THE T. & R.

BULLETIN

THE INC. RADIO SOCIETY OF GREAT BRITAIN

AND THE BRITISH EMPIRE RADIO UNION

Vol. 7 No. 6 DECEMBER, 1931 (Copyright) Price 1/6

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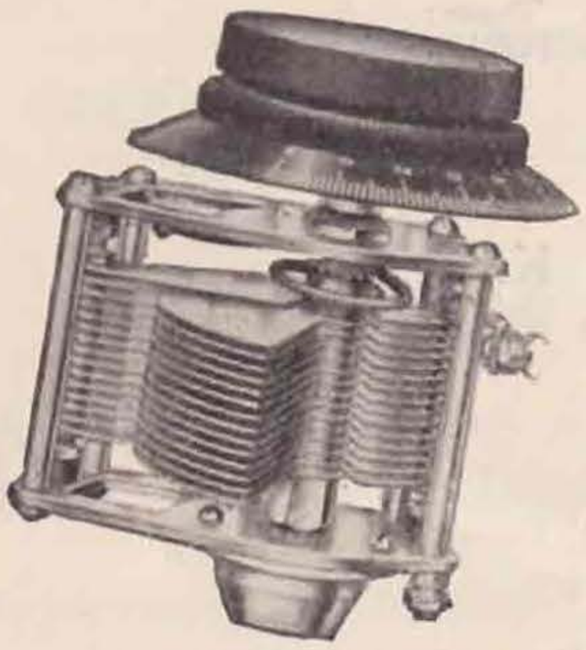

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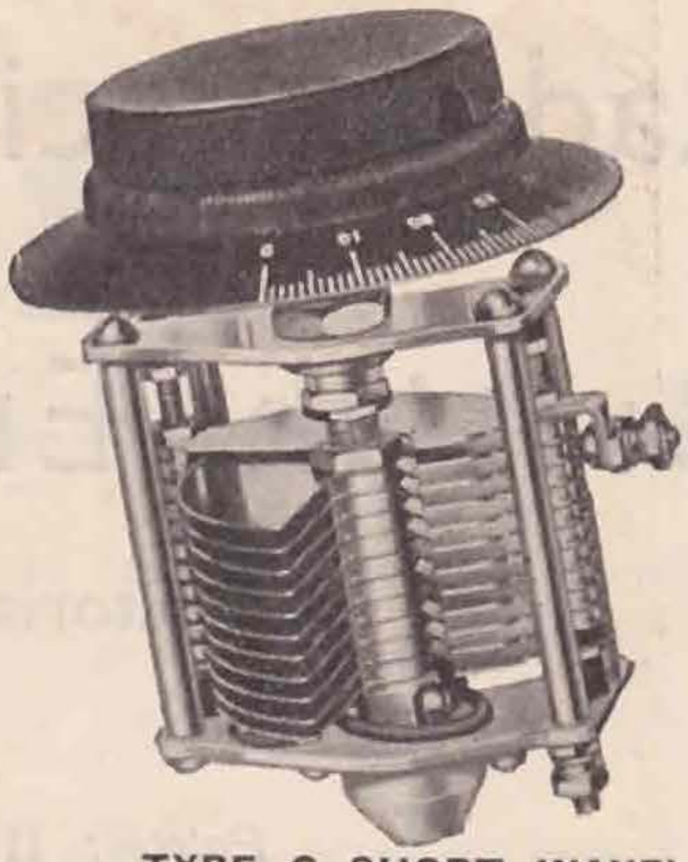

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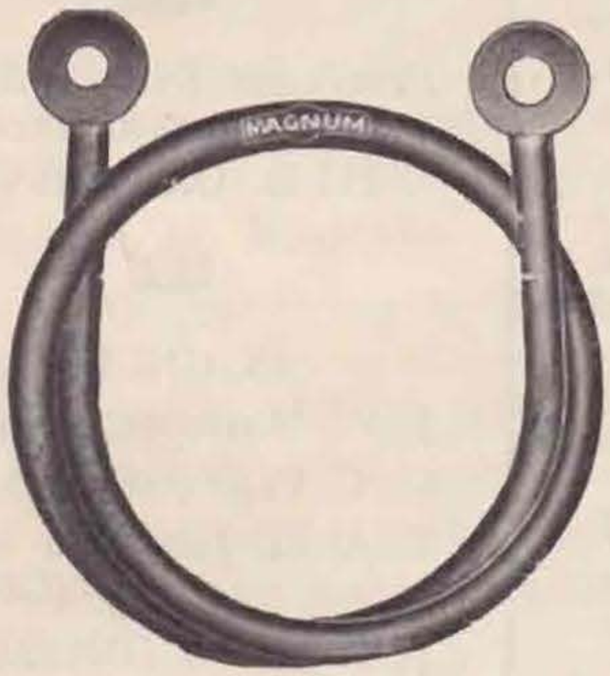

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R.S.G.B. CALENDAR

Unless otherwise announced all meetings are held at the Institution of Electrical Engineers, Savoy Place, W.C.2, commencing at 6.15 p.m. Tea is served at 5.30 p.m.

December 22.—Annual General Meeting. To be followed by a lecture by Mr. D. N. Corfield, D.C.L.(Hons), G5CD, "The Measurement of Speech and Music Qualities."

January 22.—Lecture by The Cosmos Lamp Works, Ltd., on "The Development of the Pentode."

Keep the dates *February* 19, *March* 30, *April* 22.

March 20.—Birmingham Conventionette. (All others as per October BULLETIN "Convention Report.")

Details of forthcoming Local Conventionettes will be found under the District Notes Section as they become due.

The T. & R. Bulletin.

(*Published on the 14th of the month.*)

Hon. Editor: G. W. Thomas (G5YK).

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T&R Bulletin

The only Wireless Journal Published by Amateur Radio Experimenters in Great Britain

DECEMBER, 1931. Vol. 7. No. 6

AMATEUR RADIO AND THE AUTHORITIES.

MANY people, our American friends in particular, are prone to adopt a sympathetic mien towards the British amateur regarding the restrictions under which he works and the alleged obstructionist policy of the British Post Office. We would like to take this opportunity of assuring them that we are by no means so badly treated as they seem to think.

The official attitude in this country compares very favourably with the conditions prevailing in most other parts of the world, where in many cases the amateur is just tolerated or definitely discouraged. We enjoy the use of the 1,750 K.C. band which is denied to most other amateurs and we have no restrictions regarding the use of telephony. The frequency stabilisation insisted on in 1928 was thought by some to be a harsh measure, yet time has shown that this regulation has proved to be a benefit, the quality of the average G signal being second to none.

The British representatives, in company with the Americans, held the fort in favour of the amateur in a distinctly unfriendly atmosphere at the Washington Convention and we are sure, now that all possible doubt of the amateur's ability to observe the conditions of his licence and to put out a good signal has been removed, we shall have a good friend in the Official Delegate at Madrid.

It is gratifying to see that we are gradually being recognised as a competent and highly organised group in the radio world and slowly, but we hope surely, the official side is coming to see that in the amateur they have a great fund of technical knowledge and skill with which to co-operate. The recent request from the Air Ministry in regard to the long-distance flight is a case in point, and this is not the first time that this enlightened Government Department has sought the help of amateurs. We confidently recommend its action to others.

Let us take great care to guard our amateur status and discourage the few black sheep who stain our good name. The great body of British amateurs are sound experimenters, and they should do all that lies in their power to put a stop to the commercial element in amateur radio.

The Madrid Conference will probably be in its concluding stages in twelve months' time. We are not afraid of the result. There will be fights, the commercial services will ask for more territory, some countries will press for sacrifices from amateurs, but the result for us will not be as black as it has been painted. We hope to discuss this subject in more detail in a future issue.

It behoves every enthusiast to join the R.S.G.B.-B.E.R.U. and to help increase its strength as an Empire body, for it is only as a fully representative organisation that we are likely to gain the respect of any Government Department. Our membership is growing apace, but there is still plenty of room. We, therefore, have no hesitation in once more urging members to do their utmost to swell the ranks of this Empire Society. Think Amateur Radio, Talk Amateur Radio, and Join Up.

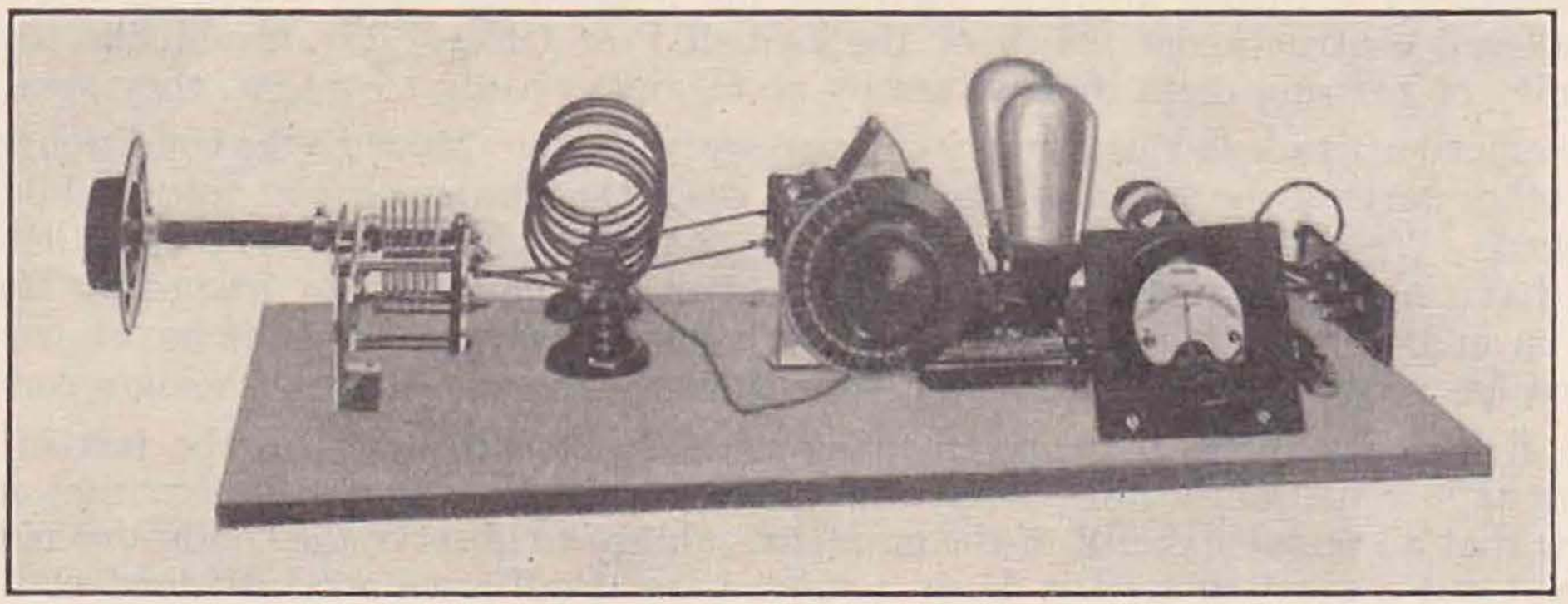
A MEDIUM-POWER TRANSMITTER FOR THE 28 M.C. TESTS.

WITH the approach of the 28 M.C. tests in January, most people turn their thoughts to a new and better transmitter, and it is the purpose of this article to describe a transmitter that is efficient on 28 M.C. and will also work on all the other amateur frequencies with equal success.

The circuit chosen is familiar to all, as the tuned plate—resonant grid, adapted to push-pull.

The great advantage of push-pull is its usefulness where H.T. voltage is of necessity low. A considerably greater output can be obtained with this circuit when using H.T. voltages of the order of 400-500 volts, than with a similar single valve circuit.

Another advantage of this type of circuit is the few components required and simplicity of design.



Components.

A glance at the photograph will show the simple lay-out and spacing of the components.

On the right is the terminal strip carrying four *Clix* all-in terminals for H.T. and L.T. connections. The grid coil is wound on a paxolin former and is visible just above the meter; this coil is fitted with two valve pins, which fit into sockets held in two *Eddystone* stand-off insulators. The 40,000 ohm grid leak, a *Burne-Jones* Spaghetti resistance, can be seen as a loop to the right of the meter. The two *Osram* LS5 valves can be clearly seen and these are mounted in *Clix* valve-holders raised half an inch off the baseboard on insulated spacers. To the left of the valves can be seen the plate tuning condenser, a *Cyldon* .0001 mfd. series-gap. This condenser, although of receiving design, will be found to be admirably suitable in this circuit with voltages up to 600 or more. The rotor portion of this condenser is not connected to any part of the circuit and is insulated from the frame, there being two portions of fixed vanes, the rotor varying the capacity between them. Hand-capacity effects and losses due to moving connections are therefore conspicuous by their absence.

There is, in addition, an extension handle on this condenser to keep the operator's hand quite clear of the apparatus.

To the left of the tuning condenser is the plate coil, mounted similarly to the grid coil, upon two *Eddystone* stand-off insulators. The aerial coil is mounted directly on to the aerial tuning condenser, a *Cyldon* .0001 mfd. transmitting type. The aerial coupling is varied by swinging the coil and condenser on its mounting, only one screw being used to hold it to the baseboard.

If desired, a similar arrangement could be designed, using two aerial coils, coupled one at each end of the plate coil, in the same manner as that described in the August BULLETIN, in an article entitled "The Mighty Atom."

To the left of the plate milliameter, a *Ferranti* 0-100 ma. and mounted on the wooden frame supporting the meter is the H.F. choke in series with the H.T. and lead to the anode coil. This should not be required, but in practice it was found that a slight increase of efficiency resulted from its inclusion. The choke is an *Eddystone* short-wave, and is wound on a small ribbed former, each turn being spaced.

Just to the right of the milliameter is a *Microfu* 150 ma. fuse. This is not shown in the circuit diagrams. Its advantage in the event of a short-circuit, or if the valves stopped oscillating, is too obvious to enlarge upon.

It will be noticed on referring to the diagram that a fixed condenser C3 is connected across the filaments of the valve. This is a *T.C.C.* 2 mfd. and is mounted below the plate-tuning condenser.

Construction.

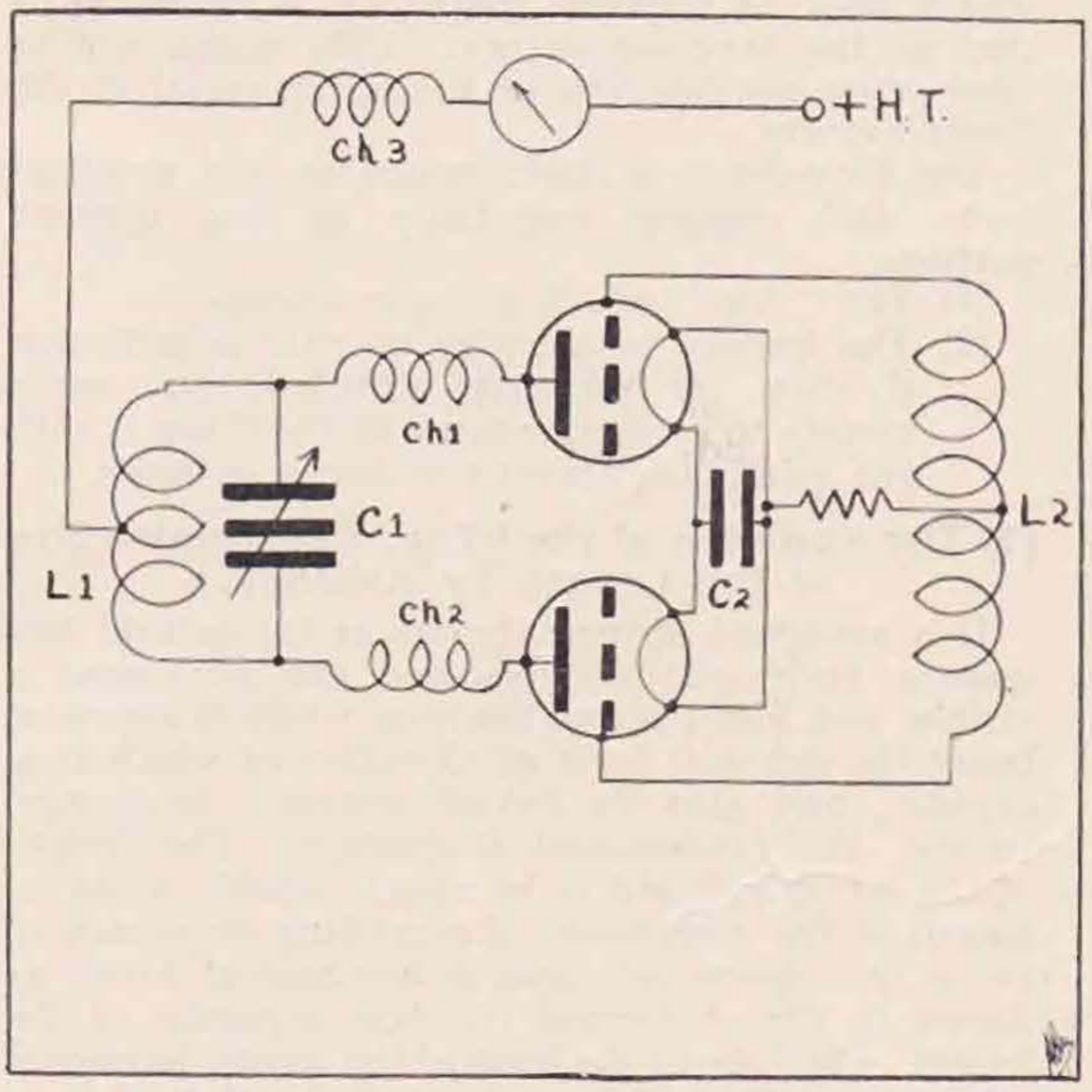
The construction of such a transmitter should not present any difficulties, as a glance at the circuit diagram will show.

The valves should be mounted fairly close to the grid coil, and the plate-tuning condenser fairly close to the valves.

The connections between the anode terminals

on the valve-holders and the stator portions of the series-gap condenser consist of small H.F. chokes, Ch1 and Ch2, in the diagrams. These chokes may be wound with 16-gauge tinned copper wire on a pencil, or similar small-diameter rod. They can then be slipped off, and opened out slightly to form the connection. About eight turns will be sufficient, their object being to eliminate any possible " squiggers " or spurious oscillations which may possibly be set up in any symmetrical circuit such as this. These oscillations are of very short wavelength, possibly of the order of half a metre or less, consequently the small chokes.

If the valve-holders are mounted off the base-board on ½-in. pieces of ebonite tube, it will facilitate wiring, besides tending to reduce losses.



The condenser C3 is connected across the filament supply to help to eliminate any flicker of the filaments when keying. It should be mounted underneath the plate condenser, C1, as close as possible to the valve-holders.

Coils.

The grid coil is wound on a paxolin former 1 in. diameter and 2½ ins. long, with a valve-pin mounted in each end. It consists of nine turns of 18-gauge D.C.C., slightly spaced. It must be tapped as near the exact centre as possible, and the grid leak, which should be provided with a crocodile clip, attached thereto. The other end of the grid-leak, as shown in the diagram, goes to L.T. negative.

The anode coil is wound with 10-gauge copper wire, valve pins also being used at its extremities. It should consist of four turns, 3 ins. diameter, well spaced, the sockets of the stand-off insulators being 4 ins. apart. The H.T. positive lead from the H.F. choke is secured by a clip to the centre of this coil.

The aerial coil also consists of four turns of 10-gauge wire and, as mentioned previously, is mounted directly on to the condenser. The actual method of aerial coupling will really depend on the type of aerial used, which will probably vary in many cases. It is not proposed to deal with aerial design in this article, as much has appeared of late in this journal on that subject.

The actual method described will be found quite suitable for use with an aerial of conventional length, say, 66 ft. from end to end.

Operation.

This is identical with the method described in the September BULLETIN in the article entitled " A Single-Valve Short-Wave Transmitter."

Care should be taken not to run the plate milliamps up too high with the aerial load, 65 to 70 milliamps being the safe limit with 450 volts H.T.

If the valves get too hot, the oscillator gets " tired " and stops oscillating; it behoves the operator, therefore, to keep the milliamps at a reasonable level.

Keying may be done in any of the conventional ways, and various methods have been described from time to time in this journal.

Work on Other Bands.

It will be found that this transmitter will function excellently on any of the lower frequency bands.

Coils may be made of slightly more than double the number of turns for the next lower-frequency band, care being taken in each case to centre tap them accurately.

In conclusion, it may be stated that a transmitter built on these lines will well repay the time spent on it, and, moreover, will merit the small expenditure necessary to procure the good-quality components which should, of course, be used.

(*Continued from page* 193.)

at the initial instant the full voltage is applied across a few end turns of the winding, so increasing the stress on the insulation and possibly causing its failure. It will often be found that the fault has occurred on the end turns of the winding. Large transformers have thicker insulation on the end turns, but in small transformers this is hardly necessary, although it would certainly add to their safety, especially if the primary windings were to be keyed.

Owing to the scheme which is in progress, for the standardisation of frequency at 50 cycles per second, it may be useful to consider the effect of change of frequency upon the operation of transformers. A transformer designed for a frequency below 50 cycles will work satisfactorily at 50 cycles, apart from an increase in the impedance voltage drop brought about by the higher value of the reactance at the higher frequency. One designed for a higher frequency will not be satisfactory, however, at a lower frequency on account of high iron loss, magnetising current and temperature-rise, and possible saturation of the iron in the core. The effect may be observed from the fundamental formula; if the frequency is reduced, the flux must increase if the voltage is the same. Owing to the higher flux density in the iron, the iron losses and magnetising current will be increased.

STRAY.

G5OU (Lansdowne House, 45a, Colomberie, St. Heliers, Jersey), a new station, is using either C.C. or T.P.T.G. on 7 and 14 M.C., and would appreciate reports.

THE ZEPPELIN AERIAL.

By A. E. LIVESEY (G6LI).

SOME time ago my brother, then VP3SRB, composed an article in company with VP3SR, dealing very thoroughly with this subject. He did not, however, touch upon the theory of the Zeppelin aerial. This article attempts to explain away some of the mystery of the Zeppelin without the use of figures, and by means of simple analogy. Few amateurs are familiar with mathematics, many are not conversant with physics, and a large number have little inclination for technicalities. It is to those who have not yet had the opportunity of coming into contact with the theory of radio and wave motion that the primary portion of this article is addressed. It is difficult to explain one of the major portions of a theory without running through the elements beforehand. The matter below is full of assumptions, and perhaps many inaccuracies. Those who understand the subject clearly will, perhaps, forgive the clumsy reasoning and pass lightly on to the less painful and purely practical details mentioned towards the end.

THE THEORY.

An Analogy of Electrical Resonance in Wires.

In the elementary physics of sound, which is a wave motion similar to that of radio, but of intensely low relative frequency, we learn that stretched strings and bars of metal, etc., are sympathetic to certain definite sound frequencies to which they respond by emitting audible notes produced by vibration of the material resulting from application of regularly timed impulses, either by direct blows, or by agitation of the surrounding medium. A piano, for instance, will often commence to " ring " when musical notes are sounded within its immediate vicinity.

The phenomena is not confined to stretched strings, for all bodies have definite notes or vibrations, to which they will respond by setting up around them a " field " of pulsations identical to those being received.

A length of wire may be excited by regular alternating electrical impulses which, if applied to one end, will cause a current to surge in the wire as many times per second as the supply varies between its limits and this in turn gives rise to an electrical field about the wire, which will surge in the same manner as the " audible " field around a vibrating string. If the response frequency of the wire differs widely from that of the supply, the " vibration " will be weak, and the field proportionately small, but if the length of the wire bears a definite relation to the wavelength (frequency) of the supplied energy, such that the natural response frequency of the wire is the same as the applied frequency, the received impulses will be assisted in building up a powerful alternating field around the wire.

A stretched string supplied with impulses at its natural frequency builds up vibrations of such great amplitude that it would snap were it not for the inertia of its mass. Wherefore the vibrations have a maximum amplitude dependant upon weight and gravity—proportional to length—and the magnitude of the applied forces.

An electrically excited wire possesses a surrounding field of which the greatest amplitude is proportional to distributed capacitance and inductance in the wire. These may be taken as constant for a given wire, so that the intensity of the response is proportional to the actual length of the wire. When no loading coils or condensers are inserted in the circuit. Hence, when a length of wire is excited by a source of alternating current of predetermined high frequency or low wavelength, the greatest disturbance of the surrounding medium will be created when the wire is " electrically " of such a length that its response frequency is the same as that of the supplied energy. This is the aim in view when constructing or tuning an aerial of the Hertz variety.

The Zeppelin is a Hertz resonator in a modified form, and consists essentially of two distinct portions :

(1) The " top " which radiates energy.
(2) The feeders, which play no part in radiation if they are properly adjusted, but serve merely to conduct energy to the " top " with the minimum amount of losses *en roule*.

(1) The Function of the "Top." Determination of the Length by Analogy.

If a stretched string vibrates at its natural frequency, both ends being secured, the movement is visible, and Fig. 1 shows the form which it assumes, being the simplest form of vibration of which it is capable, and also its lowest response frequency, termed the *fundamental* frequency. The length of the string is found to be equal to half the wavelength of the vibrations. An exciting frequency of twice this figure produces a mechanical form, as shown in Fig. 2, termed the first harmonic of the length. Fig 3 shows the form of the second harmonic vibrations. Other harmonics may be plotted from this data. The number is, of course, infinite. *

By straightforward analogy, we see that the highest wavelength to which an electrically energised wire will respond is proportional to half of the physical length of the wire.

Upon this fact, the " top " of a Zeppelin is made of length directly proportional to half the wavelength of the highest wave upon which we desire response, this being the lowest frequency upon which satisfactory working can be accomplished, and the fundamental frequency of the aerial, it being known that the wire will respond to all direct higher harmonics which are two, three, four times, etc., the fundamental frequency.

Nodes and Antinodes.

In Fig. 1 we see that the greatest disturbance in the string is situated at the centre, and, in Fig, 2, one quarter and three-quarters of the way along the string.

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* In this article the author discusses fundamental and harmonic oscillations and adheres strictly to the teaching of the Physics Text Book' (Duncan and Starling's Text Book of Physics). Amateurs have, rightly or wrongly, considered harmonic oscillations from a different view and, referring to figures 1, 2 and 3, regard the oscillations depicted in Fig. 1 as fundamental (or *first* harmonic, those in Fig. 2 as *second* harmonic and those in Fig. 3. as *third* harmonic).—Ed.

Again by analogy, an electrically excited wire has greatest disturbance at the centre when responding to the fundamental frequency, and two points of equal intensity located one-third and two-thirds the distance along the wire at the first harmonic. These points are termed antinodes, as opposed to nodes, at which there is zero disturbance of the same nature. Other nodes and antinodes appear for the other harmonics.

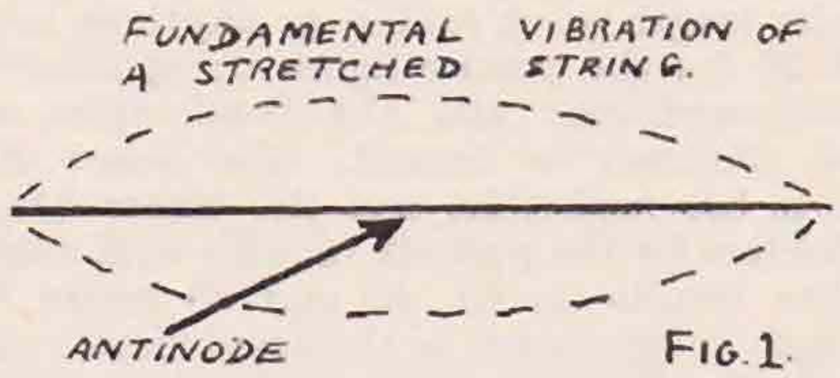


FIG. 1.

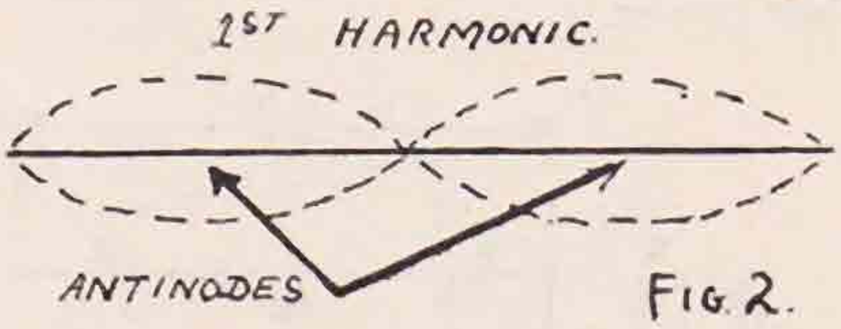


FIG. 2.

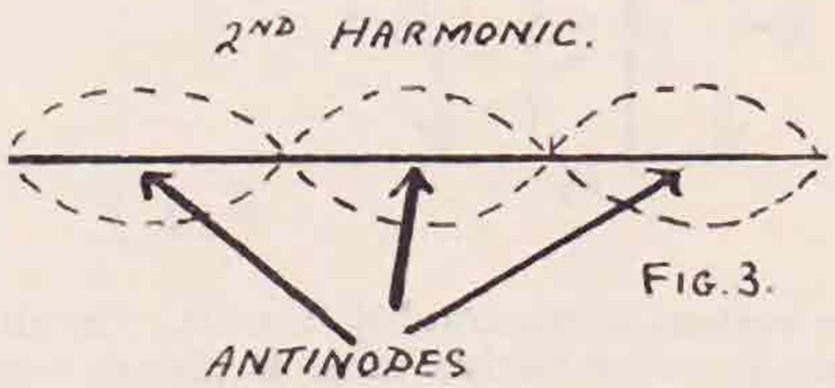


FIG. 3.

To vibrate a string mechanically at the fundamental frequency, Fig. 1, it is obvious that it would give greatest response with the least amount of expended energy if agitated at the antinode, for which reason, a stringed instrument is usually plucked at the centre of the strings. It is seen now, comparing Figs. 1, 2, and 3, that, since the distance from any node to the nearest antinode is one quarter of a wavelength, the wire must be energised at a point which is one-quarter, three-quarters, five-quarters, or any odd number of quarter wavelengths away from any one of the nodes which appear on the wire.

Standing Waves.

A wire, energised by alternating electrical energy at its fundamental, has an antinode of current appearing at the centre, attaining maximum possible value, positive or negative as the current surges in the wire. For the sake of clearness, we choose the instant in time at which the current at the antinode is greatest and the voltage difference at the nodes is also passing through the greatest value. This is represented by a " wave " of current as shown in Fig. 4, with the corresponding " wave " of voltage, or two sets of " waves," as in Fig. 5, which appear in the same length of wire at the first harmonic. The points A show the positions of the current antinodes along the diagrams, which are termed diagrams of Standing Waves. It is at such a point A, that the transmitter or energiser should be located, at which the current passes through its maximum value millions of times per second.

(2) The Function of the Feeders.

Consider the length of wire YZ in Fig. 5. The addition of the same length XY makes no difference to the current and voltage standing waves in YZ, but it makes it possible to feed energy into the total length XZ at one of two points—A. Wherefore, the part YZ might be put up in the air as a complete aerial, and the portion YX used as lead-in, with the transmitter located at the point A in XY. The part YZ may be called the " top " of the slowly developing Zeppelin, and the line XY the feeder. However, XY will radiate just as much energy as YZ, which state of affairs must be prevented if the minimum amount of loss is to be secured.

It is observed that the sign of the standing wave differs at X to the sign at Y—arbitrary signs have been shown. So that if XY is divided at A, and the two halves arranged parallel to one another, the fields produced by each will be opposite at any point along the lines, and will effectually cancel one another, such that no energy escapes until the point Y is reached, after which the remainder of the wire, YZ, is free to radiate.—Fig. 6.

It is seen that AY and AX have automatically become feeders to YZ, and that the point A is located at the bottom of the lines, all ready for the attachment of the transmitter. Also it is noticed that the original facts still hold good : (*a*) that the energy must be fed in at a point which is an odd number of quarter wavelengths away from a current node ; (*b*) that the radiating portion is equivalent to the length of an even number of quarter waves.

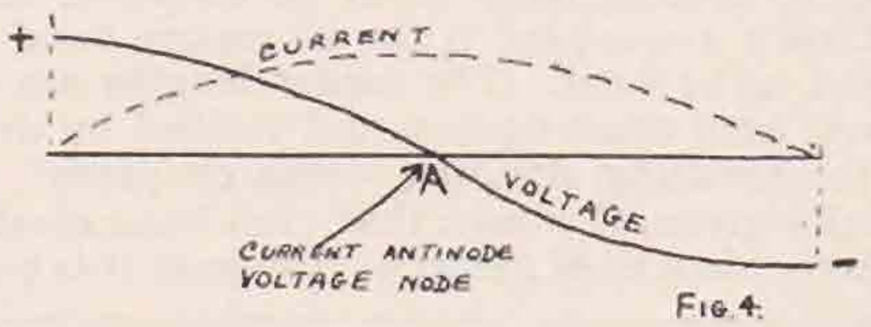


FIG. 4.

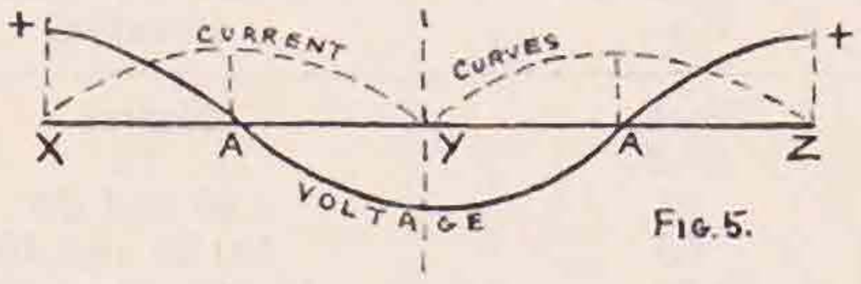


FIG. 5.

However, the radiating portion may be twice or three times, or any number of times as long as shown in Fig. 6 without affecting the feeders, and also the feeders may be made three, five, seven, or any odd number of times the length shown, without affecting the radiating portion, all the time maintaining a point of maximum current, or a current antinode at the end of the feeders. Fig. 8 shows the distribution of current nodes and antinodes if, as an example, the " top " is increased to twice the length, and the feeders increased by three times, the original length. Two hard and fast rules emerge from the confused tangle :

(1) Feeder length is always such as to accommodate an odd number of quarters of the working wavelength .

(2) The " top " is of such length as to accommodate an even number of quarters of the working wavelength.

By observation of these rules, feeders cannot radiate, and ammeters at the transmitter end of the lines will show maximum current for any part of the line, when the system is tuned to full resonance.

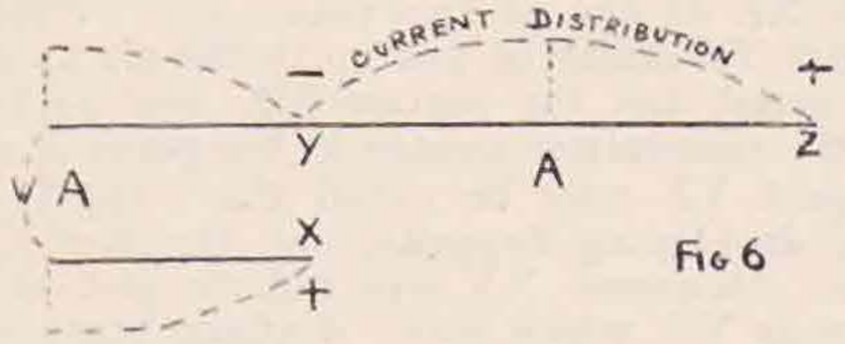


Fig 6

PRACTICAL VALUES FOR ZEPPELIN AERIALS WORKING IN THE AMATEUR BANDS

Length of Wires

On account of the fact that an electrical wave does not travel along a wire as quickly as it does in free space, the length of the wire is made a little shorter than the actual length of the wave for which it is designed. The A.R.R.L. Handbook gives the following formula for the proper length :

Length of wire in feet needed to accommodate half a standing wave is equal to the desired fundamental wavelength in metres multiplied by 1.56.

Hence, to cut the length of the "top" of a Zeppelin for the 40 m. band, and for all bands below this, we see, for example, that $42 \times 1.56 = 66$ ft. approximately. This is all that need be calculated, for it is then seen that a 132 ft. top will be needed if the 80 metres band is to be included, or that 33 ft. only are needed if the 20 metres band is the highest to be used. The feeder lengths are easily derived from these figures, and verified by drawing out the resulting standing waves on paper. From the table given, it is seen that each band must have a different length of feeders. However, it is possible

Length of Top.	Band for which suitable.
Feet.	Metres.
16.5	10
33	10 and 20
66	10, 20 and 40
132	10, 20, 40 and 80

Table 2.

Band.	Suitable feeder lengths.
Metres.	Feet.
10	8.25, 24.5 and 41.25
20	16.5 and 49.5
40	33
80	66

to strike a compromise in lengths, which can be loaded with coils if it works out to be too short for a particular band, or with condensers if it is too long. The loading has the same effect as changing the actual physical length of the feeders only, the top part taking care of itself.

Designing a Zeppelin for all Bands

Many stations to-day use the 80 metres band, and the prospect of putting up a 132 ft. top and 66 ft. feeders is usually hopeless unless one lives in a forty-acre field ! As a matter of convenient fact, the 66 ft. top will work on the 80 metres band —but don't ask how and why—and works well if the length of the top plus both feeders is somewhere not very distant from 132 ft.

Thus, the length 66 ft. is chosen for the top, and the feeder length (each feeder) as anything between 40 and 50 ft., the precise figure being determined by local conditions and the band upon which greatest efficiency is desired. The losses due to long lines are negligible, and the writer has used 48 ft. feeders for the past six months with astonishingly fine results on 20, 40 and 80 metre bands (the length being chosen as the approximate correct length for the 20 metre band), using both high and ultra-low power.

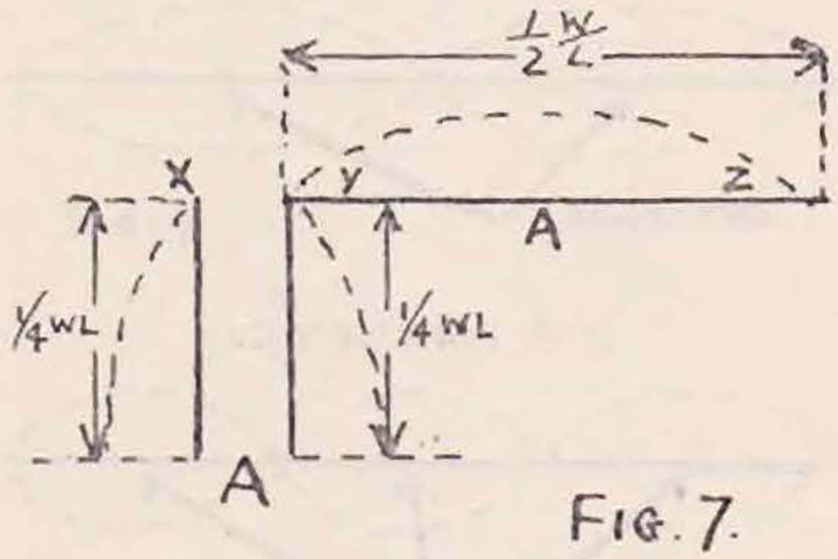


Fig. 7.

The system is remarkably flexible. On all bands a loading coil of twelve turns is placed across the end of the lines, and two receiving type variable condensers of about .0003 mfd. inserted in series with each feeder, an ammeter being essential in each line. Fig. 9 shows the complete layout. The ends of the feeders in the station are at low voltage, and can be touched without risk of a burn with a power input of 50 watts or more.

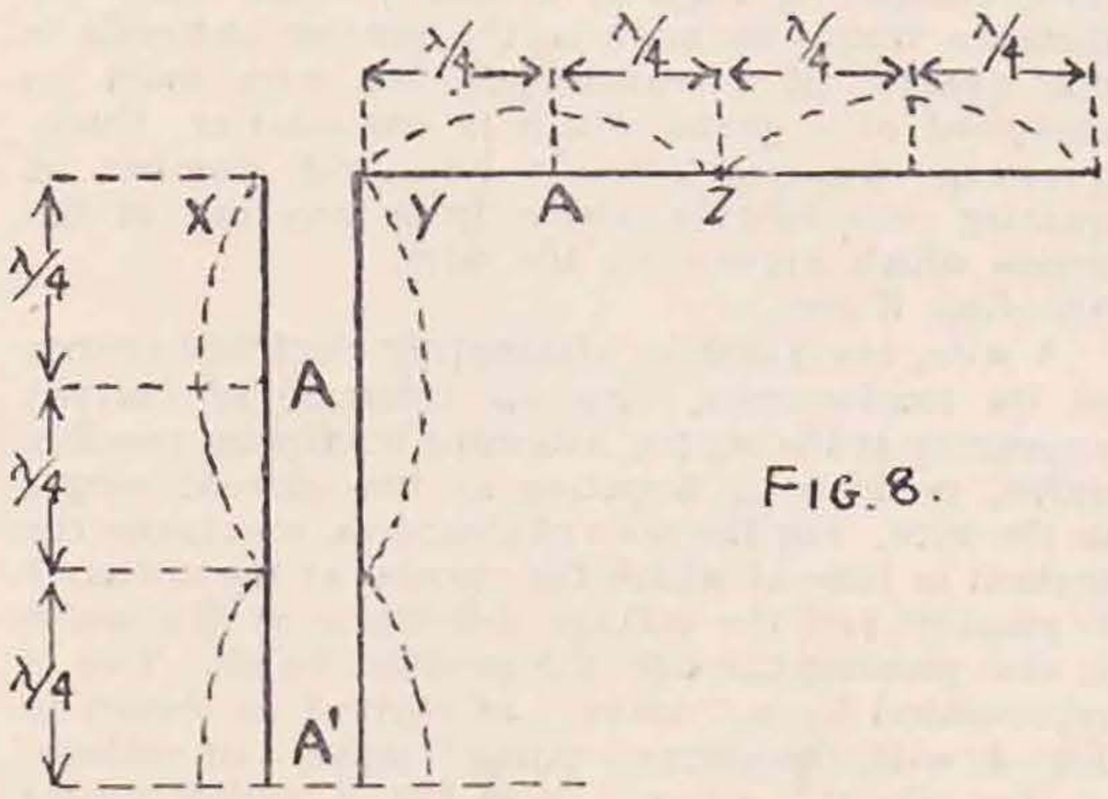


Fig. 8.

Mechanical Construction applicable to any Zeppelin

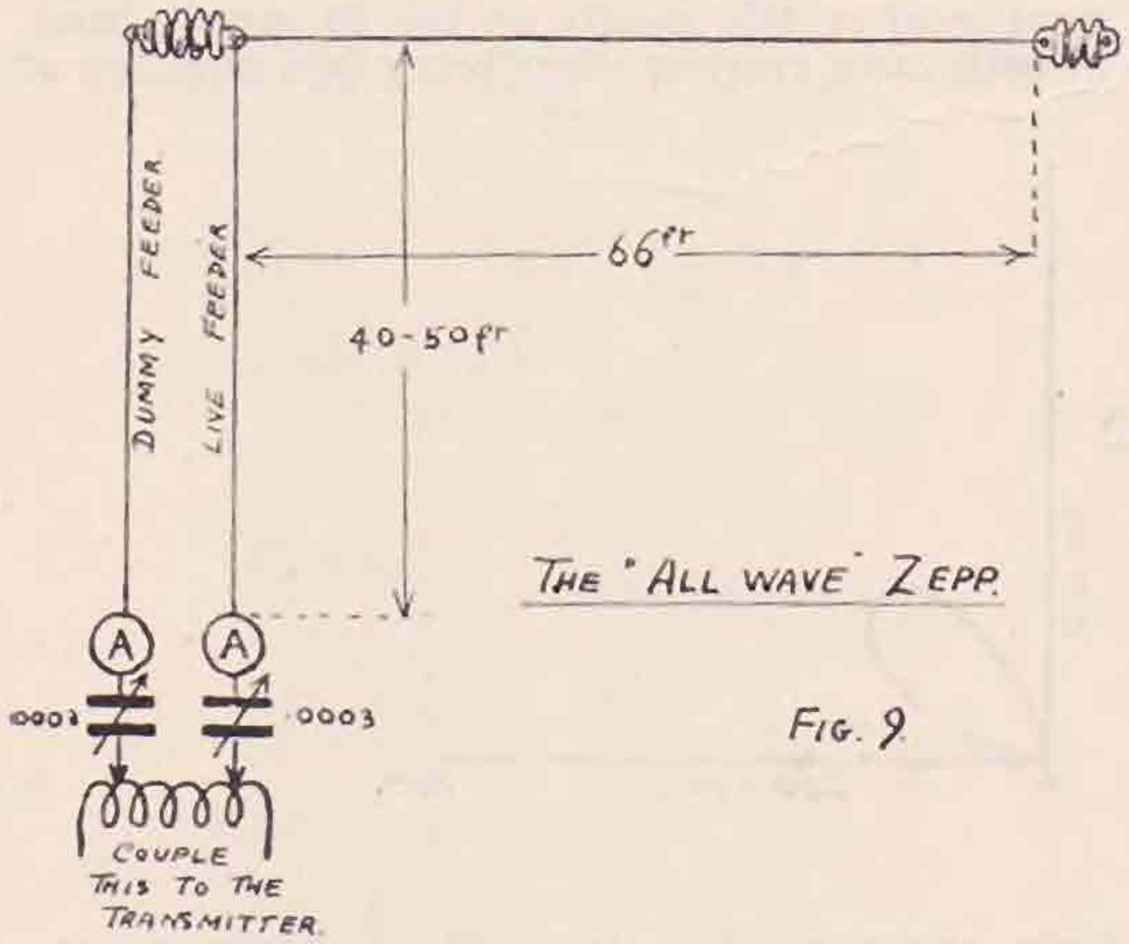
It is best to use No. 12 or 14 bare H.C. copper wire for both top and feeders, the top and the "live" feeder being in one length to avoid a joint

at the high voltage spot near the insulators. No. 14 gauge runs about 52 ft. to the pound weight. The feeders should be spaced from 5 ins. to 10 ins. (it makes little difference, although the writer spaces at 5 ins.) apart, with rods of impregnated wood, ebonite, or glass, or, best of all, Pyrex Special Zeppelin spacers, arranged at intervals of three to four feet along the lines. The two feeders must be parallel, and, when the aerial is hauled into position, taut so that they cannot touch nearby objects or move relatively in a wind. Such movement can change the frequency sufficiently to render the signals unreadable. The feeders should fall vertically for the first ten feet at least, and not in a curve, or at some odd angle to the "top." They may then be tethered with strain insulators, and taken off at the angle most convenient for entry to the station. Proximity of walls, etc., is of no consequence for it can be considered that 85 per cent. of the field around the feeders lies within a radius of four times the spacing between the wires. Thus there is often an advantage in spacing the lines closely.

Fig. 10 shows a method by which spacers can be attached or removed at lightning speed. It is self-explanatory. No. 18 wire is used. The Special Pyrex spacers are made for this form of security (details upon request).

The dummy feeder should always be attached as shown in Fig. 9, and as well insulated from the "live" feeder as from the haulage wire. The writer has found that the medium-sized Pyrex aerial insulator makes a superb junction piece between the ends of the two lines.

For lead-in insulation, a pair of glass tubes, Pyrex for preference, through the window frame is



THE "ALL WAVE" ZEPP.

FIG. 9

all that is needed, but Pyrex bowl type entering insulators are better.

With regard to the "top," some people prefer to have the "free" and elevated slightly above the height of the feeder end. Some reason for this may be inferred from the notes further on regarding angle of radiation. The writer's Zeppelin is roughly 55 ft. high at the feeders, and 70 ft. high at the free end. Pulleys at each end of the system are necessary in order to fit the feeders properly into the available space. The use of stranded wire either for aerial or feeders is discouraged.

Tuning and Operation

Both series variable condensers are set at maximum capacity, and rotated in step towards minimum before which point both ammeters will rise to greatest indicated current. The proper working position is shortly before passing the greatest value. One side of the tuning curve peak is generally sharper than the other, and the flatter side is usually between maximum capacity and maximum aerial current. The L.C. ratio of the loading is important, and influences output. For 48 ft. feeders, not more than half of the available capacity is needed with a 10-turn coil. When the feeders are short and correct length for the band, a small loading coil is demanded, and very loose coupling. To check for

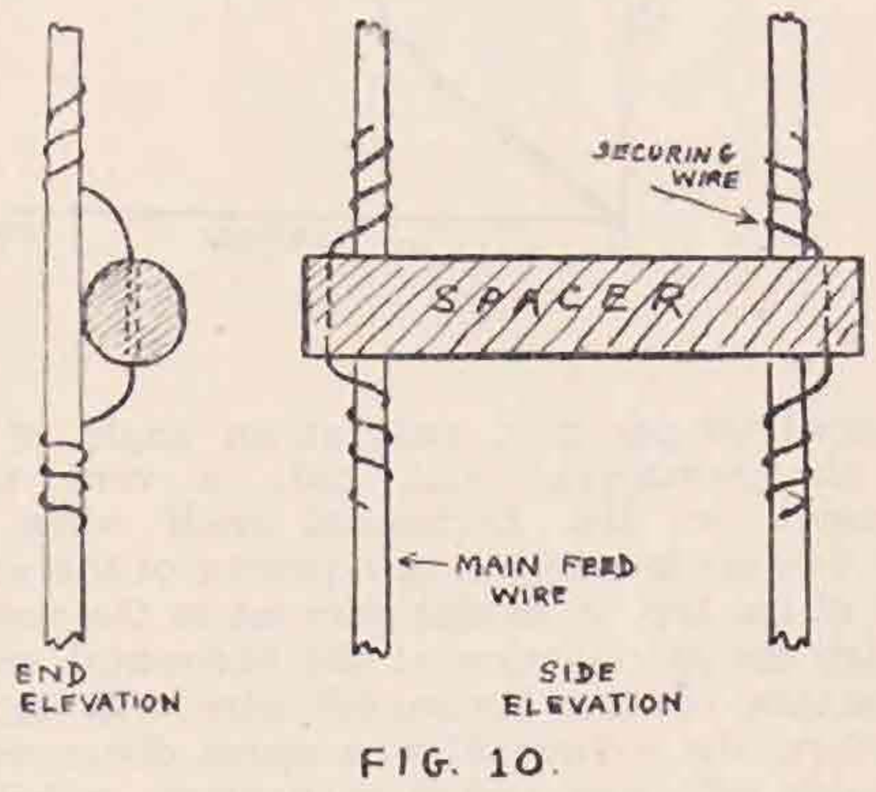


FIG. 10.

correct coupling, start at about 3 ins., tune to maximum aerial current, detune slightly for stability, then slack the coupling slowly. The point to stop is that at which the aerial current begins to fall rapidly with small movement of the coil. Coupling of as much as 5 ins. is common. For oscillator-amplifier systems, the rules do not hold, and the aerial should be tuned for greatest aerial current consistent with anode current rise. Providing that both ammeters read nearly the same, the note will be good, and the working economical. To get both meters the same, it is best to tune roughly on the dummy feeder, and finish off on the "live" line condenser. For very fine limits of working, always remove the ammeters after tuning the aerial by shorting them out. If this makes any difference to the anode current, correct to the original value by small readjustment on the "live" feeder.

If the transmitter is not C.C., the Zeppelin has a knack of changing the frequency, so that it is advised that the frequency be checked when the aerial has been tuned.

The best working position in the band is found by listening to the note at different settings. Also a very sound method was given by an Italian amateur in a recent issue of *Q.S.T.*

Before proceeding to the last paragraph on angle of radiation, it is a significant fact that the pick of our British stations to-day are all using the Zeppelin

with the 66 ft. top and long feeders in the order of 45 ft.

Angle of Radiation and Effect of Height

The effect of varying the height of the Zeppelin is pronounced, and some conclusions may be formed from the results given below of experiments conducted in the U.S.A. in 1928. It was found that a half-wave Hertz erected in the horizontal gave 100 per cent. relative radiation in the vertical and about 60 per cent. only at an angle of 30° with the horizontal, and only a very small component in the horizontal itself when the height was made equal to one-quarter of the wavelength of the top. A similar wire set in the vertical produces strong radiation at the horizontal, which no position of the horizontal wire will secure. Wherefore, the horizontal wire spans distances by high angle reflection and is particularly suited for short distance working. The effect of inclining the wire is to increase the horizontal component of radiation, and produce the low angle of radiation reputed to obtain DX. In practice, this evidence is substantiated in general.

When the same half-wave wire is raised towards a one-half wavelength in height, the strong vertical field vanishes, and the 100 per cent. angle rotates from the vertical towards the horizontal, reaching about 45° when the height is one-half wavelength. This height should, therefore, be more suited for DX working than the first.

When the height is raised towards three-quarters of a wavelength, the angle of 100 per cent. relative radiation decreases as it rotates still further towards the horizon, and a "loop" of vertical radiation appears again, which is very strong both in the direction of the wire and at right angles when the height is just three-quarters of a wavelength. This height would seem to be efficient in all respects, since it will supply a fairly strong low angle of radiation and a stronger vertical component for local working.

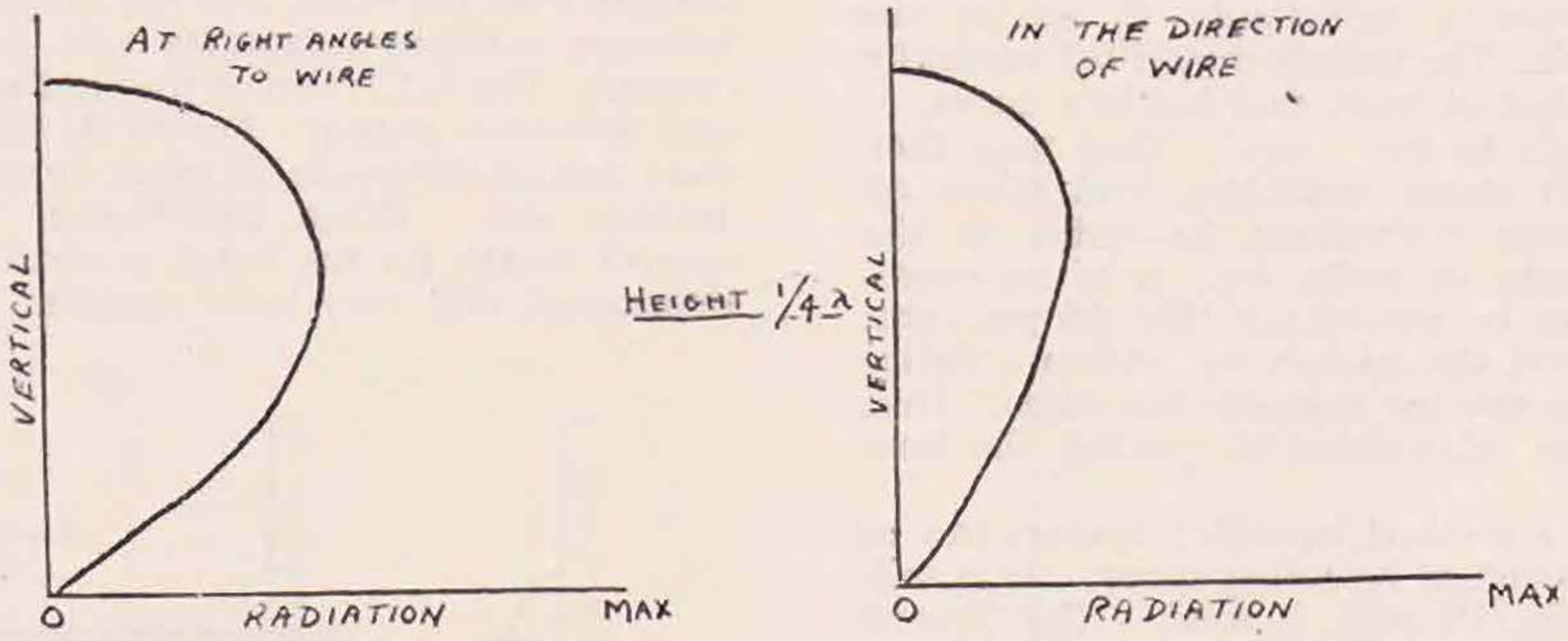


FIG. 11.

By arranging a 66 ft. wire at an average horizontal height of 60 ft., as is the case with the writer's system, it would be raised approximately half a wavelength for the 40 metres band, and three-quarters of a wave for the 20 metres band. This would theoretically give low angle radiation with good DX results on 40 metres, and rather poor local results, whilst it should give almost equally good local or DX results on the 20 metres band, in both cases greatest effect being in a direction at right angles to the wire. The radiation in the direction of the wire will be poor in the first case, but at almost the same angle as the right angle radiation. In the second case, the end-on radiation takes place mostly in the vertical and the loop of low angle radiation corresponding to the right angular loop is very small indeed. Hence, the end-on radiation on 40 metres will be poor, and better for distant rather than local work, whilst that for the 20 metres band will be good for local work, and useless for DX working. The polar diagrams of relative radiation are shown in Figs. 11, 12 and 13.

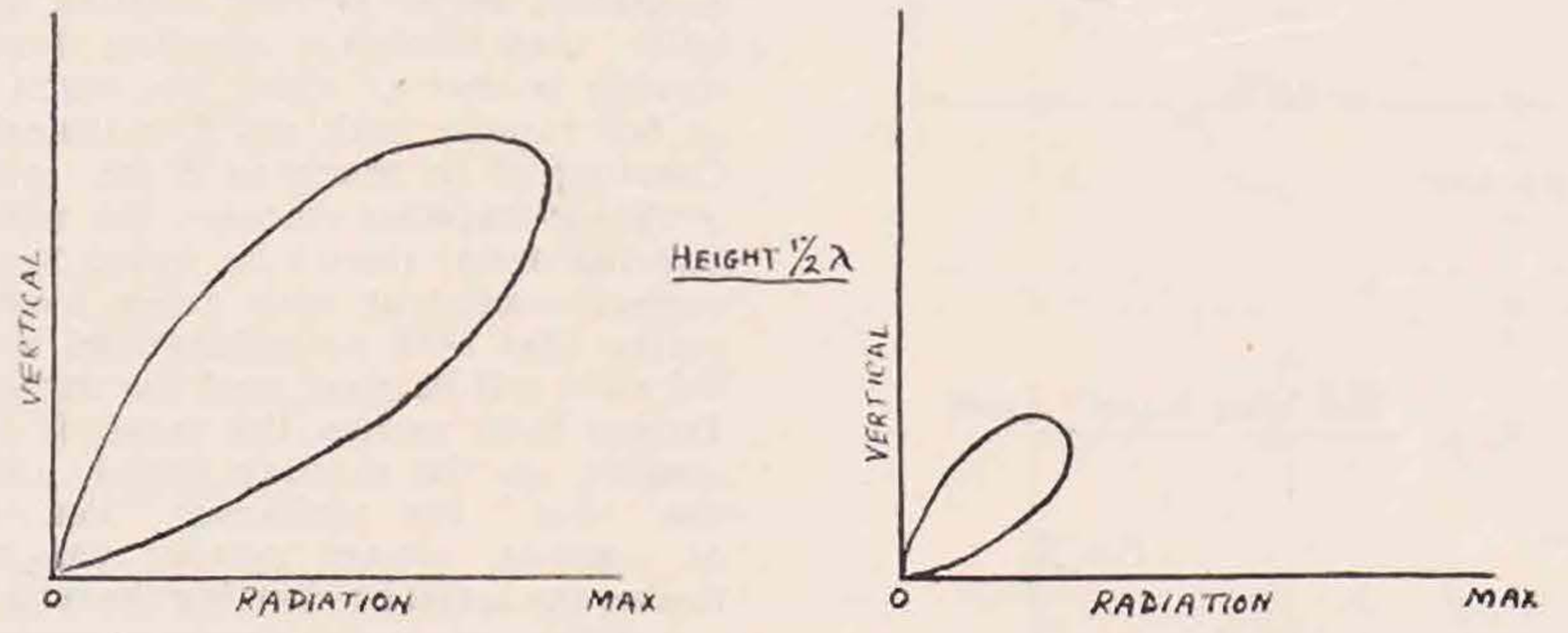


FIG. 12.

The experience of the writer bears out this fact to the last detail, which is a little astonishing.

Practical test with a simple 20 metre Zeppelin having a 30 ft. top and an angle of inclination with the horizontal of about 20° has shown it to be useless for local working, but good for rather spasmodic DX. The system is not effective at the best.

Similarly, a very average system in use is the 66 ft. top raised 30 ft. in the horizontal for the use of 33 ft. feeders working in the 40 metres band—that is, raised one-quarter wavelength. Every case within the knowledge of the writer shows that the system is splendid for local work, but useless for really efficient DX, which supports the theory of the presence of a strong vertical component of radiation and practically zero at the horizontal.

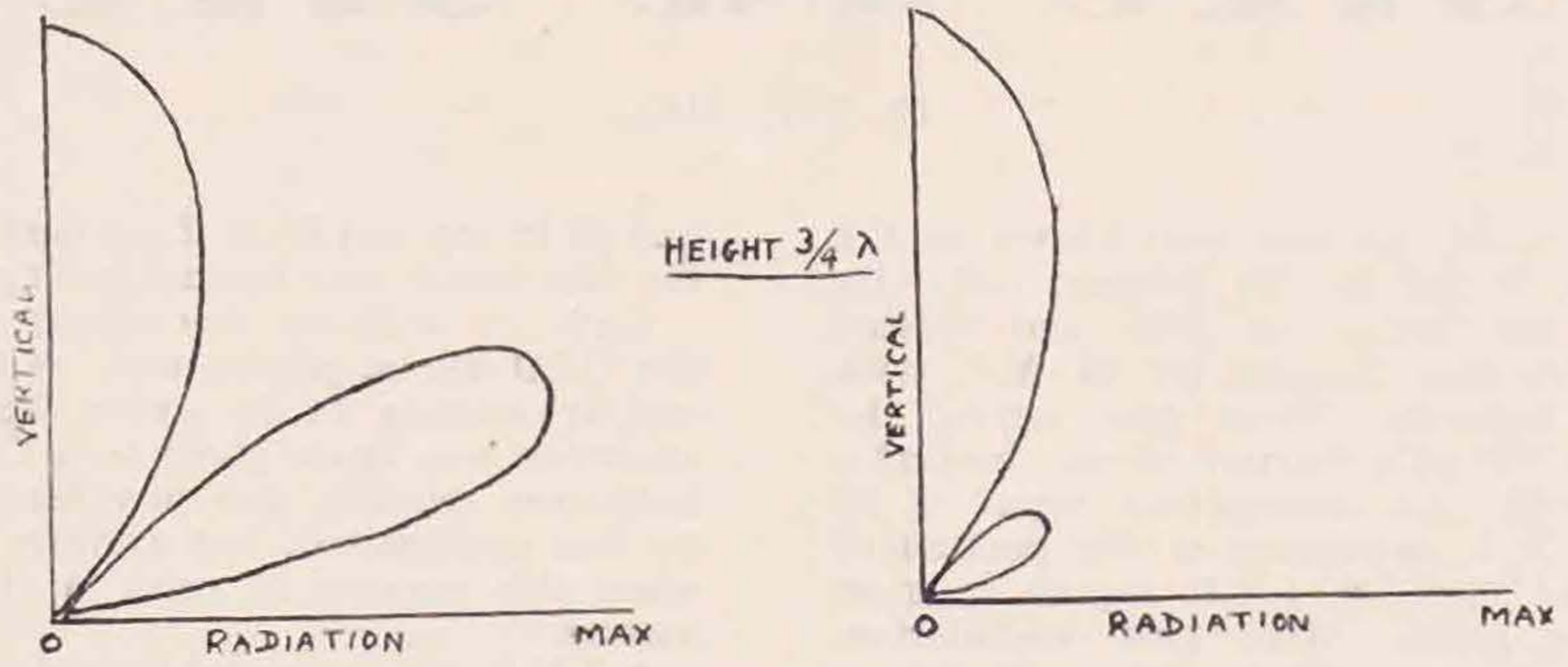


FIG. 13

The absence of figures and the necessity for assumptions in all the matter above perhaps lays one open to the violent onslaught of the experts. Maybe this is, to some degree, an advantage, for it is only from errors that one can discover the truth!

No. 1 District Conventionette.

"Upstairs, please." This, in the majority of cases, was the first greeting the members of No. 1 District received, on arriving at Brookes Café, Hilton Street, Manchester, on October 31. Is this a happy augury of the greeting they will all receive when the last QSO is done? Each to be presented with a golden key from Peter's bunch? We wonder.

Towards 5.15 the gang settled down to the fare provided by Messrs. Brookes, and if the amateur bands were half as clean as the plates left towards 5.45, we wouldn't need those spare bits of tolerance we've just been presented with.

At 7 p.m., after everybody had got to know something of everybody else, G2OA, as chairman, opened up the real business, and after apologising for the absence of G2RV, the DR, unavoidably prevented from being present by business QRM, welcomed the three HQ members. The District's thanks are indeed due to these gentlemen, Mr. Clarricoats, Mr. Watts, and Mr. Old, for their keenness in coming north. May we see you often, OM's.

The hon. secretary of the Society, Mr. Clarricoats, spoke on the work of the Society on general lines. It was learned with great satisfaction that the membership was increasing, and increasing rapidly, and that its financial position was very sound, thanks largely to the work of the Hon. Treasurer, G5AR, but it was emphasised that local activity was the only means of maintaining the Society in a flourishing state. Many possible ways of increasing interest in the Society were suggested, and some are already bearing fruit. The work of the Contact Bureau was explained and the importance to the amateur of the Madrid Convention was made quite plain. The aspirations of the Society's B.E.R.U. branch and the splendid work done by G6UN in enlisting the premier Empire Societies were reviewed, and after 45 minutes "Clarry" sat down to the accompaniment of applause which left no doubt as to the importance attached to his pronouncements.

G2VQ spoke on the methods of organisation which he had found satisfactory in the provinces, and gave many useful tips for the conduct of local meetings and the cultivating of the interest of the younger members.

G6UN amplified the Secretary's remarks on the B.E.R.U., and stressed the importance of participation in the B.E.R.U. tests by all active stations.

A short break for tea and other refreshment was followed by a general discussion in which G5LR, G5FC, BRS259, G2QB, G2OA, G2OI, G6QF and G6YO took part, and towards 10 p.m. the meeting broke up, but not before very hearty votes of thanks had been passed to G2OI, who arranged the room and tea, G2OA as chairman, and the three members whose presence had meant so much to the meeting, G6UN, G2VQ and G6CL.

STRAY

2BMR sends details of his short-wave receiver employing a DE5B valve as an unneutralised H.F. stage. This he couples by means of a transformer (secondary winding being tuned) to the PM6D detector valve. He claims very good results on 7 and 3.5 M.C. with this combination, followed by conventional L.F. The transformer coil is wound on a 6-pin Colvern coil former and contains: primary, six turns of No. 22 enamelled; secondary, 14 turns; and reaction 10 turns of No. 34 enamelled. The aerial coil is similarly constructed as a transformer with secondary tuned, the reaction winding, of course, being omitted.

STATION DESCRIPTION No. 19.

ST2C AND ST2D

By I. E. Hill.

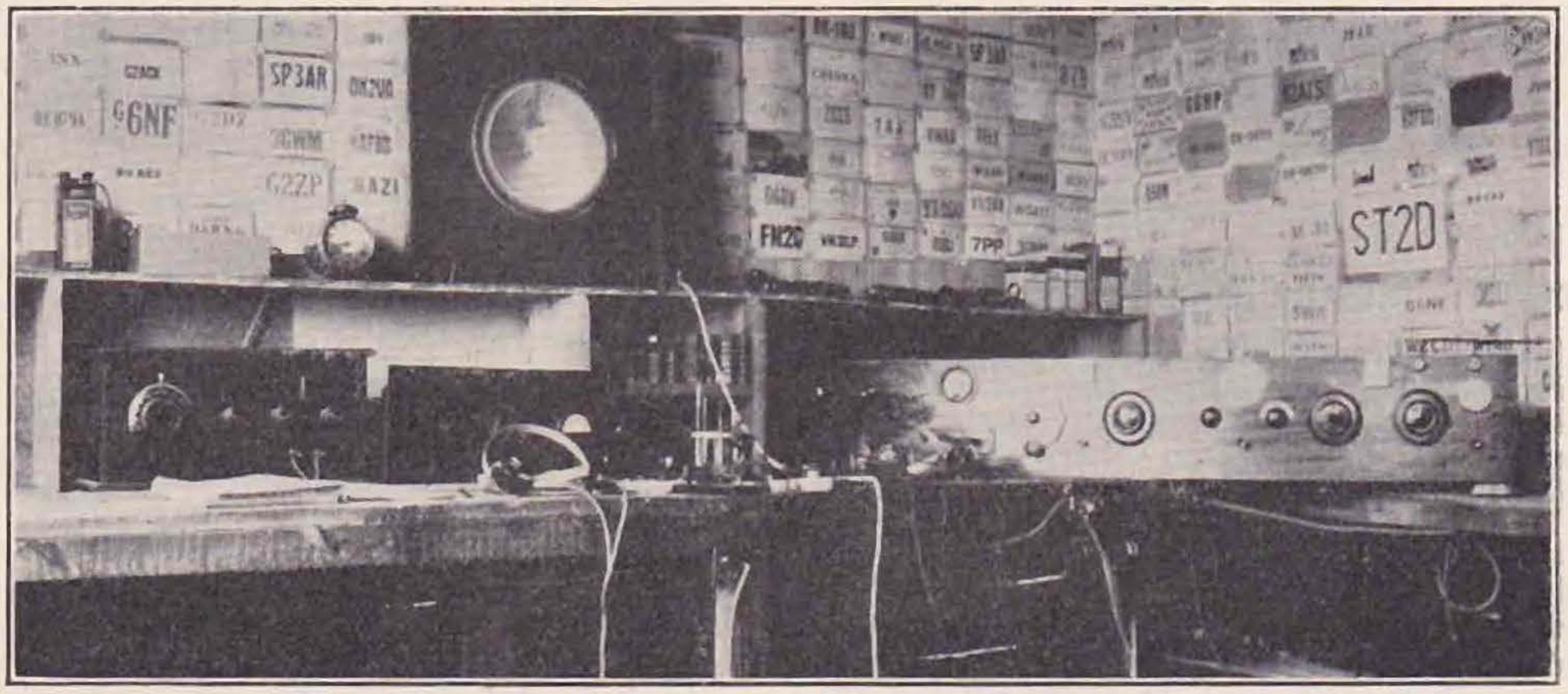
ST2C is, no doubt, already well known to G's as G5HG, if not by his present call. He came to the Sudan in 1929, and started operations by working Nairobi on 14 M.C. with 60 volts to a Pentode. When gear arrived, he started up with T50 in a Hartley circuit, feeding a V.F. Hertz aerial. An unsmoothed input of 50 watts from an M.L. generator of the permanent field type has put T8 to T9 14 M.C. signals to most corners of the globe. With grid modulation, phone has been reported R5 in Cairo. Keying is in the D.C. grid circuit. The receiver is O.V.I., and utilises a Pentode, vernier tuning being accomplished by varying hand capacity to the tuner. The original QRA was Wad Medani, some 120 miles along the Blue Nile from Khartoum, but it will be Khartoum for the next few months, if not longer.

ST6HL/ST2D made its debut on the ether in August, 1930, with gear previously in use at G6HL and SU6HL. A 50-75-watt T.P.T.G. push-pull portable for C.W. and phone on 7, 14 and 28 M.C. and a QRP C.O.-P.A. for 7 M.C. As the average distance of "local" stations is over 1,500 miles, the C.C. rig was scrapped and another T.P.T.G.-P.P. built for 14 and 28 M.C., having a maximum input of 1 k.w. On 28 M.C. this transmitter apparently functioned OK, but no one at a distance has heard it. When tuned to 14 M.C. the harmonic has been heard in G and YI. The aerial used for 14 M.C. had 99 ft. top and 60-ft. Zepp feeders; for 28 M.C. the free feeder was broken, giving a 116-ft. top.

Lack of suitable smoothing prevented using the QRO set on phone, and, as the portable was rapidly sinking to its grave from rough usage, attention was again given to a C.C. outfit. After numerous rebuilds and modifications the present rig was constructed, but whether it will be in use when this appears in print is altogether another matter.

A 7 M.C. power crystal is used in the C.O., and is followed by three stages, the first of which can be used as a neutralised P.A. on 7 M.C., or as a F.D. on 14 M.C. The next stage can be used as a neutralised P.A. on 14 M.C., or as a F.D. on 28 M.C. or 14 M.C., or can be cut right out. This is followed by a neutralised P.A. Choke modulation of the stage preceding the final P.A., or of the P.A. itself, is possible, or any F.D. or P.A. stage can be grid modulated. A single button microphone with a mica diaphragm is used, followed by one transformer coupled amplifier. For C.W. a key is inserted between negative H.T. and filament centre tap of the final P.A.

The valves are of rather ancient design, and were originally intended for long-wave work. However, by gingering their tungsten filament with a spare volt or so, they work OK as F.D.'s and P.A.'s, and handle their rated 30 watts without passing



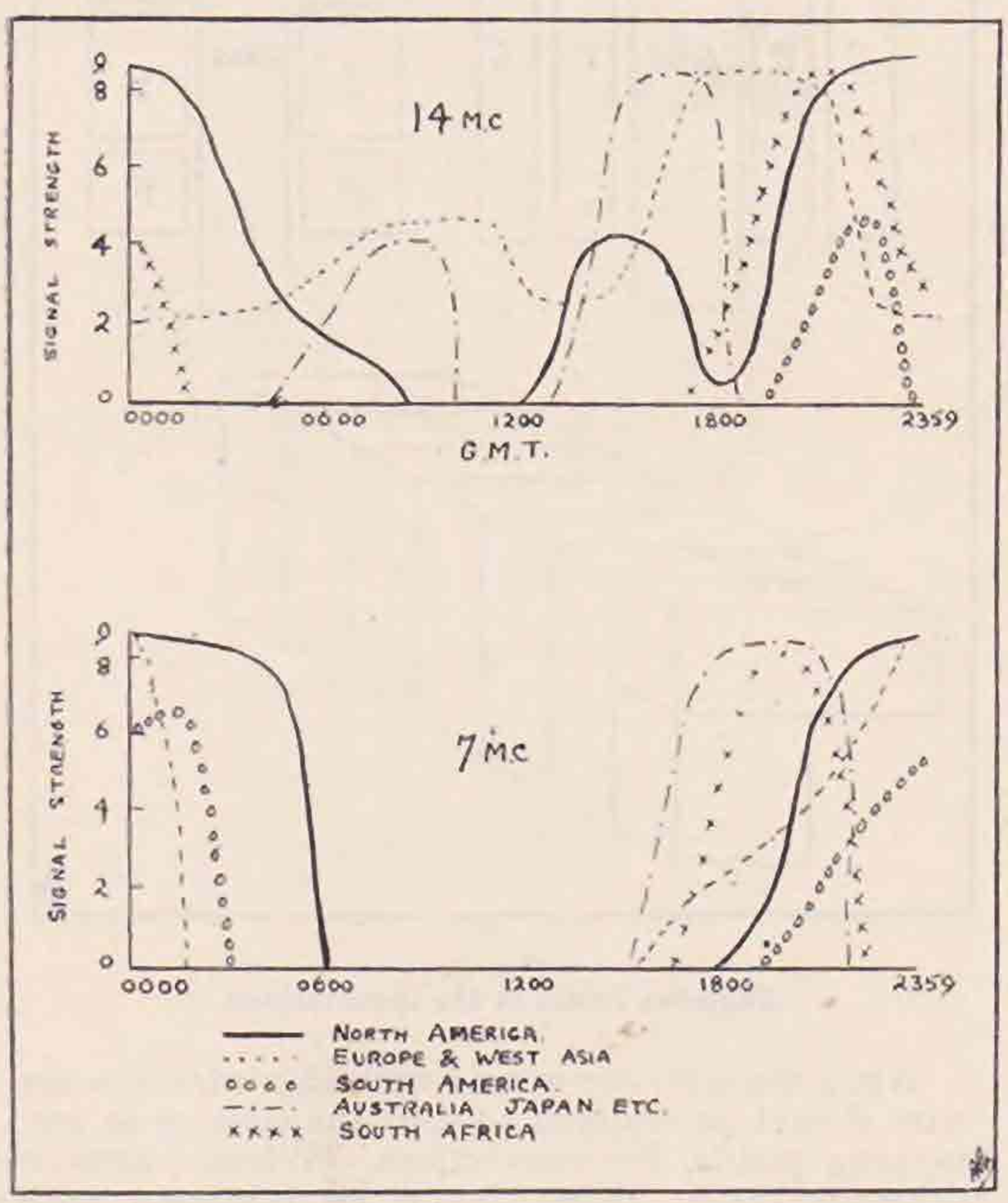
A General View of ST2D.
The receiver is on the left and the power supply control (for the transmitter) is next to it. The crystal controlled transmitter is on the right; the speech amplifier and modulator are built in on the left of the transmitter panel and are followed, working right, by the C.O., F.D. and P.A.

the cherry red stage. The final P.A. is a VT13A or DO/40, giving a maximum output of 50-60 watts derived from an M.L. motor generator and accumulators. Dry or inert batteries are used for grid bias.

During preliminary tests, it was found that the substitution of 3-16th in. copper tube for 14 S.W.G. wire in the F.D. stages gave an increase in output of 20 per cent., except in the case of the C.O. where it had no effect.

The aerial, at present, is a current-fed Hertz with 33-ft. top and 34-ft. feeders. This works well, and it is pleasant to see the aerial ammeter justifying its existence. For 7 M.C. an A.O.G. is used, tapped on the anode coil.

The receiver has an untuned S.G. stage, followed by a detector and R.C. stage transformer coupled to a Pentode. Transformer output is used to the loud-speaker and choke for phones. Whenever possible the former is used, as QRN is then not so unpleasantly loud in the ears. Doublet aerials have been tried, but an odd bit of wire tied up somewhere, with a good earth, wins the day. The receiver is totally screened, and is used as the monitor when necessary. The H.T. battery problem is a nasty one—dry or inert batteries soon get too dry, and wet cells won't stop wet, but prefer to collect sand, insects, etc. Often the same battery has to be switched from receiver to grid bias of transmitter, during transmission, while waiting weeks for replacements from Egypt or England.



With the gear described, and with various other hook-ups, not worthy of discussion, all continents have been worked and most active countries.

Now to get to the original intention of this write-up :—Conditions generally in the Khartoum district.

During May and June the temperature will rise to a daily maximum of 115 to 120° F., with no wind. Then the wind becomes gusty and sand starts to blow round. By August the sandstorms proper turn up, followed by rain—and it is rain, too. The sandstorm is preceded by a dead calm, and can be seen in the distance, a huge bank of brown, stretching skywards, and rapidly approaching. It may miss one or it may not—if it does not, all the gear will be coated with fine sand, and it will be easy to draw ½-in. sparks between aerial and earth. September is a hot, sticky month, and bugs, beetles, etc., thrive in tremendous numbers.

With the exception of the various varieties of QRN, conditions are much the same as anywhere else, except that when working it is DX or nix. QRN seems to be confined to definite periods on the different bands. On frequencies below 500 k.c., QRN is R9 plus, except for a period between three-quarters of an hour after sunrise and about 10.30 G.M.T. (12.30 local time), when all is nice and quiet. On 3.5 M.C. QRN is a steady R9. On 7 M.C. the noise is not quite so bad, and there is a spell of comparative calm from about 19.00 to 04.00 G.M.T. 14 M.C., the band most used in this country, is quiet, except for a period during twilight and usually lasting for two to three hours. 28 M.C. is reasonably consistent—no QRN, few signals, and plenty of car, electric motor and generator QRM.

On 3.5 M.C. no amateur signals have yet been identified, as also is the case with 28 M.C., although on the latter band SUC, GFV and other harmonics have been heard between 13.00 and 15.30 G.M.T. The curves show times of day for signals on 7 M.C. and 14 M.C. These form a fairly reliable guide, the only great variation being that at periods various countries are missing. During the past twelve months, from August to October, VK's were missing, but other signals came in OK on time. December to February VK's were great strength, then they just disappeared except for the morning period on 14 M.C. During April and June all signals other than Europeans and North Africans faded out, and only started to return in August.

During the coming winter ST2C and I intend spending most of our time on 14 M.C., and also, if a few fundamental signals are heard, I shall be on 28 M.C.

In conclusion, may we take this opportunity of thanking the numerous stations for various pleasant chats with the old country and other parts of our Empire.

STRAY.

VK2HR is at present operating on a special test on 7,300 K.C. The power used is 24 watts into the last valve with 10 watts in the aerial. This station will continue to send out tests on 'phone every Monday night at 22.00 to 23.00 S.M.T. for overseas reports.

A gramophone record is being made with the call and QRA of the station in six languages, and reports of reception would be greatly appreciated. Please address reports to Mr. J. Duffy, chief operator, Station VK2HR, 16, Stanley Street, Waverley, Sydney, Australia. All reports will be acknowledged.

THE DESIGN AND CONSTRUCTION OF SMALL POWER TRANSFORMERS.

By H. K. Bourne, B.Sc. (G2KB).

PART II.

(Continued from last issue.)

A FEW practical notes on the actual construction of small transformers may be of use to those who have had no previous experience of this type of work.

There are two usual methods of construction of the coils of small transformers, which have been adopted. In one case, the coils are wound on insulating bobbins which fit the core; in the other, the wire is wound on to formers, which are removed after the coils have been secured by taping.

The taped coil method is suitable for the larger sizes of core, and for the thicker gauges of wire. For smaller transformers and thin wire, the first method is preferable, however, particularly for enamelled wire coils.

Bobbins may be built up out of thick cardboard, or from several layers of thinner cardboard. The completed bobbins should be varnished and well dried. Care should be taken not to make the bobbin too large to go in the window of the core. Also a good clearance between the core and the bobbin must be allowed, in order that the laminations will not have to be forced into the bobbin, with the consequent danger of the sharp edges cutting through the walls. The bobbin must be made of ample strength and rigidity so that there is no danger of breakdown at the corners, when it has been wound full of wire.

When the coils are wound on a bobbin, they are wound concentrically, one upon the other, as in Fig. 2a. If the taped coil construction is used, the coils are then wound side by side, as in Fig. 2b. It is good practice to split up each coil into several sections and sandwich all the sections together. This will bring the coils closer together, thus reducing magnetic leakage and so improving the regulation of the transformer.

If the amateur is fortunate enough to possess a lathe and revolution counter, the process of winding the coils becomes a simple matter. In any case, an ordinary hand-drill clamped to the table makes a very convenient substitute. The bobbin, or former, is mounted on a wooden former held in the chuck of the drill. The reduction ratio of the gears of the drill must be found, and then by counting the revolutions of the handle, the number of turns on the coil is known.

The wire must be wound on in layers as evenly as possible, especially where space is likely to be a little cramped. This is of particular importance in the thicker gauges of wire, say above 32 S.W.G., owing to the great waste of space which occurs if the wire is wound unevenly.

When enamelled wire is employed, a sheet of waxed paper must be put between each layer of the winding. The waxed paper on "Force" packets are very convenient for this purpose. This procedure splits up the winding into definite sections, across each of which only a fraction of the full voltage appears. Care must be taken to prevent the wire from slipping down at the ends from an upper layer to one below it. To prevent this, melted paraffin wax should be run all around the corners of the bobbin, and when this wax hardens, it will effectively insulate each layer from the one below. With windings of cotton-covered wire, these paper wrappings are not essential, as the insulation on the wire is stronger than that on the enamelled wire. As a precaution against breakdown, however, it is wise to put several paper wrappings even in cotton covered windings.

Fig. 2.
P and S denote Primary and Secondary windings respectively.

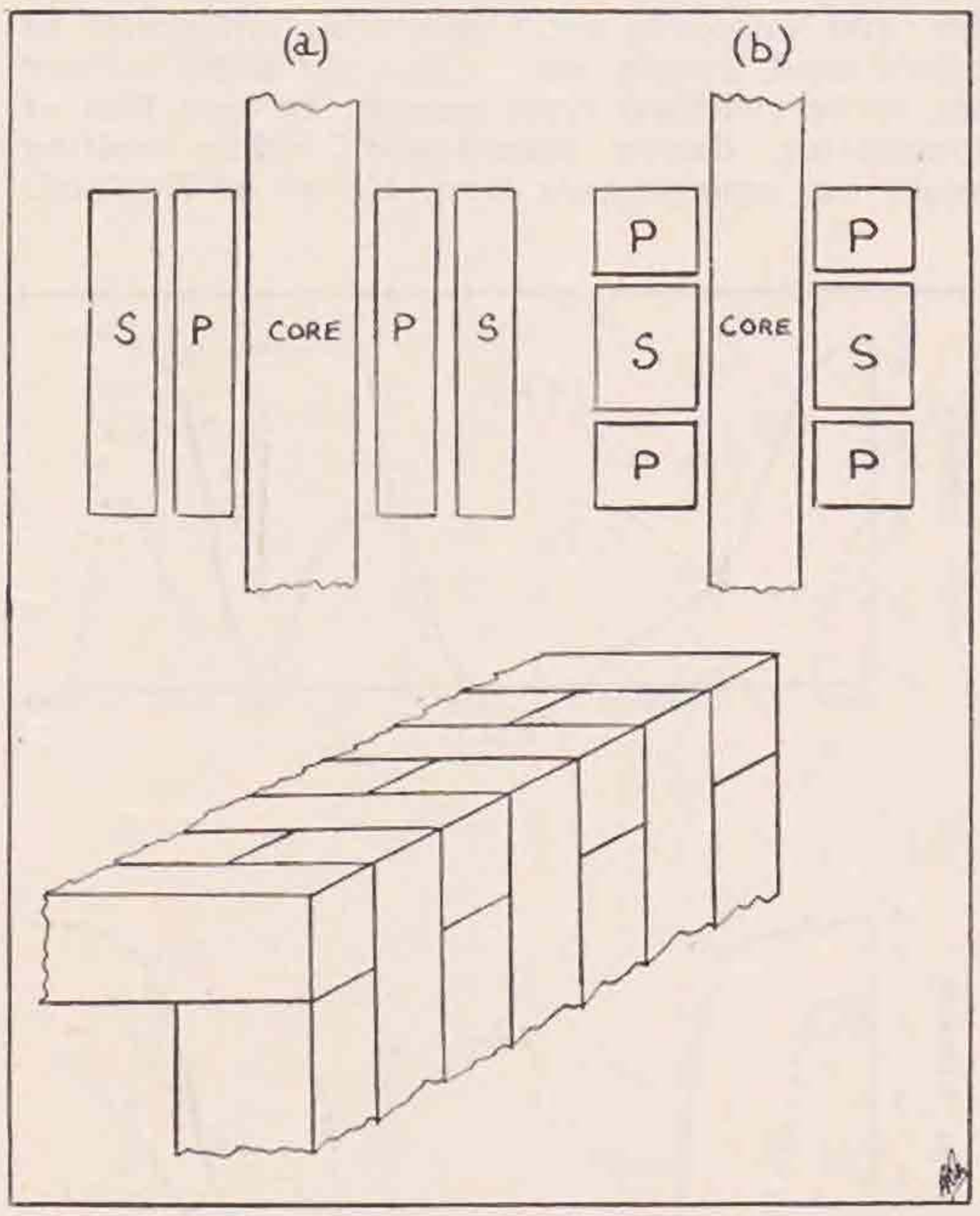


Fig. 3.
Showing joints in the laminations.

When the coils are wound with thin wire, thicker wire should be soldered to it at the ends or at any tapping points, for connections. Where joints or tappings occur, these should be insulated with waxed paper or thin Empire cloth. The connections to the ends and tappings should be insulated in a similar manner. It is best to bring out all connections from the windings through holes drilled in the ends of the bobbin, rather than leading them through the winding itself.

It is usual practice to wind the primary nearest

to the core in bobbin wound coils. Several layers of Empire cloth must be wrapped around the wound primary coil before winding the secondary coils on top of it. Care should be taken to have good insulation between the coils, particularly at the ends, so that no turns can slip down to make contact with the coil below.

Insulation tape should not be used in transformers for insulation between the coils. This material has a fairly high electric strength when it is dry, but when the slightest trace of moisture is present, its insulating value deteriorates very considerably, which would eventually lead to trouble.

It is important to note that coils wound with enamelled wire should on no account be varnished. The reason for this is that many common insulating varnishes will dissolve the enamel coating on the wire, so destroying the insulation. Also the varnish will take a very long time to dry, as there is no hygroscopic material, such as cotton, present, to absorb the moisture in the varnish, Wlth cotton-covered wire coils, the case is different, however, and it is advantageous to varnish these and dry them in an oven. This will prevent any moisture in the air from affecting the insulation of the windings.

After the bobbin has been wound, or the coils have been taped up, the laminations may be assembled. The joints in the laminations should be put at alternate ends of the core, as in Fig. 3. Also, if the laminations are only insulated on one side, they should all be laid the same way up. If two adjacent laminations have their uninsulated sides touching one another, they are equivalent to a single lamination of double the thickness. The eddy current losses, being proportional to the square of the thickness, will then be quadrupled, while the hysteresis loss will be doubled. So if a number of laminations are put together in this manner, the iron losses will be increased considerably, resulting in low efficiency and possible overheating.

Another point to notice in core assembly is always to have an equal number of the two types of laminations, *i.e.*, T and U. Suppose we have one more T lamination, than the number of U laminations, this extra T-piece has an open magnetic circuit, and it will probably be found that this causes the transformer to hum when in operation. The hum will cease when the magnetic circuit is closed by an extra U lamination.

After the core has been assembled, it may be varnished over and clamped tightly and allowed to dry. The varnish not only protects the iron from rust, but also reduces the liability of hum occurring. Before clamping the core, it is necessary to see that the joints in the laminations butt closely together, so that no small air gaps are left in the circuit. Air gaps may cause overheating, owing to the increase in magnetising current. A reduction in efficiency and worse regulation will also be caused by an increase in magnetising current.

When a transformer is put on load, its temperature begins to rise, owing to the heat generated by the losses in the windings and in the core. The temperature continues to rise until at last it attains a steady value. Heat is dissipated by the cooling surface of the transformer until at the steady temperature, the rate of heat dissipation is equal to the rate at which the heat is generated.

The maximum temperature at any point inside the windings should not exceed about 200° F. for cotton insulation. At temperatures above this limit, cotton becomes brittle and will fail, especially when it is subjected to the vibration which occurs in all A.C. windings owing to the periodic forces of attraction and repulsion. Clearly, the temperature of the hottest spot in the windings will be considerably in excess of that of the exterior surface of the windings. Actually, a transformer which runs quite cool is not the most economical, as the cheapest cost is obtained by so economising with the materials that advantage is taken of the maximum permissible temperature rise. Transformers designed with the values given in this article should run fairly cool, however. It was decided to design for cool working so that moderate overloads may be taken from the transformer. An amateur invariably finds that at some date, more output is required from his apparatus than it was originally intended to supply !

In concluding, a few general notes on the subjec t of transformers will be given. If it is desired to light the filaments of the valves in a transmitter from A.C., it is bad practice to use an extra L.T. winding on the H.T. transformer. The reason for this is that as the transmitter is tuned, so the current it takes from the H.T. winding varies. This causes the voltage to vary not only on the H.T. winding, but also on the other windings, and so the filament voltage will vary according to the tuning. This is particularly objectionable if the transmitter is keyed for C.W. The filaments will then flicker, and if the transmitter is self-excited, this will cause a chirp in many cases. So for filament supplies, it is better to have a separate transformer. The winding to supply the rectifier filament may be an extra winding on the H.T. transformer, if desired, as the filament voltage for rectifying valves is usually not critical. Very good insulation should be put between this winding and the others as it is at the full H.T. positive potential. An advantage of having a separate transformer for H.T. alone, is that it is possible to key the primary circuit, provided the transmitter is crystal-controlled, and so obtain clickless keying and absence of broadcast interference.

The voltage of supply mains is by no means constant, since supply authorities are allowed a maximum variation from normal voltage of 4 per cent., plus or minus. So on a 6-volt secondary winding, the voltage may vary between $5\frac{3}{4}$ and $6\frac{1}{4}$ volts, depending on the load on the mains.

With regard to faults developing in transformers, the usual symptoms are overheating and loss of output. If the insulation between several turns of wire on one of the windings has broken down, these turns are short-circuited and so behave as a secondary winding of very low impedance. A heavy current circulates through the turns causing serious heating and burning of further insulation, which leads to the destruction of the transformer. The breakdown of the insulation may be caused by moisture, or by corrosion due to any soldering flux that has been left on joints in the windings, or by voltage surges which may break down the insulation between the end turns of the winding. When the transformer is switched on to the mains,

(*Continued on page* 183.)

HIC ET UBIQUE.

Licence Facilities.

Attention is drawn to the fact that the Society cannot intercede on behalf of its members desirous of obtaining transmitting licences. Such applications must be made direct to the Secretary, G.P.O., London, but assistance in preparing and filling up the necessary forms will gladly be given by District Representatives.

Members are further advised that applications for high power must be sent *via* their D.R., who has been instructed to comment upon them and submit them to Council.

All applicants for high-power licences are required by Council to give an assurance in writing that their transmissions will be crystal-controlled, or that some other recognised method of frequency stabilisation will be employed. Applications for the use of the 3.5 M.C. band should also be made through the appropriate D.R.

Under no circumstances can the Society obtain facilities for the use of other bands.

J. C.

WE understand from the Air Ministry that the non-stop flight to Capetown planned for November 22 has been postponed for about a month, and the flight will in all probability take place on or about December 22, when certain minor adjustments have been made to the plane.

* * *

Owing to the nomination of Mr. Dedman (G2NH) and Mr. H. V. Wilkins (G6WN) in the forthcoming Council election, ballot forms have been sent to all corporate members in accordance with Article 49.

* * *

Members are reminded that if they desire permits for 36-hour working in the forthcoming 28 M.C. Tests, they should forward their applications to the Hon. Secretary immediately.

* * *

It has been decided to form a collection of lantern slides showing some of the well-known amateur stations of the Empire, and members are asked to forward print of their apparatus for consideration in connection with this. Photographs should be forwarded as soon as possible to headquarters, and it is emphasised that only sharp and clear pictures will be of use for the purpose.

Owners of photographs selected will be asked for the respective negatives, together with a short description of the apparatus. Any picture of historic or particular radio interest will be especially welcomed.

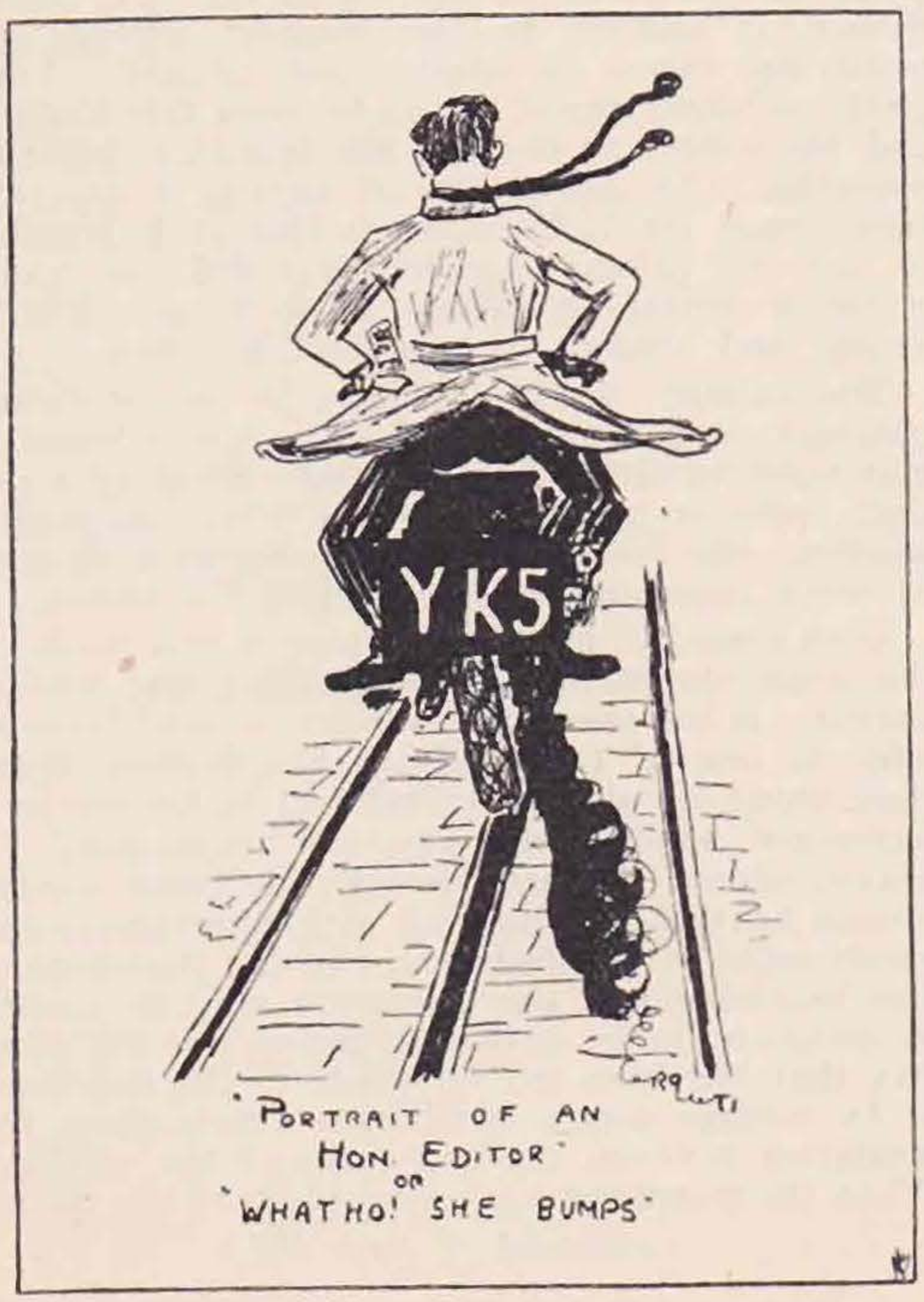
* * *

It has been suggested that a list of the frequencies of the E.L.S. and other well-known G stations be published monthly, and to this end those who have accurately calibrated crystals are asked to drop a line to the Hon. Secretary stating frequencies of their transmissions.

* * *

Erratum.

The Editor regrets that the conversion of 7,785 K.C. to metres in the article on the NPL Transmissions (page 126 October BULLETIN) was erroneously given as 168.6 m. instead of 168.06 m.



"PORTRAIT OF AN HON. EDITOR" OR "WHAT HO! SHE BUMPS"

DISTRICT 14 FIELD DAY.

Sunday, November 1, will go down in the annals of District 14 as a memorable occasion—for more reasons than radio.

Saturday afternoon, October 31, saw the active and keen members of the district, with the exception of three, who were to follow later, on the road to Abbis Roothing, in Essex (where Woodford is situated).

In due course we arrived at the rendezvous—a cottage in a jungle, surrounded by an evil-looking moat. (We were assured of a good earth, anyway !) Also it came in handy later, for the rubbish, but we had to pull him out again, because the owners of the moat objected.

Upon casting our eyes aloft, in the dim distance we perceived a pair of insulators (?—ED.) suspended, we subsequently discovered, by a length of wire. We cheered up at this, for this looked like an aerial.

All we required, therefore, in addition to large quantities of food, was a good Tx and Rx—and about a ton of other gear. This we proceeded to unload from a couple of " baby " cars, and in due course the Tx was erected inside, on the only available table.

After the Rx had been coaxed into giving up a few faint squeaks, which the owner swore was the Transatlantic fone, we sat round to our first meal —please note the only available table being in use.

The Tx consisted of a couple of L.S.5's in push-pull, with interchangeable coils for 14 M.C., 7 M.C. and 3.5 M.C. The familiar tuned plate-resonant grid, circuit was employed, H.T. being derived from an M.L. rotary transformer, run off 12-volt accumulators. This proved eminently satisfactory, and three stations were worked on 7 M.C., all reporting our signals as R6.

After a short trip for more " food," we found the remainder of the party had turned up, there being present then, G6UT, G6TX, G6CW, G6FY, G6LL, G6LB, G6SG and 2AOV.

G6CW constituted himself cook, and made a very fine job of it.

Further work on 7 M.C. was then carried out before we transferred our attention to 3.5 M.C.

This band proved very successful, our first QSO being with D4LOP, who gave us R6. Further tests on this band gave three more QSO's, and at 04.30 G.M.T., while the " sluggards " were sleeping, four of the stalwarts set out for a stroll.

Upon returning at about 05.40 G.M.T., they found the " sluggards " still sleeping, and proceeded to turn on the rotary transformer and call " test " on 14 M.C. This elicited no replies (by radio), the band being completely dead.

Work then commenced on erecting a 1.75 M.C. Tx, upon an article of bedroom furniture found lying about the place. The Tx was kindly loaned by G6SG, and consisted of a simple T.P.T.G. circuit, grid modulated.

Some trouble was experienced at first owing to lack of counterpoise, but after the cows had passed we erected one, and quite a lot of R.F. was passed to the aerial.

During the morning many stations round the East and South-East coast were worked on telephony, very satisfactory reports being received. We were honoured, also, by a visit from G2NU and Mr. Tapson.

The afternoon was given over to tests with the 3.5 M.C. Tx, in an unsuccessful attempt to modulate its output.

The evening again saw us on 1.75 M.C., and further stations were worked.

One very noticeable feature was the way stations to the North-West of London came in. G5RD, in particular, being much stronger than usually received in East London.

At 20.00 G.M.T. the most successful field " day " of the district came to a close.

Especial thanks are due to G6LB and G6SG for obtaining " portable " permits for their call signs for the occasion. The district would like, also, to record its appreciation for the work done by G6UT and G6TX in arranging the details of the " outing." Without their forethought and care it is certain that the field " day " would have collapsed. Our thanks are also due to G6LL for the loan of his Rx, and also the push-pull Tx.

We would like, also, to thank Messrs. Rotax, Ltd., for the loan of an M-L rotary transformer for H.T. purposes. These machines are ideal in such circumstances.

Stations worked :—7 M.C., call sign G6LB : EARZ, EARLP, HB9T ; 3.5 M.C., call sign G6LB : D4LOP, PAODJ, D4BOG, G6PA, G5YK, HB9T ; 1.75 M.C., call sign G6SG : G2ZN, G5GZ, G2DQ, G2MI, G6QO, G5JT, G5RD, G6PA.

FORTHCOMING TESTS.

HUNGARIAN 28 MC. TEST.

Every Saturday from 15.00 to 19.00 G.M.T., and every Sunday from 07.00 to 19.00 G.M.T., the following stations will call " CQ TEN " for five minutes during every 30 minutes. They will listen for replies on 28. QSL cards to be sent via M.R.A.E or R.S.G.B.

The stations are: HAF3D, HAF4D, HAF8B, and HAF8C.

SPANISH INTERNATIONAL CONTEST.

We are informed by the Spanish Radio Society, " Red Espanola," that they have organised a transmitting contest to be held during the last fortnight of January, 1932, for their members and for amateur non-members residing outside Spain. A gold, silver and bronze medal will be awarded to the three foreign amateurs who log the greatest number of QSO's with members of the " Red Espanola." No formal entry is necessary for non-Spanish competitors.

ABSTRACT OF RULES.

1. The contest will begin at 00.01 G.M.T. on January 15, 1932, and end at 24.00 G.M.T. on January 31, 1932.

2. Any licensed amateur wavelength may be employed.

3. A code word consisting of a group of five letters (two of which will be vowels), with two numerals interspersed—for example, AR8E3LT—will be transmitted by the Spanish amateur.

4. Not more than one QSO with any one station will be admitted in scoring.

5. Proof of QSO in the form of QSL cards with details of call-sign and code word, etc., filled in, should be forwarded to the "Red Espanola."

6. Cards to reach the "Red Espanola" by March 31, 1932. Address: "Red Espanola," Apartado 262, Madrid, Spain.

In publishing this information we wish to point out that we have received no official information regarding the position of the Spanish Society "Red Espanola."

RECEPTION TESTS.

Further Reception Tests have been arranged as given below, and it is hoped that still more members (of all grades) from all Districts will participate, and that from a careful study of the logs some extremely interesting comparisons will be shown. Log sheets on quarto (R.S.G.B. notepaper will do) and separate sheets should be used for each band. The logs will then be circulated in budget form to all members contributing. Logs to be sent to T. A. St. Johnston, G6UT, 28, Douglas Road, Chingford, E.4. Details of log to be standardised as below :—

Member's Name and Station Call Sign,
B.R.S. or A.A. .....
Address .....
Wave-band ..... M.C. Receiver.....
Type and Aerial Details.....
Direction .....
Date ..... Period G.M.T.....
Other information .....

Time. G.M.T.	Station. Calling.	Called.	Q.R.K. R.	Tone. T.	Q.S.A.	Q.S.C.	Remarks.
.....	.....	.....			.....	.....	.....

RECEPTION PERIODS AND BANDS.

Date 1931.		Period, G.M.T.	Band.
December 19	...	23.30—24.00	1.7 M.C.
,, 20	...	20.00—20.30	3.5 ,,
,, 26	...	21.30—22.00	7 ,,
,, 27	...	09.00—09.30	14 ,,
1932.			
January 3	...	15.30—16.00	14 ,,

CALLS HEARD.

Contributors to this section will assist considerably if they will list their calls in strict alphabetical and numerical order.

14 M.C.: g2dh, g5wq, g6rg, vk4gk, zd2a, zs6y, zu6u, zs1b. 7 M.C.: gflr, g5yh, g5wq, vk2oc, vk2sf, vk2sx, vk2tx, vk2xg, vk2xu, vk2zw, vk3lq, vk3sk, vk3wl, vk3bd, vk3gj, vk4fb, vk4uk, vk5hg, vk5rw, vk5ml, vk5mb, vk5lx, vk6jk, vk6wt, vk6bn, vk6gf, vk6bo, vk6ft, vk6ag, vk7cw, vs1ad, vs1fd, vs6ag, vs6ah, vu2kh, zs2n, zs5l, zt5r, zs6d, zt6a, zt6c, zt6x, yi2dc.

* * *

BRS669, 5, St. Johns, Kempston, Beds. October to November.

7 M.C.: cn8mi, cn8mk, ct2ab, ct2af, ct2r, frear 149, gx2tm (QRA ?), hc1fg, hh7c, hj1ak, j69 (QRA ?), k4es, k4ry, lkD11 (QRA ?), pk1jr, pl18o (QRA ?) py2ac (QRA ?), ry1r, su1ch, ti3la, ve1co, ve1dl, ve1dq, ve6nus, vk2br, vk2hw, vk2jx, vk2lz, vk2oc, vk2wk, vk2xu, vk3ml, vk3rp, vk3wl, vk3zw, vk5hg, vk6op, vk7jk, vo8an, vo8mc, vs3ac, w1abn, w1acw, w1au, w1azl, w1cot, w1dby, w1lz, w1me, w2dn, w2dq, w2es, w2rs, w2sp, w2zc, w3aho, w3bjz, w3cbe, w3fb, w3zq, w4as, 4hk, w8fcb, w9dzx, zc6p, zl1ak, zl1ar, zl2ab, zl2bi, zl2ci, zl2cj, zl2cl, zl2cw, zl2dj, zl2fr, zl3aj, zl3aq, zl3as, zl3aw, zl3ax, zl3bc, zl3bn, zl3bt, zl3cc, zl3cj, zl3cs, zl4am, zl4ao, zl4ap, zl4ar, zl4bg, zl4bq, zl4bt, zl4ca, zs2a, zs4m, zs6y.

VS7AO, Trincomali, Ceylon. October 10 *to* 31, 1931.

14 M.C.: d4aa, d4aca, f8bs, f8rj, g2dz, g2ig, g2nh, gx2tm, ka1cm, on4au, pa0dw, pa0dm, pk1, pk1ci, pk1hs, pk1wr, pk2wj, pk3bq, pk4aj, va3ac, vu2ah, vu2ca, vu2fx, vu2bj, vu2jb, vu2kt, vu2wb, vk2ax, vk2jp, vk2ku, vk2xu, vk2zw, vk4cb, vk4gk, vk4rk, w7de, yi2dc, zd2a, zl1ce, zl2gn, zu5b, zs1b, zs6y.

Dr. J. Lunt (ZT1Q), Kenilworth, Capetown. September 17-*October* 29.

14 M.C.: ac8al, g2ig, g2vq, g5ml, g5pj, g5sy, g5yg, g6gd, g6ll, g6rg, g6vp, g6wt, g6yk, gflr1, gx2tm, (October 16, 25 and 28), st2c, st2d, ve1dq, vq2ty, vq3msn, vs3ac, vs3wr, vs7ap, vs7gt, vs7sg, vu2ah, vu2df, vu2dj, vu2fx, vu2jp, vu2kt, zd2a, ze1je, ze1jg.

* * *

ST2D. October, 1931.

14 M.C.: g2ao, g2bi, g2cx, g2dh, g2dz, g2ig, g2ih, g2qb, g2tk, g2ux, g2yd, g5bd, g5cv, g5gy, g5ml, g5pj, g5rv, g5yg, g5yk, g6gs, g6hp, g6mn, g6rb, g6rg, g6vp, g6wn, g6xq, g6yd, su1aa, su1ch, st2c, ve1cg, vk3bo, vo8mc, vs7ap, vs7gj, yi2dc, zc6jm, zd2a, zt6k.

*BERS*14, *R.A.F., Ambala, Punjab, India.*

ei8c, g2ay, g2bg, g2by, g2cx, g2fn, g2io, g2ma, g2oa, g2op, g2pw, g2pz, g2qb, g2rv, g2vq, g2zd, g2zn, g2zp, g2zw, g5bd, g5bj, g5dc, g5fa, g5is, g5ml, g5mu, g5ni, g5pl, g5qv, g5qy, g5rq, g5rv, g5vm, g5yc, g5yg, g5yk, g6bo, g6hp, g6mn, g6ot, g6rm, g6rg, g6vp, g6wn, g6wt, g6yk, gx2tm, su1aa, su1cw, st2d, vk2lx, vk3dq, vk3ga, vk3gx, vk4gc, vk5bo, vk5ml, vk5wr, vk6bd, vk6bg, vk6bn, vk6dw, vk6fl, vk6gf, vk6jx, vk6nj, vk6rl, vk6wi, vk6wj, vs1ab, vs1ad, vs6ae, vs6ag, vs6aw, vs6am, vs7ai, vs7ap, vs7fd, vs7gt, vu2ah, vu2cs, vu2df, vu2dr, vu2fx, vu2fz, vu2hrr, vu2jb, vu2jp, vu2kw, vu2kt, vu4nt, zs3y, zs5c, zs5d, zs5l, zs6d, zs6y, zt5r, zu5a, zu5b, zu6w, zu7d, v2x, v4x.

* * *

A. S. Mathews (*BRS*497), 24, *Woodside Park Road, North Finchley, London, N.*12.

14 M.C.: gx2tm, py1xo, st2d, ve2bb, vk2ba, vk2hc, vk2lz, vk2nr, vk2xg, vk2xu, vk2xy, xf7c, yi6kr, zl3ar.

7 M.C.: fne5z (QRA ?), fm8pc, j1ct, k4ry, ka1hr, su1ch, ve1bv, vk2ns, vk3bo, vk3bw, vk3jt, vk3lz, vk3oc, vk3wx, vk3xi, vk5gr, vk5hg, vk5lk, vk6fl, vk6wi, vk7ge, w5atf, xf7c, xf8nih, xx1yj, yi2dc, zl1ak, zl1cc, zl2ab, zl2ci, zl2cl, zl2cm, zl2du, zl2du, zl2dv, zl3al, zl3aq, zl3as, zl3aw, zl3ca, zl3cm, zl3da.

G2TK, 30, *Sculcoates Lane, Hull. November* 22.

1.75 M.C.: g2ak, g2au (?), g2aw, g2ip, g2qi (fone), g5di, g5ih, g5nc, g5ns, g6ba, g6gr, g6gu, g6gw, g6kp, g6qs, g6sg, g6sy, g6uf, g6uj (fone), g6wy, oz1p.

SOCIETY CELEBRITIES No. 3.

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.

Codes and Abbreviations.

To the Editor of T. & R. BULLETIN.

SIR,—I regret that I am still unable to agree with the remarks on this subject by G5RV, in as far as they refer to code and plain language, and I hope that he will forgive me if I have misunderstood his letter in any way, and I hope he will extend to me the same privilege.

The idea as embodied in my first letter was to create an amateur "Urgency" signal which would have the same meaning in the amateur world as the SOS signal in the wider movement, yet G5RV would place a call of this magnitude in the same category as OM, OB, CUL, etc. I had in mind the idea of some sort of auxiliary to the SOS signal by which the amateur fraternity could bring its organisations into a common line should the occasion arise, and a national or even international calamity require the help of the movement. I refer, of course to flood, earthquake, and similar catastrophes of Nature. A call prefixed by a distinctive and internationally known prefix would be at once sorted out by any operator from the usual run of signals, with the ease he sorts out test or CQ calls, where a dozen plain language messages would go unheeded, hence the use by the services and shipping of distinctive groups of letters to denote unusual conditions. The use of abbreviations is not, of course, peculiar to amateurs, I used some of these terms before I heard of the existence of amateur radio on both land line and radio circuits, and that was at least twelve years ago; it always has been and, as far as I can see, always will be, largely used wherever Morse signals are in use, for those operators who have handled busy circuits know and appreciate their use during rush hours. But if I understand G5RV right, it is simply that he does not agree with the frequent use of certain abbreviations. Well, OM, as a rule a QSO, except with a personal friend, is of very short duration, and it has been my experience that the overseas operator has usually gone to some very considerable pains to learn these few lines of English, and far from the use of these few abbreviations causing us any loss of credit in the eyes of the world, I find that they think there is something very friendly indeed in the use of these phrases, and all honour to them for the use of the terms. The disgrace, to my mind, is that our stations accept so easily these attempts at English and make no attempt to return the compliment. I have set myself the task of learning their languages, and have, so far, had some success.

I had no intention of being irrevelant in my reference to the "T" code. I tried to deal honestly with the whole subject as covered by the reference. My copy of the "T" code gives T7 as "Pure D.C. Tone," but has key thump or back wave, no mention of steadiness of wave here. It is not an unknown thing for a station employing a marker and spacer to have an unsteady note. To my mind, a T7 note

need not by any means have a perfectly steady note as an understood part of its definition; that would, in my view, be covered by T8, but the spacer defines it T7.

I am, Sir, yours sincerely,
W. E. F. CORSHAM (G2UV).

The response to an Editorial request for a short reply from G5RV to the above letter shows that G2UV has misunderstood G5RV's statement, and that the latter considers amateurs should master existing codes before learning others; further, as there is already one urgency signal, internationally known and respected—SOS—why not use it? G5RV also comments on the numerous amateur abbreviations applying to a single word, as for example, TKS and TNX for "thanks," and considers there is more than one version of the "T" code, and that this has caused useless argument in the past; a revision by a competent authority is suggested.

[This correspondence is now closed. It is hoped to make use of some of the suggestions and ideas at a later date.—ED.].

A Reply from D.A.S.D.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—Referring to the Editorial published in the November, 1931, issue of the T. & R. BULLETIN, I shall appreciate it if you will kindly publish the following comments in order to remove the present misunderstandings which appear to exist between your society and the D.A.S.D.

It is with considerable satisfaction my colleagues note your remarks that the attacks made in your May Editorial against certain European societies did not refer to the German national organisation. We feel that if it had been more clearly stated in your original Editorial, this unfortunate discussion would not have arisen.

We also note that your Council associates itself with the May Editorial, but, at the same time the D.A.S.D. executive wish me to point out that in our reply published in "CQ" it was expressly stated that D.A.S.D., for its part, found it necessary to repudiate that portion of your editorial which was reprinted in "CQ." The statements made in your November editorial that "no mention is made that D.A.S.D. even associate themselves with the idea behind the ("CQ") Editorial," and that "D.A.S.D. seems to have assumed the rôle of defendant in general," are therefore erroneous.

The writer whose name is specifically mentioned in your November Editorial is himself "somewhat surprised" at the statement that "he only attacks our hard statement of the truth" in view of the fact that he stated very clearly in "CQ": "All serious amateurs will agree that, in spite of a great improvement in the character of European notes during the past years, the situation is still far from ideal. . . ."

It seems, therefore, that language difficulties may be responsible for the misunderstandings which have occurred.

Our one and only objection to your May Editorial was the statement: "We know not whether the societies concerned are unable, *or do not wish*, to keep the air clean—or it may be that the *amateurs responsible* for the safe running of the societies concerned are *themselves the chief offenders* in polluting the ether."

In conclusion, may we state that the high quality of British amateur signals is much appreciated in this country, and although we could not approve of the manner in which you addressed your remarks to the national societies in general, we nevertheless assure our British colleagues of our wholehearted and loyal co-operation in all matters affecting the welfare of the amateurs of our two countries and of Europe in general.

Yours sincerely,
CURT LAMM,
Hon. Foreign Secretary, D.A.S.D.

Regarding the Monitor.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—Far be it from me to disparage in any way the design of a Monitor wave-meter, published in your issue for September, but I venture to think that it could be improved in one or two ways, which I think would help to keep its frequency constant, and to enable it to stand rough usage and transport.

The idea is this: The whole of the wiring with the exception of H.T. and L.T. leads can be placed under one ebonite panel and soldered hard there, leaving no wires from coil holder to valve holder to get pushed out of place. My monitor is quite used to having its phones and other odds and ends jammed in on top of it for transport to a friend's bungalow on the back of a motor bike and it is still as accurate as the day it was calibrated.

Yours faithfully,
ERIC A. BRAMWELL (VS7PK).

We Will Keep to English!

To the Editor of T. & R. BULLETIN.

DEAR SIR,—In making a reply to BRS591's letter in the November issue of the BULLETIN, I am sorry to learn that I have "jammed his signal."

However, I still hold to my opinion that the international bond of amateur radio is a greater and stronger one than that of Esperanto, and I certainly had not forgotten all about Esperanto's claims when I made that previous statement that "jammed Mr. Matthews' signal."

I believe I am correct in stating that soon after the inception of the I.A.R.U. this body decided to use Esperanto as their official language, but it didn't seem to "take on" with "hams" at all, and English now is to the fore. Esperanto is only an international code, and as we had already our own international code of abbreviations, official and otherwise, it was only natural to expect that a further "code" wouldn't help matters much.

English is slowly and surely being adopted as an international language the whole world over. Don't think, Mr. Matthews, that I've got a grudge against Esperanto, but a language has traditions and roots that Esperanto never can have. I learned a good deal of Esperanto some years back, but am afraid it served me little in "amateur radio," and now I prefer to learn a little of as many languages as possible, and with the aid of these and "ham language," I can always be sure of a good intelligible "ragchew."

Another thing requiring comment is with regard to his plea for more fone "QSO's." Yes, OM, fone would really be the *ultima thule* for making friends via radio. However, even the most modern

amateur fone station takes up " more room in the ether " than a C.W. station, and if we all started to use fone " ham radio " would soon not be worth while at all. Besides, I don't think one gets the real aspect of amateur radio with fone QSO's. After all, its traditions are built up on the foundation of the morse code.

Well, I've already trespassed too much upon the " BULL's " precious space, so will end by hoping that Mr. Matthews doesn't develop into a " fone fiend."

I'm sure if he sticks to the code he'll master it quickly, and I'll close by wishing him 73 and good luck in ham radio.

I am,
Yours sincerely,
HARRY C. D. HORNSBY (G5QY).

QRA Section.

Manager : M. W. PILPEL (G6PP).

NEW QRA's.

G2FI.—UNIVERSITY COLLEGE (Electrical Engineering Department), Gower Street, W.C
G2KB.—H. K. BOURNE, 24, Regent Place, Rugby.
G2RW.—A. G. ROWE, 2, Westley Road, Bury St. Edmunds, Suffolk.
G2VR.—Portable station of G2VQ.
G5FN.—S. A. C. HOWELL, 117a, Trafalgar Road, Gillingham, Kent.
GI5MO.—C. MORTON, 27, Bristol Avenue, Belfast.
G5NP.—W. J. CRAWLEY, 1, Pisgah House Road, Broomhill, Sheffield.
G5OQ.—E. F. BAKER, 5, Currie Road, St. John's, Tunbridge Wells, Kent.
G5OU.—H. J. AHIER, " Lansdowne House," 45a, Colomberie, St. Heliers, Jersey, Channel Islands.
G5OZ.—E. HOLT, 43, Park Road, Hale, Cheshire.
G6CC.—B. A. MATHEWS, 20, Hesketh Crescent, Stockland Green, Birmingham.
G6GU.—E. GAUKRODGER, 4, Montrose Villas, Chewton Road, Keynsham, Bristol.
G6PF.—L. PARFITT, 88, Queen Street, Abertillery, Mon.
G6PM.—F. PEMBERTON, 69, Langham Road, London, S.W.20.
G6XO.—J. NIXON, 33, Seaview Road, Gillingham, Kent.
2ARN.—J. H. HARGREAVES, 26, Kingsgate, Bridlington. Yorks.
2AUA.—N. L. H. PLATT, " Daneswood," Barton Court Avenue, New Milton, Hampshire.
2AVY.—A. DELLBRIDGE, High Road, Laindon Hills, Essex.
2BJX.—H. HARRISON, " Ashleigh," Folley Lane, Caddington, near Luton, Beds.
2BMR.—D. MOORE, 97, Johnson Road, Lenton, Nottingham.
2BSR.—R. Y. PARRY, 127, Charlton Road, Kingswood, Bristol.

The following are cancelled : G2TA, G5MI, 2ABW, 2AFO, 2AHD, 2ANU.

New Members.

CORPORATES—GREAT BRITAIN.

C. H. YOUNG (G2AK), 52, Maidstone Road, Handsworth, Birmingham.
H. C. TURNER (G5OJ), " Gedling," Forest Ridge, Keston, Kent.
L. W. HOOKE (G5XH), 104, North End, Croydon, Surrey.
G. WEBSTER (G6AJ), 28, Park Road, Barnsley, Yorks.
W. P. DOLPHIN (G6DP), 127, Kings Road, Old Trafford, Manchester.
T. LAING (G6LG), 13, Salisbury Terrace, Aberdeen.
G. W. S. MELHUISH (2AGD), 75, Springfield Road, Cotham, Bristol.
L. E. CRABBE (2AHX), 13, Luccombe Hill, Redland, Bristol.
E. M. L. STEAR (2APN), 25, Rokeby Avenue, Redland, Bristol.
A. J. PAGE (2ARZ), 41, Mayfield Road, Chadwell Heath, Essex.
L. B. PARKES (2AUZ), 102, Lichfield Street, Walsall, Staffs.
W. C. G. SMITH (2BQO), 23, Fairfield Road, Montpelier, Bristol.
R. J. KEIR (2BTG), 59, Gladstone Place, Aberdeen.
E. L. HOAD (BRS654), 64, Lancaster Road, Southsea, Hants.
W. N. BRUCE (BRS655), 10, Murieston Terrace, Edinburgh.
J. R. HARVEY (BRS656), " Lynton," Haynes Park, Hornchurch, Essex.
J. F. RENOUF (BRS657), 1, Rockhampton Villas, St. Aubin's Road, Jersey, C.I.
J. P. SHILLINGFORD (BRS658), The Wain House, Little Heath, Potters Bar, Herts.
W. H. WATTS (BRS659), Radio House, Maesteg, Glam.
F. V. HEADLAND (BRS660), 101, Belgrave Road, Wanstead, E.
R. H. WOODALL (BRS661), 18, Oldfield Lane, Greenford Green, Middlesex.
R. J. BROCKELSBY (BRS662), 212, Northumberland Park, N.17.
J. H. TWYDELL (BRS663), 11, Belvoir Crescent, Bowbridge Road, Newark, Notts.
A. SCOTT (BRS664), 14, Cornhill Terrace, Leith.
R. ROBSON (BRS665), Naburn, Yorks.
C. B. DURHAM (BRS666), Bulls Farm, Herriard, Hants.
A. C. OLIVER (BRS667), 28, Clarence Road, London, N.22.
H. E. M. LAWSON (BRS668), 77, Kennington Avenue, Loanhead, Scotland.
J. C. G. KEALY (BRS669), 5, St. John's, Bedford Road, Kempston, Beds.
M. H. MUNROE (BRS670), 1, Paisley Avenue, Edinburgh.
E. HOWELL (BRS671), 6, St. Paul Street, Chippenham, Wilts.
H. S. MANSBRIDGE (BRS672), Gellibrands, Chalfont St. Peters, Bucks.
T. W. M. HALLAM (BRS673), 10, Morley Road, Thorneywood, Nottingham.
H. C. SPENCER (BRS674), 1, Shepherds Hill, Stoughton, Guildford.
B. F. SKINNER (BRS675), 2, Newnham Avenue, Bedford.
E. J. MARTIN (BRS676), Eden Villa, Burham, near Rochester, Kent.
W. B. BROWN (BRS677), 137, Brixton Hill, S.W.2.
G. EDWARDS (BRS678), *News-Chronicle*, 19-22, Bouverie Street, E.C.4.
R. G. KNIGHT (BRS679), 21, Beresford Road, East Finchley, N.2.
S. A. TAYLOR (BRS680), 4-31, Cregoe Street, Birmingham.
J. G. STONESTREET (BRS681), Pilot's Lodge, Lower Hardres, near Canterbury, Kent.
J. HAMILTON (BRS682), 10, Airlie Terrace, Dundee, Scotland.
E. FEWKES (BRS683), 28, Shipley Road, Leicester.
F. A. VOST (BRS684), 26, Pinewood Avenue, Warrington, Lancs.
L. HILL (BRS685), 160, Wells Road, Knowle, Bristol.
H. MARTIN (BRS686), 68, St. Mark's Road, Easton, Bristol.
H. T. BAKER (BRS687), 21, Church Road, Horfield, Bristol.
H. J. KNIGHT (BRS688), 45, Sloan Street, Whitehall, Bristol.
T. F. GLEED (BRS689), 32, Brynland Avenue, Bishopston, Bristol.
F. G. GARAWAY (BRS690), 28, Richmond Road, Montpelier, Bristol.
W. L. DAVIES (BRS691), 57, Hawthorne Street, Knowle, Bristol.
J. L. THOMAS (BRS692), 12, Upper Sandhurst Road, Brislington, Bristol.

CORPORATES—DOMINION AND FOREIGN.

W. BAINBRIDGE (VU2AH), W/T Cabin, R.A.F. Depot, Drigh Road, Sind, India.
A. H. TILSE (VK4WO), Railway Parade, Yeronga, Queensland.
C. W. BROWN (VK6CB), 11, May Avenue, Subiaco, W. Australia.
N. F. OLLIVIER (VK6FO), 26, Merriwa Street, Hollywood, W. Australia.
W. H. LOCKLEY (VU2HG), " Roslyn," Barnaby Road, Kilpauk P.O., Madras, India.
A. M. MACCOLL (VU2LD), c/o A. Scott & Co., Rangoon, Burma.
A. W. HOTTINGER (W3EV), 726, Greenleaf Street, Allentown, Pa., U.S.A.
T. C. CHAMBERLAIN (Yi5TC), i A. D. Hinaidi, Baghdad, Iraq.
A. W. H. GWINNELL (Yi6AG), i A. D. Hinaidi, Baghdad, Iraq.
D. A. RICHARDSON (ZS1B), " Fernleigh," Camp Ground Road, Newlands, Cape, South Africa.
W. S. PENNEL (ZS1Z), Milan Villa, Penrith Road, Wynberg, Cape, South Africa.
G. PATTERSON (BERS88), P.W.D. Mogok, Burma.
F. J. MUSTILL (BERS89), c/o A. Scott & Co., Bankers, Rangoon, Burma.
R. J. TRAILL (BERS90), " Tuwinga," Bundella, N.S.W., Australia.
A. DE MONTIGNY (BERS91), Bishop's House, Chittagong, Bengal, India.
E. J. DUNKLEY (BERS92), c/o Messrs. Philips Electric Co. (India), Ltd., P.O. Box 1058, Rangoon, Burma.

The Incorporated Radio Society of Great Britain.

Headquarters Society:—BRITISH EMPIRE RADIO UNION,
53, VICTORIA STREET, LONDON, S.W.1. ('Phone, Victoria 4412)

APPLICATION FORM.

The Hon. Secretary,

Sir,—I beg to make application to be enrolled as a member, and shall be obliged if you will submit my name to your Council. I agree, if elected, to act and abide by the Rules of the Society as expressed in its Articles of Association and By-laws.

Signature.....

Name in full (please use Block Letters) .....

Address (to which all communications may be sent) .....

Nationality..... Age (if under 21).....

Call Sign.....

NOTE.—*Members not having Call Signs are allotted B.R.S. (British Receiving Station) or B.E.R.S. (British Empire Receiving Station) Numbers, which are used for identification purposes only.*

Proposed by..... Seconded by.....

NOTES.—*Applicants who do not know any member may accompany their forms by references in writing by persons to whom they are known. Such persons should be householders, and should state profession and length of acquaintance with applicant.*
The Council reserve the right to refuse any application without reason.

UNDERTAKING TO BE SIGNED BY APPLICANT.

I, the undersigned, agree that in the event of my election to membership of the INCORPORATED RADIO SOCIETY OF GREAT BRITAIN, I will abide by and observe the Rules, Regulations and Articles of Association of the Society, and that in the event of my resignation from the Society given under my hand in writing, I shall, after the payment of all arrears which may be due by me at that period, be free from this obligation. I further agree to observe strictly the terms of any licence issued to me by the responsible authorities to operate transmission or receiving apparatus.

Witness my hand this.....day of..... (*signed*).....

SUBSCRIPTION RATES.

Corporate Members and Associate Members (Town) ...	**£1**	**1**	**0**	**per annum.**	
Corporate Members resident outside 25 mile radius Charing Cross	**0**	**15**	**0**	,,	,,
Corporate Members resident outside British Isles ...	**0**	**12**	**6**	,,	,,
Non-Corporate Members—Associates	**0**	**10**	**0**	,,	,,

Associates are not eligible to vote or receive individual notices of the Society.
Certrficates of Membership and copy of the Articles of Association are issued to all members upon election.

NO ENTRANCE FEE.

A copy of the Articles of Association may be inspected at the Headquarters of the Society, 53, Victoria Street, London, S.W.1, by applicants upon request.

FOR OFFICE USE ONLY.

Approved by Council.....

B.(E.)R.S. Number issued..... First Subscription Paid.....

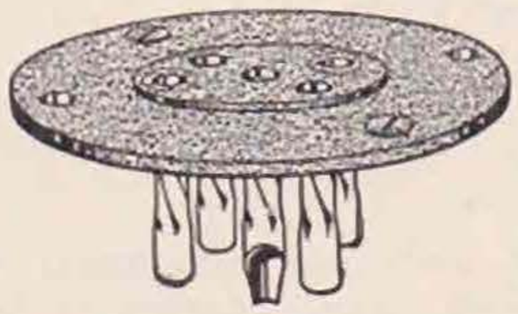
APPARATUS WORTH BUYING.

The Varley Nicklet Transformer.

A new Varley product is the Nicklet L.F. transformer, which is made in two ratios, 1 to 5 and 1 to 3.5. It is nicely finished in the usual bakelite case with terminals at the top. It is of small dimensions, occupying about 2 ins. by 2½ ins. of baseboard space, and, therefore, eminently suited to receiver design. The primary inductance of the 3.5 to 1 model is 45 henries at no D.C., and the resistance is 750 ohms. It is advisable to shunt feed these transformers, but a maximum of 3 milliamps D.C. may be passed through the primary of the last named. The quality on telephony is surprisingly good; it is, in fact, rather better than one would expect to get with so cheap a transformer. When a British firm is producing an article of this description there is no reason for anyone to buy a foreign make. The price is 7s. 6d., and the transformer is good value for money.

Clix Panel Valve Holders.

The accompanying photograph shows a view of a Clix panel valve holder, with cover plate to avoid shorting of valve pins. The holder may be mounted on either the upper or under surface of the panel.



The helically-slotted sockets used by Clix are now available to the amateur and may be easily fixed to the panel. Two collars are turned on the socket and by means of a special punch supplied by Clix the recessed sections may be turned over at the base and the socket is then securely fixed to the panel, no nut being required.

* * *

We have recently had the opportunity of examining a sample of Aluminium Plymax, the armoured Plywood. It consists of 5-ply wood, backed with aluminium, making a total thickness of ⅜ in., the metal being rather less than 1/32 in. thick. We believe this to be extensively used in the construction of shielded cabinets, and in particular, for baseboards. The aluminium appears to be very securely fastened to the wood, and attempt to split the metal off resulted in fracturing the wood backing.

* * *

Messrs. Wingrove & Rogers, Ltd. (POLAR), inform us that they now hold ample stocks of Polar Tub 2, Tub 3 and Uniknob Condensers, and can despatch by return.

* * *

In a letter, Brookes' Measuring Tools desire to express their apologies to those members who in the past have had reason to complain of the delay in the execution of their orders. The company state they experienced severe trouble a short while back owing, partly, to the breakdown of some machinery, but they are now ready again to execute orders with the least possible delay.

THE AMATEUR AGAIN!

How We Helped in the Crisis at Cyprus.

By H. G. MOHRSTADT (SU1AQ).

It is a long time since Egypt has been mentioned in the columns of the BULLETIN, but at last there is something of real interest to report.

To begin with, I must remind you that SU1AQ has been the property of the British military authorities for some time now, and has been dealing with a great deal of traffic for them, although it was not until the recent trouble arose in Cyprus that we were given a chance to show what could be done by a really determined "ham."

Anyway, with a view to providing a reliable and quick traffic route from Cairo to Cyprus, Ackroyd, of SU1AA, packed up his set and kit, borrowed an operator from my station, and moved off for Cyprus. I believe he had rather a job getting there, but once he arrived he lost no time in starting up.

The first thing he came up against was "skip." It was well after dark when he was ready to work, and he could hear nothing of SU1AQ, but eventually he heard our link in England working to SU1AQ, and established touch with him. The wavelength in use was in the neighbourhood of 38 metres. Arrangements were made for SU1AQ to work direct to SU1AA during daylight the next day, and QSO was effected at the first attempt. Subsequent tests have proved that communication is exceptionally good on 38 metres during daylight, but impossible after dark, and so a system of schedules has been arranged for traffic to be passed *via* England after dark. Mr. Ackroyd is to be congratulated heartily on his excellent work, as he has helped materially to bring Cairo into very close touch with Cyprus during a very critical period in her history.

QSL Section.

May we remind those who have been in the habit of sending letters, photographs, etc., in sealed envelopes for delivery by the QSL Section to places outside of Great Britain that, under the postal rate at which our packages of cards are sent, it is not permitted to include any sealed envelopes, and we are, therefore, obliged to open all such letters before dispatching? Perhaps members would bear this in mind when sending photographs in future and make sure that their photos are clearly marked with the call-sign of the addressee on the back so that there will be no danger of the picture becoming lost. In the case of small photographs it is an advantage to paste them on to a postcard as, although the cards are tied tightly with cord before posting abroad, it is sometimes possible for very small photographs to work out between the string at the open ends of the package.

J. D. C.

W.B.E. Certificates.

W.B.E. certificates issued:—

G2OA.—J. DAVIES.
G5NI.—W. H. D. NIGHTINGALE.
G5QY.—H. C. D. HORNSBY.
G6BB.—H. BRABROOK.
G6MN.—E. R. MARTIN.
G6WN.—L. N. WILKINS.
OK2AG.—L. VYDRA.

CONTACT BUREAU NOTES.

By H. C. Page (G6PA).

I HAVE not received any reports from abroad this month with regard to 28 M.C. work, but VE2AC has forwarded me a list of the times during which his note was AC, or nearly so. He noticed that an AC note had been reported on 28 M.C. in last month's Notes, and wonders if it was his. For the benefit of those who have any unidentified signals down in your logs I give the following in full :—

March 22, 23, 29, between 1200 G.M.T. and 2100 G.M.T.

April 5, 9, 12, 19, 25, 26, between 1300 G.M.T. and 1800 G.M.T.

May 29, 30, 31, between 1300 G.M.T. and 2100 G.M.T.

June 12, 13, 15, 21, 28, between 1300 G.M.T. and 2100 G.M.T.

July 5, 6, 11, 12, 18, 19, 26, 1300 G.M.T. to 2100 G.M.T.

August 1, 2, 3, 4, 7, 8, 10, 11, 23, between 1300 G.M.T. and 2100 G.M.T.

September 30, between 1300 and 2100 G.M.T.

VE2AC will shortly be crystal controlled on 28480 K.C.

G2OA asks me to announce that he is on 28 M. C. every Sunday, from 1530 to 1700 G.M.T. He will welcome any reports on his signals. He is using a push-pull T.P.T.G. with two LS5B valves, and 400 volts on the anodes.

I have been asked by several of the Group Managers to remind those of you who receive group Budgets to be sure to forward them punctually. There have been a lot of cases of Budgets being held up for a considerable period, owing to slackness on the part of one member. Please see to this OM.s. Remember the other fellow. He wants the Budget just as much as you do, and its not much use to him if he does not get it until it is out of date.

I must draw your attention to an error which occurs in the Conditions for the 28 M.C. tests. You will notice that they are stated to cease at 0000 G.M.T. each week-end. This is, of course, incorrect. There is no such time as 0000 G.M.T. The correct time is 2400 G.M.T.

The Television Group is still short-handed, and would be very glad to receive additional members. A line to G5CV will bring you full particulars, if you are interested. His address is: 45, Fairfax Road, Bedford Park, W.4.

Group Reports

28 M.C. Work.

G6VP, Group Manager.

Another month and still conditions bad, in fact I suppose never worse for the higher frequencies. After dark on 14 M.C. now there is a complete fade-out. Something has changed. Can it be the violent electrical storms that have been raging recently? Or is it that our friend the Heaviside is some miles higher up than is usual at this time of the year?

It is interesting to note, and would point to the latter, that the beginning of the impossible period was heralded with W7's coming through well at between 1730 and 1830 G.M.T. on 14 M.C. Now in many respects 28 M.C. behaves like 14 M.C., although "more so," for it seems as if we shall have due warning on the lower frequency as to when again our hopes may rise for 10-metre work.

Nevertheless some good work is still being done both on the reception and transmitting side of the subject as will appear below. Also still more members are applying to join groups, realising, no doubt, the possibilities of the band. Here is the work done by the different Groups :—

Group IC. G.C. G6VP has not been radiating on 28 M.C. the last month, ZL-VK-B.E.R.U. traffic being responsible at the commencement of the month, and alterations to the transmitter and power supply being the reason for the last two weeks. GU1's are being installed, and as the station is all remote controlled, this has necessitated new underground cables, relays, etc. Will be on very shortly again.

G6WN seem still to be right to the front, and have now worked HAF8B. This was on October 25, at 08.00, and communication was held till 08.45, when signals started to fade.

In reply to BRS25, here are their figures to date : G fundamentals, 36 ; harmonics, 14 ; DX fundamentals, 39 ; harmonics, 16 ; commercial harmonics, 23.

So that BRS25 wins on figures, but as the WN's say, the RX man can spend more time on the receiver. The transmitter having to handle both sides of the question.

Here is their log :—

24.10.31.—Heard G5SR, G2YD.

25.10.31.—Heard and worked HAF8B ; heard EAM (two phone stations), G5LA, G6NK, G2BY, G5BY, G2OL, G2BM, G6QB, G5VB, G2YD, G6VP, G2CX.

They were heard by BRS615.

1.11.31.—Heard by 2ALR, Cambridge ; heard G6XN, G6VP, G5LA, G5VB, G5SR, G2BM, sked with HAF3D, no results.

8.11.31.—Heard G6XN, G6VP, G2YD, G6NK, G2BY, G5BY, G6MU, G5CV, G2BM.

15.11.31.—Heard G6VP, G5SR, G4IY, G2XA, G5BY, G6LL, G2BM, G6XN.

G5VB has got the TX working fairly well now, but the note is not to his liking. He says that he has arranged a sked with HAF3D, Sundays at 1000 G.M.T.

G5MP been doing a lot to his station this month, both with the receiver and aerials. He is trying to improve the signal mush ratio, using a S6 detector, and complains of the poor magnification obtainable with a timed L.F. stage. He thinks an R/C. transformer much better, with tuned primary to 1000 ~. He wants some advice on

aerials. He has used lengths from 67 feet down to 16½ feet, but cannot find any definite advantage in any. Has also tried ½λ aerial, but owing to blind spots, the exaggerated coupling required does not favour this type either.

BRS588 heard only G6PY'S harmonic. He has QRM from local electricity works.

BRS615 has been " on " quite a lot. At present he is using a standard O.V.1 receiver, but is now building an O.V.O., with a high mag. value, series tuning has been tried. This gives him smoother reaction control but less volume. He has listened some time during every day, but heard nothing approaching DC.

HAF8B tells him that HAF3D, 4D, 8B and 8C are taking part in the MRAE 28 M.C. transmission (see October BULLETIN). HAF8B is now trying to get over to G on 56 M.C. BRS615 wants the QRA of the phone station, about 9 metres. He has heard him up to R7. In conclusion, he is very willing to assist in any tests. Here is his log, fundamentals in italics :—

17.10.31.—G2ZQ, G2BM
18.10.31.—*G5LA*, G2VD, *G2UX*, G2BM, G5BY, G6HP, G2ZQ, G6FJ.
25.10.31.—G6WY, G2BM, *G5VB*, G2VD, *G5LA*, *G2UX*, G6HP, G5BY, G6WN, *G2CX*, and fone station on about 9 metres.
26.10.31.—G2BM.
29.10.31.—G2ZQ, G2BM, G6NF.
31.10.31.—G2ZQ, G2VD, G6WY.
1.11.31.—G2ZQ, *G6HP*, G2BM, *G5LA*, G2IH, G6WY, G2IM, *G5VB*, *G6WN*, and two commercials.
2.11.31.—G2ZQ.
7.11.31.—G2ZQ, G2IM, G2BM, and nine metre fone station.
8.11.31.—G2ZQ, G2IH, G2BM, G2IM, G2VD, G6HP, G5BT, G5PL.
9.11.31.—G2ZQ.
10.11.31.—G5PL, two commercials and three fone stations too weak to resolve.
12.11.31.—G2ZQ, G2IH, G6LL.
13.11.31.—G2ZQ.

Group 1B.—G5SY, Group Centre, says he has nothing of importance to report. Printed cards were sent to his members requesting reports, but says that only half the members have responded. G5SY has skeds with VU2FS and VU2FX at 14.00 G.M.T., also with BRS458 at Plymouth, but n.d. yet.

G6LL has been active most Sundays, but has not had any success. He is also of the opinion that with conditions as they are on 14 M.C., it is not likely for 28 M.C. to be much good.

G5LU has changed his QRA. He is now at Forest Gate, and has not got his tackle over from Basingstoke yet.

G6WY is rebuilding for 28 M.C., and has changed his plans to 2 LS6A's no push-pull. A window is in use here.

G20A writes that he is active on 28 M.C., and as requested, I have found him a place in Group IF. He is to be congratulated on having been heard by FM8IH. He is using a push-pull self-excited, with 400 volts to an LS5B. It would be good if he could interest some of the Manchester men and so get local co-operation. As it is the Yorkshire Hams seem to be his nearest neighbours at present.

28 MC. Test Transmissions from University College.

Additions and amendments to information supplied last month :—

Call Sign.—G2FI.

Amended Schedule Time.—17.30 G.M.T. instead of 18.00 G.M.T.

Reports may be sent to G5PJ on 7 or 14 M.C. during the week-ends and some evenings of the week.

Reception conditions at G2FI are very variable, but efforts will be made to establish contact whenever they are favourable, after the 28 M.C. tests.

Work has been delayed, so that the first tests will merely consist of ordinary transmissions at the times stated, in the form " TEST 28 de G2FI." It is hoped to start the code letter tests shortly.

Fading, Blindspotting, and Skip.

G2ZC, Group Manager.

I am glad to report that both groups 2A and 2B are in full working order, and that 2A, with G6MB as G.C. is now up to strength ; they have settled down to discussions of definite subjects. Co-operation between the two groups is being arranged.

Unfortunately, one of the founder members of 2B has had to resign, which is the first break this group has had, and the G.C. of 2B will be glad to submit any name to the group, which is brought forward. Will any member of C.B. who is interested in the subjects we are studying please apply to any member of the group, election to the group being carried out by ballot. Next month 2B celebrates its third birthday.

Group 2A.—The subject under discussion has been the possibility of radiation possessing the property of inertia, and if so, whether this would be a factor (in addition to frequency) upon which depth of penetration into the Heaviside Layer would depend. BRS473 and BRS504 are of the opinion that radiation does not possess mass, and the former thinks that such a theory would not be consistent with the theory of conservation of energy. BRS426 gives particulars of transmissions of varying power and their signal strengths at his station, and comments on high *versus* low power in relation to the subject under discussion. G5NL sends his first report, and pleads ignorance. (Would that we all owned up when we did not honestly understand problems.—G.M.) G6MB inclines to the mass theory, and quotes short passages from Einstein and Sir Oliver Lodge, which seem to indicate such a possibility.

Group 2B.—Owing to the first publication of 2B's Earthquake Report (compiled by G6YL), the G.C. thinks that owing to the space this will occupy, he will suppress the findings of the current budget. This earthquake list is being published with a definite aim, and group 2B appeal to hams all over the world, to compare their logs with the periods of the recorded earthquakes, and if any peculiar conditions have been noted, to let group 2B have the benefit of their findings. Very briefly, 2B have noted that amongst other things that happen to short waves, during or after a quake, is a marked rise in skip, and such other things as fade-out, etc., have been noted. We intend to issue monthly a list for comparison purposes, but as this is the first

one, it includes most of the earthquakes experienced in 1931. We shall be glad to receive reports of earthquakes from any part of the world (some foreign countries are already sending in reports, and we have the assistance of more than one observatory) as well as reports of conditions compared to actual quakes. The following is our first list :—

Date.	Time, G.M.T.	Situation.	Remarks.
Feb. 2	2100 onwards	New Zealand (Hawkes Bay)	—
May 7	?	Further shocks in New Zealand	14 M.C. dead, but QRN violent, at G6YL
May 19	1515-1530 About 2030	Shocks felt at Lahore, Punjab, India	Reported by VU2FX
May 19	0227	Under the Atlantic, about 300 miles W. of Cape St. Vincent	Recorded at Kew as a large earthquake
May 20	0125	Two severe tremors lasting about 90 secs. each, felt at Funchal, Madeira	—
May 20	0327	Three severe shocks felt in Lisbon and N. Portugal. Epicentre probably at Coimbra	Reported by CT1BK
June 7	0028	Shock felt in England (greatest intensity in N.). Epicentre under North Sea, about 50 miles E. of Hull	Shock also felt in C.I., Belgium, N. France, Holland, Denmark and Germany
June 18	1300	Shock of moderate intensity. Epicentre apparently in Nepal	Reported by VU2FX
July 25	1245	Slight shock. Origin about 1,700 miles from Bombay	Reported by VU2FX
July 29	?	Earthquake in New Zealand	—
July 29	1720	Slight shock. Origin about 1,300 miles from Bombay	Reported by VU2FX
Aug. 2	1808 1820	Two slight shocks Origin about 600 miles from Bombay	Reported by VU2FX
Aug. 7	Midday (local time ?)	Severe earthquake at Aitape, New Guinea. Lasted 40 secs. Followed by minor shocks until next morning	Recorded at West Bromwich at 0332 G.M.T.
Aug. 7	0123	Moderate shock. Origin about 4,500 miles from Bombay	Reported by VU2FX
Aug. 8	0412	Slight shock. Origin about 1,600 miles from Bombay	Reported by VU2FX
Aug. 10	2125	Very severe shock. Origin about 2,100 miles from Bombay	Reported by VU2FX
Aug. 10	2228	Exceptionally severe earthquake shock recorded at West Bromwich. Both of the recording pointers were thrown from the socket. Epicentre probably about 4,000 miles away (in Alaska)	—
Aug. 15	0405	Slight shock. Origin about 1,200 miles from Bombay	Reported by VU2FX
Aug. 15	1500-1600 (local time ?)	Slight shocks at Algiers. Severer shocks at Alma (20 miles E. of Algiers)	—
Aug. 18	1427	Severe shock. Origin about 2,100 miles from Bombay. Epicentre near Lat. 50 N., Long. 80 E.	Reported by VU2FX
Aug. 18	Afternoon	Big shock recorded at Kew. Origin believed to be in Northern Mongolia, near the Great Altai Mountains	—
Aug. 24	2145	Very sharp earthquake at Quetta, Baluchistan. Shocks continued at intervals of 15 and 20 mins. throughout the night ; 35 shocks up to 0830 next morning	Reported by VU2FX at 2138 G.M.T. Epicentre in N.W. Himalayas, probably
Aug. 25	Continuous	Fairly light shocks (ditto)	—
Aug. 26	Continuous	Fairly light shocks (ditto)	—
Aug. 27	1330	Very severe shock. Origin probably in Baluchistan, about 900 miles from Bombay	Reported by VU2FX
Aug. 27	1805	Slight shock (ditto)	Reported by VU2FX
Aug. 27	1853	Slight shock (ditto)	Reported by VU2FX
Aug. 27	2008	Slight shock (ditto)	Reported by VU2FX
Aug. 27	2100	Severe earthquake in Quetta district, lasting 3 mins. Also felt at Karachi	—
Aug. 28	0045	Moderate shock. Origin probably in Baluchistan, about 900 miles from Bombay	Reported by VU2FX

Date.	Time, G.M.T.	Situation.	Remarks.
Aug. 28	0323	Slight shock (ditto)	Reported by VU2FX
Aug. 28	1015	Slight shock (ditto)	Reported by VU2FX
Aug. 28	1943	Slight shock (ditto)	Reported by VU2FX
Aug. 28	2129	Slight shock (ditto)	Reported by VU2FX
Aug. 29	0155	Slight shock (ditto)	Reported by VU2FX
Sept. 6	Night	Two severe shocks felt at Quetta, Baluchistan.	—
Sept. 15	2109	Earthquake at Queenstown, New Zealand. Epicentre about 380 miles from Wellington	Also felt in Dunedin and Invercargill
Sept. 16	2145 G.M.T. ?	Severe earthquake in Tokyo, Japan, and district	—
Sept. 21	1120 G.M.T. ?	Severe shock in Tokyo, Japan, lasting 9 mins.	—
Sept. 22	0110 G.M.T. ?	Prolonged earthquake felt in both Islands of New Zealand, from Auckland to Christchurch. Epicentre apparently Hawkes Bay, N.Z.	—
Sept. 25 / Sept. 26	?	Volcano of Krakatoa, D.E.I., in eruption.	—
Sept. 30	1645 G.M.T. ?	Fairly heavy shock, lasting 30 secs., felt at Quetta, Baluchistan	—
Oct. 3	?	Shocks in Upper Silesia, Sydney, N.S.W., and Wellington, N.Z.	—
Oct. 4	(local time ?)	Severe earthquake in Central and Eastern Solomon Islands, Pacific Ocean. Epicentre probably Pennell Island, in Southernmost group	Recorded at West Bromwich, Wellington, N.Z., Sydney, N.S.W., and Italy
Oct. 6	0400-0430 G.M.T. G.M.T. ?	Two sharp shocks felt at Simla, India, and district	—
Oct. 10	0139	Violent shock recorded at Florence, Italy. Epicentre about 12,000 miles E.N.E. of Florence	Also recorded at Trieste, Padua, and Taranto, and at West Bromwich. Distance from West Bromwich estimated about 10,500 miles. Epicentre probably in the Tonga or Solomon Islands.

2 M.C. Work.

G5UM, Group Manager.

Conditions have lately been in distinct contrast to those obtaining in November, 1930, when communication was opened up on 2 M.C. with Czechoslovakia. Static and fading have been prevalent to an unprecedented degree for the time of year, and though DX is not apparently falling off, it is largely spoilt by QSC. The G.C. has been longing for a hard frost, while G5RX says fogs always bring him DX. The latter statement raises the question: does fog act as a screen to radio signals, or does it aid them? Many years ago Le Queux (late 2AZ) said that fog was detrimental to wave propagation, but little has lately been heard whether this is so or not. Both G5RX and G5UM say it makes no difference; being a conductor by virtue of suspended moisture and carbon particles, it might conceivably assist radio waves in the same manner that the sea (a conductor) does.

It is suggested that the bad conditions on 2 M.C. —and particularly the QRN—are largely due to the present mild weather. Normally in November, when the temperature is little above freezing point, conditions on 2 M.C. are at their best. What do Group 2A think, in view of their expressed opinion that radio is unaffected by weather conditions?

G6FO's expression of opinion last month that a self-excited transmitter was preferable to a crystal-controlled type has naturally aroused keen controversy in the Group. G5RX points out that if it is easy to get a note like G6FO's with self-excited transmitter, why are not more of them heard? (It should be interpolated here that G6FO invariably obtains a T9 note with a self-excited outfit.—G.C.) If a station uses A.C. mains, continues G5RX, crystal control is definitely cheaper. It gives a pure note with less smoothing than is necessary with self-excited, and the smaller filter means a smaller voltage drop. A CO-driven T.P.T.G. gives greater R.F. output than self-excited T.P.T.G. The QSY problem is admitted to be a disadvantage.

G5UM votes for C.C., as it *guarantees* a chirpless note. Frequency variation due to aerial swinging (and to a lesser extent to valve heating) is negligible with crystal. Tests made during the month have proved the slight superiority of push-pull CO over push-pull T.P.T.G., though a robust crystal is needed to obtain this gain. G.C. adds, in passing, that the pebble type of crystal has been found more efficient in this respect than the square-cut crystal.

G6FO, a staunch protagonist of self-excited transmitters, points out that, given a power supply reasonably well regulated and smoothed, it is merely a matter of building an oscillator that gives a clean, sharp and steady note. This is possible even with A.C., and a self-excited set under such conditions gives greater flexibility and R.F. output than crystal control. "Personally," G6FO continues, "I have always felt that the value of C.C. lies in the realm of high-power DX on 14 M.C. On other bands it is merely an easy and not always inexpensive way of avoiding technical difficulties, which, in the case of an A.C. supply, means the provision of a properly designed rectifier and smoothing system with an adequate factor of safety, the factor of safety resolving itself into the question of getting good regulation. This is simple when low outputs are required, as on 2 M.C."

G6FO uses a high-C Hartley, with direct-coupled aerial tuned to resonance, and H.T. tapped on to the nodal point of the oscillator coil. Reports are T9 on all bands, whether the Hartley is used on 2 M.C., the push-pull on 3.5 M.C., or the M.O.P.A. on the shorter waves. The latter is regarded as the ideal type of transmitter, and with a Zepp aerial and keyed M.O. there is no broadcast interference. QSY is easy, and cheaper than using a multiplicity of crystals. Summing up, G6FO says that a properly designed and *adjusted* oscillator, and a good rectifier-cum-smoothing system, is equal and generally better than crystal control.

Turning to general work, G5RX sums up the situation thus: "Conditions on 2 M.C. have been the same as on all other bands—rotten." More time has been devoted, therefore, to local phone work, and the Aberdonian modulation system described by G5VL has given excellent results with T.P.T.G.-CO transmitter. G5RX raises the following question: how does fading affect signals in different directions? and quotes a recent contact with G6FO, of Newport. The latter station was QSA5 and no fading with G5RX, although G6FO was receiving 5RX at QSA5-O with QSC. The interesting point about the matter, however, is that a Belfast station received G5RX at R7 and no QSB, while G6FO was QSB from R6 to R3 in Belfast. Yet G5RX is equi-distant from both Newport and Belfast, and differences in efficiencies of receivers could hardly have brought about such variations in readability. (G.C. wonders if observation on current isobars at that time might be at all illuminating.)

G6FO reports extremely poor conditions for the time of year, and says that 80 and 160 metres seem equally bad.

The log of BRS164 reflects the generally poor conditions. It contains plenty of distant calls, but records bad QRN. BRS164 agrees that there appears to be a skip range of about 300 miles on 2 M.C.

G5UM has been trying to ascertain the absorption effect of an extensive lead roof on the west side of his aerial and about 10 ft. below. When this roof was connected to earth apparent radiation dropped off alarmingly, but increased by half an ampere when the roof was connected as a counterpoise! Obviously in the latter condition the system was functioning as a closed circuit, but if one lead roof can absorb as much R.F. current as was apparent, the amount that runs to earth through adjacent trees, piping and other metal roofs must reach considerable (and painful) proportions.

G5FP, of Aberdeen, has joined Group 10A in place of G2FS. He has some particularly good distance records to his credit on 2M.C., both telephony and C.W.

3.5 MC. Work.

G6RB, Group Manager.

Group 4A.—Reports this month are again rather scarce and those that have come in report very little of interest. But this can no doubt be explained by the fact that we are experiencing a patch of very bad conditions not only on 3.5 M.C., but on every other band. Instead of the hoped-for improvement, conditions at the moment are decidedly worse than at the corresponding period last year, and DX seems non-existent as regards 3.5 M.C. G6WY has been carrying out some experiments with the "Windom" aerial and has obtained a perfect voltage/current distribution, but owing to the prevailing conditions is unable to say whether it shows any improvement for DX working. Has noticed that this type of aerial has a smaller angle of radiation which should therefore be better for DX working. G2XT reports that he finds conditions during daylight very much better than night working, and says that QSB and QSC are very noticeable after dark. Has been trying out a fresh antenna, using a 46½-ft. top and a 33-ft. counterpoise and finds results very queer. BRS408 finds conditions improving and says the band is nearly as good as 7 M.C. at the moment. Finds Continental fone stations very strong indeed, but fading on all signals very bad. Gives some very useful reports on the signals of group members which are very helpful indeed. G6RB finds conditions have not come up to expectations and DX non-existent. Cannot quite agree with the 11-year cycle theory relative to 3.5 M.C., and says that, although we are told that when sunspot activity is at its minimum the lower frequency bands should be fairly good, this does not seem the case with 3.5 M.C. Yet when one comes to make comparisons it seems evident that 3.5 M.C. is very much better for European working, at any rate than any of the other bands, despite the bad conditions so general at present, but the DX prophesied this season has so far failed to appear. G.M. would like to remind all members that the Group Budget must be forwarded promptly and on no account be retained more than three days. Will all members please bear this in mind, and also do their best to make the 3.5 M.C. tests in March as widely known as possible?

Group 4B.—I have little to report for this month, but I have put the budget into circulation, so next month there should be something of interest to report. Reports have been received from the following:—

G2WP finds ¼-wave aerial no good for distances above 200 miles, although fairly good for purely local work. Is now using loose-coupled Marconi system, which is much better. BRS552 has been QRT owing to receiver trouble, but finds conditions on this band best with west winds and low temperature and pressure. SM6WL is welcomed as a new member. He has been QRT and is only just starting up again. His transmitter is M.O.P.A., with push-pull in both stages, with 25 watts input. His receiver is S.G.H.F., detector, and transformer-coupled pentode L.F. G6FO's aerial is the "G6JV" type, 88ft. long, loose-coupled. Finds that joining high voltage end of aerial coupling coil to low potential side of transmitter improves stability but increases B.C.L. interference. Removing this connection does not affect radiating properties, but reduces B.C.L. interference considerably. His transmitter is push-pull with the untuned grid, this combination giving excellent stability. G2KB is now going from new QRA in Rugby. Tried ¼λ aerial in first case and found this very poor for European contacts but satisfactory for local work. Agrees with G2WP in this matter. Is now using loose-coupled aerial and counterpoise—66-ft. aerial and 20-ft. counterpoise—with great improvement in results. B.C.L. interference on receiver next door has been cured by a wave-trap in the aerial on their receiver. Condi-

tions generally have been very poor and are not nearly up to the standard of conditions last year, either for the further European stations or for U.S.A. stations.

QRP Work.

G2VV, Group Manager.

I expect many of you have noticed in the past that different groups send in similar reports to those which have been published previously dealing with almost the same experiments. To obviate this and to try and make the QRP Section of C.B. rather more interesting and helpful, it has been suggested that each group shall have a definite line of work to follow and to devote their reports to whatever subject they choose to investigate. All G.C.'s have been approached and are in agreement with the idea, and 8D has decided to plunge into the mysteries of 28 M.C. I am still awaiting replies from other G.C.'s stating what subjects they are going to pursue. With this scheme working, we trust that these notes will prove even more interesting to everyone.—G.M.

Group 8B.—G.C. G2VV is now working on 28 M.C. with 5 watts to an L.S.5. A P625A and a CT25X refuse to function properly, although they are O.K. on 14 M.C. The RX employs 6-pin coils, and exceptionally good control is present on 28 M.C. A sked with G6LK failed, and so far nothing has been heard at all. Any reports will be welcome. The 33 ft. tapped 11 ft. in is still proving itself worthy, and although acting as a quarter wave on 7 M.C., SU1CH has been worked twice with QSA5 reports. 14 M.C. is dead after 16.00, and 7 M.C. seems to be steadily getting worse, in spite of one week of excellent conditions on this band. On Sundays some 1.75 M.C. work is done. G6PV has scrapped the 33-ft. aerial as he finds it hopeless. Has now got a 66-ft. " Windom " arrangement and finds it far better than anything he has tried. Using this and 4½ watts, he has also worked SU1CH. Will be applying for a 28 M.C. permit shortly to experiment with G2VV. G5CM has been working, but has nothing of interest to report. 2ANU is to be congratulated on getting his full permit and is now G5OU. He is working on 7 and 1.75 M.C. with crystal and 2½ watts input, and is anxious to receive reports. G6SO still complains of very poor conditions on all bands, but still seems to get out well on 1.75 M.C. G5RX has been trying the " Aberdonian " modulation system and finds it very successful. He also says conditions as bad as ever, and has not anything more interesting to report !

Group 8C.—G.C. G5PH is still using CO-PA with good results and intends using CO-PA-FD for 14 M.C. Reports conditions generally very poor. G5LQ is a new member and is using a T.P.T.G. with a P.M.252 and 3 watts. With this outfit he is getting consistent reports from most Europe on 7 M.C. G5LC reports conditions bad and cannot seem to do much with DX yet. G2WS also complains of poor conditions, but has worked some European stations on 7 M.C. with .5 of a watt. BRS587 is another new member and will be pleased to arrange schedules.

Group 8D.—G.C. G6BU reports improving conditions and has worked PK on 14 M.C. with 5 watts in daylight. 2AGN, referring to 28 M.C., says he favours a series-tuned RX and describes the circuit he intends to use. Also finds a 30-ft. aerial gives better results on 28 M.C. than a larger one. BRS534 notes improved 7 M.C. conditions. He, like G.C., finds a power valve in the detector stage cure threshold howl. 2APR is busy preparing his gear to work on 28 M.C. G5IX is a new member and is using a Split Hartley with a P240 and 160 volts on the plate. He tried the " much discussed " 33-ft. aerial but scrapped it.

Group 8E.—G.C. EI7D sends some interesting percentages of calls answered and his results prove that, in the case of QRP anyway, it is better to call a station than to send test ! BRS493 noticed exceptionally good conditions on 1.75 M.C. on October 18. Finds this band better than 7 or 3.5 M.C. for reception at the moment. 2AOX is spending his time trying to cure a 14 M.C. RX wipe-out due to a nearby charging plant. G5JU is on 3.5 M.C. with a Hartley push-pull and 3 watts. He has worked D on this band. Is now licensed for all waves. His aerial system is 34 ft. top with a 34-ft. counterpoise loose coupled. Employs AOG for 14 M.C.

Group 8F.—G.C. G2TJ is having trouble with his new PA. Has been active with 2.5 watts. His RX is being rebuilt. G6QA has to resign owing to business QRM. (Sorry to lose you, O.M.—G.C.) G2PF has been busy on 7 M.C. fone work and gets good reports from F, etc., but cannot get a G QSO. On one or two occasions he has made a G contact, but QSB and QSC always spoil the QSO. (This is 1931, OM. !—G.M.) G5LN has burnt out his power transformer and says conditions hopeless. He reports hearing G5IH very consistently on 1.75 M.C.

It has just been decided that Group 8B will devote their work to weather effects and aerial experiments on all bands.

Antenna Group.

G2OP, Group Manager.

Group Centres report difficulty in carrying out any experiments owing to the poor conditions prevailing, especially on the 14 M.C. band. These conditions, and in reply to further questions, call for a few general remarks on propagation which I hope will be of general interest.

There is no doubt that the icy silence on the 14 M.C. band during the evenings is due to the fact that this band is what is known as the " Twilight " band and cannot be used successfully on a route which has a large extent of bright or intense daylight on any portion of it. Some of my most successful QSO's have been made when one of the two stations in communication has been in daylight while the other was in darkness. Other equally successful ones had varying grades of light and darkness between us.

The 7 M.C. band is a night, or late night, band, and appears best for long-distance communication during the winter nights. It is for this reason that at the moment we are hearing our VK friends so well on this band. Communication with the Antipodes, however, is an exceptional case, as all Great Circle lengths are equal, and undoubtedly the route is governed by attenuation conditions.

A point in which I am rather interested at the moment is one which seems to be somewhat neglected as far as I know ; it is the effects produced at various latitudes. We here in England are located in what we are pleased to call the Temperate Zone, and our conditions are subject to diurnal

variation and seasonal variation, but what I want to know is, upon how much does the relative effect of these two variations depend on the latitude. My old friend VQ4CRF, now at Mombasa, again has the definite diurnal effect, but his season is practically the same all the year round, while others in or near the Arctic circle have variations much more dependent on seasonal conditions. Perhaps TF3TP or someone under similar conditions can throw some light on the subject.

In conclusion, I still want four B.E.R.U. members to complete the B.E.R.U. Group.

Television.

Group 11*A*.—2AOB is well again and has been experimenting with choke output, but experiences difficulty in "striking" the neon. Incidentally, in this connection G.C. G5CV has noted that, after "cooking" the neon with H.F. from the TX, its critical voltage is reduced for vision purposes. Have any others noticed this? G5GJ has been prevented from doing any work with the Kerr cell so far, but has been trying crystal rectification. I am glad to report that BRS527 has joined this group. He is also endeavouring to form "a society to take up television and other kindred subjects in the locality of Forest Hill, S.E.1, if sufficient support can be obtained." Will anyone who is interested please communicate with him? (Mr. E. Bates, 95, Upper Tulse Hill, London, S.W.2). G.C. G5CV has not had very much opportunity recently for vision reception, but the amplifier is still receiving attention.

Review of Foreign Magazines.

By G6FY.

The reduction of interference by static is discussed by VK4RB in the October *QTC*. The effects of static may be reduced by running the L.F. amplifier with low anode voltage, so that it will only accommodate a small grid voltage swing on the linear part of the characteristic. A strong signal, such as a burst of static, is not then amplified so strongly as a weak one. If a high resistance (about 10 megohms) is placed in the lead to the grid, a back voltage is set up across this on the positive half cycle by the flow of grid current, so that this half cycle has practically no effect on the grid, and the danger of blocking is removed. The arrangement, of course, introduces serious distortion, which can, however, be reduced by adopting a push-pull system.

In the July *Proc. I.R.E.*, and in *QST*, Mr. L. E. Barton describes a method of increasing the efficiency of L.F. amplifiers or modulators by the use of a push-pull circuit in which the valves are biased almost to cut-off, so acting as Class B amplifiers. The arrangement is particularly attractive for high-power fone work, as it enables considerably more speech frequency output to be obtained from a given pair of modulator valves, or for a given modulator plate input, than does the usual Class A amplifier. For details, the November *QST* should be consulted.

Dr. Stoye, in the October *CQ*, gives an account of some of his recent studies of the relation between solar disturbance (sunspots), terrestrial magnetism, and short-wave propagation. Solar disturbance influences both the earth's field and short-wave propagation, the latter being first affected. For waves of about 10 to 50 metres the following rule is given :—

One, two or more usually three days before a magnetic disturbance, the signal strength increases (DX contacts) ; it then falls off to a minimum or to zero during the days of strong disturbance of the earth's field, and in the following days slowly increases with much fading.

It is also suggested that 10-metre traffic should be possible during the two days preceding strong terrestrial field disturbance.

Observations are now in progress on 80 metres. It is shown that the sudden drop in signal strength of inter-European signals which often occurs at about midnight is connected with the effect of a solar disturbance on the earth's atmosphere.

BOOK REVIEWS.

KURZWELLENTECHNIK. (Short-wave Craft.) A handbook for the Amateur. 304 pages, 337 illustrations. Published by Rothgiesser and Diesing A.G. for the D.A.S.D., Berlin, W.57, Blumenthalstrasse 19, Germany, from whom it may be obtained. Price Reichsmark 9.0, post free.

This book, which has been written by members of the D.A.S.D., deals with every phase of amateur radio from building a simple receiver to the construction and operation of a crystal-controlled transmitter employing three frequency doubling stages, from the elements of electricity to details of apparatus for use on the ultra high frequencies. Although, in common with most German technical books, rather free use is made of mathematical formulæ, this should not deter the beginner, or, for that matter, any amateur from gaining much useful information from its pages.

The most outstanding chapter is that dealing with waves below 7 metres, to which 20 pages are devoted. In addition to a general review of conditions and effects likely to be encountered when dealing with frequencies of this order, 12 diagrams of various receivers and transmitters are given, including one attributed to Potapenko, which is claimed to have oscillated at 3.5 centimetres.

Another chapter worthy of special note is that on "Aerials," wherein may be found complete particulars as regards the dimensions of all the popular amateur radiating systems, especial mention being made of the "Fuchs" aerial, named after J. Fuchs (UO1JF), which enjoys great favour on the Continent, and which is a type of voltage-fed Hertz.

In general, "Kurzwellentechnik" can be thoroughly recommended to everybody who may wish to find a solution to many of the problems, both technical and practical, which confront the amateur from time to time, and the publishers are to be congratulated on having produced such a useful, well-printed and copiously illustrated work. We have but one regret—it is written in German!

M. W. P.

Empire B.E.R.U. News.

B.E.R.U. REPRESENTATIVES.

Australia.—H. R. Carter (VK2HC), Yarraman North, Quirindi, N.S.W.

British West Indies, Bahamas, Bermuda, and British Guiana.—H. B. Trasler, No. 2 Mess, Pointe à Pierre, Trinidad, B.W.I.

Canada.—C. J. Dawes (VE2BB), Main Street, St. Anne de Bellevue, Quebec.

Ceylon and South India.—G. H. Jolliffe (VS7GJ), Frocester Estate, Govinna, Ceylon.

Channel Islands.—Captain A. M. Houston Fergus (G2ZC), La Cotte, St. Brelades, Jersey, Channel Islands.

Egypt and Sudan.—H. Mohrstadt (SU1AQ), No. 1 Co. Egypt Signals, Polygon, Cairo.

Hong Kong.—P. J. O'Brien (VS6AE), 12, Kent Road, Kowloon Tong, Hong Kong.

Iraq.—H. W. Hamblin (YI6HT), Wireless Section, R.A.F., Shaibah, Basra, Iraq.

Irish Free State.—Col. M. J. C. Dennis (EI2B), Fortgranite, Baltinglass, Co. Wicklow.

Kenya, Uganda and Tanganyika.—H. W. Cox (VQ4CRF), Box 572, Nairobi, Kenya.

Malaya.—G. W. Salt (VS2AF), Glenmarie Estate, Batu Tiga, Selangor, Malay States.

Newfoundland.—Rev. W. P. Stoyles (VO8MC), Mount Cashel Home, St. John's East.

New Zealand.—D. W. Buchanan (ZL3AR), 74, Willis Street, Ashburton; and C. W. Parton (ZL3CP), 69, Hackthorne Road, Cashmere Hills, Christchurch.

Nigeria.—Capt. G. C. Wilmot (ZD2A), 1st Battalion Nigeria Regiment, Zaria, Nigeria.

N. India and Burma.—R. N. Fox (VU2DR), c/o Messrs. Lyons (India), 11, British Indian Street, Calcutta.

South Africa.—W. H. Heathcote (ZT6X), 3, North Avenue, Bezuidenhout Valley, Johannesburg.

South Rhodesia.—S. Emptage (ZE1JG), Salcombe, Plumtree, Southern Rhodesia.

AUSTRALIA

By VK2HC (*via* VK2XU and G2DZ).

During the past month there has been no outstanding success on 28 M.C.; only local contacts over distance of a few miles have been made. There have been no contacts to date during the VU/VK tests, and conditions on 14 M.C. are very little better; the worst experienced for years. The only DX period when any work can be done is between 13.00 and 14.00 G.M.T., even then it is very unreliable, and European stations at their best are only weak. VK2HC succeeded in putting QSA5 fone through to F8PZ.

BRITISH ARABIA

By BERS25.

All hopes of ever establishing an amateur station at Aden have fallen to the ground as BERS25 has been down with dysentery, and the authorities have decided that he must be packed off to "Blighty" as soon as possible. He is very disappointed at having to leave just as things were looking brighter over the licence question, and, to make matters more trying still, the very morning that the 14 M.C. transmitter was finished and ready for the air the ambulance men called and carried BERS25 off to hospital! He hopes to be in England on December 14 and is looking forward to meeting many of those amateurs whose signals he has received so consistently in Arabia.

[We should like to take this opportunity of tendering our sincere thanks to BERS25 for all the support and enthusiasm that he has given in the cause of BERU, and hope that ere long he will be on the air again with a "G" call.]

CANADA

By VE2BB.

DX conditions here continue very poor, but few contacts being made. Local conditions are also indifferent sometimes, the air being practically dead.

We are all set for the 1,750 K.C. experiment.

CEYLON & S. INDIA

By VS7GJ.

The north-east monsoon is now making its presence felt, and interesting to note that a distinct improvement is found on the 14 M.C. band, but fading appears to be prevalent, and signals sometimes fade right out; all stations make this comment. South India's report from VU2JP *via* VS7AP, by radio, shows improvement on 14 M.C. band, but the 7 M.C. band is getting very noisy owing to local QRN and QSS.

VS7AL, VS7AP and VS7GT are all active and are looking forward to the time when 14 M.C. conditions improve enough to make work there worth while. VS7AL is to be congratulated on obtaining his air pilot's ticket.

CHANNEL ISLANDS.

By G2ZC.

It is some years since a report appeared from the Channel Islands, owing to all the "old timer" hams dropping out, save G5GW (who is seldom here) and G2ZC, so there was little point in one station reporting, but of late several new members have taken up amateur work, and it is hoped more will do so, and that we shall have a regular monthly report. The active amateurs at present are G5GW, G5OU, 2BCS, BRS657 and G2ZC. At present we seem to be confined to the island of

Jersey, but I shall be glad to hear of, or from, anyone from any of the other islands, who is interested in amateur work. Conditions have been very similar to those prevailing in Britain. I might add that as G5OU and G2ZC both use the 1.7 M.C. band, they will always be glad to work British stations, and any working will be in the nature of mild DX, as the nearest part of Britain is 115 miles away. Both stations are crystal controlled, and during the 1.7 M.C. R.S.G.B. tests the latter station found no difficulty in working all over Britain on 5 watts.

EGYPT.

By SU1AQ.

DX conditions are excellent on 14 M.C. band between 08.30 and about 14.30 G.M.T., when a "dud" period seems to set in. About 16.00 G.M.T. 7 M.C. proves useful for long distance work, but seems to fade badly at odd times, especially between 18.00 and 21.00 G.M.T. The only other station known to be active in the area, SU1CH, apparently finds conditions fairly good also, judging from the number of contacts he makes.

NORTHERN INDIA & BURMA

By VU2FX.

Conditions have improved considerably during the month, particularly on 14 M.C. Several really good contacts have been made with Australasian stations, and Europeans come in very well from about 13.00 G.M.T. onwards.

Ex VU2EK, who is now stationed at Quetta, Baluchistan, sends some interesting observations on the Earthquake *v.* Radio question. This report is considered of sufficient importance to warrant a place to itself and is given below *in toto*.

The Burma district is beginning to show signs of "radio-mindedness." VU2JB's activities have resulted in at least six applications for membership being forwarded to B.E.R.U. headquarters, and questions are being asked in connection with transmitting circuits, etc.

Quetta Earthquake Report

(By H. CHERRY, ex VU2EK and VU2AH).

The advent of earth tremors in Baluchistan during September caused no little excitement generally, and added spice to the work of the ham who is unfortunately barred from punching a key and has perforce to listen only.

Having experienced these tremors over a fairly long period (about two weeks) one can fully agree with G6PP's letter in the July BULLETIN. They certainly *do* affect radio signals. The following points were observed :—

(1) Marked absence of atmospherics.
(2) Great influx of signals, especially from Europe, and from countries not usually heard at this time of the year.
(3) Marked increase in signal strength of stations usually heard.

The observations were made on the 14 M.C. band, and the improvement was out of all proportion to that usually experienced at this time of the year. Conditions whilst an actual tremor was in progress did not seem to vary in any respect from the conditions experienced over the whole period of the earth disturbances.

VU2AH, VU2BB, VU2CS, VU2EK, VU2FS, VU2FX, VU2FZ, VU2JB, and VU2LK are all more or less active, although many of them are believed to be uncertain as to their movements from place to place.

VU2JB complains of commercial interference on the 7 M.C. band, and believes JBK to be an offender. (The frequency of JBK as measured by 2FX on October 20 was 7,280 Kc/S. Some time ago he wired one commercial station to get off the 14 M.C. band, and the offender obliged.

IRISH FREE STATE.

By EI2B.

Conditions on all bands are generally reported as being very bad, and it is probably owing to this that many EI stations seem to be inactive at present. Stations on 1.7 M.C. are only very weakly heard at the writer's station and no DX at all on 14 M.C. EI4C has gone to England and will shortly be on the air as a G. We have a new station, EI8D, who expects to be on the air very shortly.

NEW ZEALAND

By ZL3AR (via G6VP).

The fellows in New Zealand are looking forward to a very successful time during BERW next year, and hope that the experience gained by all in this year's contest will enable the rules to be amended so that some of the inequalities noticeable can be flattened out. The QRO stations had a very great advantage last February over their lower-powered brethren, and it is to be hoped that some sort of adjustment can be made to make amends for this.

SOUTH AFRICA

By ZT6X.

Whilst local QSO's on 7 M.C. (local in South Africa and Rhodesia means anything up to 1,500 miles) have not improved to any great extent during the past month, DX has been very good indeed, amateurs in all continents, with the exception of Europe and South America, are keeping our hams extremely busy. The poor conditions on the 14 M.C. have shown no improvement, a fact which has often been commented on by hams in other continents. Very few of our amateur stations are on the 3.5 band, but the proposed R.S.G.B. tests on this band may stimulate interest. The action of the postal authorities referred to in my last month's notes has had the effect of waking up some of our members who did not like the idea of losing their licences.

The gradual improvement with every issue of the BULLETIN has been favourably commented on, and the steady increase in our membership is a good sign that amateurs in the Empire are realising the benefits of joining the B.E.R.U.

NOTES and NEWS from the BRITISH ISLES

DISTRICT 1 (North-Western).
(Cumberland, Westmorland, Cheshire, Lancashire.)
D.R. · Mr. S. Higson (G2RV), "Hebblecroft," Egremont Promenade, Wallasey, Cheshire.

DISTRICT 2 (North-Eastern).
(Yorkshire, Durham, Northumberland).
D.R. · Mr. L. W. Parry (G6PY), 13, Huddersfield Road, Barnsley, Yorks.

DISTRICT 3 (West Midlands).
(Warwick, Worcester, Staffordshire, Shropshire.)
D.R. · Mr. V. M. Desmond (G5VM), 199, Russell Road, Moseley, Birmingham.

DISTRICT 4 (East Midlands).
(Derby, Leicester, Northants, Notts, Rutland, Lincoln.)
D.R. · Mr. H. B. Old (G2VQ), 3, St. Jude's Avenue, Mapperley, Nottingham.

DISTRICT 5 (Western).
(Hereford, Oxford, Wiltshire, Gloucester.)
D.R. · Capt. G. C. Price (G2OP), 2, St. Anne's Villas, Hewlett Road, Cheltenham, Glos.

DISTRICT 6 (South-Western).
(Cornwall, Devon, Dorset, Somerset.)
D.R. · Mr. H. A. Bartlett (G5QA), 95, Old Tiverton Road, Exeter, Devon.

DISTRICT 7 (South-Eastern).
(Berkshire, Hampshire, Kent, Surrey, Sussex.)
D.R. · Mr. J. Drudge Coates (G2DC), "Burleigh," Farnborough Park, Hants.

DISTRICT 8 (Eastern).
(Cambridge, Huntingdon, Norfolk, Suffolk.)
D.R. · Mr. C. E. Runeckles (BRS163), "The Myrtles," Needham Market, Suffolk.

DISTRICT 9 (Home Counties).
(Bedfordshire, Hertfordshire, Essex, Buckinghamshire.
D.R. · Mr. F. L. Stollery (G5QV), "Kingsmead," Lancaster Gardens East, Clacton-on-Sea, Essex.

DISTRICT 10 (South Wales and Monmouth).
(Monmouth, Glamorgan, Breconshire, Carmarthen, Cardigan, Pembroke.)
D.R. · Mr. A. J. E. Forsyth (G6FO), "St. Aubyns," Gold Tops, Newport Mon.

DISTRICT 11 (North Wales).
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)
D.R. · [To be appointed.]

DISTRICT 12 (London North).
D.R. · Mr. S. Buckingham (G5QF), 19, Oakleigh Road, Whetstone N.20.

DISTRICT 13 (London South).
D.R. · Mr. A. D. Gay (G6NF), 49, Thornlaw Road, West Norwood, S.E.27.

DISTRICT 14 (London East).
D.R. · Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4.

DISTRICT 15 (London West and Middlesex).
D.R. · Mr. H. V. Wilkins (G6WN), 81, Studland Road, Hanwell, W.7.

SCOTLAND.
D.R. · Mr. J. Wyllie (G5YG), 31, Lubnaig Road, Newlands, Glasgow.

NORTHERN IRELAND.
D.R. · Mr. C. Morton, (GI5MO), 27, Bristol Avenue, Belfast.

District Notes for publication should be written as concisely as possible and should be in the Editor's hands by the 25th of the month preceding publication. They should be of a general rather than personal nature. Individual reports from County Representatives will not be accepted for publication.

DISTRICT 1 (North-Western).

LET me thank all those members who turned up at our Conventionette in Manchester and helped to make it an unqualified success. Also those three excellent fellows from the South who travelled up North and gave our meeting such distinction—I mean G6CL, G6UN and G2VQ. I very much regret that I was unable to be there, and so missed what was one of our most enjoyable functions. My thanks go to G2OI and G2QB for the organisation of the affair.

Our meeting in Liverpool on November 21 was excellently attended, about 17 members being present. We were entertained admirably by a talk on the manufacture of valves by G6RW. I would remind members here that these meetings are held to encourage you to bring along your friends who are interested in our science, whether they are members or not.

The Conventionette seems to have upset the Lancashire constitution, as only five members have reported active. G5ZN reports little doing on all bands, and asks for more use of the 3.5 M.C. band. G5KL has not been able to get any VK's for a fortnight, and reports curious examples of fading on local signals. 2AWV sends his usual long list of stations received during the month, and is pleased to say that every No. 1 District station heard has a T8 or T9 note. (FB, OM's.) G6QA has "gone all 56 M.C.," and asks for BRS reports. 2ARY has little to report, but has heard ZS regularly on 14 M.C. for the last six weeks. G2QB has done usual 7 M.C. work, but says if conditions don't improve he will transfer permanently to 1.7 M.C. A preliminary meeting of the Manchester gang has been held, and hopes are high for very successful monthly meetings. Write G2OI for full particulars. Cheshire seems to be gripped in a wave of reconstruction. Evidently getting ready for the February Tests. G5WG is building an all-mains super het. G5CN has just made a T.P.T.G. G5XD is scrapping with a C.C. job that

won't perk. G6OM has left 28 M.C. for 3.5 M.C., and G5GY has left 7 M.C. for 1.7 M.C. G5FC has just completed his DX and awaits card for W.B.E. and W.A.C. G2OA can't hear anything on 28 M.C. and wants co-operation. He also has got W.B.E. Following an open invitation, G5WG, G6OM and G5CN paid a visit to G2VQ and other Notts stations, and wish me to record their thanks for an FB time. We should like the opportunity of repaying the hospitality soon. No November report to hand from the two northern counties.

DISTRICT 2 (North-Eastern).

Again I have no reports from any Yorkshire station—G5IA is the C.R., O.M.'s, and please report, if only to say "active." G2XT reports active on 3.5 M.C. and finds conditions no good after dark. G6US is active on 1.7 M.C. only. 2ANS and 2BCJ report conditions very bad. G6PY has done a little on 7 M.C., 3.5 M.C. and 1.7 M.C., and conditions generally poor after dark.

I know several stations in Yorkshire have been active, as I have worked with some myself. Come on, report, please!

DISTRICT 3 (West Midlands).

Owing to the very bad conditions on all bands, very little work has been done; it is doubtful if a dozen DX contacts have been made during the month.

Very hearty congratulations to BRS391, who has passed his Morse test and is now waiting for his call sign. FB, OM.

I am very pleased to hear G2OQ on the air again after his very long absence and hope that Wolverhampton will now resume its former activities and again attain that prominence they so long enjoyed.

Our Conventionette will be held in Birmingham on Sunday, March 20, 1932. Please make a note of this and book the date NOW, full details and reminders will follow in due course.

The following stations are active: G5ML, G2OQ, G5BJ, G6XQ, G5QC, G6XJ, G2ZW, G2PD, G2WW, G5VM.

DISTRICT 4.

Well, OM's, allow me to congratulate you on the progress made and enthusiasm shown during the last month; new members are rolling up, so keep it up, No. 4.

Congratulations to BRS550 on winning the prize of a receiving valve offered by G2IO for the most complete log on the half-hour listening periods.

The usual monthly meeting was held at the Reform Club, Saturday, November 14. Again a very fine attendance was recorded, a warm welcome being given to ZU1J (ex G6UO), late of Durban, on his return home; also he gave a very fine talk on the ham conditions in South Africa, which was enjoyed by all present. Many amusing incidents were told regarding South African field days.

A field night took place on Saturday, November 21; the usual portable transmitter G2VR, owned by G2VQ, was housed again in the caravan. Test signals were radiated alternate 10 minutes on the 80-metre band from 21.00 to 02.00 G.M.T., and six car parties set out with their D.F. receivers to locate the hidden transmitter. The first party to be successful was G2XS, G6MN and G5QT, arriving at 23.25 G.M.T. Congrats, OB's, on your snappy work. By 01.20 G.M.T. all the gangs had arrived excepting G5DM, G2OC and BRS548, who were compelled to retire owing to engine trouble. At 2 a.m. rockets were fired to denote that the tests were completed. As DR, I would like to offer to all who took part my sincere appreciation of the keenness and real ham spirit shown during these tests, although the weather turned out a real soaker at times; everybody was very happy on their arrival. The hams who took part are as follows: G2IO, G2XS, G2OC, G5DM, G5QT, G6MN, 2AQU, 2BMR, BRS521, 548, 550, 582, 583, 601, 650, 673 and 683; also ZU1J and BRS366 assisting G2VQ at the transmitter.

Many G and European QSO's were established by G2VR during the week-end. Will ZU1J please note that he left sufficient food in the caravan to feed him for a week. Hi!

The only stations reporting active in Lincolnshire are G6LI and G5IX. G6LI is now temporary resident in Nottingham, and will only be operating his station at the week-end.

BRS559 reports that Leicestershire is very much alive, and welcomes G2CZ (a very old ham) back into the fold of RSGB. G2IO reports that Nottinghamshire is as usual 100 per cent. solid, and that the Morse practice every evening is still being supported. G2VQ has been very QRP for the last two weeks, using only 4 watts maximum on the 40 and 80 band. Hi!

No reports from Derbyshire, Northants and Rutland. Now, you fellows, let's hear something from you by the 20th of each month.

On Sunday, November 15, G5CN, G5WG and G6OM of the "Liverpool Gang," honoured No. 4 District by paying a visit to Nottingham, and in company with G2IO and G2VQ a very enjoyable day was spent visiting various stations. Many thanks, Liverpool.

DX conditions on all bands seems to be very abnormal, signals from all parts of the globe choosing any time but the expected; in fact, ZS2A on the 40 band has been coming through at R6 about 21.00 G.M.T.

The usual monthly meeting will not be held on Saturday, December 12, but the Saturday following, December 19, when a Christmas social evening is being arranged. The time is 5 o'clock as usual, at the Reform Club, Victoria Street, Nottingham, and members of the adjoining districts are cordially invited.

DISTRICT 5 (Western).

The D.R. wishes everybody all the very best for Christmas and the New Year, which, he hopes, will bring good conditions on all amateur bands.

Arrangements have now been made for the Morse practices to be held on the dates specified by H.Q. as follows:—

11.00 to 11.10 G.M.T. on 160-m. band by G2IP at 6-8 words per minute.
11,10 to 11.20 G.M.T. on 80-m. band by G2BI at 8-10 words per minute.
11.20 to 11.30 G.M.T. on 40-m. band by G5FS at 10-12 words per minute.

GLOUCESTERSHIRE.—The first number of the *Gloucester County Magazine* has been published, and is free to all members in the county. Twenty-four attended the November meeting. These monthly meetings are held on the first Thursday in every month at Carwardine's Café, Baldwin

Street, Bristol, at 19.45 hours. Applications for 15 new members have been put forward.

WILTSHIRE.—The first letter Budget has proved a great success, and was most excellent. It had eleven contributors, and consisted of 46 pages, every one of the greatest interest. Letters to be included should reach G2BI not later than the first day of each month. Keep it up and increase it.

DISTRICT No. 6 (South-Western).

A letter Budget has been started, and your contribution to this should be sent not later than the 25th of each month to G5QA.

G6RR is now at the Slaithwaite station, and BRS467 is in Nottingham. G2FN hopes to be active soon. Conditions generally are reported poor though G5SY is still obtaining contacts at unusual times, such as LU4KE and PY2BN in the early morning on 14 M.C. in October. G5QA, G6XD, and G5RN are rebuilding, and G6XD comments on the strength of Scottish stations on 7 M.C. on November 1. BRS458 and BRS473 find conditions poor on 14 M.C., but better on 7 M.C.; they are both going out for 28 M.C.

DISTRICT 7 (South-Eastern).

Reports this month from Hants, Surrey and Kent only. Now, you fellows in Sussex and Berks, just a line or two to your C.R. each month, so that he can report.

G6WY reports a very healthy activity in Kent, mostly on the 1.75 M.C. band, where conditions are steadily improving. The County Budget is going strong and 20 contributions were received last month. New members, in particular, are cordially invited to contribute to the budget. We congratulate G5OQ and G5BI in obtaining their radiating permits and wish them success.

The report from G6NK is most encouraging, almost a 100 per cent. activity prevails throughout the county, although almost everyone bewails the appalling conditions existing. There is, however, one bright spot—G2DZ has been QSO VK4GK almost every day for a fortnight. The November meeting was most successful, no less than 28 persons attending, almost a record for an area meeting. There is no truth in the rumour, however, that G6GS, who accommodated the gathering, is negotiating to rent the Town Hall for future meetings. A letter was sent to the G.P.O. conveying the thanks of all members present for the extension of the tolerances in the amateur wave-bands. The monthly meetings are being held on the first Sunday of each month at 14.30 G.M.T., and at G2NH and G6GS, alternately. The January meeting will be at G6GS.

G6GZ reports activity on the upward grade in Hants, many stations are rebuilding for the winter and several stations report good DX, although conditions in general are poor. The new Letter Budget made a successful debut, 12 members contributing. There is, however, plenty of room for more letters, so just drop G6GZ a page or so by the 15th of the month, telling him of your own activities in the radio line, and get, in return, the narratives of brother "hams." The combined budget now includes Surrey.

DISTRICT 10 (South Wales and Monmouth).

In spite of bad conditions all round, there is much activity in the Area, especially on 1.75 M.C., on which frequency-band several newly-licensed stations have made their appearance. Owing to the difficulties consequent upon the new system of County Grouping and Representation, it has taken some time to get this district under way, but it is hoped that these difficulties are now past, and that the membership will pull its weight and help make No. 10 one of the keenest and most efficient in the country.

A Letter Budget is being started, and all members will have had a circular from the D.R. with the details. It is also proposed to make the L.B. serve the purpose of a monthly broadcast, so that people will be kept conversant with the Society matters that concern them, as well as things of more local interest. Arrangements have also been made in connection with the Morse practice transmissions, and the question of meetings is being taken in hand. This latter is rather a problem, as the area is very scattered, but it is hoped that, with the co-operation of the C.R.'s, it will be possible to arrange them so that every member will be able to attend at least one every two months or so, with the minimum of travelling.

There are still one or two points in connection with county representation that have to be settled, but I hope these will be cleared up before the next notes are sent to press.

The following are known to be active: G2PA, G5FI, G5LP, G5NS, G6FO, G6GW, 2BPI, 2BPM, BRS493, BRS518, BRS525, BRS573.

I hope to be able to make the acquaintance of everyone in the district as the season comes on, and also that any member who thinks that I could be of assistance to him will write me.

The following have resigned from membership of R.S.G.B.: G2HH, G2QI, 2ACB, G6PF, BRS393, BRS431.

DISTRICT 12 (London North).

I should like to start by wishing you all a Merry Christmas. The new way of sending your reports to me by the 24th has not been successful, only five doing so, therefore we shall revert to the old way, and I shall extract the notes for the BULLETIN from the budget when it reaches me. G6CL gave a lecture on short-wave transmission and reception to the Friern Barnet branch of the British Legion. Conditions on 14 M.C. have been very bad, but 7 M.C. has had a few surprises in the shape of VK's at 20.00 G.M.T. G6OT has been spending some time on television.

DISTRICT 13 (London South).

Only three people reported their activities. G5YH is rebuilding to Goyder-lock. G5XH has come to life again after five years QRT, but is troubled with local BCL who *will* receive his 7 M.C. signals on National programme. All sorts of chokes tried without avail.

Area meeting is apparently served by the South London and District Radio Transmitters' Society; only replies to my last notes were 2AUC and 2AKB; and in letter-budget, voting was against a further meeting.

Morse practices from 10 a.m. to 10.45 approx. divided between G6NF (1,972 K.C.), G6QB (1,782 K.C.) and G2AQ, in this order, have so far only received two reports of reception.

Your reports, please, by the 20th.

District No. 14 (London East)

Slow Morse transmissions are now being regularly given out from 11.00 to 11.30 G.M.T. each Sunday, and all future transmissions will be made on the 1.75 M.C. band, the following stations are taking duties: G6LB, G6SG, and G6LL; from reports received the service is being appreciated. BRS597 is now 2AOV. The field days held October 31 to November 1 at Abbess Roothing, Essex, were voted a huge success—see separate account. For all further reception test see announcements in BULLETIN. Next monthly meeting is on Tuesday, December 15, and afterwards every fourth Tuesday of the month—at Chingford. BRS631 has now reported and is applying for a permit shortly. BERS4, ex VTVVZ, is now in the district and will be meeting members shortly. He will also be after a permit.

DISTRICT 15 (London West).

This month's meeting was very successful, 18 being present.

The next is fixed for Saturday, December 19, at 8 p.m., also at G6WN, with G6YK again as host.

There will be a discussion, self-excited *versus* crystal control. G2UV will champion self-excited, while G5CV will uphold crystal control. This should prove interesting, so make a note of the date.

It has been decided to hold the area "rag-chew" on all bands, at 19.00 G.M.T. or B.S.T., on the first Sunday in each month. No fixed band has been arranged owing to so many divided opinions on the subject. You will at least know that you can call another in the area at this time and expect him to have a chat with you.

So far very few reports have come to hand, but it is expected that more will be seen in the future.

By the time this is in print, BRS438 will have received his full permit, so we shall soon have a chance to welcome him on the air.

Conditions have been bad generally, not too much DX being heard on any band.

It would seem, contrary to my belief, that all bands are being used in this area.

The following have consented to take over the morse practices:—G2UV on 1.75 M.C., G6WN or G6XN on 3.5 M.C., and G2BY or G5CV on 7 M.C.

To all these stations, many thanks for your co-operation.

SCOTLAND.

Press date shows no alleviation of the general poor conditions referred to last month; indeed, if anything, working conditions on all bands seem poorer than a month ago.

I have no reports of work on 28 M.C., but 14 M.C. seems to be dead for almost 22 hours of the 24. 7 M.C. has been slightly better, and a little DX has been done on this band. Several Scottish stations had 3.5 M.C. prior to the new arrangement, but so far as I can make out, most such have been on 1.7 M.C., which band appears to be increasing in popularity here.

We have had quite a number of new members this month, and to such I would extend the hand of fellowship. In this connection I would remind the older members that membership of the Society carries an unwritten obligation towards the new members, and that the making or breaking of their new-found enthusiasm is more or less in your hands. A little encouragement and help at the start go a wonderfully long way towards cementing a new man's allegiance to and enthusiasm for the Society.

"B" District produces two new licensed men—one, Mr. T. Laing (G6LG), 13, Salisbury Terrace, Aberdeen, who possesses a full permit, may be heard with C.C. on the 7 M.C. band. The A.A. call 2BTG is owned by Mr. R. J. Keir, 59, Gladstone Place, Aberdeen, and I hope that he, along with Messrs. Hunter (2AVU) and Brown (2BTT) of "A" District, will soon go forward for the full privilege.

I was pleased a few days ago to hear on 7 M.C. the call G2MG, belonging to one of our first Scottish transmitters. I understand he has aerial trouble, but we shall have to see about that.

With regard to the fortnightly morse lessons (see November BULLETIN, page 168), G6SR, G6FN and G6UU have kindly arranged to handle those until we can get a few more stations on the roster. Meantime, it has not been possible to arrange for the 3.5 M.C. transmission, but this will follow at a later date.

I have to thank G5NW for the very interesting photograph of his portable station G5AP which is a most elaborate concern used while Mr. Allen is camping during the summer months. G5GK is also blossoming out in this direction, and has been allotted the call G5GM for his portable station. If, therefore, you hear any snappy "wise-cracks" coming from a station with this call, you will know it is merely our humorous friend "GK" in a new environment. While referring to G5GK, might I express my pleasure at meeting, in addition to him and his good lady, a large number of the "D" District men at the Edinburgh Show? On this occasion also it was my privilege and pleasure to visit the station of G6SR, "D" District Officer, and in this connection I have to thank Mr. and Mrs. Rowden for their hospitality.

There is not much of note to record from the various stations. G6RG while "poshing" up his station prior to a visit from the "D" District gang had the misfortune to drop and fracture his crystal. The broken crystal, however, was the means of revealing an unsuspected resonance in a choke, so its martyrdom was in a good cause.

As stated last month, VQ5NTA (ex-G5WV, G2IV) is at present at home in Blantyre. As he may be transferred abroad again at any moment, it is unlikely that he will start up again with a "G" call.

G6FN, G6SR and G6UU are busy with telephony tests on 7 M.C., but also on 1.7 M.C. This band is also in use by G5FP and G2YA, of "B" District.

"A" District, considering its membership, appears to be singularly inert, and apart from G2MG, G2MA, G6MS, G5YG, 2BTT and 2AVU, there appears to be next to no activity. What is the matter with you fellows?

The following is a list of stations definitely known to be active, and if I have understated the numbers, I shall be most delighted to be contradicted:—

"A" District.—G2MG, G2MA, G6MS, G5YG, 2BTT and 2AVU.

"B" District.—G2YA, G5FP, G6LG, 2BTG.

"C" District.—G5NW, G5GK, G6KO, G5IM and 2AHZ.

"D" District.—G6SR, G6FN, G6UU and G6RG.

With regard to trans-oceanic or high-power per-

mits, permit me to emphasise the futility of making such applications direct to the General Post Office. The G.P.O. will not consider any application which does not have the sanction of the R.S.G.B. Council. To procure such sanction, a satisfactory case for the additional facilities desired must be made out and submitted to our Council for approval or otherwise. All such applications from Scotland should reach me not later than the first week of the month. It may be stated, further, that in no case will such an application be considered unless the station is crystal-controlled.

Attention to the aforegoing will save much grief and useless correspondence.

EUROPEAN NOTES.

Conditions generally over Europe at last seem to be improving, and activity appears to be on the increase, as would be expected at this time of the year. The number of transmitting stations in Norway is rapidly growing, and it is reported from this country that interest recently has, to a great extent, centred on the 3.5 M.C. and 7 M.C. bands. The former band seems to be finding increased favour all over Europe, especially in Norway, Switzerland, Czechoslovakia and Germany. It is reported from Germany that many American stations are to be heard on this frequency between 02.00 and 04.00 G.M.T., and it is suggested that some special effort be made to establish transatlantic contacts on this band between these times.

The D.A.S.D. new Amateur Handbook is now ready and it is hoped that this will help to spread enthusiasm among German-speaking amateurs throughout the world.

Several German-Australian and German-New Zealand contacts have been established recently on the 7 M.C. band in the early morning, and this band also appears to have presented considerable interest of late in Czechoslovakia.

STRAYS.

G5QY and G5DI are working each other on 28 M.C. every Sunday at 18.30 G.M.T., and welcome reports and QSO's if their signals are heard. Power is 10 watts, and they are testing antenna systems.

* * *

VK4WO is working on 28 M.C. and would be glad of reports from G stations.

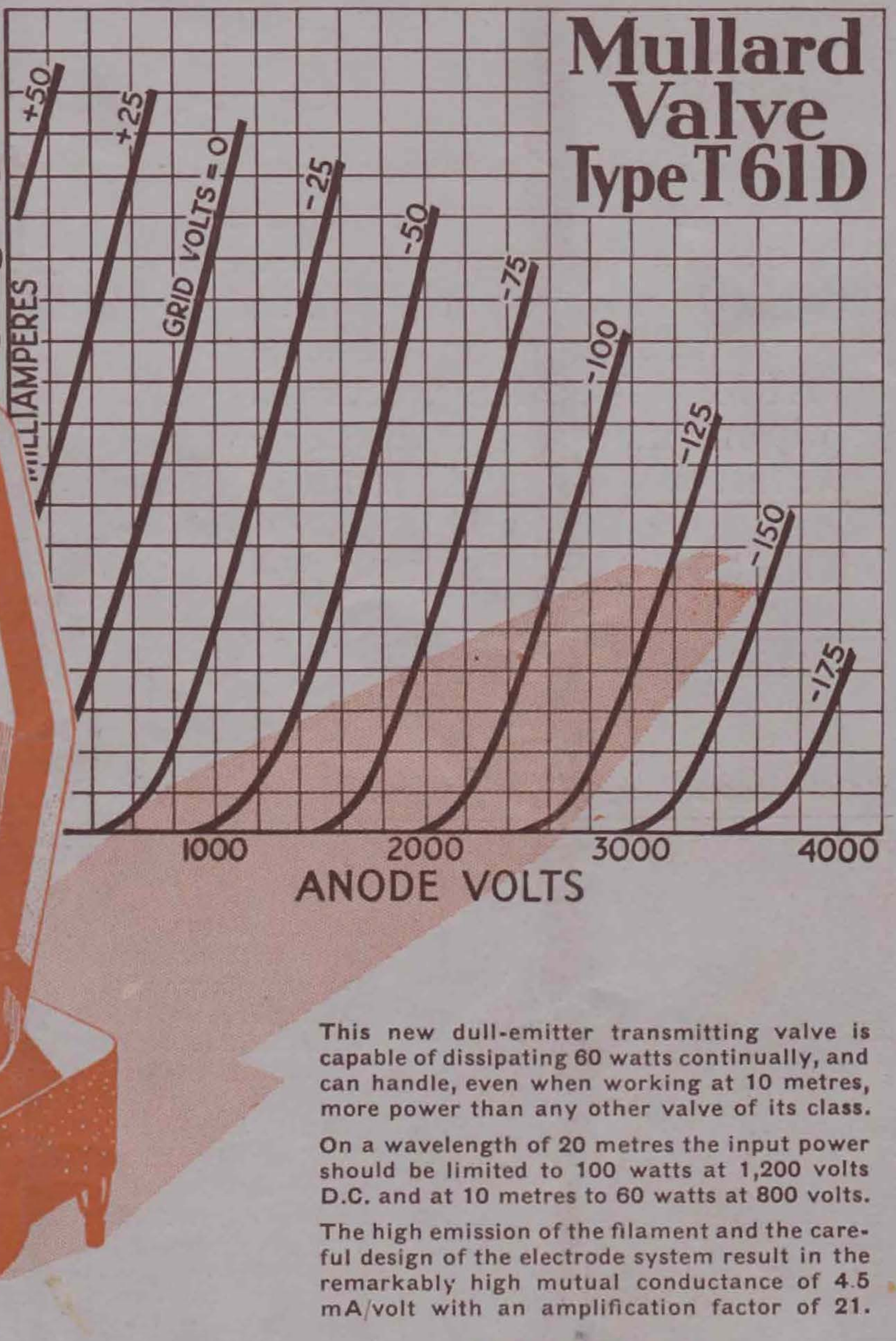
* * *

Were the words of the operator of a Glasgow E.L.S., when he dropped a DO/40 in the Q code?

Notice to Contributors.

The Editor is pleased to have manuscripts submitted to 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.*

Mullard Valve Type T61D



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The high emission of the filament and the careful design of the electrode system result in the remarkably high mutual conductance of 4.5 mA/volt with an amplification factor of 21.

OPERATING DATA

Filament Voltage	6.0 volts
Filament Current	4.25 amps.
Total emission	1,500 mA. approx.
Max. Anode Voltage	2,000 volts D.C. 1,500 volts R.M.S.
Anode Impedance	4,700 ohms.
Amplification Factor	21
Anode dissipation (continuous operation)	60 watts
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