out of the ordinary is necessary in the way of equipment, that this article is written. An attempt will be made to deal systematically with the various problems which occur in designing equipment for 56 M.C.

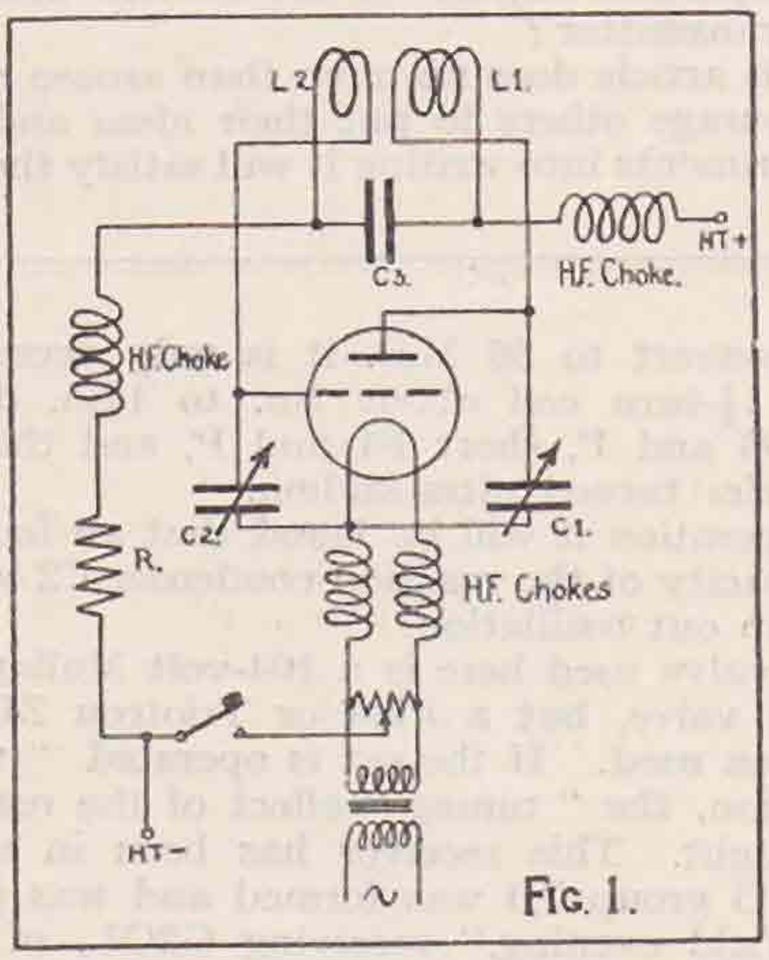


FIG. 1.

First, a few general remarks about the components required will not be out of place. Any type of tuning condenser may be used provided its maximum capacity is not more than 50 mmf., and that it does not possess a long flexible connection to the moving vanes. The condensers should preferably be small in bulk, and the writer recommends those of the "neutrodyne" or "reaction" type, which may be double spaced or otherwise reduced in size to give a resulting capacity of 10 to 25 mmf., values which will be found suitable for most purposes. Preferably, too, the vanes should be of brass or copper, so that a soldered connection may be made between them. The connection to the moving vanes must be kept clean.

Perhaps the most "tricky" components are the R.F. chokes. After considerable experiment the writer recommends chokes of 80 to 110 turns of 36 gauge D.S.C. wound on about 2 inches of $\frac{1}{4}$ in. diameter ebonite rod. A double-wound choke can usually be placed with advantage in the filament leads and may consist of 70 turns of No. 20 S.W.G. wound on a $\frac{3}{8}$ in. former.

The tuning inductances may consist of two to four self-supporting turns, one or two inches diameter, of bare copper wire or tube of sufficient size to give rigidity. The exact size is easily found by experiment.

There is no great need to de-base valves, but when possible connections should be soldered direct on to the valve legs. Alternatively, the valve-holder may consist of sockets held rigidly in the wiring.

The grid condenser in the receiver should be of 50 to 100 mmf. capacity; 1,000 mmf. is a satisfactory value for all other fixed capacities.

Now for the problem of transmitters. The first question is, "What is the best circuit to use?" The popular Hartley circuit is not much use below 20 metres, either in theory or practice. Good results can be obtained with the T.P.T.G., but the ideal circuit appears to be the Balanced Colpitts, as sketched in Fig. 1. This will doubtless be familiar, but it is reproduced here in order to emphasise certain points. The grid and plate coils together make up the tuning inductance, and the direction of winding must, of course, be such that one coil is a continuation of the other; but the connections to each coil should be arranged so that the high potential ends are adjacent. This is indicated in the diagram. H.F. chokes *must* be used, and balance is obtained by adjusting the ratio of the capacities C_1 and C_2 for minimum feed current. This operation is equivalent to that of adjusting the position of the tap in the Hartley circuit. It will merely be a coincidence if the blocking condenser then happens to be at a nodal point. The popular method of adjustment in which the H.F. chokes are, or can be, omitted is incorrect. After adjusting the circuit, the position of the node on the coils may be traced with a neon lamp, and the relative sizes of grid and plate coils adjusted accordingly, so that the condenser C_3 is at the point of zero potential. (At lower frequencies it may then be permissible to omit the H.F. chokes.)

There is no more simple piece of transmitting apparatus, perhaps, than an Ultraudion transmitter for 56 M.C. It is easily calibrated and capable of useful results, but it rarely approaches the Colpitts in efficiency. The only fundamental difference between these circuits is that the capacities C_1 and C_2 (Fig. 1) are replaced, in the Ultraudion, by the inter-electrode valve capacities, and are therefore incapable of adjustment.

Double-ended valves are not generally suitable for very high-frequency work. Any good receiving power valve can be used as an oscillator. For inputs up to 5 watts the old Cosmos type S.P.55/R, or the Triotron XD4, can be particularly recommended. The D.E.5 or B.TH.-B.11 (if obtainable) can be recommended for 10 watt work. For higher powers the D.O.20 and B.T.H.-B.12 would be satisfactory. The $\frac{1}{4}$ kilowatt man is advised to try two pairs of the latter in push-pull!

In laying out the transmitter, or receiver, the following points should be observed:—Mount the tuning condensers as close as possible to the valve. Take the leads to the inductances straight

off the condensers. Keep all high-frequency leads as short as possible, and use bare copper wire for wiring. Be careful that masses of metal, such as the tuning condensers and the plate of the valve, are not in the field of the coil. When making connection to the condensers, remember that threaded rod has a high H.F. resistance. If necessary, some of the thread can be filed flat.

The various circuit constants will depend on the particular valve in use.

Referring to Fig. 1, the following table shows the values used by the author with two extreme types of valve :—

Valve.	B.12.	L.S.5.B.
L_1 (turns 2 in. dia.)	2	3
L_2 (turns 2 in. dia.)	1¼	2
C_1 (max. capacity in mmf.) ...	10	10
C_2 (max. capacity in mmf.) ...	25	50
Grid leak resistance (ohms) ...	100,000	10,000

The following method of adjusting the transmitter can be recommended. Obtain a lamp (for a 10-watt transmitter, a 7-watt motor lamp may be used, and *pro rata*) and connect a loop of wire across it. Having adjusted the transmitter for minimum feed, approach the loop to the coil until the brightness of the lamp reaches a maximum, or until a small increase in brightness is offset by the increase in feed current. Now note the milliamps. Remove the lamp, and increase the aerial coupling until the feed current reaches its previous value.

The amount of power in the lamp can be estimated from its brightness ; if desired it may be calibrated on direct current in terms of watts per candle power. This will give an idea of the power in the aerial. The efficiencies, based on this power, obtainable with various circuits, were as follows :—

Ultraudion : Very variable ; 20 per cent. to 35 or 40 per cent.
T.P.T.G. : 35 per cent. to 45 per cent.
Colpitts : 45 per cent. to 55 per cent.

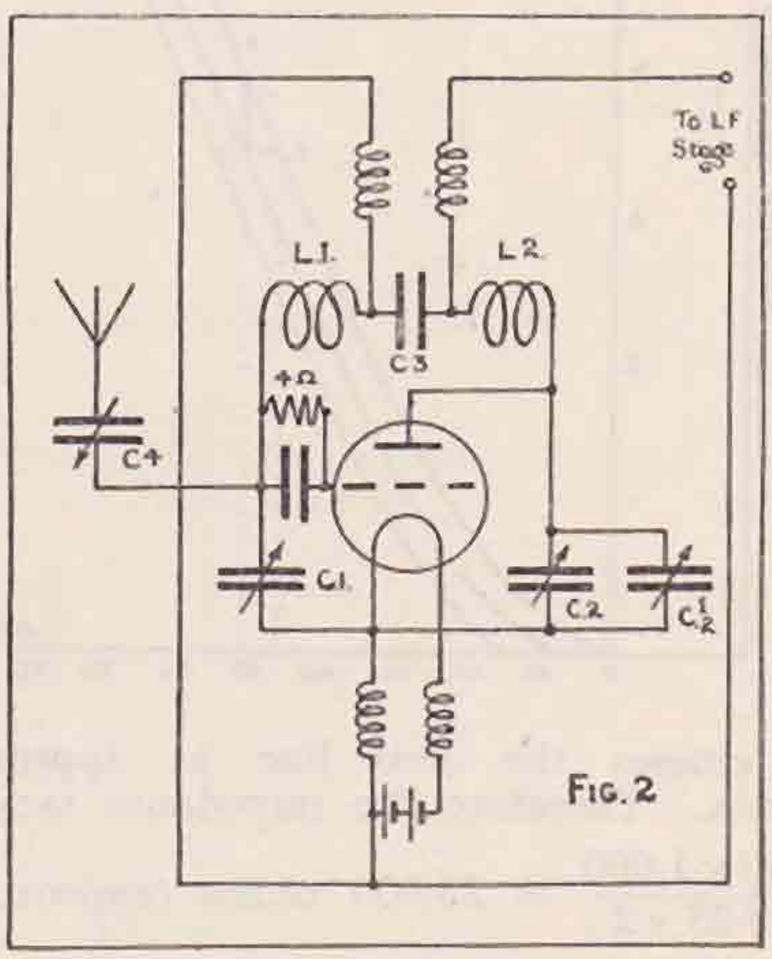


FIG. 2

Although the chief application of the higher frequencies will probably lie in the direction of beam transmission, a start may be made with any sort of aerial, and in this connection there is as yet no reason for departing from standard practice. In the case of a twin-wire fed aerial, a single turn untuned coupling coil may be used if the transmitter can be situated at a current point in the system. If the feeders have been adjusted for a longer waveband and cannot be lengthened, they may be fed by tapping one wire on to the plate coil, and the other on to the grid coil.

Next we come to the all-important matter of receivers. The results obtained with the Colpitts transmitter resulted in a similar circuit being tried for reception, and the result is shown in Fig. 2. The tuning capacity is made up of the condensers C_1 and C_2 in series, and this introduces a problem. Shall we make C_1 or C_2 the tuning control ? Any alteration of one condenser should require a simultaneous alteration of the other. The following method of adjustment, however, has proved very satisfactory. The "Vernier" condenser C^1_2 is used for tuning, and the band covered in steps of 10 to 15 cms. Supposing we require to tune from 5.2 to 5.3 metres. C^1_2 is set at the centre of its range. The ratio of C_1 to C_2 is adjusted to give the strongest possible oscillation on 5.25 metres. The adjustments of C_1 and C_2 are marked for future reference, and the job is done. The reaction control is a series condenser in the aerial lead. Objections have been raised to this method, but it is perfectly satisfactory in practice, and will have very little effect on the tuning if the aerial is made a number of half wavelengths in length. Alternatively, the reaction control might consist of a resistance in the H.T. circuit as recommended by G2DT.

Equally sensitive receivers can be constructed using the simpler, and better known, Ultraudion or "Throttle-Control" circuits, but it is not so easy to guarantee good results. A useful form of Ultraudion circuit has already been described by the writer (see C.B. Notes, February, 1930). This has been used with success by G2OL and G2OW.

The "throttle-control" circuit is particularly susceptible to threshold howl. All the usual remedies may fail to effect a cure, and careful choice of valves and patient experiment with the layout may be needed. It is, however, only fair to say that some of the finest achievements on 56 M.C. have been accomplished with this circuit. Threshold howl may also be troublesome with an Ultraudion. Careful adjustment of L.T. current and a parallel fed L.F. stage will usually effect a cure. If all other remedies fail the receiver should be placed as far as possible from other objects, the batteries insulated, and connected by short leads.

Valves which make excellent detectors on 28 or 14 M.C. may be quite useless on 56 M.C. ; 4 or 6 volt power valves are usually satisfactory, especially the Shortpath variety. There is much room for experiment with screen-grid and Pentode detectors.

To obtain a silent background careful choice of grid-leak is necessary. Tuning condensers are apt to be noisy, and care must be taken to keep all rubbing contacts clean. The Ormond reaction condenser with two sets of fixed vanes can be recommended. Unsteady signals are curable by mounting the transmitter or receiver on Sorbo sponge. It is advisable to use 6 or 8 inch extension handles on the tuning controls. If reasonable care is taken with the layout these will be sufficient to

(*Continued on page* 127, *col.* 2.)

The Application of Characteristic Curves.

By G. W. A. Dummer (BRS350).

An Explanation.

THE usual valve characteristic curve is a curve showing the ratio of grid volts to anode current, taken at various anode voltages. By working the valve on various parts of the curve, rectification or amplification is obtained, and by suitably matching the impedances, etc., reception can be greatly improved.

We know that inside the valve negative electrons

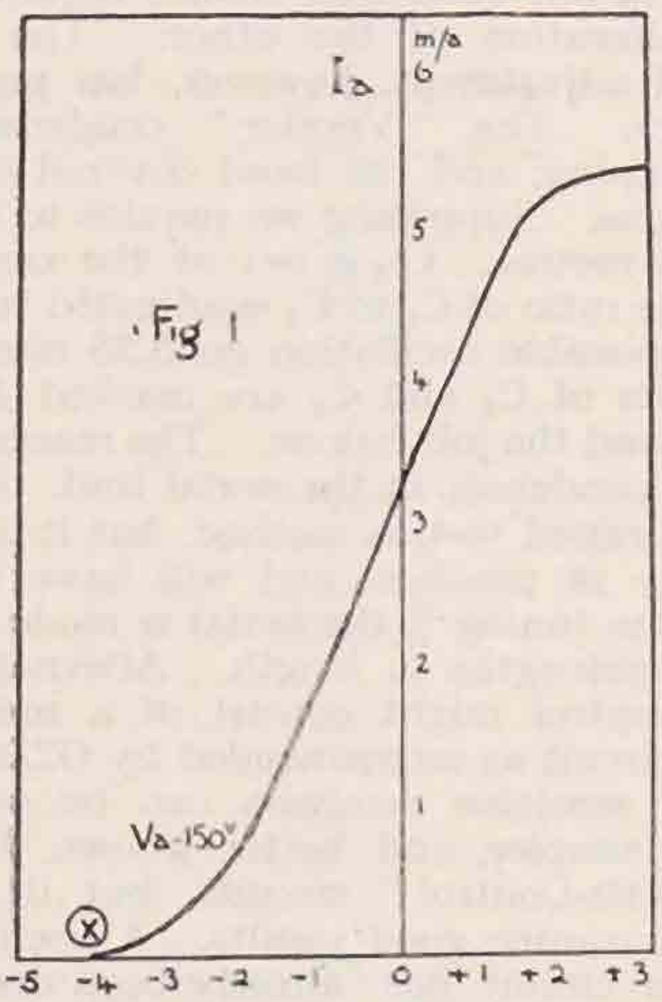


Fig 1

are being emitted by the heated filament and attracted to the positively charged anode. The grid, being alternatively positive and negative, attracts or retards the flow of electrons, causing amplified variations in the anode current.

Now at the point " X " on Fig. 1, which corresponds to a bias of 4 grid volts, the grid is so negative that little or no electrons get past to the anode. At 3 volts negative a slight current is flowing, and at 2 volts negative the emission rises steadily as represented by the straight part of the curve until at 1½ volts positive saturation point is reached. At this stage the total quantity of electrons are leaving the cathode, crossing to the anode, round through the H.T. battery and back again. Saturation point means that a further increase in grid volts or anode volts produces no further increase in the anode current. This part is usually not shown in the characteristic curve, as it is of little use.

Now we see on the outside of any valve box, after the usual filament and anode voltages :—

Mutual conductance	...	1·7 m/a. volt.
Anode impedance	...	4,000 ohms.
Amplification factor	...	7

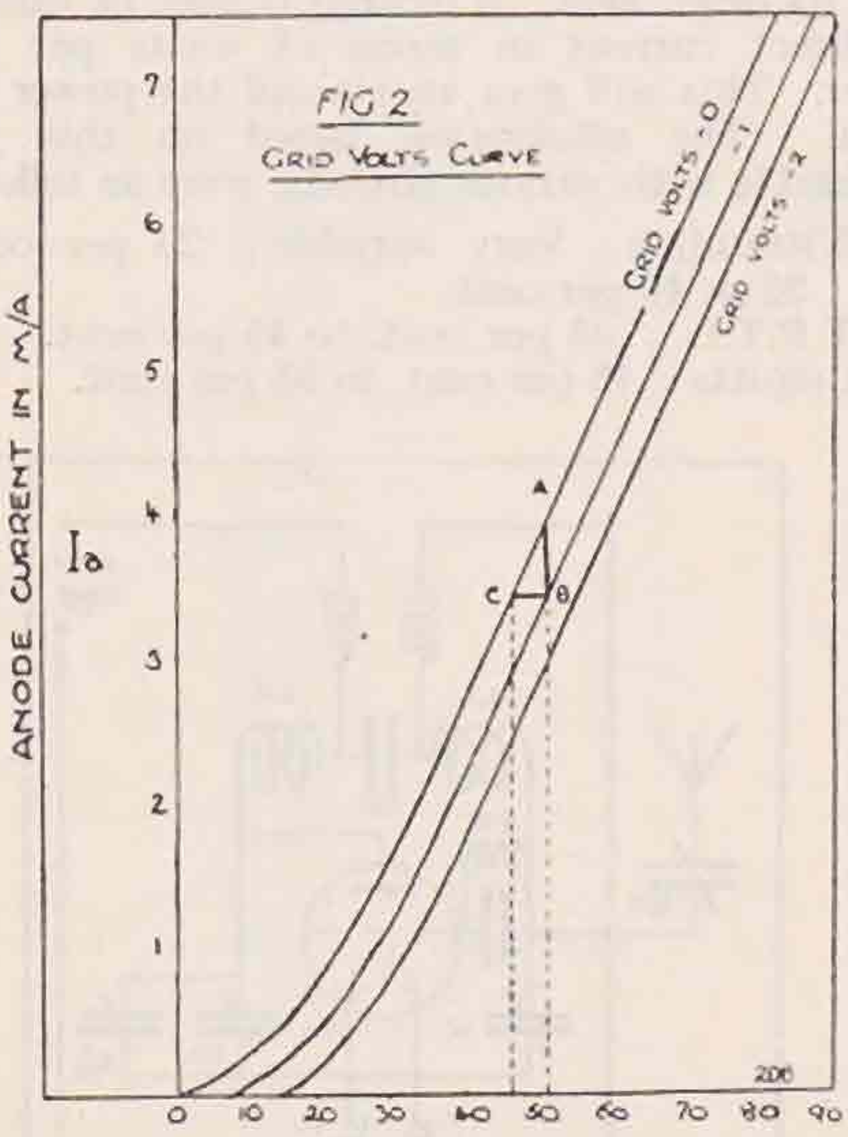
The mutual conductance shows the change in anode current due to a 1-volt change in grid volts. This is usually measured under standard conditions, i.e., at anode volts 100, grid volts zero. On Fig. 2 the mutual conductance is represented by A—B, this being the amount of change in the anode current by changing the grid voltage by 1 volt (from 0 to 1).

This can be taken as a guide to the efficiency of the valve, because the higher the mutual conductance the more change we can get from a 1-volt grid bias charge, and therefore the more efficiency.

Now C, B represents the amplification factor. It is seen from this that a change of one volt grid bias produces a change of 5 volts H.T. In other words, the amplification factor is 5. To calculate this from the curve take any two readings of the grid volts at the same current (e.g., along the line C, B) and divide this into the difference of the two anode voltages (=5 volts). The result is the approximate amplification factor of the valve.

Now we come to impedance, which is really another name for the A.C. resistance of the valve. We know that wherever a current flows there must be a resistance to that current, and therefore there is an A.C. (since the applied voltage is A.C.) resistance in the valve. This is termed impedance, and is measured as follows :—

On Fig. 1 the point is taken where the curve crosses the zero grid volts line. This is multiplied by 2 and divided into the anode volts multiplied by 1,000. To take an example. On Fig. 1 the



curve crosses the zero line at approximately 3·25 m/a. Therefore the impedance is :—

$$\frac{150 \times 1{,}000}{3{\cdot}25 \times 2} = 23{,}000 \text{ ohms (approx.).}$$

For good reproduction this impedance should bear a definite relation to the speaker impedance through the output transformer. An approximate guide is to take the square root of the valve im-

pedance divided by the speaker impedance, e.g., if the valve impedance is 8,000 ohms and the speaker impedance 2,000 ohms, the output transformer would need to have a ratio of $\sqrt{\frac{8,000}{2,000}}=2:1$. In the case of a moving-coil speaker the ratio would be given by :—

$$\sqrt{\frac{2\times\text{Valve Impedance}}{\text{Speaker Impedance}}}$$

It was mentioned earlier that by working the valve on various parts of the curve, rectification or amplification was obtained. It will be seen that for pure amplification a change in grid voltage must produce an equal change in anode voltage. Therefore, the voltages must be applied to a point corresponding to the straight part of the curve.

Now if we make the grid slightly negative, thus bringing the signal down to the lower curve, we cut out the negative half of our applied A.C., the electrons passing when the grid is positive and stopping when the grid is negative. Thus rectification takes place in the usual manner. This method is known as anode-bend or bottom-bend rectification, and owes its name to its working position on the valve characteristic curve.

Scrap that Hertz !

By E. G. INGRAM (G6IZ).

In these days of crystal control one does not worry much about swinging aerials and lead-ins, etc., as the frequency of the transmission can be kept constant, and admittedly that is a very great advantage by itself, but experiments carried out over a number of years have shown that the type of aerial used has a great deal to do with the stability of the note emitted.

Quite candidly, I do not remember hearing nearly so many swinging notes until the " Hertz " type of aerial came so much into use (this statement, of course, omits all stations using quartz control), and therefore I assume that any radiator which is exactly in tune with the transmitter causes more trouble than one which is not so in tune. This may be of interest to those newcomers to the ether who, so far as I can see, generally start off with one of the various forms of auto-tuned Hertz.

The reason for saying the auto-tuned aerial causes more trouble is contained in the following : If one takes two circuits exactly in tune and coupled by some sort of feeder arrangement, i.e., one circuit driving and the other being driven, any slight variation in the driven circuit is immediately transferred back to the driver, and that is undoubtedly a bad state of affairs. But if we make the driven circuit to have a different resonant frequency from the driver it will be found that, although the power transferred is less, any change of the resonant frequency of the driven circuit will have very little or no effect at all on the frequency of the driver.

In practice, two aerial systems I used successfully with a straight T.P.T.G. circuit had the following physical dimensions : No. 1, 30 ft. long, 70 ft. lead-in ; counterpoise, 3 wires 20 ft. fan. No. 2, 55 ft. long, 20 ft. lead-in. Both of these aerials gave remarkably good radiation results ; practically every country in Europe worked with from 1 to 5 watts input and never a report of an unsteady note. This, I think, goes to show that these auto-tuned Hertz are not all they are said to be.

Another point with regard to the auto-tuned aerial used in conjunction with a C.C. transmitter is that although the frequency remains constant, a variation of the aerial constants will cause a change of resonant frequency, and this will give a change in actual power transferred, and therefore a variation in signal strength.

I hope that these remarks may help someone in the choice of a radiating system, and, if so, perhaps my energies have not been in vain after all.

Transmitters and Receivers for 56 Megacycles

(*Continued from page* 125).

eliminate hand capacity. Screening is not desirable at very high frequencies, as it will not be possible to maintain the entire screen at the same R.F. potential.

This article will not be complete without a few words on the subject of frequency measurement. When starting up on 56 M.C. you may be in doubt as to whether you have picked the right harmonic of your crystal or other long-wave oscillator. This can be checked accurately by Lecher wires, or, more simply, as follows : Connect up an aerial of about 8 feet of wire (preferably on the receiver) and " feel " for a point where the hand may be brought close to the aerial without upsetting the frequency. The distance from this point to the free end of the aerial, multiplied by four, will give the approximate wavelength.

Perhaps if you have had the patience to read through thus far you will say : " Yes, but all this means new apparatus, and what will be the use of it, anyway ? "

Don't forget that your existing transmitter and receiver may be capable of useful results on 56 M.C., without alteration. Moreover, a good 56 M.C. receiver will be very near perfection on 14 and 28 M.C.

Don't forget, also, that the possibilities of 56 M.C. as a low power DX band have been shown by the reception of FM8CR and EU5AM by BRS310, especially as these signals were harmonics.

The strength of local signals will depend upon the altitude of your station, but a weak ground wave does not necessarily mean weak signals in (for example) America !

In conclusion, I wish to acknowledge my indebtedness to G5QB, G2OW, and G2OL, for a number of useful ideas. I shall be very pleased to hear from, and to co-operate with, anyone who wishes to start up on 56 megacycles.

Strays.

Owing to a reported inaccuracy, both calibration services have been suspended until further notice.

* * *

G6DH reports first QSO with UO on 28 M.C.

The 28 M.C. Transmitter and Antenna at Present in Use at G6DH.

AS a number of articles on 28 M.C. self-excited transmitters have appeared during the last eighteen months, another may seem rather superfluous, but there are one or two points about the transmitter at G6DH that may be of general interest.

The circuit has been primarily designed for use with a DETI SW valve. Since the anode-filament capacity is smaller than the grid-filament capacity in most valves, especially the DETI SW, the grid circuit is tuned by the G-F capacity without the addition of an external parallel condenser, while a small condenser is used to tune the plate circuit. This has the effect of reducing the likelihood of parasitic oscillations, since although the grid and plate circuits are tuned to the same frequency, the connecting leads are dissimilar. With most other circuits, trouble has often been experienced with parasitic oscillation, but never with this particular one. It may be thought that, since the G-F capacity is used for tuning without an external capacity, when keying in the H.T. a chirp would result, due to slight expansion of the electrodes when the valve is heating up, causing a variation in the capacity between the electrodes, and this varying the frequency of the transmitter; but with inputs up to 30 watts, this has not been found to occur.

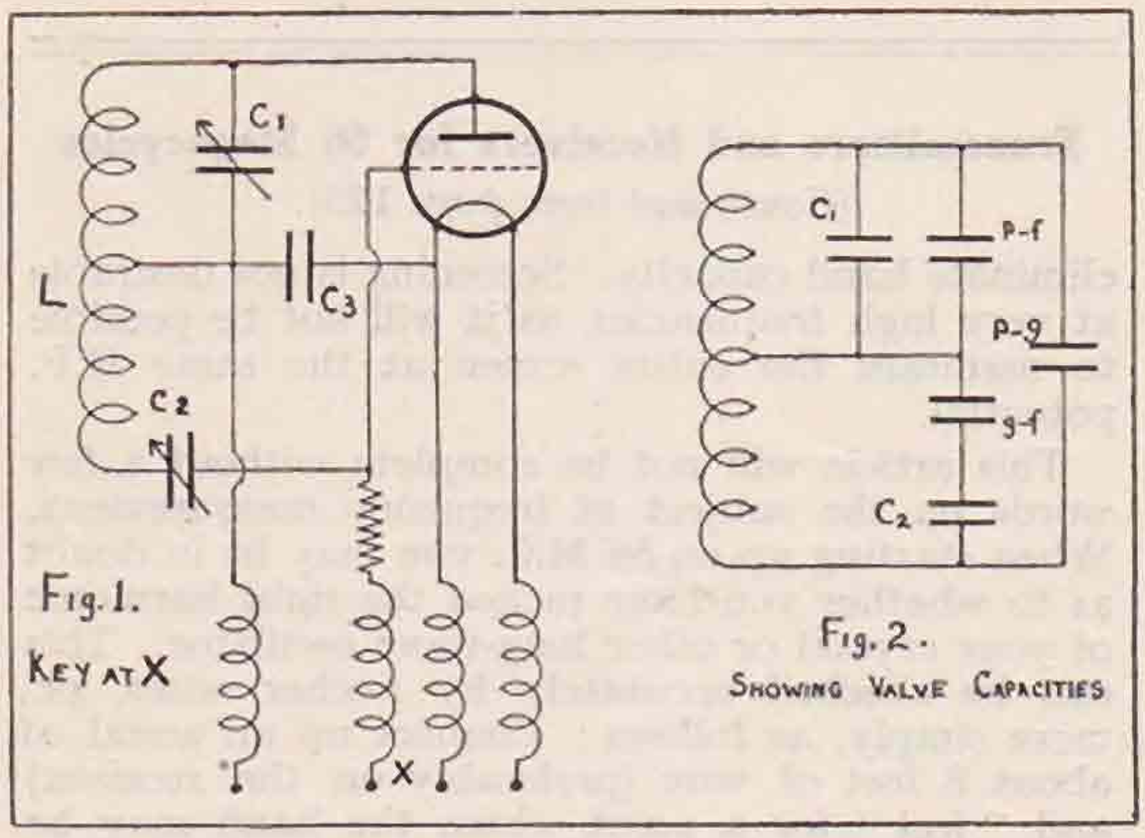


Fig. 1.
KEY AT X

Fig. 2.
SHOWING VALVE CAPACITIES

As will be seen from Fig. 1 a variable grid condenser is used which acts as a blocking condenser for the H.T. and also as a tuning adjustment for the grid circuit (since it is in series with the G-F capacity).

The valve envelope is coated with metal foil (tinfoil in this case) to within one inch of the anode connection, this having been found greatly to increase efficiency. Exactly what is the effect of this screening cannot be said at present. No connection is actually taken to the foil.

R.F. chokes are used in the filament leads, because the leads tend to pick up R.F. energy and produce losses: the same remarks apply to the H.T. feeds.

Perhaps the efficiency of the transmitter could be slightly improved by inserting, as in Fig. 3, a by-pass condenser in the centre of the inductance and taking the grid leak from the low potential end of the grid part of the coil. This has not, so far, been tried, the grid leak being taken direct from the grid.

As to practical details: L has seven turns 7.5 cm. in diameter, spaced 1 cm. of No. 8 S.W.G. copper wire, and the tapping is made of the same wire soldered to the centre of the coil. Sufficient support is found for the coil by the anode connection at one end, the plate tuning condenser at the centre, and the grid condenser at the other end, to do away with external supports. The plate tuning condenser (C_1) consists of two plates 5 cm. in diameter, one being supported by the anode terminal of the valve, while the other can be moved in relation to it by means of a piece of screwed rod, as shown in Fig. 4. C_2 is a .00015 double-spaced low-loss variable condenser. A 25,000 non-inductive resistance is used as a grid leak.

The R.F. chokes in the filament leads consist of thirty turns 4 cm. in diameter of No. 18 D.C.C., and those in the H.T. supply, 200 turns of No. 26 S.S.C. enamelled wire wound on glass tubes 2.5 c.m. in diameter. It is generally advisable to use the by-pass condenser (C_3) since its inclusion is found to improve the note, though perhaps this is a matter of experiment.

An antenna, which is 20 metres long and is

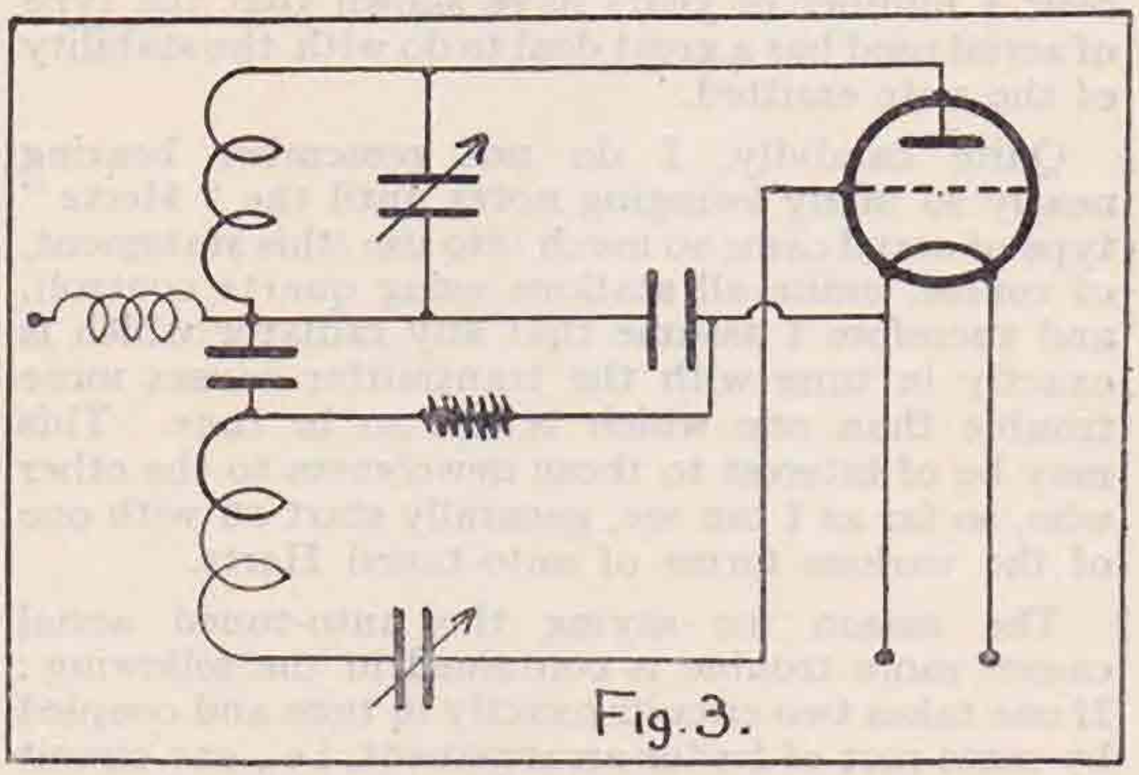


Fig. 3.

coupled by a two-turn coil, has been successfully used for some time. (This antenna is often wrongly termed the A.O.G. type; "end-fed Hertz" is a more suitable name).

Some recent experiments with antenna and feeders went to show that considerable losses occur in feeders, and even if these are well designed, the full output power of the transmitter is not conveyed to the antenna. It would appear a good rule, therefore, in the design of a radiator for the average ham, to consider if a good antenna of the type described above can be erected without much (if any) screening from trees, houses, etc., or if screen-

(*Continued at foot of page* 132, *col.* 2.)

Television.

PART IV.

By P. D. Walters (BRS273).

IN the previous part of this series a circuit was given for connecting the neon lamp direct in the anode circuit of the output valve, but the chief drawback to this method is the extra H.T. which is necessary in order to compensate for the resulting voltage drop across the neon. For those fortunate hams who have about 350 volts H.T. available the above method is very satisfactory, but there are other ways of modulating the neon without employing excessive H.T.

The neon lamp can be initially "struck" by a separate D.C. potential and then the A.C. component of the signal output from the amplifier superimposed in such a manner as to modulate the neon glow. This method enables one to use voltages as low as 240, and therefore the "mains" can generally be pressed into service. It should be borne in mind that, since the eye is far more sensitive than the ear, the slightest hum or ripple in the mains must be eliminated if a clear background to the picture is to be obtained.

Neon lamps should never be connected direct to a source of current without a fairly high series resistance. When the neon is wired in the anode circuit of the output valve, the impedance of the latter is quite sufficient and no other resistance is necessary.

Of the various types of neon lamps on the market, the tubular type with a flat rectangular cathode is the most suitable for television work, but very good results can be obtained from the ordinary commercial "beehive" neon, which is considerably cheaper and also requires slightly less current. In this latter type the series resistance is usually incorporated in the cap and must be removed before connecting, as shown in the accompanying diagrams. The writer, however, has procured from the G.E. Company an "Osglim" *without* the resistance in the base, and found it admirably suited for television. It is generally necessary to have a frosted glass, otherwise the electrodes are visible in the background of the picture.

Fig. 6A shows how choke output can be employed for modulating the neon which derives its striking potential from the same supply as the H.T. for the valve, providing the latter is above 200. Care should be taken that the connections to the neon are made so that the larger electrode (the flat plate or the spiral as the case may be) is the cathode or negative, which is represented in the following diagrams as the long curved electrode. In Fig. 6B the same method is applied to transformer output.

Since a large undistorted output is required many readers will probably wish to use the push-pull system of amplification, which is shown in Fig. 6C.

The writer, who has tried all these methods

(*Continued on page* 132.)

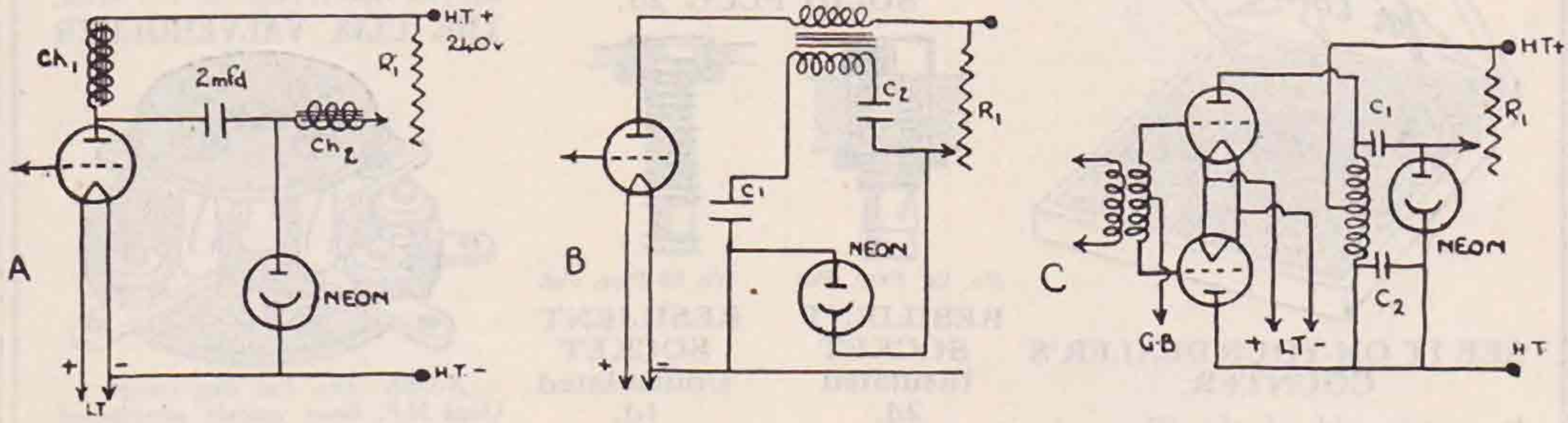
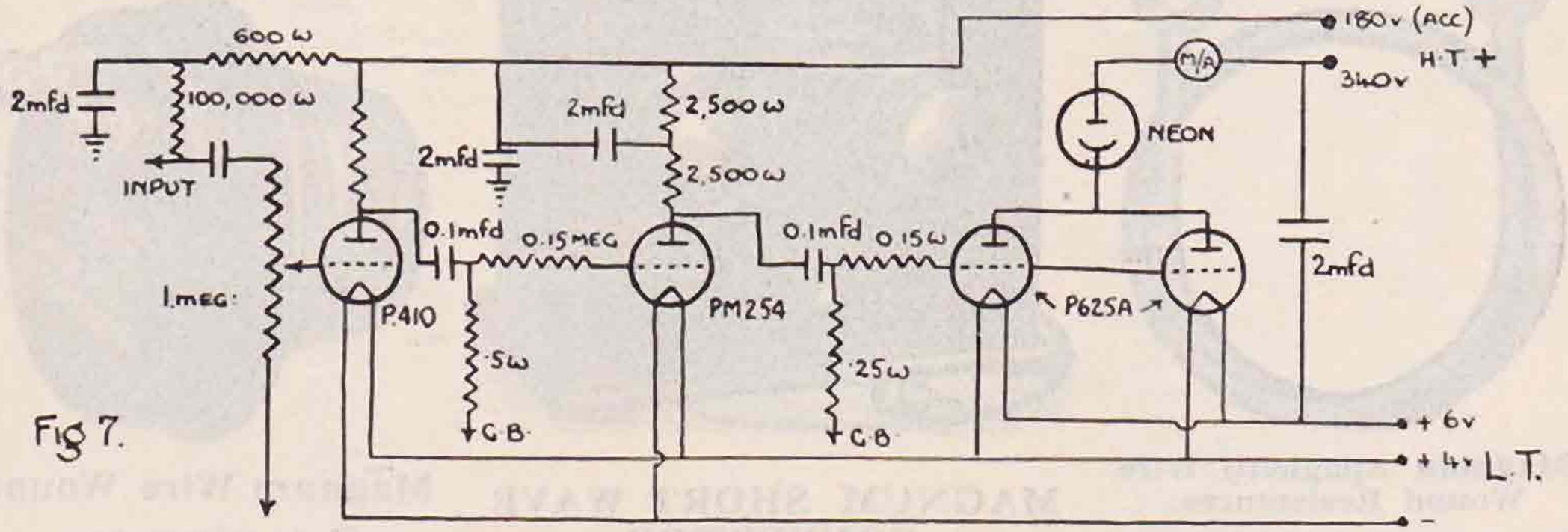


Fig. 6.—Various Ways of Connecting the Neon to the Output Valve.
R1 — 5,000 ohms (variable). C1 and C2 — 2 mfds.



(*Continued on page* 132.)

General Society Regulations

(as covered by Article 64).

Approved by Convention, September, 1930.

1. GENERAL.

Nothing in these regulations shall be so read as to be inconsistent with the Articles of Association.

2. COUNCIL MEMBERS.

Duties.—Members of Council will be elected as laid down in the Articles of Association, but on election all such persons shall accept office for one of the undermentioned duties :—

(*a*) Contact Bureau Section Manager.
(*b*) Publicity Section Manager.
(*c*) Social Section Manager.
(*d*) Editorial Section Manager.
(*e*) Q.S.L. Section Manager.
(*f*) Q.R.A. Manager.
(*g*) Licence Manager.
(*h*) Districts Manager.

3. SECTIONAL COMMITTEES.

Each Sectional Manager shall have power to co-opt to himself not more than four, and not less than two, Corporate members who shall assist him with the work of his Section. The names of such members shall be submitted to the Hon. Secretary at the first Council meeting held in each year. Such members shall not attend Council meetings except those co-opted under Rule 6.

4. SECTIONS.

The Sections of the Society shall be known as follows :—

(*a*) Contact Bureau Section.
(*b*) Publicity Section.
(*c*) Social Section.
(*d*) Editorial Section.
(*e*) Q.S.L. Section.

5. SECTION MANAGERS OPERATING WITHOUT COMMITTEES.

The Council members responsible for (*a*) Licences, (*b*) Q.R.A., (*c*) Districts shall operate without committees unless special circumstances demand assistance.

6. CO-OPTED COUNCIL MEMBERS.

After the election of Council, three Sectional Committee members may be co-opted as laid down in the Articles of Association.

7. PROXIES.

Council members resident outside London, or who are prevented from attending through illness or business, may appoint a deputy to serve on their behalf. Such deputies shall only vote on matters for which they hold a proxy vote, and shall be approved by Council prior to the first meeting of the newly-elected Council in the case of members resident outside London, or prior to the individual meeting in the case of London members.

8. SECTIONAL RULES.

The rules governing the operation of each section shall be drawn up or revised by the Section Committee at its first meeting after January 1, and such rules shall be submitted to Council for approval prior to publication in the BULLETIN.

9. RESIGNATIONS.

In the event of a member of Council resigning his office, the remaining members may appoint one of the three co-opted Committee members to take his place, whilst a new Committee member may be co-opted to fill the vacancy.

10. ABSENCE FROM MEETINGS.

Council shall have power to call for the resignation of any Council member (or his London deputy) if he is inexcusably absent from three consecutive meetings. The vacancy thus caused shall be filled as laid down in Rule 14.

11. MEETINGS.

Council shall meet monthly in London on the evening of the third Wednesday in each month, or at such other times as the President shall decide. One week prior to the date fixed for a meeting, the Hon. Secretary shall forward to all Officers, District Representatives, Council members and their London deputies a notice convening the meeting, together with an agenda of business to be discussed, and a copy of the minutes of the previous meeting.

12. DISTRICT REPRESENTATIVES.

Elections.—District Representatives shall be elected annually, and shall be representative of the Society membership within their district. They shall be responsible to Council for all matters affecting their district, and shall produce such reports as are requested by that body.

13. NOMINATIONS.

District Representatives will be nominated in July of each year by members resident in their district. Such nomination shall be made in writing, and on the form prescribed below, which shall be published in the July issue of the Society's Journal.

District Representatives' Election, 193.....

To the Hon. Secretary, R.S.G.B.

I wish to nominate.....
Call Sign.....of.....for the position of No. ..... District Representative.

I have his consent to make this nomination.

Signed .....
Call Sign.....
Address.....

These forms shall be returned not later than August 1.

In the event of more than one person being nominated for District Representative, a ballot form, as below, shall be published in the August BULLETIN.

District Representatives' Elections, 193.....

The following persons have been nominated for the position of No. ..... District Representative.

Names. Call Signs.

Will you please indicate below the person you desire to vote for, and return to me not later than September 1.

Signed.....
Hon. Secretary.

I desire to record a vote for Mr.....
as District ..... Representative.

Signed .....
Call Sign.....

14. Announcement of Elections.

The result of the District Representative Elections will be announced at the Annual Convention, but newly-elected members will be notified as soon after September 1 as possible, in order that arrangements may be made by them for their districts' official representation at Convention. In the event of no nomination being received from a particular district, Council shall appoint a representative at its September meeting.

15. Council Representation.

English District Representatives shall be represented on Council by the Districts Manager, to whom all matters of importance should be reported, prior to the 10th of each month.

16. Scotland, Wales and Northern Ireland.

Scotland, Wales, and Northern Ireland shall either be represented on Council by the Districts Manager, or, if they so desire, their District Representative may forward direct to Council, before each meeting, instructions regarding any matter on the agenda, or other business upon which he wishes a decision to be made by Council.

17. District Conventions.

District Representatives should arrange local Conventionettes at least once a year. A member of Council will, if possible, attend such meetings, providing a minimum of 25 members of the district have signified their intention of being present.

18. Election Arrangements.

The election of all District Representatives shall be carried out under the direction of the Hon. Secretary.

19. Resignations.

District Representatives failing to report for three consecutive months shall be deemed to have resigned, and a new representative shall be appointed by Council.

20. Period of Office.

District Representatives shall take office as from the commencement of Convention each year. In the event of the newly-elected delegate being unable to attend, he shall arrange for a member of his district to officially represent him at all Convention Business Meetings.

21. British Districts.

The counties of England shall be divided into Districts, and shall be as laid down at the Convention held in 1928, with the exception that Monmouthshire shall be considered as a separate district, as decided at the Convention held in 1930. The English districts shall be numbered from one to fourteen.

22. Scotland, Wales and Northern Ireland.

Scotland, Wales, and Northern Ireland shall be considered as separate districts, and shall be known by name only.

23. B.E.R.U. Groups.

Council shall have power to appoint B.E.R.U. members to act as official representatives for the country in which they are residing. Such members shall be given full power to act on behalf of the Society, and shall provide a monthly report of the activity of B.E.R.U. members in their country. The Publicity Manager shall represent all B.E.R.U. representatives on Council.

(*Continued on page* 140.)

"Television"—(*Continued from page* 130).

with varying degrees of success, finally adopted the circuit shown in full in Fig. 7. The best results were obtained using the LS5 type of valves, but owing to their large consumption of L.T. others were substituted. A clear and bright picture is produced with a current of 42 m.a. in the anode circuit of the two P625A's in parallel. In order to obtain this current with the high resistance of the neon in circuit, it was necessary to increase the H.T. from 220 volts (derived from the mains) to 340 volts by the addition of 120 volts in series from large capacity H.T. accumulators.

This amplifier is usually preceded by a S.G. H.F. stage and an anode bend detector (P.M.3A). It was found necessary to insert resistances in the grid circuit of each L.F. valve, as well as a choke-capacity filter in the anode circuit of the detector in order to exclude any H.F. from the amplifier. Care must be exercised to ensure that neither the output nor the intermediate L.F. valves are overloaded, otherwise black patches will appear on the picture, which will also suffer from lack of half-tones.

In these diagrams the synchronising coils have purposely been omitted for two reasons. Firstly, that by far the best method is to use a separate valve for feeding the two coils (the circuit for which will be given next month), and, secondly, that if the reader wishes to make a very simple televisor for himself, synchronising will most likely be effected by friction with the finger on the shaft of the motor (which is initially adjusted to run slightly too fast), thereby regulating the speed of the disc to maintain a steady picture.

(To be continued.)

The 28 M.C. Transmitter and Antenna at Present in Use at G6DH—(*Continued from page* 128).

ing would be bad, then it would be better to use feeders, since the losses incurred by their use would be less than those due to screening. If feeders are decided upon, then use a single feeder of the type

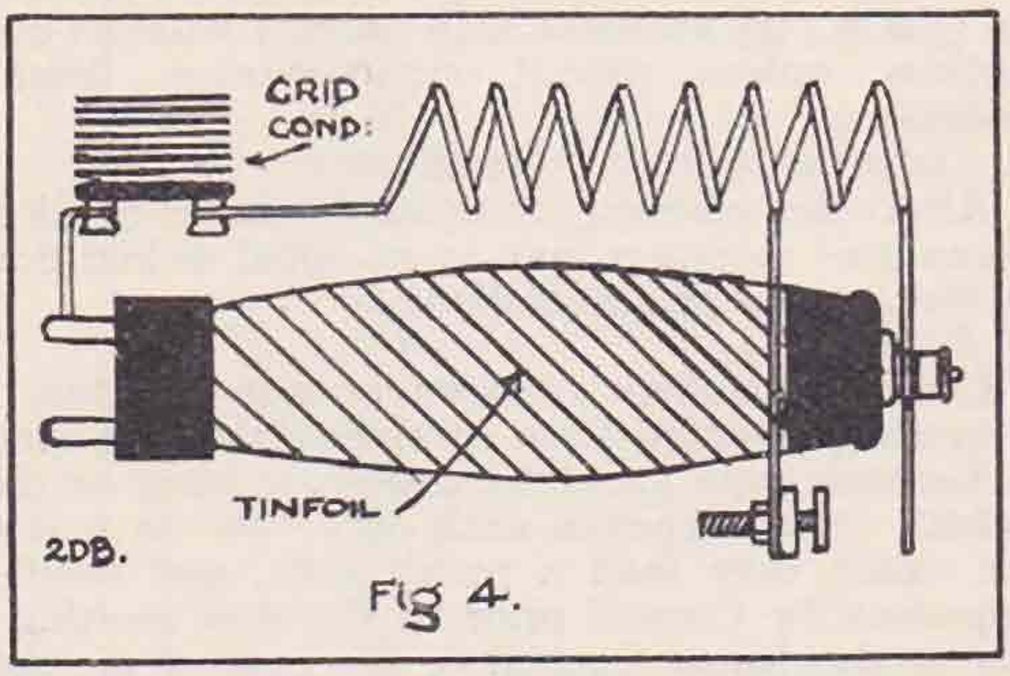


Fig 4.

recently described in QST, because this is equally as efficient (if not more so) than the twin-feed type, and is certainly more simple to adjust. Of course, in the case of directive antennæ, twin feeders generally have to be used.

Using the transmitter and antenna here described with 15 watts maximum input the following countries have been worked :—OH, SU, W1 and 2, and VQ, while reports have been received from W9, ZS, CT2, OK, and YI.

Contact Bureau Notes.

By H. J. Powditch (G5VL).

MAY I borrow space to thank London stations for the hospitality extended to the writer during Convention? From the stations visited, hints and ideas could be freely picked up, and there seems to be much material of interest to all if those concerned would come out into print. Even the gentlemen who removed ignition leads from our "Rolls" on a dark and dirty night may have meant they wished us to stay for ever, or—it may have been pure devilment.

All CB active members will have had notice of GABDS' flight, and a word of thanks is due to the E.L.S. stations who passed on the schedule, especially G2VQ, who got the details to Malay and Hong Kong within 48 hours via VS7AP. A few reports of the plane's signals have come in from G stations, but Convention and the failure of the schedule spoilt our chances of doing more than QSP the news.

28 M.C. Tests.
January 4, 11, 18, and 25, 1931.

These tests will be run on the general lines of 1930. We do NOT, however, propose to offer extra points for night contacts, although all transmission and reception during the twenty-four hours from 00 to 24 G.M.T. on each Sunday will be eligible. The possibility of night work is not admitted to be hopeless, and it is hoped that some will be attempted. The question of directional aerial arrangements will, it is hoped, receive special attention. Whilst it does not seem possible to differentiate on points allowed for directional work, yet it is certain that a larger amount of effective radiation can be secured by reflectors, even though these are not arranged for directional purposes but only to give control of angle of radiation. Therefore their use seems advisable for general communication work and should assist in securing points. Another special feature is the keenness of VK and ZL stations, and (given even moderate conditions) contact with these countries should be established on 28 M.C. this season. As this month's notes are rather lengthy, a copy of the formal rules will be held over till next issue. Meanwhile, will you repeat the good work of this year by using every opportunity to ask foreign and colonial stations to be ready for the tests? Following upon the 28 M.C. tests, our 56 M.C. groups will stand by on February 8, 15, 22, and 29. Transmissions will be made by both 7A and 7B stations between 11 and 15 G.M.T. The times for 7A will be 14.30 to 15.00 G.M.T., frequency 58 M.C. 7B stations will probably be on the air for ten minutes of each hour and on receiver during 7A's tranmission periods. Our 28 M.C. enthusiasts are booking March for their tests. Details of these are now in hand and will be published as soon as possible. While on the test question, it will be known that VK 28 M.C. tests were in progress during September, although notice did not reach me direct and, in fact, not until practically the end of the tests. However, VK5CM got the first VK-ZS contact with ZS5U, and rumours reach me of a VK-Siberia contact as well.

The N.R.R.L. have a series of tests for October 29 to November 3 on 3.5 M.C. band. If any reports are available, these should be sent to N.R.R.L. H.Q. showing full details and code word.

For those interested in weather, LA1R proposes a code for weather reports, and this is printed below. If it finds general favour, it will serve to shorten and also clarify such reports :—1, Clear; 2, cloudy; 3, showers; 4, mist; 5, heavy rain; 6, snow; 7, sleet; 8, hail; 9, thunder and lightning.

UO1JF suggests the advisability of cutting down the usual report on signals. He points out that readability is now shown by the letter W in the Austrian Army service, *i.e.*, Washington scale, and with this abbreviation, the usual QRK and QSA can be dispensed with. Thus, in place of "Ur sigs Tone T8, QRK R4, QSA 4," simply "Ur T8, R4, W4" serves and saves operating time and QRM.

In the "N.R.R.L. Bulletin," LA1J gives an interesting keying method. He connects three resistances in series from H.T.+ to H.T.—. The first, connected to H.T.+, is high value to suit the voltage, the centre one about 10,000 ohms and the third, at negative end, variable and some 1,000 to 2,000 ohms. Filament is taken to junction of the first and second resistances, key is bridged across the centre resistance, and grid goes to the full negative end of variable. With key up, the grid is thus negative to filament by the fall across the resistances. With key closed, only the small variable is in circuit and the valve will oscillate. Now comes the point of the idea: by altering the variable resistance, it is possible to start the valve off just at the right bias to drop it into immediate steady oscillation. Another suggestion (from LA2V) to sufferers from QRM is to use a very small grid blocking condenser, with a low value leak of ½ to 1 meg. The condenser is preferably variable and acts as a stopper to low-frequency interference without, it is claimed, affecting signal strength on the higher frequency signals.

VK3CX wants skeds. on 28 M.C. He states he was called by an F station recently on 28 M.C. but could not get his call sign. This was at 15.00 G.M.T. Will all G's look out, particularly in November, for VK signals as a series of tests may then be in progress? Unfortunately, no details have been sent to us.

For those interested in weather and seismic conditions, a broadcast in French is made from FLE each day on 1,445 metres at 11.20 G.M.T., following the meteorological bulletin. The notes are also sent out at 20.20 G.M.T. by FYL on 18,800 metres and Issy-le-Moulineaux on 32.5 metres. The information covers (*a*) steadiness and general condition of earth's magnetic field—magnetic storms; (*b*) steadiness of atmospheric electric field—variations in conductivity; (*c*) apparent activity of solar surface, sunspots, etc. NAA (Washington) sends out a complicated code on 16,060 K.C. each

day at 16.00 E.S.T. I can supply details on request.

G2ZN, in a note dated October 12, says: "If the sunspot theory holds, we should find an improvement in conditions for the next week or two . . . I made a telescopic examination this afternoon and was surprised to see a number of spots visible." Anyone prepared to approve or disprove G2ZN's prophecy?

On 28 M.C., in addition to the SU contacts of G6LL and G6HP, FM8IH (who is a welcome new member for CB) reports that he heard no G's on October 19, but with 8 watts he was QSO OH2NM at R7. FM8BG also worked OH7ND. Some of you will be getting tired of the harmonic queries on 28 M.C., but I think that some details from (ex) YI1LM are worth noting. The point that 14 M.C. harmonics will get through when 28 M.C. fundamental cannot is worth investigation. Shortly, on March 8 and morning of March 9, a 60-watt set on 28 M.C. failed to reach OH and OK. In the afternoon of March 9, a 250-watt set working on 14 M.C. was put into action, using same aerial and coupling (direct). Calls from this set were heard on fundamental (14 M.C.) in VK and OK2SI and UOZZ both received second harmonic on 28 M.C. UOZZ, it transpired, was also working fundamental of 14 M.C., and this was his third QSO on second harmonic! YI1LM then transferred to the 60-watt set on 28 M.C. fundamental and failed to reach UOZZ, although with another return to the 14 M.C. set, the QSO was completed on harmonic. YI1LM adds: "Even if one grants that the efficiency of the 28 M.C. set might be of a low value, it should at least radiate as much power as that carried by the second harmonic of the larger 14 M.C. set. It might be mentioned that the lamp of an absorption wavemeter tuned to 28 M.C. lit brilliantly from the lower powered set (28 M.C.), but only a faint glow was obtained from the harmonic of the 14 M.C. set. It is very strange that the second harmonic of a set using 250 watts can get through where the fundamental of a 60-watt set fails." Other items for the month are:—G2ZN has promised to give a monthly summary of sun spots "as he sees them," and this should enable stations to compare with their own results. G6RB starts off a group on the 3.5 M.C. band and announces great activities there. We want volunteers to complete a further 28 M.C. group. BRS310 is preparing charts of reception conditions at his station for a period of three months for comparison with other later periods. Thanks, BRS310, I wish other BRS stations would do this consistently as well.

No replies to my request for BCL interference elimination methods have come along. I gathered in London that the matter is of great interest to many stations there. Please send in your experiences in dealing with the trouble—and do it now.

I am glad to say that G6NK is willing to reopen Group 2A on fading and similar work. G6SV and 2AYX are also interested in the subject. Can we find three other stations to complete the group and get it under way?

***28 M.C. Tests in January Next.*—Will those stations who propose taking part send in a note to that effect and enclose stamped addressed envelope. Unless this is done, I cannot undertake to keep them advised of any late news, additional transmitting permits, etc., which may be available. QRA here is: G5VL, Porth, St. Columb Minor, Cornwall.**

Group Reports.

28 M.C. Work.

A number of descriptions of receivers for the band have been sent in. Our referendum seems to have disclosed varying opinions on the design of these sets. To take items roughly.

Aerials.—G5ML notes that the harmonic of the aerial should not fall within the band and recommends a length of 73ft. for receiving. G5LU notes that "harmonic should be tuned off the band."

Aerial Coupling.—G5SY uses a small variable capacity. G5ML a six-turn coil. G6HP either direct to coil or through a small condenser "as this always gives louder signals." OZ7T uses, in front of a S.G. stage, a "fixed tuned coil" for each band. No condenser is shown, and it appears that this means a coil wound to the approximate frequency and functioning in an "untuned" H.F. stage. BRS25 uses a three-turn coupling coil, unearthed. G5VL the same. H.F. stages are recommended by G6LL and G5YK, "providing I.D.H. valves are used to secure amplification." OZ7T uses apparently an ordinary SG, transformer coupled to detector. G6VP also advises A.C. type S.G. valve stage. Other stations do not use H.F. G6LL is the only station to mention anode bend detection as equal to leaky grid, and this again is for I.D.H. valves. When using leaky grid, there is a concensus of opinion that .0001 and 5 meg. are the best values. BRS25 and G5VL again favour 3 meg. G5SY, OZ7T, BRS25, and G5VL all favour potentiometer return from leak. G6HP emphatically states return is best to L.T. positive. This station also advocates the abolition of H.F. chokes and use of resistances in anode lead as a preventative of TH. G6LL resonates chokes at 12 ms. Other TH cures are:—G5LU, resistance across Py of first transformer and attention to choke. G5SY, increases bias to first L.F. valve. OZ7T cures the complaint by potentiometer to grid leak return and dimming detector valve filament. G5VL advocates this dimming combined with variation of H.T. to detector by a variable resistance. On the L.F. side, G6LL advocates two peaked stages; G5ML uses two stages, as does G5SY. G6WY uses a pentode. G5YK, one or two stages. G6VP, following his H.F. stage, uses one L.F. only, but with a 10-1 transformer, peaked. G6HP advocates the use of a very old transformer followed by choke coupling to phones and with variable resistance across these. OZ7T uses transformer followed by choke stage. Also choke to phones. As to circuits, nothing new comes to light. G6LL advises Schnell or ultra Audion. G5ML, G5SY, BRS25, and G5VL use Schnell. G6WY and G6VP use Reinartz. OZ7T uses Schnell with resistance control. The majority appear to favour air-spaced coils, only OZ7T and G5VL using tube base type. G6LL advises air-spaced grid condenser.

So the net result seems to be every one to his taste. I think that G6HP is right when he advo-

cates the old type of L.F. transformer. Not only did these often peak, but their faulty characteristics from a BC point seem efficacious in dealing with TH. The S.G. controversy is left where it was, except that every one who has tried I.D.H. valves seems to continue their use in a H.F. stage. The majority advise air-spaced coils, and G6HP's advice to cut out chokes by resistances is good, if you have the H.T. I notice a remark of BRS25 that when the band is spread over more than 20 or 30 degrees tuning becomes a tedious process, and although some stations use 100 degrees spread, it seems doubtful if this is required. On the L.F. side, I personally suggest it is always worth running valve filaments low and reducing general amplification whilst apparently improving signal ratio to background. Four-volt valves are run at about 2 volts in one stage, with the first stage at about 3 volts. I have extracted a large quantity of the group reports in above summary, the rest follow.

Group 1*B*.—G.C. G5SY notes that five members were present at Convention and that the group had a share in the successful paper read by G6LL and G5YK. As regard activities, G6LL, G6WY, and G5SY have been rebuilding, and G6LL has already reaped the benefit in a QSO with SU8RS. G5SY is changing QRA and will be off the air for a time. Owing to the claims of other members of his household, the suggestion of choosing a new site purely for its radio value has had to be compromised. New transmitter is built on "Shelf" method with a 3.5 M.C. crystal stage at bottom working up to 28 M.C. on top shelf. G5SY intends to again start upon the weekly weather charts from Air Ministry, which now include the whole of the Northern Hemisphere. He hopes that all members of the group will again come up to scratch and show CB that they do indeed constitute the senior 28 M.C. group.

Group 1*C*.—G.C. G6VP finds that his new QRA gives vastly improved conditions, due to lack of screening and conductive sub-soil. Commercial harmonics have been plentiful, but no DX signals yet. G6WN ops. are using the FB set shown at exhibition. This is to be described later. They have only heard G5VB. G5YK mentions receiver matters. G6DH has not heard any stations, but had a report from OK1AH on September 20 at 14.50 (QSA5), and from G6HP at 80 miles. The transmitter and aerial are not to be altered this season, so that comparisons may be made. G6LF 2BIV has heard G6LF and G6YC. YI6HT, in his first report, says his 28 M.C. stage is held up for some fixed air dielectric condensers; the solid type have burnt out. He also is now using A.C. valves in receiver and finds them good. Harmonics of PLL and JNA have been heard, but no ham signals. He is on the air from 12.00 to 14.30 G.M.T. on weekdays and 09.00 to 14.00 G.M.T. on Sundays. Normally, he can keep sked. at any time. What offers?

Group 1*F*.—G.C. BRS25 sends in some very interesting receiver details from his members. Congratulations to G6HP who twice worked SU8RS on October 5 at 11.30 and 14.00 G.M.T. SU8RS is also said to have worked FM8BG. BRS25 heard SU8RS signals on this day at 11.34, 14.23, and 15.17, but fading badly at the latest time. Signals were R5 max., and OZ7T, who heard SU8RS working G6HP, found them R4-6. The G end of this contact, however, could not be heard in OZ, but the SU signals were the first DX heard there since March. BRS25 has also heard G's and harmonics of WQF and IDM, pointing to an early awakening on the band. OZ7T, who is a welcome new member, says his transmitter is CO-FD-FD-PA, absolutely straight circuit with neutralising between last FD and PA. The output is very low compared with old self-excited T.P.T.G., but he considers a good note of more importance. Input to PA, a Phillips TAY/125, is 60-70 watts; crystal, a home-made one, on roughly 7,250 K.C. In his receiver, an ingenious method converts tuning from series to parallel. The grid end of coil is taken to grid condenser, as usual, and is also attached to a socket in which a plug with flexible lead from variable condenser can be inserted when condenser is paralleled across coil. The earth end of coil goes to the other side of variable condenser and to another socket. Against the lower side of this socket rests a light spring which completes the connection to L.T. When the plug from flexible lead is pushed through the socket, it pushes the spring out of contact with socket, and connection is then through the plug itself, flexible lead, and variable condenser in series with coil.

Fading, Blanketing and Blindspotting.

Group 2*B*.—G.C. G2ZC says his group are concentrating on the question of the Heaviside Layer. G2ZN puts in a case against its existence, which G2ZC answers. G2IM and G6PP side with G2ZC. G6YL, who has been on visits to SM6UA and G2ZC, has no report. It may be some months before the group can issue their full report. The G.C. also sends me some of the letters on the above subject. I hope he will himself get these into shape for a BULLETIN article. It is not possible to compress them into notes.

35 M.C. Work.

We welcome into the CB family a new group on this band under the leadership of G6RB. This will be known as Group 4A, and we hope to have an official account of its progress for next month.

56 M.C. Work.

Group 7*A*.—G.C. G2DT sends the following optimistic note:—G6LK has turned up *de novo*, and this time with a "QST" 5-metre Beam aerial, only rotational instead of fixed. He will be using an ultra-Audion transmitter. G6XN reports local QSO's and says "the adjustment which gives best results is NOT that at which the feeders appear to be balanced." G2DT and G6TW have not heard a sound, but conditions in general are so bad that this is not surprising. So, with Optimism as our battle-cry, we look forward to arranging trans-atlantic tests with the A.R.R.L. in February. Will all interested BRS's please begin to get their new receivers into tip-top condition, and remember that the frequency in use is 58,000 K.C. G6XN has asked the lowest wavelength reached with a small receiving valve. So far as the G.C. can ascertain, the lowest reached is 50 centimetres, on a UX199, by Professor Uda—*vide* Proc: I.R.E. for June, 1930.

Group 7*B*.—G.C. G2OL tells us that OH2OP is on 56,710 K.C. each Sunday for the first ten minutes of each hour from 10.00 G.M.T. till a last transmission at 13.50. The group had a tour in G2BY's car, using the car itself as aerial. The car itself caused practically no QRM, and G2OL was

received at R9 until the shaking of the car caused the receiver to be shut down. Up to three miles signals were received in any direction, but at five miles the car had to be in fairly open country to produce R4. G2BY made a first appearance, working G2OL for three consecutive Sundays, and heterodyning G2XN on one day. Is the band already overcrowded? BRS327, at the suggestion of BRS310, changed a R.F.C. to a 30-ohm. rheostat with beneficial results. He notices that his receiver works better (with lower H.T. and less liability to T.H.) after sunset. SU8RS has already noted that on 28 M.C. he finds the reverse, T.H. developing after sunset. An underground aerial is to be tried out. BRS310 and G6WN are building. G2OL works G6XN every Sunday, and also has heard G6HP's 28 M.C. harmonic, the fourth G station to be heard so. A complete rebuild is contemplated for tests. The transmitter seems, like BRS327's receiver, to behave better after dark, output going up 30 per cent. The receiver also seems better, and the same may apply to the lower frequencies.

QRP Work.

Group 8*A*.—G.C. G5RV has found no opportunity for QRP work this month, but an improvement from the present bad conditions is hoped for, as DX and far European stations seem to be getting through. A rebuild to CC is in progress. G6MB joins up and G5RV vouches for his QRP DX-ability. (Good word that, G5VL!). G6NM, from Sunbury, has worked EU on 2 watts and OH, CT, EAR, D, F, ON, and TS on 2½ watts. G2WP says things are bad, but hears W and VE erratically on 7 M.C. at about 06.30. Best 3-watt QSO was OK3SK, R6. A CO.PA set, à la G6QA, is in construction. 2 M.C. is also found to be affected by adverse conditions and no DX signals are heard. Reports of Sunday QRP signals on 2 M.C. from South of England would be welcomed. G6LF has been getting good European stuff—2½ watts gave R9 from Red Sea. He finds that high L/C tank gives T5 reports and high C/L T8 or 9. BRS317 does not report.

Group 8*B*.—G.C. G2VV laments the loss of G5CM. With the advent of a hand generator he joins the QRO gang after very good work with 8B. From his report, I gather that overwhelming QRM is the chief reason for the shift to QRO. G5JF sends in a very good report. In spite of exam. QRL, he works SU, W1, W2, FM, CT2, and OH on 14 M.C. On 7 M.C., SU6SW and fone to EAR, F, ON, and TS. G2OA was heard by G2CX from Finland, louder than many QRO G stations. He is now staying on 14 M.C. for W's and others. G6SO is applying for 3.5 M.C. and 28 M.C. tickets. Conditions on 3.5 M.C. seem better than on other bands. Separate transmitters will be used for each band. BRS310 sends in twelve closely-written pages, including a wonderful log of stations heard on each band. Conditions are said to be mainly poor. ST2C was heard, QSO G5MD. Anyone know QRA of NN7XJ? G2VV finds twelve hours' work per day interferes with radio. Some 7 M.C. work through bad QRM. A new 2 M.C. transmitter in construction has held up work on that band.

Group 8*C*.—G.C. G5PH asks if some members of the group are still alive. If they are still interested in QRP and, if so, will they come alive for keeps and send in some good reports? G5AQ has COPA working and gets out well on CW and fone. Conditions have, however, been bad enough to drive him QRO with 8 watts. G2AV with a new crystal, new holder (G5PH air gap type), and two new LS5's is getting along well. G5PH finds bad conditions on 7 M.C., but has a R7 from YI on 4 watts. He claims 75 per cent. modulation on the CC set. A new job on "talkies" means week-ends only at home, and in addition D.R. for Wales "puts the tin hat on it."

2 M.C. Work.

Group 10*A*.—G.C. G5UM draws large hopes for the March 2 M.C. tests from the present activity on the band. He has visions of something approaching the old R:S.G.B. transatlantic tests, and mentions several QSO s of late with OK. However, all this is for discussion. I give the group's report in full. G6ZH turns in a comprehensive first report on 2 M.C. work. He says that on his return to amateur radio after two months' QRT he is struck by the extraordinary number of stations now on the band, and has had several good contacts, notably with G6FO (CW and fone) and with G2QG when the latter, at Ebbw Vale, was using but 2 watts input. A sked with G6FO has been kept consistently, despite some trouble with the transmitter. On one occasion only weak oscillation could be produced—due, it was subsequently found, to a crack in the glass partition between two cells of a 10v. block of the H.T. supply—but contact was made with G6FO, although no radiation was visible at G6ZH. Harmonics of G6FO have been heard on 3,500 K.C. when the latter was on 1,750 K.C.—which must be an unprecedented record for 2 M.C. harmonics. G5UM has observed overtones of local short wave stations in rather a similar manner, but DX harmonics of the nature heard by G6ZH are a comparative rarity. BRS164 has carried out some consistent operations during the month, and though he reports a falling off in conditions, has logged stations as far apart as G2BM, G2QI, G6GL, and G5WB. A sked has been fixed up with G6FO to take place five minutes after G5UM's on Sunday nights. The comparative results will be interesting, though G6FO is usually the louder station, be it said, as UM's aerial is worse than an A.O.G.! BRS164 hopes to have more results to give when the skeds are well under way. G6FO has substituted a P650 Mazda valve for the LS5 as an oscillator, and gets .2 amp. more radiation for 2 watts less input. A similar type of valve is also very successful as choke control modulator, and with but 1 watt input G6FO has had an R6-7 fone report at 25 miles. He is using a new 66ft. VF Hertz aerial with 29 ft. feeder as an ordinary inverted L antenna for 2 M.C. work, together with a fan counterpoise. The outstanding QSO has been with OK3SK, on October 7. This station is one of the few Continentals on the 2 M.C. band, and gave G6FO R5. Who will now dare to allege that 2 M.C. is no good! Several other G's are known to have worked OK3SK over the week-end of October 5, which, G6FO thinks, was one of the best periods for 2 M.C. work for at least two years. G.C. agrees, since on that date a much-sought-for contact with G6FO was at last effected! G5UM has found all week-ends good, the only drawback being fading and QRN in varying amounts. He comments on the fact that the average signal strength of stations heard in London on 2 M.C. is much less than in the provinces. For instance, when visiting G2II (Colwyn Bay) 5-watt

telephony stations at 40-50 miles were heard on O-V-1 at R7, which is a much higher QRK than obtains in the London area. He thinks that the absorption effect of the Metropolis is much greater than might be thought. Regular work is being recommenced at G5UM, and a gas fire has been installed in the radio room against the cold of winter evenings! Rather a peculiar effect was observed on October 5 when G6FO was worked, as G6ZH could not be raised at all, though coming in at good strength. G5UM wonders if any skip effect is likely after dark on 2 M.C., as G6ZH was worked with ease in daylight a few months ago. Attention is drawn to the fact that members of Group 10A are anxious to receive reports on their transmissions, *i.e.*, G5RX, G6FO, G6ZH, and G5UM, while BRS164 and 2AZQ can QRX for anyone else desiring 2 M.C. reports.

(It is interesting to note the coincidence (?) of exceptional conditions on the 2 M.C. band noted for October 5 with G6HP's contact with SU on 28 M.C. Also, with regard to the overtone reception mentioned above, VK3WL recently wrote me as follows: "I have just read an official organ of W.I.A. (QTC) that a chap has received 300 Australian stations, five W stations, and three KA stations on a receiver which does not tune below 130 metres (verified). All the stations have been definitely proved to have been working on 42-metre band at the time." How's that, G5UM?—G5VL.)

Group 10*B*.—G.C. G2OO sends in a last-minute report concerning his new group. G6MN, G6UJ, G2KO, G6PS, G6DR complete it, and BRS261 acts as extra reporting station for the South. All stations will be on Sundays, 11-13.00, 14-15.00, and 18-19.45. G6DR has already achieved a QRP QSO with OK3SK, using only 7-8 watts and getting QSA5, R6. G6UJ followed with a similar QSO a few days later, again with 8 watts—FB for both stations. G6PS has logged thirty stations in ten days, including two OK's. G6OO has been in touch with G6DR and G6PS.

Review of Foreign Magazines.

"QSO" brings the most unwelcome news of the death of M. Lucien Perlaux, ON4IA. Those of us who attended the Antwerp Congress enjoyed much of the company of 4IA, and the news that he has passed away at the early age of 23 will be received with deep regret by his British friends.

An article by M. Perlaux appears in the September number of the Spanish ham magazine, "Ear." Dealing with the calibration of thermo-ammeters, he points out that, owing to a difference in frequency errors, a comparison of calibration of two such meters made on D.C. may not hold true at high frequencies. When two thermo-ammeters are to be used together—for instance, in the two feeders of a Zepp. aerial—their calibrations should be compared at about the working frequency; this may easily be done by joining the two meters in series in the tank circuit of an oscillator.

* * *

A much larger number of magazines has been received this month, but the amount of novel matter published is exceptionally small.

"REF" has been running a competition to find the best QSL card. The first prize is awarded to F8CJ, but his card is still regarded as falling short of the ideal.

"Funk" describes a new type of condenser microphone developed by Manfred von Ardenne. Although possessing the uniform frequency response curve characteristic of good condenser microphones, the sensitivity is comparable with that of carbon instruments. The cost is said to be much lower than that of other high-class microphones.

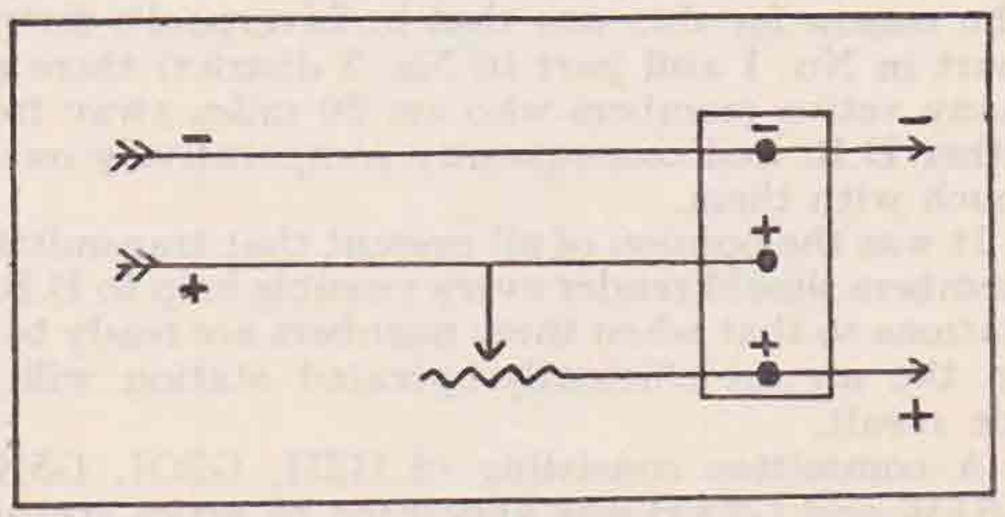
A remarkably interesting article by W9DBW appears in the October "QST," in which oscillograms of various good and bad signals are reproduced and described. The effects on the wave of bad keying systems, frequency modulation, etc., are rendered clearly visible.

A paper of great interest to those working on frequency stabilisation problems is contributed by Mr. Ross Gunn, of the Washington Naval Research Laboratory, to the September "Proceedings of the I.R.E." An oscillator has been developed, the frequency of which can be kept constant under working conditions to within one thousandth of one per cent.; at the same time, it can be tuned to any desired frequency as easily as can any normal oscillator. The principle of operation is that the oscillations generated by a simple oscillator are passed back to the grid through a sharply tuned circuit which acts as a filter. Oscillations of the resonant frequency of the filter build up to a large amplitude, but those of any other frequency are attenuated at each passage through the filter and do not appear in the output. Very careful design is necessary in order to prevent any coupling between input and output other than that provided by the filter.

This Month's S.O.S.—We would welcome a little assistance from someone who can read Finnish.

A Substitute for the Accumulator.

We are indebted to BRS207 for the following method of making use of a Ferranti trickle charger to supply L.T. to the receiver. Referring to the diagram, the input is obtained from the trickle charger at a voltage somewhat above that required for the set, and suitably dropped by means of the variable resistance. A three-terminal electrolytic condenser, of not less than 1,000 mfds. capacity, is required across the output, as shown. On a 4-valve set the hum is very slight and only audible when the set is out of tune.



Apparatus Worth Buying.

Mains Apparatus.

MESSRS. PARTRIDGE & MEE, LTD., 74, New Oxford Street, W.C.1, makers of Parmeko mains apparatus, have introduced a new filament transformer for indirectly heated valves, giving a total output of 4 volts 5 amps. To make it possible to run any number of valves, up to 5, at the correct voltage, the primary is tapped so as to give 4 volts at 1 to 2 amps., 3 to 4 amps., and 5 amps., three tappings in all. Tappings are also provided for 200, 220 and 240-volt mains. By a combination of these tappings it should be possible to get the right output on any mains voltage within the range. Provision is made for earthing the core, and the transformer was absolutely silent in operation on test. It has been tested on the higher frequencies with indirectly-heated valves, and can be strongly recommended. The cost is 30s.

The Heavy Duty Chokes turned out by this firm are intended for hard work. They are wound in two halves, and have really good cores. Type No. 2 has an inductance of 25 henries at 50 milliamps. and a D.C. resistance of 280 ohms, price 25s. Type No. 3 has an inductance of 45 henries at 100 milliamps. and a D.C. resistance of 240 ohms, price £2. Messrs. Partridge & Mee inform us that they are always willing to wind a special transformer or choke at no extra cost ; that is, they charge the equivalent standard price for a special job. Both partners are members of the Society, and members are, therefore, assured of special attention to their requirements.

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The 1930 edition of "The Book of the M-L Rotary Transformer" is a very up-to-date list of the various rotary transformers made by the company. Current can be taken from D.C. supplies of any voltage and transformed to a higher voltage of D.C. or to A.C. at 230 volts, 50 cycles. The address of the company is Victoria Works, Coventry.

* * *

The Mullard Rapid Radio Valve Guide will be found to be a useful list of all the receiving valves made by the company. Complete characteristics are given of 36 different types.

Manchester Conventionette.

The Manchester Conventionette was held on October 18, when 48 were present from Districts 1, 2, 3, and 4, and was thus fully representative of the North.

The proceedings started with a business meeting held in the Milton Hall at 3 o'clock. G2XB introduced Mr. Old (G2VQ) as the representative of the Council, and explained that Council had been unable to find a member from London. G2VQ took the chair and gave 73's and greeting from Council. He then read a letter of greeting from the Iraq Amateurs by Y16KR, who is an Oldham man himself, and hopes to be in Manchester in time for next year's Conventionette.

G2XB in his report explained the abolition of the District Notes and how they are to be replaced. He then read a message which he proposed should be sent to the YI Gang via Radio, in reply to their greetings. G5KL, in seconding the motion, said that he had had the pleasure of working YI6KR many times. Mr. Old was asked to QSP the message.

After some discussion it was arranged that Liverpool and District should be made a sub-area and Mr. Davies (G2OA) was appointed sub-manager. The reason for this was that in Liverpool's district (part in No. 1 and part in No. 3 district) there are many active members who are 50 miles away from either D.R. and consequently comparatively out of touch with them.

It was the opinion of all present that transmitting members should render every possible help to B.R.S. stations so that when these members are ready to go on the air an efficiently-operated station will be the result.

A committee consisting of G2II, G2OI, G5KL, G6TW and G2XB was appointed to make arrangements for visits to places of interest and for summer field days.

After an explanation that a Stand at the Manchester Exhibition would need a great deal of attention to pay for itself, it was decided that such a stand was not a feasible proposition and a resolution to this effect was carried.

A complaint was raised with regard to the QSL Section, and Mr. Old stated that he thought it was due to pressure of Convention business but that he would put the complaint before G2CX.

Mr. Brownson (G5BR), asked for stations to be appointed to report on his 80 metres calibration service, to determine the best time for it. He was referred to Contact Bureau in this matter.

A resolution of appreciation and thanks to Headquarters for their voluntary work in connection with the Society was proposed by G2DH, and seconded by G6BJ. Mr. Old was asked to convey this to H.Q.

A vote of thanks to Mr. Old was proposed by G2XB and seconded by G6BJ.

In reply Mr. Old said that it had been a great pleasure to be with members at a successful conventionette, and that it was his intention to attend as many of these conventionettes as possible.

G5FA proposed and G2VQ seconded a vote of thanks to Messrs. Beattie and Browne (G6BJ and G2XB) for their management of the conventionette.

Aerials and ultra high frequencies were then discussed informally and afterwards the assembly adjourned for tea, which was conveniently served in the same building. After tea even those who had remained silent during the afternoon meeting found their tongues and radio was discussed on every hand.

At 7 o'clock the meeting closed officially and visitors made their way to the Radio Exhibition to finish a very enjoyable day.

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 Unlicensed Transmitter.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—Information is to hand that some person or persons unknown is using my call sign on the 14 M.C. and 7 M.C. bands. I have received such information from two independent sources that G5UM has been received on these bands, so I should like it to be made known that I am licensed *exclusively* for the 160-metre band. Anyone hearing my call sign on the shorter waves would greatly oblige by sending me particulars, and, if possible, of ascertaining the pirate's QRA!

Although I doubt if the offender is a member of the Society, I am writing this in the hope that the publication of this letter will result in a cessation of the nuisance.—Yours faithfully,

J. HUM (G5UM).

London, N.10.

Amateur Goodwill.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—You kindly published a letter of mine, in the October BULLETIN, about the Arctic expeditions.

Since my QSO with CVH, the second Roumanian Arctic Expedition, in the first week of September, I have been informed that this Expedition has had to return to Denmark owing to unforeseen difficulties with the Danish Government. The Expedition was withdrawn from East Greenland during the second week of September.

I should like to endorse every word of the letters from G6XJ and G2CX about "Amateur Radio and International Goodwill," which were published in the BULLETIN. I can only speak from experience of my visit to Stockholm and SM6UA this summer, but the welcome, hospitality and great kindness I received in Sweden only proves what a wonderful thing the "ham spirit" is. I should like to take this opportunity of expressing my sincere thanks to all the Swedish "hams" whom I had the pleasure of meeting in their own country.—Yours truly,

B. DUNN (G6YL).

The Lower Frequency Bands.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—A few years ago I requested a lot of my amateur friends to use the 3.5 M.C. band for European QSO's, and I am indeed glad to see that every evening now this frequency is being used in this way.

I have this year often spoken about the 1,750 K.C. band, but I could not get the fellows to believe that it was possible to work outside one's own country, and I was therefore the only station in Europe using this frequency.

On October 5 I was very pleased to work with G6PA on 3.5 M.C., and on arranging a test for 1,750 K.C. we immediately QSO'd with G6PA here at R7/8, while I was a good strength in England. At the completion of this QSO I also worked in quick succession G2QI, G2OI, G6ZR and G6DR, and since then have also worked several other English stations. I have now had to close down until about December 12, but I then hope to be able to work regularly my English friends on 1.7 M.C., for I think this is a splendid frequency on which to operate, and considering that my input during the above contacts was only 3 watts, I think we have shown it is possible to QSO good DX even on lower power.

Sincerely yours,

H. H. PLISCH (OK3SK).

General Society Regulations — (*Continued from page* 132).

24. FOREIGN REPRESENTATIVES.

Council may from time to time appoint foreign members (who are also members of their I.A.R.U. National Society) of the Society to act as official correspondents for the country in which they are residing. Such persons shall provide monthly reports covering the activities of the amateurs in their country, and shall act as a liaison between their I.A.R.U. National Society and the R.S.G.B. Council on all matters of general policy.

25. PUBLICATION OF PROCEEDINGS.

Council shall instruct the Manager of the Editorial Section, through the Hon. Secretary, as to what Council matters shall be reported in the Society's Journal, or elsewhere. No matters other than these shall be reported.

26. TRAVELLING EXPENSES.

In the event of it being found desirable that a Provincial, Council or District Representative member should attend a meeting in London, Council shall arrange to pay his third-class return railway fare, on the understanding that the shortest and most direct route has been travelled. A signed declaration and receipt shall be handed to the Hon. Treasurer.

HIC et UBIQUE.

Calls Heard.

By ST6HL, Khartoum, Sudan, September 1 to 9, 14 M.C. :—ct1aa, d4abg, d4axg, d41rg, d4mfm, d4sux, ei7c, eu2hs, f8amf, f8cs, f8dt, f8fo, f8gob, f8jf, f8pz, f8rhf, f8rvl, f8tex, f8whg, fm8cfr, fm8ih, fm8jr, fm8mst, g2bz, g2ci, g2cj, g2gm, g2dz, g2kl, g5bj, g5qf, g5vb, g5vm, g6ut, g6wt, g6wy, haf2d, haf4d, haf8b, haf8c, la1g, oh3nq, ok2rm, ok2uo, ok3sk, on4bz, on4jc, oz7ag, oz7y, pa0aq, pa0da, pa0tw, pa0xf, pa0za, pa0zm, py2bb, su8rs, su8wy, uo1pu, vp2sra, vp3sr, vp9sr, vq4cre, vq4msb, vq3msn, vs7ap, w1mo, ym4zo, zs5u.

* * * *

By ST6HL, Portable at Dongola, Sudan, September 16 to 30 :—d4llj, d4wao, d4zxt, f8cs, f8da, f8ef, f8hr, f8prx, fwhg, f8zbi, f8zor, fm8hrx, fm8mst, g2oz, g5pj, g6bd, g6nf, g6wt, haf2d, haf4d, on4jb, on4jc, on4gu, on4jj, on4us, oh5ng, oh7nf, ok2si, pa0dw, pa0tw, vp9sr, vq4msb, y11cd, y16kr.

By VO8MC.—g2by, g2kb, g2kf, g2lz, g2ma, g2vq, g5bj, g5ml, g5vm, g6bd, g6hp, g6nf, g6oh, g6qb, g6ut, g6vp, g6wy.

* * * *

By G6RH on 14 M.C. between September 21 and October 10.—cm2xd, cn8mop, fm8asm, fm8bg, fm8cr, fm8eor, su8rs, vu2zx, w1axx, w1fh, w1lk, w1ph, w2hj, w2rs, w2wl, w4akt, w8bkp, w8cfp, w8dld, w9bqe, w9bqh, x1xx, zs4m, zt1t. On 7 M.C.—fm8bg, rx1aa, vk2hm, vk2zk, w1cg, w2wz, w4ft, xx3bmp, yi6kr, zl2gd.

* * * *

By ZT1Q, Dr. J. LUNT, Kenilworth, near Capetown, 14 M.C., usually 14.30—18.30 G.M.T., September 1 to 22.—ce5aa, ct1aa, ct1ae, d4abg, d4mfm, f8aly, f8cs, f8dt, f8ho, f8bk, f8ol, f8pz, f8rvl, f8zb, g2cj, g2vq, g5ml, g5qv, g6gd, g6vp, g6wt, g6xq, gi5nj, haf8c, lu2ca, lu8dy, oh3na, ok2ac, ok2ny, ok2op, ok2si, ok2va, on4aa, on4bz, on4dj, on4gn, on4jc, oz7y, pa0dw, pa0qf, pa0tw, pa0xf, pk4bo, py2aq, py2ba, py2bk, py3ad, sp3ar, st2c, st6hl, su8rs, un7xo, vp3sr, vp3srb, vp9sr, vp4sra, vq2ba, vq2bh, vq2ty, vq3msn, vq4cre, vq4msb, vq5nta, vs2af, vs6ah, vs7ap, vu2bg, vu2ev, vu2ob, x9a, xu2uu. [VE, VK and ZL not heard.]

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First Contacts.

IRAQ AND AUSTRALIA.—AQ1LM and VK7CH, at 23.32 G.M.T., on November 26, 1927.

IRAQ AND MADAGASCAR.—AQ1LM and FB8HL, at 16.42 G.M.T., on February 11, 1928.

IRAQ AND PORTO RICO.—AQ1LM and K4JG, at 00.00 G.M.T., on February 28, 1928.

GREAT BRITAIN AND FEDERATED MALAY STATES.—G6WT and VS2AF on 14 M.C., at 17.03 G.M.T., on August 19, 1930.

GREAT BRITAIN AND SUDAN.—G5BD and ST2CS at 20.00 G.M.T., on July 9, 1930, 14 M.C.

* * *

The Physical and Optical Societies.

The Twenty-first Annual Exhibition of Electrical, Optical and other Physical Apparatus is to be held by the Physical Society and the Optical Society on January 6, 7, and 8, 1931, at the Imperial College of Science and Technology, South Kensington.

There will be a Trade Section, a Research and Experimental Section, and a Section for Apprentices and Learners.

The Exhibition Committtee invites offers, from research laboratories and institutions and from individual research workers, of exhibits suitable for inclusion in any of the above three groups. Accommodation for these exhibits will be provided in rooms separate from those devoted to the trade exhibits; and a part of the catalogue will be devoted to their description. No charge will be made for space or catalogue entries in the Research and Experimental Section. Offers of exhibits, giving particulars of space and other facilities required, should be communicated immediately, and in any case not later than October 30 to the Secretary, Exhibition Committee, 1, Lowther Gardens, Exhibition Road, London, S.W.7.

THE SECTION FOR APPRENTICES AND LEARNERS has for its object the encouragement of Craftsmanship and Draughtsmanship in the Scientific Instrument trade. Apprentices and learners may exhibit, in competition, specimens of their work, providing they are in the regular employ of a firm which is exhibiting at the next Annual Exhibition, or has exhibited once during the past three years. Printed particulars of this Section will be sent on application to the Secretary.

* * *

W.B.E. certificates have been issued to: A. G. Brown (VK3CX), Australia; E. W. Mayer (K4KD), Porto Rico.

The Re-Opening of the Lower Frequencies—(*Continued from page* 117).

on the high frequency bands, we do not feel inclined to discard the second theory at all.

In view of these facts, is it not possible that a cycle of changing conditions for low and medium wave propagation follows a periodic cycle of solar activity? A study of the changing conditions from 1928 to 1934 may help to prove or disprove this, and the amateurs of the world are in a very excellent position of being able to assist. When we consider the present apparent return to the lower frequency bands, we are hopeful that, in the course of the next few years, the amateurs will give all the bands allotted to them sufficient attention as will assist in bringing to the front as much useful data as possible, and at the same time justify ourselves as a part-owner of the high frequencies.

QSL Section.

From reports received from abroad, it appears that there is a general opinion that G stations are not so particular nowadays about sending QSL cards as they were some years back, and it was thought that a little discussion here might help to make matters clearer.

There is obviously a difference of opinion amongst amateurs concerning the value of a QSL card, and although there is much to be said on both sides, it seems to be apparent that it is a matter of common courtesy for amateurs to reply to every card received. If a station shows, by the act of sending you a card, that he does place a value on QSL's, then the least one can do is to return the compliment and show that the days when a QSL had an attraction for you are not forgotten—we were all new stations once.

J. D. C.

QRA Section.

I am indebted to J. E. Graham (ex OA3OM) for an up-to-date list of Australian amateurs. This has been checked up with the list published in the "Radio Amateur Call Book," and all corrections and alterations will appear in the December issue of that publication.

Will members please note that my telephone number is being changed, and after this month will be Gladstone 1282.

New Q.R.A.'s.

G2OW.—E. L. OWEN, 47, Arbour Lane, Chelmsford, Essex.

G2QH.—C. HEWINS, "Garwick," Cross Coates Road, Grimsby, Lincs.

G2SJ.—K. Franklin, 16, Cannon Street, Dover, Kent.
G2VS.—J. D. R. Hammett, "Redwood," Queen's Road, Rayleigh, Essex.
G2WQ.—A. Brown, 7, Stanley Road, Broughton Park, Manchester.
G5DB.—C. H. P. Nutter, 245, Selhurst Road, London, S.E.25.
G5GX.—P. D. Tyres, 17, Woodland Drive, Watford, Herts.
G5TG.—W. J. Tarring, "Castlerigg," Broadmead Road, Woodford Green, Essex.
G5ZC.—F. J. Clark, 28, Byegrove Road, London, S.W.19.
G6JO.—I. Rodgers, "Haverigg," Tregenver Road, Falmouth, Cornwall.
G6LR.—L. A. C. Lawler, 71, Colborne Way, Cheam, Surrey.
G6MR.—International Marine Radio Co., Ltd., Endersleigh Gardens, London, N.W.4.
G6PG.—C. H. Targett, "Car Lynn," Shepherds Lane, Dartford, Kent.
G6WH.—G. H. Wheatley, 84, Stanhope Grove, Beckenham, Kent.
G6XB.—G. E. Jones, "Brynawel," Redruth, Cornwall.
2ARB.—R. B. Jeffries, "Lynn Dene," Mount Hill, Kingswood, Bristol.
BRS25.—T. A. Iserbyt, "Lynmouth," Spring Park Avenue, Shirley, Croydon.

The following are cancelled :—G2GR, G2GS, G5WM.

QRA's wanted :—XG1JP, SFEN.

Please send all new QRA's to G6PP, 54, Purley Avenue, London, N.W.2, or by telephone to the number mentioned above.

M. W. P.

NEW MEMBERS.

P. J. A. Hankey (BRS382), Stanton Manor, Chippenham, Wilts.
T. M. Wood (BRS381), 7, Frederick Road, Edgbaston, Birmingham.
J. A. Stapley, Science Buildings, Tonbridge School.
J. D. Fraser (VK2JF), North Street, Quirindi, N.S.W., Australia.
G. M. Whiteley (G5IA), The Hollins, Sowerby Bridge, Yorks.
J. A. Dougharty, 5, Becmead Avenue, Streatham, S.W.16.
F. C. Peckham, 9, Upper Thames Street, London, E.C. (private door).
F. E. Grainger, Eagle Lane, Thorpe-on-the-Hill, Lincoln.
J. E. Ruffer, B. House, Marlborough College, Wilts.
A. Boffey (G2UB), Newtown, Westbury, Wilts.
C. A. V. Roper (G2RK), 7, Yale Court, Honeybourne Road, N.W.6.
H. G. Collin (G2DQ), London Road, Wickford, Essex.
R. H. Eagan, "Ferndale," Robinson Road, Mapperley, Notts.
J. R. Wilson (2BZT), 23, Salters Road, Gosforth, Newcastle-on-Tyne.
E. G. S. Frewer, 26, Malden Hill Gardens, New Malden.
O. B. Thompson, 72, Merton Road, Wimbledon, S.W.19.
D. Briggs (G2QI), 24, Gaer Park Crescent, Newport, Mon.
H. Higson (G6IS), 99, Ashton Terrace, Stopes Brow, Lower Darwen, Blackburn.
W. T. Cooper, 16 and 18, Station Road, Walthamstow, E.17.
J. Dow (VQ5NTA), Katera, P.O. Masaka, Uganda.
C. F. Fox (VQ4/LMA), P.O. 635, Nairobi, Kenya.
J. J. G. Taylor (G6XD), "Willowby," Radford Road, Plymstock, Devon.
B. M. Scudamore (G6BS), 39, Owlstone Road, Newham, Cambridge.
T. P. Auzeas (G2TJ), 13, Salters Road, Gosforth, Newcastle-on-Tyne.
M. A. Artique (FM8IH), 9, place du Gouvernement, Alger.
E. L. P. Pinon (FM8CR), Rue de la Paix, La Redoute, Alger.
N. I. Bower (G2HZ), Court End, Adderbury, near Banbury.
J. R. Baker (2AAY), 133, Trafalgar Street, Gillingham, Kent.
N. Jervis, P.O. Box 794, Port Elizabeth, S. Africa (ZS2F).
A. G. Brown (VK3CX), 8, Mangarra Road, Canterbury, E.7, Victoria, Australia.
S. A. Pegrume (VQ4CRE), c/o Barclays Bank, Nairobi, Kenya, B.E.A.
T. R. Clarkson (ZL1FQ), 10, Madiera Lane, Auckland, N.Z.
A. T. Boshier (ZT6J), 142, Ferreira Street, Kenilworth, Johannesburg.
A. E. Emmelhainz (VK-X2HM), Chief Engineer, Union Theatres, Ltd., 215a, Pitt Street, Sydney, N.S.W.
H. A. Marshall (VK2HM), 94, Francis Street, Bondi, N.S.W., Australia.
W. E. C. Bischoff (VK2LZ), 180, Chandos Street, Crows Nest, Sydney, N.S.W.
E. W. Mayer (K4KD), Box 103, Ensenada, Porto Rico.
P. Rajanandam, Indian Posts and Telegraphs Dept., Nagore (Tanjore District), Madras Presidency, S. India.
W. J. Coyle (G5OK), 134, London Road, Southend-on-Sea.
B. J. Silver (VU2CT), 40, The Mall, Lahore, India.
E. C. Mitchell (BRS399), 61, Cornwall Road, Paddington, W.11.
T. W. Taplin (BRS398), 138, Westborough Road, Westcliff-on-Sea.
J. H. Stooke (BRS397), 30, Sandown Road, Brislington, Bristol.
R. Livesey (BRS396), Hazelmere, Beechwood Avenue, Weybridge, Surrey.
F. W. Shearman (BRS395), 221-223, Whittington Road, Bowes Park, N.22.
C. H. Chorley (BRS394), 78, Nightingale Lane, S.W.12.
W. I. Davies (BRS393), 40, Letchworth Road, Ebbw Vale, Mon.
E. Williams (BRS392), 14, Wall Street, Ebbw Vale, Mon.
R. W. Kidner (BRS391), 200, Beaumont Road, Bourneville, Birmingham.
G. Barton (BRS390), Fairholm, 41, Glebe Avenue, Enfield.
J. R. Ferguson (BRS389), "Arawa," Granville Road, Limpsfield, Surrey.
H. J. Harding (BRS388), 3, Pond Cottages, Tunstall, near Sittingbourne, Kent.

T. Singleton (BRS387), 306, Nantwich Road, Crewe, Cheshire.
S. L. Russell (BRS386), " Arcadia," College Road, Harrow Weald, Middlesex.
F. Jackson (BRS385), The Lodge, Crook Hill Hall, Conisbrough.
T. Bridgewater (BRS384), 74, Egmont Road, Sutton, Surrey.
J. C. Runge (BRS383), Kippington Court, Sevenoaks.
R. E. Thomson (BRS400), 67, Fort Street, Broughty Ferry, Angus.
S. R. Drayton (BERS15), c/o Posts and Telegraphs Department, Kuala Lumpur, F.M.S.
J. R. Taylor (BERS16), Amazonas Engineering Co., Ltd., Caixa Postal 41, Manaos, N. Brazil.
W. A. Newman (BERS17), London Tin Corporation, P.O. Bariki, N. Ladi, N. Nigeria.
P. R. Cowan (BRS401), 31, Booker Avenue, Mossley Hill, Liverpool.
H. C. Hall (G2RU), 351, Ecclesall Road, Sheffield.
S. F. Sharpe (BERS14), Signals Section, R.A.F., Ambala, Punjab, India.
W. P. Cargill (BRS407), 10, Duffield Road, Pendleton, Manchester.
R. A. Howden (BRS406), 25, Tunnard Street, Boston, Lincs.
D. L. C. Creedy (BRS405), 75, Canterbury Road, Harrow, Middlesex.
T. B. Cocking (BRS404), 509, Finchley Road, Hampstead, N.W.3.
Sir David H. Kyd, 28, Thurloe Square, S.W.7.
F. E. Godfrey, 4, High Street, Hampstead, N.W.3.
L. Cooper (BRS403), 130, Walton Road, East Molesey.
L. Waddington (2BVO), 55, Nelson Road, Highams Park, E.4.
G. H. Smith (BRS402), 539, The Wells Road, Mapperley, Nottingham.
N. Bardon, The Hotel, Kilcullen, Co. Kildare, Ireland.
R. M. Hardy (BRS408), 10, Westcliff Walk, Nelson, Lancs.
R. H. G. Garside (BRS409), 7, Egremont Road, Hensingham, Whitehaven.
A. D. Stenning (G2JA), 25, Woodlands, North Harrow, Middlesex.
E. W. Perrin (BRS410), 38, Walton Road, Hoddesdon, Herts.
E. T. Terver (BRS411), 65, Gore Road, London, E.9.
C. H. Bond (BRS412), 21, Stokesley Street, W.12.
Eric Holt (BRS413), 43, Park Road, Hale, Cheshire.
N. G. Nolan (BRS414), 1, Langley Cottages, Staines Road, Bedfont, Middlesex.
T. Scott (BRS415), 108, Tantallon Road, Glasgow, S.1.
(Marine) F. Burnett (BERS18), H.M.S. *Malabar*, c/o G.P.O., London.
A. M. Ralli (G2II), Dermont, Abbey Road, Colwyn Bay, Denbighshire.
J. V. Gil, Woodsway, Sandown Road, Esher, Surrey.
W. E. Bradshaw, 37, Greenleaf Road, Walthamstow, Essex.
E. R. Mellon (BRS417), 5, Templemore Avenue, Rathgar, Dublin, S.2.
Willie Roaf (BRS416), 428, Barking Road, East Ham, E.6.
G. M. Thomson (BRS158), 3, Viewforth Square, Leven, Fife.
Lieut. F. S. Benney, Wykham Hall, Lee-on-Solent, Hants.

Council Elections, 1931.

In accordance with the following extract from the Articles of Association, the undermentioned gentlemen have been nominated for Council for 1930.

48. Not later than the 24th day of November in each year the Council shall send to each Corporate Member entitled to vote a list of duly qualified persons whom they nominate for the offices of President, acting Vice-President, Hon. Secretary, Hon. Treasurer, and other elected Members of Council in December next following. This list must include at least four names of persons not serving on the existing Council.

49. After the issue of the Council's list, and not later than the fourth day of December next following, any ten corporate Members (but not more than ten) may nominate any other duly qualified person by delivering their nomination in writing to the Secretary, together with the written consent of such person to accept office if elected, but each such nominator shall be debarred from nominating any other person for the same election.

33. The affairs of the Society shall be managed by a Council consisting of the President, the immediate Past-President, the first Past-President, the acting Vice-President, the Hon. Secretary, the Hon. Treasurer and eight elected Corporate Members.

Should any ten members wish to nominate any other person to serve on the Council, such nomination should reach the Hon. Secretary by December 4, in accordance with Article 49. Following that date a ballot form will be sent to all members.

President.—Mr. H. Bevan Swift (G2TI).

Acting Vice-President.—Mr. Arthur Watts (G6UN).

Hon. Treasurer.—Mr. E. Dawson Ostermeyer (G5AR).

Hon. Secretary.—Mr. John Clarricoats (G6CL).

Council:—Messrs. G. Marcuse (G2NM) (Licence Manager).

R. W. Royle (G.2WJ) (Social Manager).

G. W. Thomas (G5YK) (Publications Manager).

A. E. Watts (G6UN) (Publicity Manager).

(Retiring members eligible for re-election).

Messrs. C. Brookes (G2CB) (Q.R.A. Manager); J. D. Chisholm (G2CX) (Q.S.L. Manager), H. B. Old (G2VQ) (Districts Manager); H. J. Powditch (G5VL) (Contact Bureau Manager).

NOTES & NEWS FROM THE BRITISH ISLES.

Special Note to District Representatives.

In accordance with decisions made at Convention, the District Notes, in the form in which they appeared last year, have been discontinued. A certain space is, however, reserved for reports from the Districts, which reports, it was suggested, should be of a general rather than individual nature. Very brief remarks of the work done in the District, together with announcements of future Conventionettes, Hamfests, etc., may be inserted. The Editor asks the District Representatives who desire to contribute to the notes to write up their reports in as concise a form as possible in order to relieve unnecessary work. As an example of the type of report that is considered to be written on the lines indicated at Convention attention is drawn to the report for No. 7 District.

All notes should be in the hands of the Editor by the 25th of the month preceding that of issue, and in future no late reports will be added to the main report after the latter has been received.

DISTRICT No. 1.

Representative: J. BROWNE (G2XB), Kenilworth, Beaufort Road, Ashton-under-Lyne.

ACCORDING to a decision at the Manchester Conventionette, the Liverpool members are asked to note that a sub-area was made of the Liverpool district, and that G2OA was appointed manager.

We welcome another new member in Liverpool, BRS401.

The only radio matter of note this month is a QSO between G2OI and OK3SK on the 1.7 M.C. band.

There are quite a number of members in District No. 1 who do not participate in the budget. All that is necessary to receive it is a letter to the D.R. by the 25th of the month. Contributions from BRS stations are particularly welcome.

DISTRICT No. 2.

Representative: T. WOODCOCK, G6OO, 8, George Street, Bridlington, Yorks.

It is hoped to run a Conventionette in Leeds on November 1 for District No. 2. The following stations are active in the District: 1.75 M.C., G2UG, G6UJ, G6DR, G5DR, G2KO, G6PS, G6OO; 3.5 M.C.: G6OO; 7 M.C.: G6UJ, G5DR, G2FS, G2UG, G6PS, G6DR, G6OO, G2KO.

DISTRICT No. 4.

Representative: J. LEES (G2IO), 17, Trevose Gardens, Sherwood, Nottingham.

A meeting was held in Nottingham on October 4 to discuss our winter programme. There was a good attendance, and it was decided to hold further meetings on the second Saturday in each month at the Reform Club, Victoria Street, Nottingham, commencing with tea at 5 p.m. prompt. It was also decided to start the Letter Budget, the first issue is now in circulation. Will Lincolnshire members please let me have their views regarding quarterly meetings in Lincoln?

DISTRICT No. 5.

Representative: F. W. MILES, Rydal, Beechwood Avenue, Coventry.

G5VM has worked VK and thus qualified for WBE and WAC. Finds a half-wave antenna less directional than a full wave. G6XJ is carrying out tests with indoor aerial for transmitter on 7 M.C. Preparing for fone on this band and also constructing a 160-170 metre transmitter. XG6XK will shortly be co-operating in 7 M.C. tests with G6XJ. Power, 4-5 watts from A.C. supply. Interested in reports on QRI.

Will members in this district please forward reports in future to G5VM, V. M. Desmond, "Haarlem," 199, Russell Road, Moseley, Birmingham, not later than the 12th of the month.

Apparently the only active stations and all of which are doing good work are G5BJ, G5VM, G6XQ, G6XJ, G2ZW, and G5ML.

DISTRICT No. 7.

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

There seems to be very little of real interest to report this month. Conditions on 7 M.C. seem to be improving considerably, but so far, 14 M.C. remains poor. Some VK and ZL stations have been heard at good strength on 7 M.C. So far as is known here, no results at all have been obtained on 28 M.C. The lower frequency bands, however, show signs of considerable improvement; 3.5 M.C. is quite good for work all over Europe, and on several occasions American stations have been heard there at good strength. This Area can claim the member who made the first contact between Czechoslovakia and England on the 1.7 M.C. Band.

The Budget is finding increasing favour in the Area. This is especially noticeable among the BRS stations.

DISTRICT No. 8.

Representative: R. C. NEALE (G6GZ), Farnborough Road, Farnborough, Hants.

I hope by the time you read these lines, each will have received a letter from me about my introduction of the Letter Budget scheme for No. 8 District.

I shall try my utmost to make this a success. So please help by contributing regularly your monthly letter.

A summary or any items of interest will appear in these lines from time to time.

We have to welcome G2WK—ex GI—who is now in our district. His QRA is: Reading, Berks. (Hope to hear you on the air soon, OM.—G6GZ.) BRS368, Jersey, C.I., sends an interesting report. He says 7 M.C. band is improving and a good many G's R7 on fone.

Not much doing on 3.5 M.C.; 14 and 28 M.C. dud.

DISTRICT No. 12.

Representative: T. A. ST. JOHNSTON (G6UT), 28, Douglas Road, Chingford, E.4.

Will all members of this District note that the next monthly meeting will be held on Tuesday, November 25, at QRA of G5AR, Mr. E. Dawson Ostermeyer, 59, Gordon Road, Woodford, E.18;

also that the December meeting will be held at Chingford, on Tuesday, December 16, and meetings will then revert to the fourth Tuesday of each month.

DISTRICT No. 13.

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

Only six members attended the October meeting, and the next one will be on November 23. Please make a note of the date.

The following members, G2OL, G6CO, G2IY, G6VP, G5VB, G2BY, G6XN, BRS197, BRS273, and BRS338, have reported, and are keeping the 7, 14, 28 and 56 M.C. band alive.

Conditions on all bands seem to be improving, and most stations report working some DX.

Yet another station has gone over to crystal control, and it is hoped soon that most members of the area will have followed the same example.

DISTRICT No. 14.

Representative: H. HARDING (G2HH), Treve Cottage, Ebbw Vale.

The second meeting of the M.T.S. was held at Ebbw Vale on Thursday, October 23, and was a great success.

The following were present: G—2PA, 2QI, 6FO, 2HH, 2AWT, BRS—237, 239, 355, 359, E. Williams and W. I. Davies (BRS Nos. not yet appointed), and two visitors, G. A. Martin and G. E. Waddington. G5FJ wrote regretting inability to attend.

We all met at the station of G2HH, and after a study of the gear, etc., and informal introductions, journeyed to the Central Café, where the meeting proper was held.

G6FO, speaking from the chair, expressed his pleasure in seeing such a good gathering, and welcomed our visitors and new members. Also that now that Monmouthshire was a district on its own, No. 14, we were all to work hard and support the D.R., and see that we justified the Council's decision.

Numerous details were discussed, of which the most important was the decision to run a Letter Budget in the M.T.S. BRS355, F. Wilson, of 85, Risca Road, Newport, is the centre for this section of the M.T.S., and members are asked to send along their letters to the meeting if unable to attend the next; it being decided that letters for the Budget be handed to BRS355 at the next meeting in November.

G2HH, the Secretary, then distributed the R.S.G.B. Booklet on Amateur Radio, which aroused great interest, and was studied well during the refreshments which followed. In addition, the Secretary had T. & R. notepaper and call books for sale, and many present took the opportunity of getting supplies.

After the refreshments, G2PA, of Newport, spoke on "Operating Conditions on the 2 M.C. Band" in a very concise and neat manner. He spoke from actual experience on this band, and raised the following interesting points:

"The weather conditions at the transmitting or receiving stations is no indication what results will be obtained, and one type of weather will produce different results on various occasions. He is rather of the opinion that the weather in another district affects the signals, acting as a screen to signals in one direction, and as a reflector in another.

Further, he mentioned that near-by stations worked regularly at day and night were always of lower readability at night, and yet more distant stations come in well. G2PA's theory was that the former was not a decrease in strength, but suggests that it is an aural illusion due to the presence regularly of static at night on 2 M.C.

In the latter, the DX result is due to Heaviside layer effect.

These two points, amongst others, were then discussed with lively enthusiasm by all, and it was interesting to note the diversity of opinions. It was interesting to note that the BRS men went into the fight like terriers after a rat!

The discussion lasted until 10.20, when we had to QRT to return home, but it was done very reluctantly.

G6FO, the Chairman, in closing the meeting, thanked all for attending, and announced with great pleasure that one of our visitors, Mr. G. A. Martin, had during the evening joined the R.S.G.B.

Anyone interested in the M.T.S. is invited to communicate with the Secretary, G2HH, H. Harding, Treve Cottage, Ebbw Vale, Mon.

That's the M.T.S. report, now a short one for District No. 14. The outstanding event in this district this month was the QSO's by G6FO, 2QI and 2PA, with OK3SK on 2 M.C. band. G2QI even got telephony over. Congratulations to BRS359 and 237, who have graduated to full radiating and A.A. respectively.

SCOTLAND.

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

These notes are the first under the new regulations regarding BULLETIN matter. From them you will note that the personal element with which so many have found fault has been almost entirely eliminated. In a country such as Scotland, where our members are widely scattered, the advisability of this step is questionable, but, at all events, it must be given a trial, as the majority favour a change. The writer has a means in view whereby we in Scotland may get over the difficulty, but more of this anon.

The period September—October has shown towards the latter part of it quite an appreciable improvement in respect to general conditions. Contacts with distant localities have consequently been more frequent, though hardly reliable. The same fading phenomena referred to by Col. Dennis in the October issue of the BULLETIN have been prevalent here. It seems to be becoming particularly hard to apportion the cause to any one circumstance, especially in view of the fact that as Col. Dennis pointed out, the "fades" appear to have no particular periodicity.

There appears to be much reconstruction work going on in Scotland, no doubt due to the poor conditions prevailing for some time past.

A pleasing feature of the period under review has been the influx of new Scottish members to the Society. This interest in short wave work is really encouraging, and I should like to thank those who have "nursed" these new members, mentioning particularly Mr. W. Scott Hay (G2FV), who has been particularly assiduous in this connection.

I repeat for the benefit of all new fellows, what I have often said before, look in on G5YG any time

(*Continued on page* 149.)

Empire B.E.R.U. News.

AUSTRALIA.

By H. R. Carter (VK2HC).

The 28 M.C. tests are at present in progress, but so far, few really definite results are known. Congratulations to VK5CM and ZS5U, who QSO'd on 28 M.C. recently, a very excellent performance indeed; also we hear that VK5RW managed to QSO Siberia with 2½ watts, but no definite information has, as yet, been obtained. A great number of VK3's and 5's are working on this band. VK3CX was heard in VK5 at 2.30 a.m., and the VK5CM-ZS5U QSO took place at 5 p.m., making daylight all the way. VK2RC and VK2HC have both got automatic test sending arrangements for 28 M.C. transmissions. The 14 M.C. band is beginning to liven up again now, and S. American and Asiatic signals are coming through in the afternoons.

Owing to the skip and fading effects on the 7 M.C. band, many of the VK hams have been doing good work on 3.5 M.C. Many good QSO's have been had on both CW and phone, and quite a few W's have been heard. Some very high quality phone has been heard here during the recent Maclurcan Cup Competition. The N.S.W. division of the W.I.A. have appointed VK2RC, VK2DY, VK2JZ, and VK2HC as Official Vigilance Stations, with power to report stations working off frequency or with bad notes, etc. The operating standard in VK is, however, very high, and a large percentage are CC.

VK2ZN has been selected as the VK2 representative at the forthcoming Federal Convention, to be held in Melbourne.

By W. G. Sones, Hon. Publicity Manager, W.I.A.

The most important news this month is the extension of the present privileges of Australian amateurs on the 150-250 metre band until January, 1931. The Post Office has shown its confidence in W.I.A. by arranging that in future all complaints of interference with broadcasting shall be dealt with by the two bodies working together.

The Federal Convention was held on October 20 and the Victoria Division has been holding an exhibition during September. In this connection, we should like to say that we shall always be glad to see at any of our functions any amateurs who happen to be visiting Australia.

The 28 M.C. band is being systematically explored by an ever-increasing number of VK amateurs and VK3CZ has received confirmation from HAFIG that the latter was on 28 M.C. when he was heard.

CEYLON AND SOUTH INDIA.

By VS7GJ, Frocester, Govinna, Ceylon.

September has not proved itself a favourable month for DX work, entirely due to weather conditions—September is nearing the tail-end of the South-West monsoon.

Most amateurs have been working on the 7 M.C. band, and the following stations have been active lately, VS7AI, VS7AL, VS7AP, VS7GJ, VS7MP, and VS7TD.

VS7AP is to be congratulated on receiving, via G2VQ, a full report in connection with the flight of the aeroplane "Blue Bird," he has also passed on a few interesting B.E.R.U. reports. He has kindly offered to send our monthly B.E.R.U. report to H.Q. by radio.

VS7AI is experimenting on the 28 M.C. band with VU2EV (South India), and reports atmospherics nil, and signals nil.

EGYPT.

By SU8RS, Egypt Signals, Polygon, Cairo.

October has seen the return of good conditions on the 28 M.C. band, and both SU8WY and SU8RS have had several QSO's on that wave, although there are not so many stations. All the regular G stations have been heard. SU8WY has now packed up and cleared out his gear in anticipation of his return to "Blighty" some time before next May. His gear is now in the hands of another ham, who will shortly be heard with the call SU1AA. SU6SW is on 7 M.C. when he can find time, but says there is ND in the way of DX. As a rough guide, the general conditions on the three DX bands are given here. (Presumably the best times): 28 M.C., 09.00 to 16.00; 14 M.C., 08.00 to 11.00 and 14.00 to 17.00; 7 M.C., 17.00 too 06.00. Generally speaking, things are better than for the corresponding period last year.

IRAQ.

By YI6HT, 84 (b) Squadron, R.A.F., Shaibah.

Conditions during the past month have been steadily improving, except on 28 M.C., which still remains dead. The 7 M.C. band is best for DX, but 14 M.C. conditions are becoming more stable, although there is still too much QSC for satisfactory QSO's.

YI6KR, YI1CD and YI6HT are active and the first-mentioned is doing great things on 7 M.C.

YI6HT had the job of re-fitting the aerial on Mrs. Victor Bruce's plane GABDS when it was at Shaibah. (Congratulations on your smart piece of work, OM. We are glad to know that Amateur Radio has had another opportunity of proving itself.—Ed.)

KENYA, UGANDA AND TANGANYIKA.

By VQ4MSB, Radio Station, Mombasa.

September passed as a quiet month in this division as several stations were rebuilding. Conditions generally on the 14 M.C. were again poor in comparison with this period last year, but local contacts are being maintained well on 7 M.C.

We were pleased to welcome G2SC amongst us when he passed through Nairobi en route for Kampala, where he is to settle down. It is possible

that we shall hear him on the air before long with a dry battery QRP outfit and a VQ5 call.

VQ4CRE, VQ4KTA, VQ4CRF, VQ4LMA and VQ3MSN are all active and report, although, unfortunately, there is not space to tell of their doings in full. VQ4MSB has been on most evenings, but finds conditions erratic.

NEWFOUNDLAND.

By VO8MC (received by G5ML).

Conditions have been very good at times, but fading is usually present. Only a few stations are active at present, but we expect to have a good winter as interest is on the increase. We are getting the ideas of amateurs with regard to Empire Radio Week.

SOUTH AFRICA.

By ZT6X (received by G2VQ and G6WT).

Conditions during the beginning of October have been fairly normal for DX working at this time of the year. English amateurs have not been so prominent as they were a short while ago. G stations are requested to QRX for South African hams on 28 M.C. on Sundays, as a number of our men will be on the higher frequencies in the near future. The following hams have joined B.E.R.U.: ZT6J, ZS2F, ZS6Y. The latter is anxious to QSO stations north of the Tweed. All continents excepting VK and ZL are coming in well. The rainy season is now on, with resultant static on the high veldt. Several new hams doing good DX.

SOUTHERN RHODESIA.

By VP3SRB.

These are the last notes that VP3SRB will write, as the station is closing down and the operator returning to England, where it is hoped to " pound brass " at G6LI.

VP9SR, an amateur well known to G stations, will be taking over the job of B.E.R.U. representative, and with the help of VP3SR, VP2SRA, VP6SR and the other live wires, will keep Southern Rhodesia well on the map.

During September the following stations have been active: VP3SR, VP4SRB, VP2SRA, VP3SRB, VP9SR. VP5SRA hopes to be on again shortly, but nothing has been heard of VP6SRA lately.

We are plagued here with some very poisonous A.C. notes from a certain division of South Africa which cause very persistent QRM. VP3SR's " Black List " has done a lot towards decreasing this trouble, but there are still one or two hams who are making a nuisance of themselves in this respect.

Cheerio, all the VP gang. Very sorry to leave you and all the pleasant work we have done together, but CUL from G6LI!

SUDAN.

By ST6HL, Khartoum, Sudan.

No information has been received from ST2C up to date, concerning his activities, and very little done at ST6HL. ST3WT, a portable at Soderi, has been on the air once or twice.

During the latter part of the month ST6HL did some portable work on 14 M.C., with fair success, at Dongola. On 14 M.C. conditions are fair during the day and atmospherics few, but after sunset they rapidly rise to R8 or R9.

Several fruitless hours have been spent on 28 M.C. during week-ends.

At Dongola, considerable trouble was experienced with instability in the transmitter and investigation showed that flies, attracted by the light, had " parked " between the plates of the anode condenser!

Notes and News—(*Continued from page* 146).

and you will be most welcome. Any information or assistance I can give you is yours for the asking, and I think I may safely say that those who have approached me in this respect from time to time have had no cause to regret it.

You may be interested to learn that G5YG, in company with G6XB, of Cornwall, has been appointed Official British Empire Link Station for the West Indies and Bermuda, and British Guiana.

" A " District Officer (G2MA) has been experimenting with the voltage-doubling device described by G2OW in a recent issue of the BULLETIN, and comments on the fact that the regulation appears to be very poor.

WALES.

Representative: B. F. PHILLIPS (G5PH), 21, Byng Street, Landore, Swansea.

G2AV is on C.C. with input of 4 watts, and has been testing some new valves. G5PH has been tseting on 14 M.C., but poor DX; on 7 M.C. had a good QSO with YI when conds. were bad.

STRAY.

Mr. Clark, G6OT, regrets that he omitted the inductance and capacity values from both diagrams in his article in last issue. He suggests the following:—

L1	..	..	0.5 henry.
C	..	..	0.5 mfds.

For L1, a slab coil consisting of 3,200 turns of S.W.G. 38 D.S.C. wire of 2" mean diameter and 0.5" × 0.5" cross-section should suit.

The inductance of L2 is not very critical and about 2,000 turns of similar form should be O.K.

European Notes.

We are very pleased to receive this month the first report from Switzerland. The " Union Schweiz Kurzwellen-Amateure," the Swiss Amateur Radio Society, was founded in August, 1929, and since that date the amateur movement on short wavelengths has progressed rapidly, thanks to the friendly relations existing between the amateurs and the authorities. Swiss amateurs always work under very bad conditions for both transmission and reception, due to the presence of mountains, power wires, and electric railways and their activities are mostly confined to the 3·5 M.C. band. Only QSO's with other Swiss stations are usually effected on the frequency.

It is particularly interesting to note that the Swiss authorities are collaborating with the amateurs in the study of radio on the 3·5 M.C. band. Swiss amateur are naturally very proud of this expression of confidence.

Further, we hear that at the request of the U.S.K.A. the cost of transmitting licences has been considerably reduced in Switzerland. The practical and theoretical examination, which has always been fairly difficult, remains the same because Swiss amateurs wish to reserve transmission for amateurs who are thoroughly capable.

We hear from Czechoslovakia that the issuing of licences is fast increasing and at the present time there are some 12 stations in that country licensed. Most amateurs have been rebuilding and the opinion there is that the past summer was the worst for five years.

The 3·5 M.C. band is proving very interesting and there are many amateurs experimenting on this frequency. OK1AB transmits on this frequency every Friday at 2200 G.M.T. Reports will be welcomed.

No reports are to hand as to 28 M.C. but it is hoped that conditions on this frequency will improve in the near future.

The N.R.R.L. reports that their new address is Post Box 2253, Oslo. All correspondence for the N.R.R,L. as well as for members should in future be sent to this address. Please direct QSL cards to "NRRL-QSL." This corrects the information given in the September, 1930, *QST*.

Reports show that conditions in Norway are fast improving and there is much activitiy amongst Norwegian amateurs.

A temporary permit has been granted to Norwegian amateurs to work on 3750 K.C., chiefly in order to arrange some inland tests. These will take place from October 29 to November 2. The permit extends only to the end of November and all amateurs would welcome reports.

From France we learn that little has been done lately owing to holidays, etc.; a few DX QSO's being reported. Everyone is agreed that conditions lately have been terribly bad. F8RX reports a QSO with X0RC on 7 M.C. The QRA of X0RC was given as the Second Roumanian Arctic Expedition at Scoresby Sound, East Greenland.

The operator of this station is W6BSB. (We understand that the call sign of this station is now CVH and not XORC.)

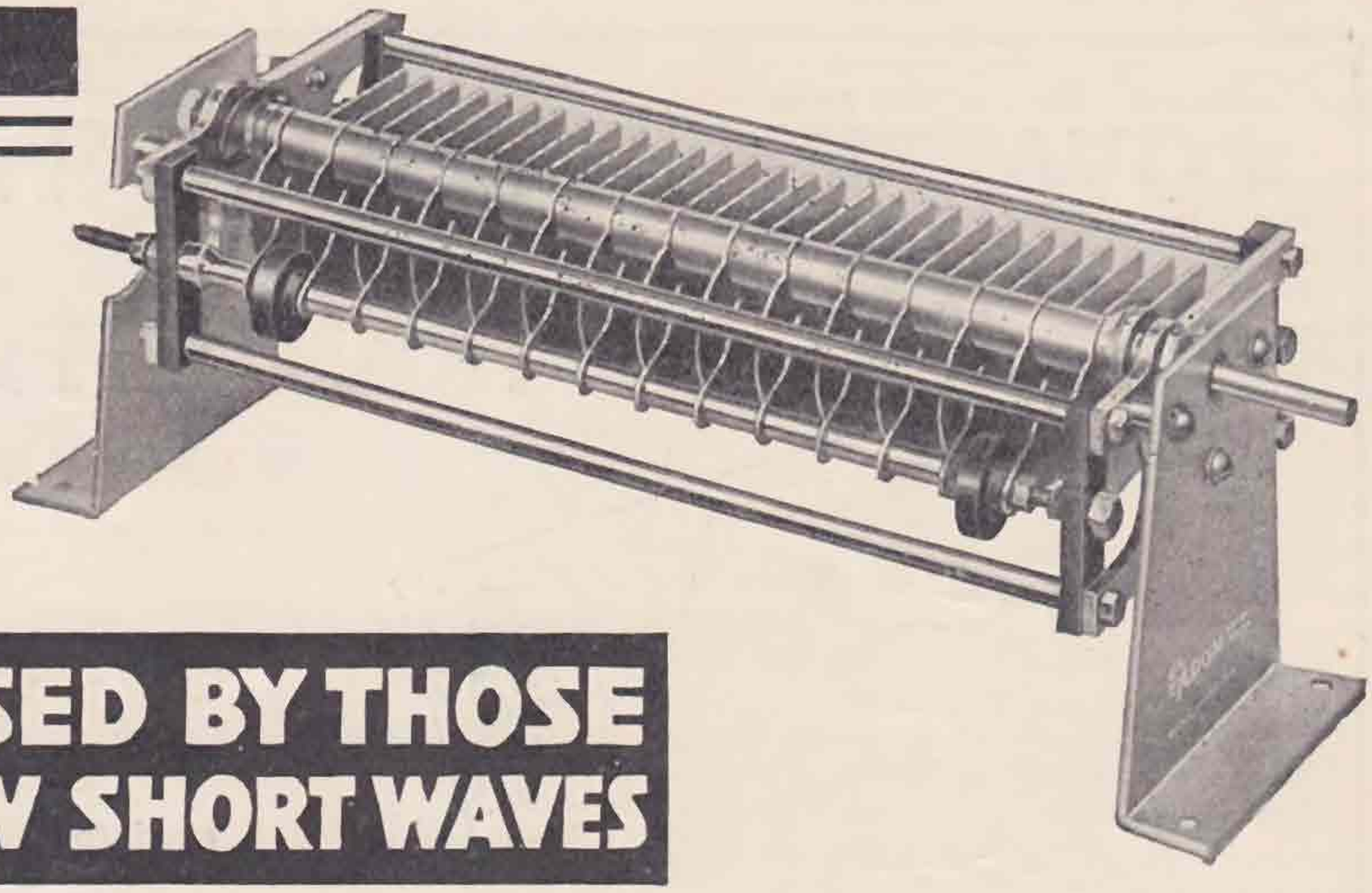
F8EO reports a QSO with SFEN, s.s. *Indianic*, who was in the Atlantic about 1200 miles North of Capetown.

XX3BMD has been heard in France. This is a boat bound for China and on October 1 she was passing the Azores. With the coming of the winter and, we hope, better conditions, many French stations will be on the air. Amateurs are getting more and more numerous in that country owing to the regulations not being so strict as in past times.

Notice to Contributors.

The Editor is pleased to have manuscripts submitted o him for publication, but would remind contributors that, owing to lack of space, a delay often elapses between the receipt of the MS. and the date of its appearance in these pages. All matter intended for publication should be written on one side of the paper only and preferably typewritten (double spaced). Diagrams should always be shown on separate *sheets. Rough sketches can be re-drawn by our draughtsmen. Photographs, if any, should not be smaller than ¼-plate as otherwise the reproduction will be poor.*

After publication, authors may, if they so desire, purchase from the Society any blocks used in their articles at the following prices:—Half-tone, 1s. per block; Line, 6d. per block (post free). Application should be made after the appearance of the article in question.



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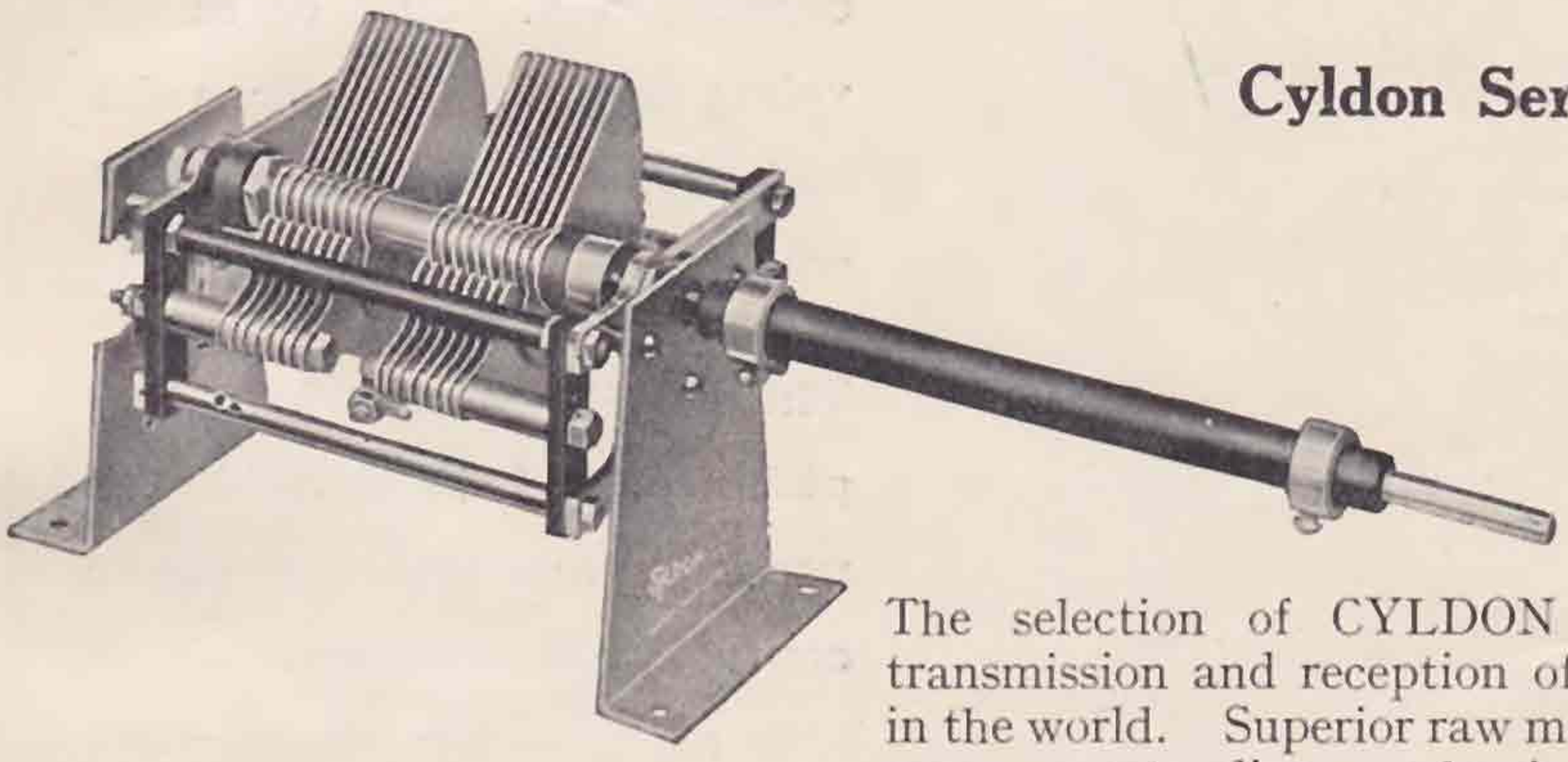

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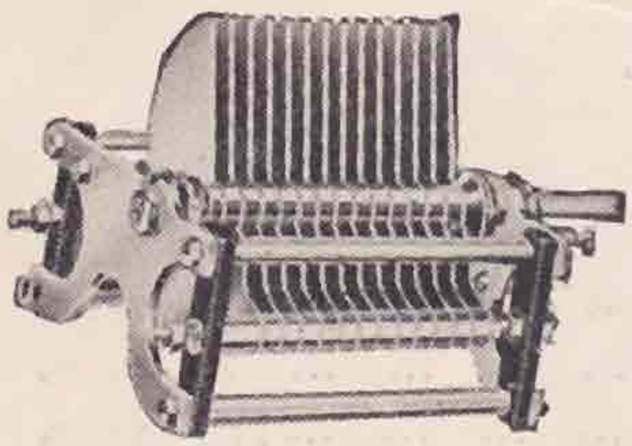

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