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THE JOURNAL OF

The Inc. Radio Society of Great Britain

AND THE

British Empire Radio Union



Vol. 6. No. 10.

APRIL, 1931 (Copyright)

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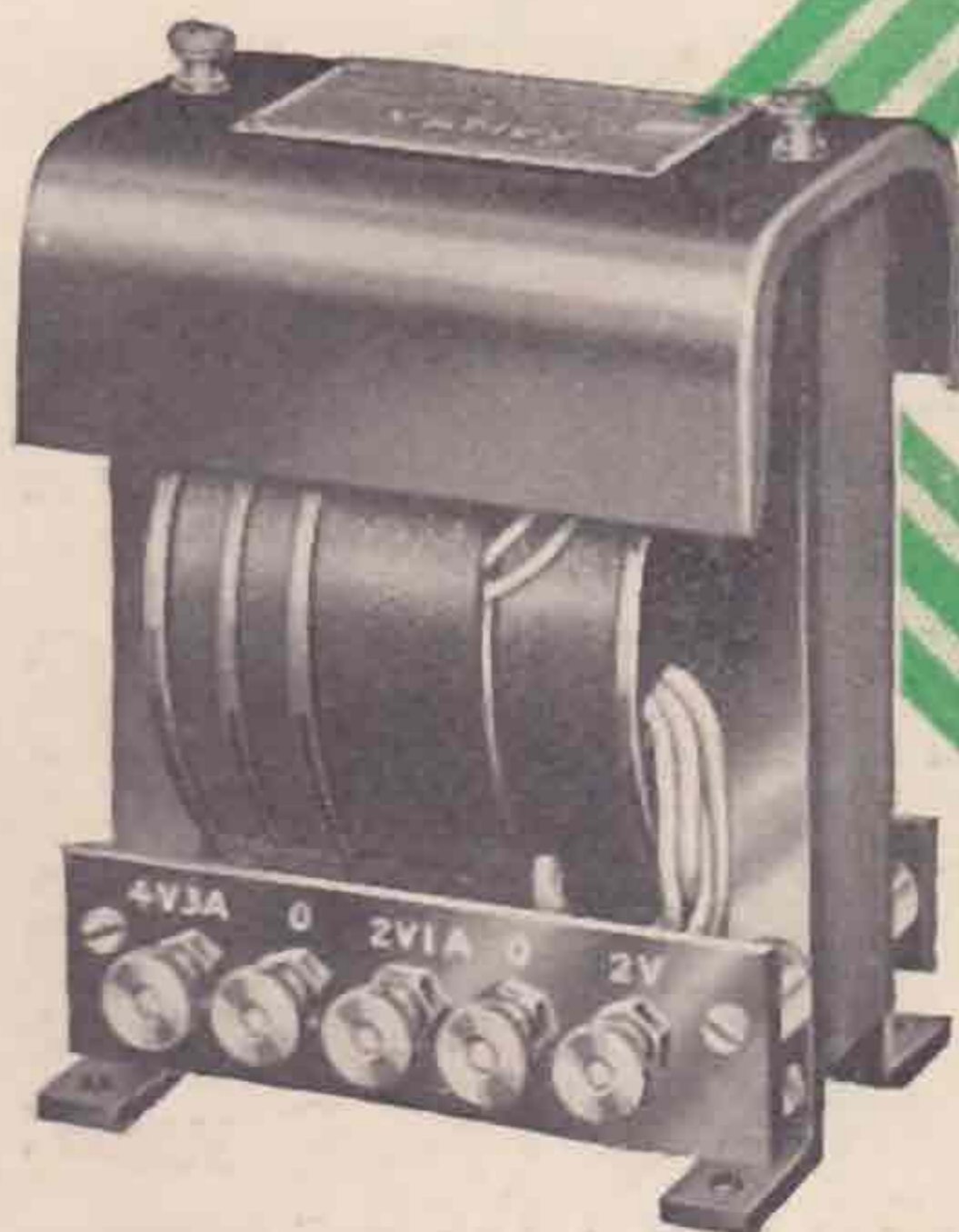
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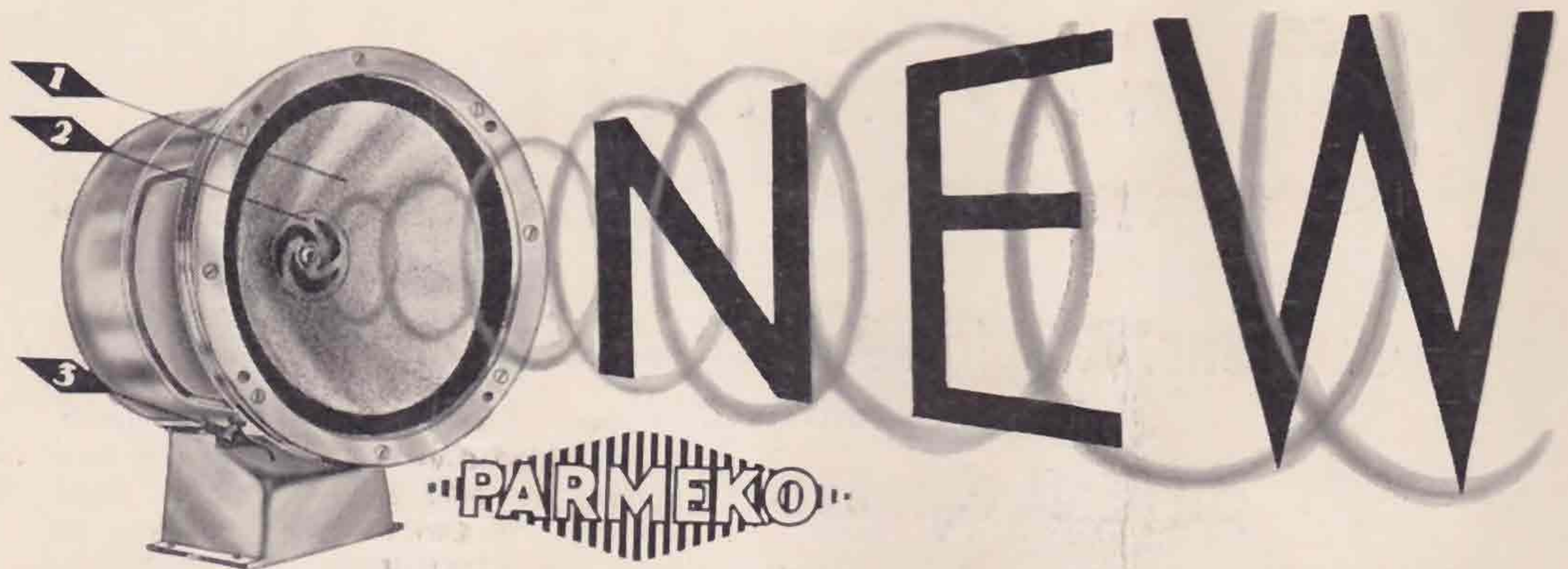
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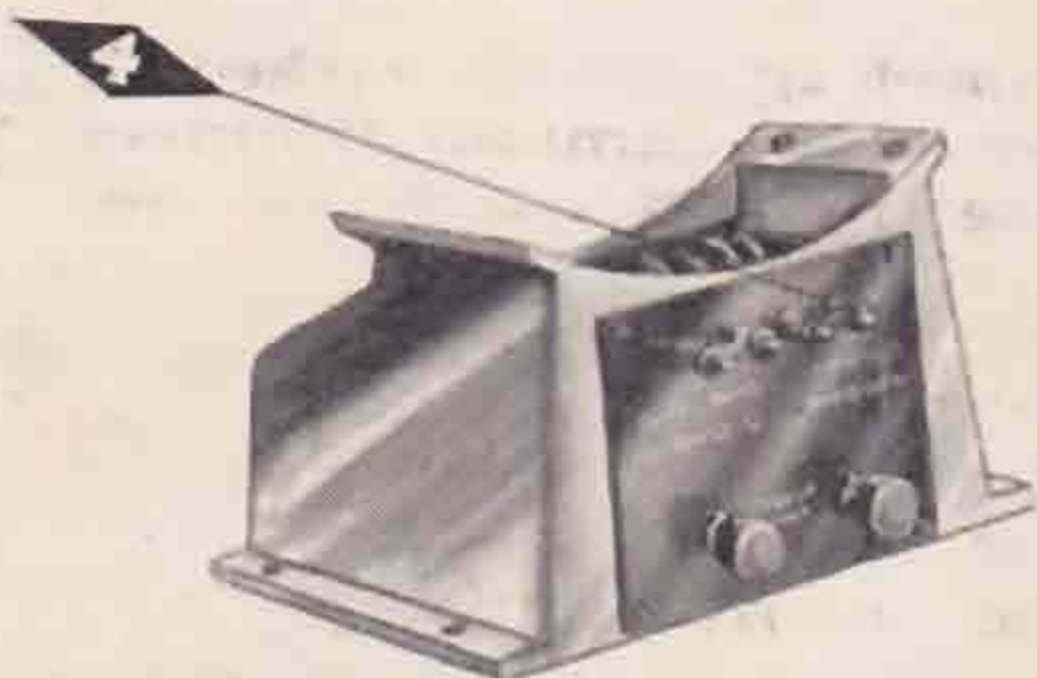
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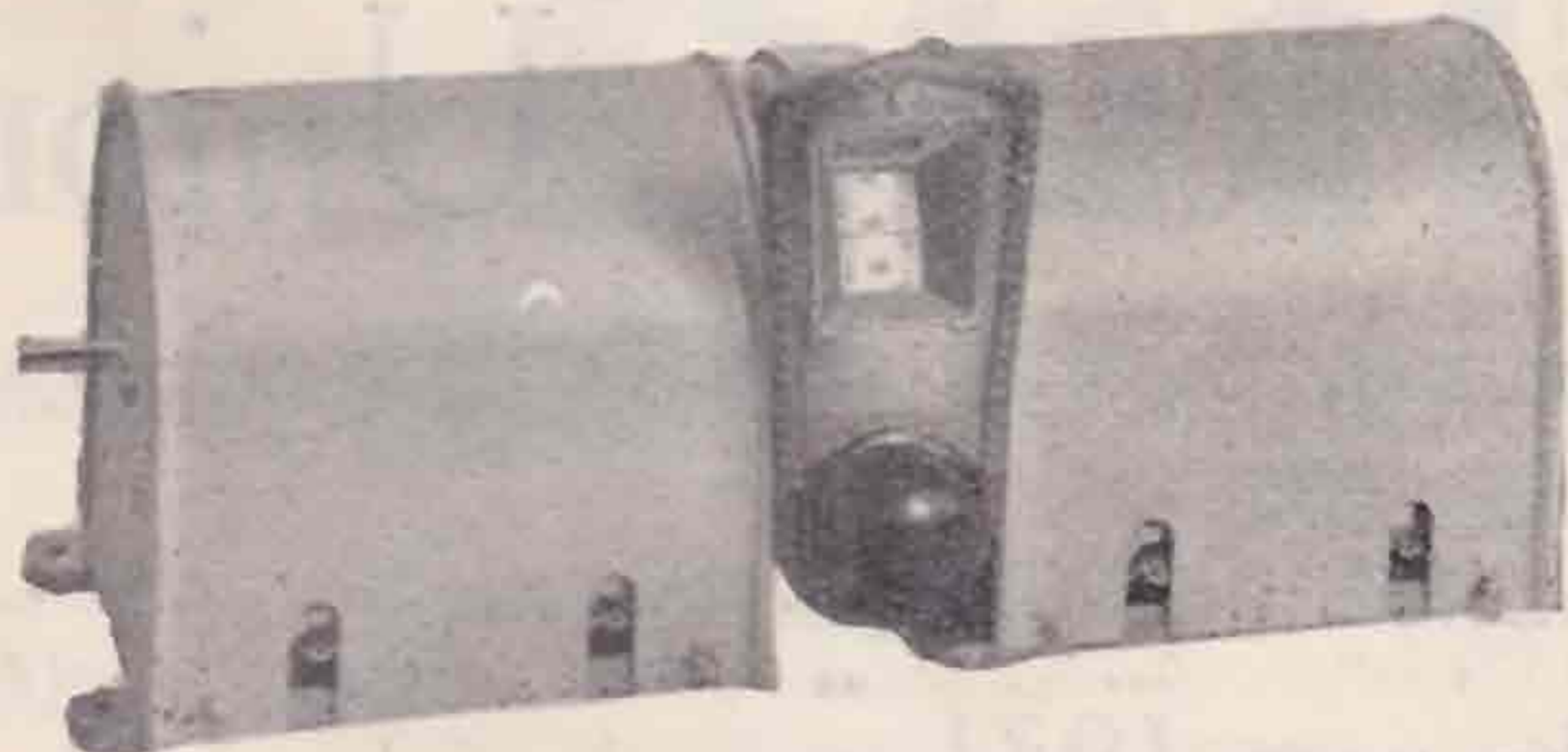
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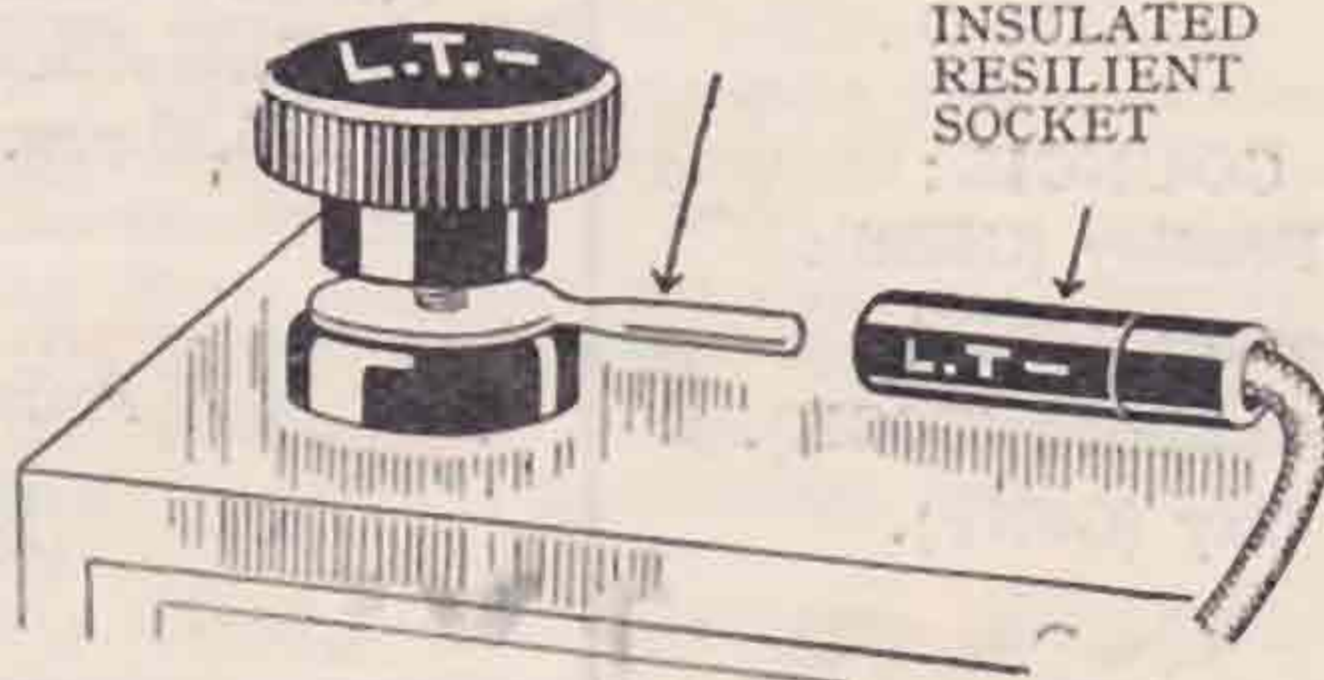
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# **T E R**

# Bulletin

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

APRIL, 1931.

Vol. 6. No. 10

## **PRESIDENTIAL ADDRESS.**

### **Historical Survey of Amateur Radio.**

BY H. BEVAN SWIFT, A.M.I.E.E. (*President, 1931.*)

(*Continued from previous Issue.*)

TOWARDS the summer of 1918 we began to hear rumours of the wonderful things which had been done in the radio world and the feats performed by the thermionic valve. I should add here that the Fleming valve appeared before the war, but beyond stability had very little advantage over the ordinary crystal. A specimen of this valve is on the table.

Amateur radio did not recover immediately upon the declaration of peace; in fact many thought that we should never regain the permits we previously held. However, the Wireless Society of London took up the matter with the Post Office and mainly through the efforts of the late Dr. Erskine Murray and Admiral Jackson, the licences began to be sparingly re-issued. Many of us, however, were so busy rebuilding our businesses that we neglected to apply for the early permits. The writer personally did nothing until February, 1921, when he took out a licence for receiving only.

Everybody had now gone mad upon valves and everybody began to study the subject, and Bangay's book was our great help here. Most of us were brought up upon this early work together with an Admiralty handbook. For some time these two works were the only source for our information.

The valves available were mostly the French R type and took a filament current of half ampere. They were classified as hard or soft, the latter being used for detectors. Most of the material was war-time and bore the broad arrow.

The *Wireless World* shortly appeared again, first as a monthly and then every fortnight and finally weekly. It gave us much information regarding the new circuits available and advances made. It also became the official organ of this Society and remained so until the appearance of the BULLETIN.

We soon began to use valves in cascade, though generally we only amplified the low frequency side. H.F. amplification was limited to resistance coupling untuned and was not very satisfactory. We had very little choice of intervalve transformers. For some time only two were available, the American Federal and the small Army block type, made, I believe, by Ericsson.

In those days we had very little to listen to, Croydon being the first to put out telephony. One by one the amateurs got into being, the author joining them towards the end of 1921. Various of the amateurs began to work every evening and among those who featured most prominently were Mr. Burnham (2FQ), Mr. Walker (2OM), Major Parker (2ON), Mr. Crampton, of Weybridge, William Le Queux, the novelist, Basil Davies, and others.

2FQ introduced us largely to the gramophone classics, being very partial to the Galli-Curci records, and one Sunday evening gave us the first wireless service.

The wave-length used at first was 1,000 metres. Here many of us got into trouble by jamming Croydon and the air services working upon 900 metres. To get over this the G.P.O. gave us 440 metres.

In 1922 there arose a series of concerts given upon Sunday afternoons by the Netherlandische Radio Industrie of the Hague, Holland. To get these concerts was the wild ambition of all. We piled valve upon valve and listened to them upon headphones and thought it wonderful. Unfortunately the concerts failed from lack of funds and although we got up a subscription towards their continuance, they were ultimately discontinued.

However, we were rewarded by early tests from the Marconi Works at Chelmsford, and notably I would mention the classic Melba concert which was received by ships in the Atlantic. This latter achievement, loudly advertised in the Press, did more than anything to arouse interest in radio.

In December, 1921, this Society presented a petition to the Post Office to obtain facilities for a regular broadcast service. This was signed by 65 affiliated societies. The result of this was that Writtle (2MT) was established with the assistance of the Marconi Scientific Co. It transmitted weekly upon Tuesday evenings for one hour and our Vice-President, Capt. Eckersley, was its chief announcer, artist, humorist and engineer all rolled into one. He had to close down at first every few minutes to see if he was causing interference in accordance with the terms of the licence. They were the shortest two minutes upon record. This was the first regular broadcast service in this country and led up to the opening of the regular service afterwards. It can therefore be justly claimed that this Society laid the foundation of the present National Service.

The continued interest in radio resulted in the springing up of local societies all over the country. Most of these sought affiliation to the parent body, and at one time there were no less than 220 upon the register. The great majority of these faded away as the first excitement died down.

Turning again to the work of the amateur transmitter he found that with the setting up of the broadcast service, it was impossible to work upon 440 metres, so that there was a general trek to 200 and it was here that the real serious work of the amateur began. Distance work was the order of the day and the main ambition was to span the Atlantic.

In 1920 the A.R.R.L., in conjunction with the R.S.G.B., arranged a series of tests to ascertain if the American amateur signals could be heard over here. In inviting us to listen they also sent a delegate, Mr. P. F. Godley, over here, to listen in. This test was well organised by Mr. P. R. Coursey, one of our former Secretaries, and all the affiliated societies were asked to join in. It was arranged that selected American stations should send special code words. Prizes were offered by this Society to those who should receive the most code words correctly. The first prize was won by Mr. Bourne, of Sale, Cheshire, who heard seven stations. The second by Mr. H. H. Whitfield, with three stations, and Messrs. Corsham and Spence tied for the third prize with one station each.

Meanwhile Mr. Godley had set up a special receiving station at Ardrossan, in Scotland, with a Beverage aerial 850 yards long, and he claimed 16 stations. An amusing incident occurred over this in that Mr. Warner had issued a bet that Godley would receive more than any of us, and Mr. Burnham took him on. The bet was a new spring hat. At the end of the test, when the results were known, Mr. Burnham cabled Warner for his size in hats and the hat was duly presented. It was of the regular Ascot type with the British and American flags upon the sides. Those of you who remember the visit of the Americans to this country in 1924, following the Paris Conference, will remember that Warner brought the hat with him.

In September, 1922, the first Radio Exhibition

held in this country and sponsored by this Society, took place at the Horticultural Hall. It was largely attended by the public and lectures were given daily.

In 1922 another series of tests were arranged by this Society and a special transmitting station under the call-sign 5WS, was set up at Putney. This station was hurriedly equipped with apparatus contributed by members and with valves borrowed from the makers. It was manned by a special sub-committee consisting of Messrs. Coursey, Hambleton, Lee, Phillips, Maurice Child and Blake. This station, after one or two abortive attempts, was ultimately heard upon 200 metres by a number of American amateurs. Had a higher frequency been used the results would, of course, have been much more conspicuous.

The first trans-Atlantic two-way contact was made by J. Partridge from his station, 2KF, at Colliers Wood. For a long time he had been trying, with many others, to make successful contact upon 200 metres. This proving a failure, he tuned down to 100 metres, where the French amateur station, 8AB, owned by Mr. Leon Deloy, of Nice, had been successful in getting across. Here, upon December 8, 1923, he managed to effect contact with UIMO, the station of Kenneth Warner, at Hartford, and maintained contact for one hour. A week later several of the British amateurs managed to get across.

Among other first contacts made by 2KF was with Chili, in August, 1925, and with Borneo.

Our Vice-President, Mr. Simmonds (G2OD), was another station which made early achievement and of which the Society may well feel proud. In December, 1923, he made first contact with Canada (Can.1BQ), on 116 metres. Upon October 17, 1924, he had a cable from Mr. Bell, of Weihens, New Zealand, reporting the reception of his signals and giving a code word correctly. Upon the same day Cecil Goyder (G2SZ) effected contact with and worked N.Z. 4AA. 2OD also claims to be the first to receive a New Zealand station in this country, the station being N.Z. 4AG. This reception was considered so extraordinary that the *Wireless World* cabled for confirmation. It had always been regarded by the Post Office officials that the short waves were useless for long distance work, in fact, that is why we were given them. It was the amateurs of the world who proved their value and you all know the conditions below 100 metres to-day.

The early short-wave work was excellently summed up in a paper read by Mr. Simmonds (2OD) over the broadcast on June 7, 1926, and contains details of the first 20-metre QSO by 2OD, with Mr. MacLurcan, of Sydney. He had previously worked 3BQ on 95 metres and in 1925 he managed to work telephony with New Zealand. In December, 1925, his speech was heard by the ship G-FUP, lying off Hong Kong.

The first telephonic speech across the Atlantic was achieved by 2XZ on 200 metres.

All these and many other first contacts were duly reported in the *Wireless World* and also the daily Press.

I ought also to refer to the work of our Past-President, 2NM, who did much of the pioneer work, and especially his transmissions in Empire broadcasting.

In 1924, following the Paris Conference, we had a brief visit from Mr. Maxim, K. Warner, and many of the American amateurs, and it was our great pleasure to entertain them in London. It was at this time that the I.A.R.U. was formed, Mr. Maxim being the first member and Mr. Marcuse the second.

We now arrive at comparatively modern times, of which you are all more or less conversant, and it is needless to say anything more upon the historical aspect. For those interested in the early work, there is an excellent book entitled "History of Radio Telegraphy and Telephony," by G. Blake.

Still, for the old-timer, there is considerable interest in looking back over past years and noting events. In the first place he sees what started as a simple science, practised by a few, developed into a large industry employing thousands and involving large financial issues.

Whereas in the earlier years it was a question of making your own components because there was no regular source of supply, to-day a dealer of radio material will be found in almost every street to fill your needs. This state of affairs is not without its drawbacks, because with the ease and cheapness with which components are obtainable, few dream of making the various parts and thus obtain the experience gained in the amateur workshop.

Furthermore, if the set did not work when finished there was nobody to blame but ourselves. There was nothing to do but to dive into matters and find the source of the trouble. To-day we are more inclined to dig out the components one by one and return them to the suppliers with the usual complimentary remarks. I must say here that as an outsider to the radio industry, it has my complete sympathy in the way its customers treat it. I admired the traders' extreme patience, their untiring efforts to please their customers and fill their often unreasonable requirements. Indeed, it is not to be wondered at that so many have got into difficulties and retired to more stable and lucrative trades.

Again with the building up of sets with bought components, radio has lost much of its romantic aspect. In 1921 it often took weeks to make a set up, and further weeks to make it work. To-day we bring home the components in the evening and have the set working before the evening broadcast is over. We can, if necessary, build up the set in the drawing-room, using only a pair of pliers and a screw-driver. All that is left over is a pile of empty carton boxes and printed instructions which few take the trouble to read. In the early days, when the job was done, we stood ankle deep in ebonite filings and lumps of solder. But there were no carton boxes, which was one distinct advantage.

In those early days our neighbours looked upon us as scientific cranks deserving every pity. They would not believe us when we told them that the scratchy sounds they were listening to came from the Eiffel Tower. To-day they come in and tell us that the loud-speaker we are using does not match the impedance of our output valve.

I would like before I conclude to say something generally upon the hobby of amateur radio. It is certainly the finest pursuit which anyone can take up, for as a science it teaches you to think, and its devotees who go seriously into the matter are bound to acquire a certain amount of sound elec-

trical knowledge so important to our modern life. Photography used to be similarly acclaimed because it taught you chemistry, but in these days, where the majority merely press a button and send their roll films round to the nearest chemist to be developed and printed, it can hardly be said to maintain its educational value. Of course this is more or less happening in radio to-day with the so-called kit sets, where the panel is drilled, and you are even told the lengths into which to cut the connecting wires. Still, when the real radio amateur knows what he is doing when he makes a connection and places a condenser in position, there is a real amount of skill required.

As the motor-car and bicycle have given mankind a general knowledge of mechanics, so has radio taught the laity the fundamentals of electricity. Most people nowadays know the difference between a volt and an ampere, and father can generally put in a new fuse without putting half the town into darkness.

Many buy the *Wireless World* every Wednesday but I wonder what percentage read the many useful articles it contains. Still, we know that there are a few who are keen enough to dive into the depths of things, and they are the ones who ultimately gain the greatest pleasure. Even the broadcast listener seeking after purity of quality in reception has a serious task before him, and I have the utmost praise for the man who patiently plods on, making alteration after alteration in his set to attain the ideal.

With regard to the transmitting amateur there is just one danger which I would refer to. Many of us, I fear, have settled down to mere DX hunting and the accumulation of QSL cards. This in itself is pleasing and it is fascinating to receive reports of our signals from distant parts of the world. We, however, do not want to be mere amateur telegraphists but remember that we are experimenters. We have new fields before us to conquer. This Society has been wise to organise tests with low power and in the higher frequencies because they encourage original work and the gaining of the utmost efficiency.

The trouble due to fading is still as prominent as ever and we are no nearer the goal than we were five years ago. It is no good just saying that so long as we work with the indirect ether ray we shall always have fading. Man has overcome many of Nature's obstacles in the past, and I am sure that there is a way round this one.

### Strays.

Congratulations to G2UX, who, with a power input of 10 watts from dry batteries, worked all continents in a period of 10½ hours on Sunday, March 15. His log shows ZL4AP at 07.15 G.M.T., PY2AZ at 09.00 G.M.T., XYI6KR at 09.20 G.M.T., AU1AI at 13.30 G.M.T., SU1AA at 16.00 G.M.T., and W2QF at 18.00 G.M.T.

\* \* \*

VIJA, Mr. W. H. Stephens, of The Wireless Station, Stowy Hill, Jamaica, B.W.I., asks all British stations to look out for him on 7 M.C., 22.00 to 01.00 G.M.T.

# Clickless Keying by Absorption.

Including the description of a Home-made Relay.

By A. E. LIVESEY (G6LI).

THE method of absorption keying presented itself to the writer when an M.L. rotary converter was purchased for supplying anode current. The output of the machine is 80 watts at 1,000 volts. Attempts have been made to key this load directly with the use of "back-spacing" resistances, but the arcing at contacts and other troubles caused the method to be abandoned in favour of the remarkable success which accompanied tests with absorption keying. The latter system has been applied on all amateur bands with equally good results.

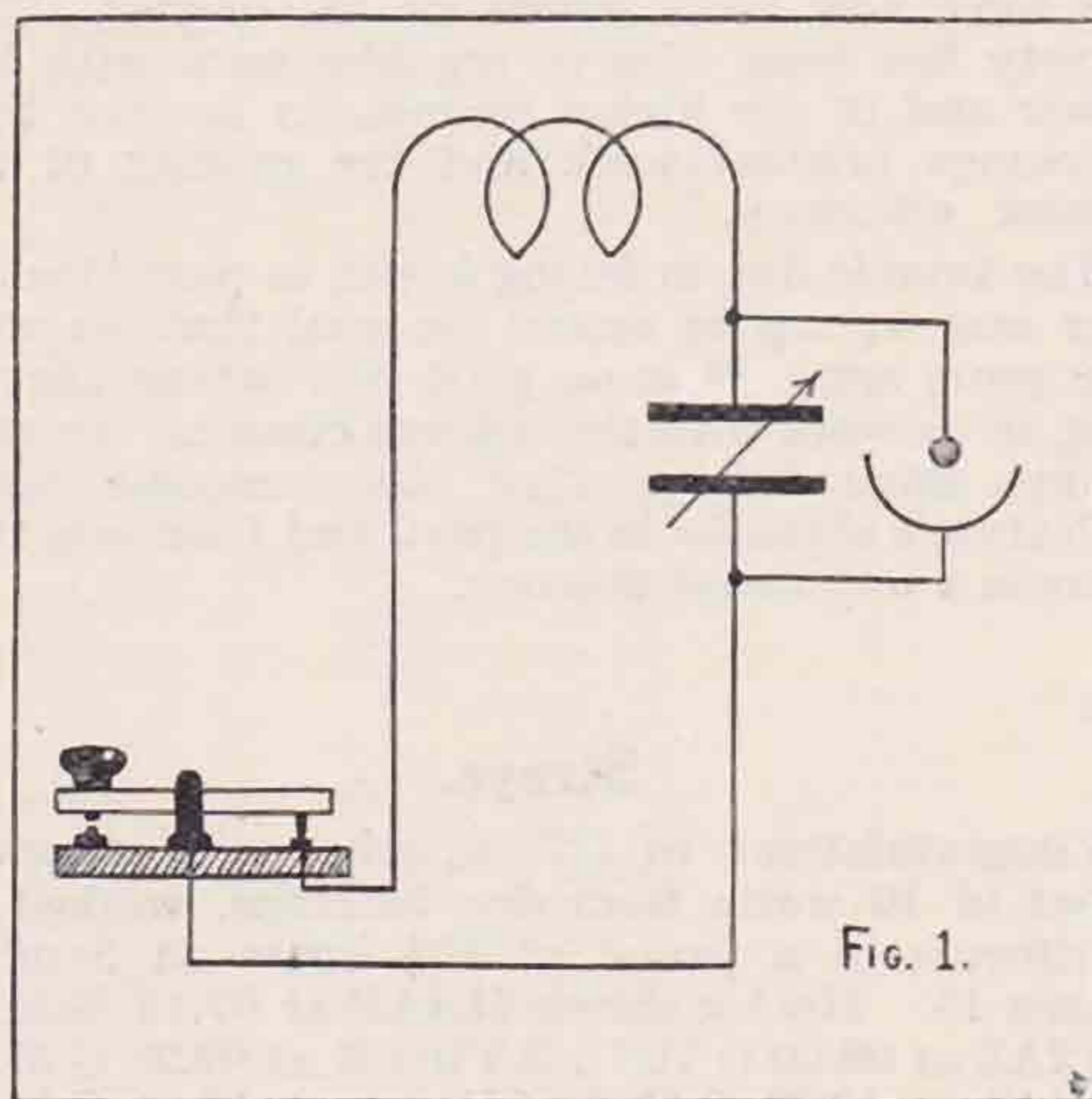
Essentially, the method is a transference of the aerial load and a constant load on the plate of the valve which gives constant generator speed.

Fig. 1 shows the simple theoretical diagram. The circuit is interrupted by the "back" contacts of the key, the front contacts being idle.

The coil consists of a rigid structure of two turns for 14 M.C. and four turns for 7 M.C. of roughly the same diameter as the anode coil and spaced about  $\frac{1}{2}$  in. For 3.5 M.C. a special coil is used, made of five or six turns of 18 S.W.G. D.C.C. wound on a small former, with the turns touching. The whole is tuned by an ordinary .0003 mfd. receiving condenser, which can be shunted by a commercial size Neon tube if visual indication is required.

The coil may conveniently have its connections made by spring clips and flexible leads.

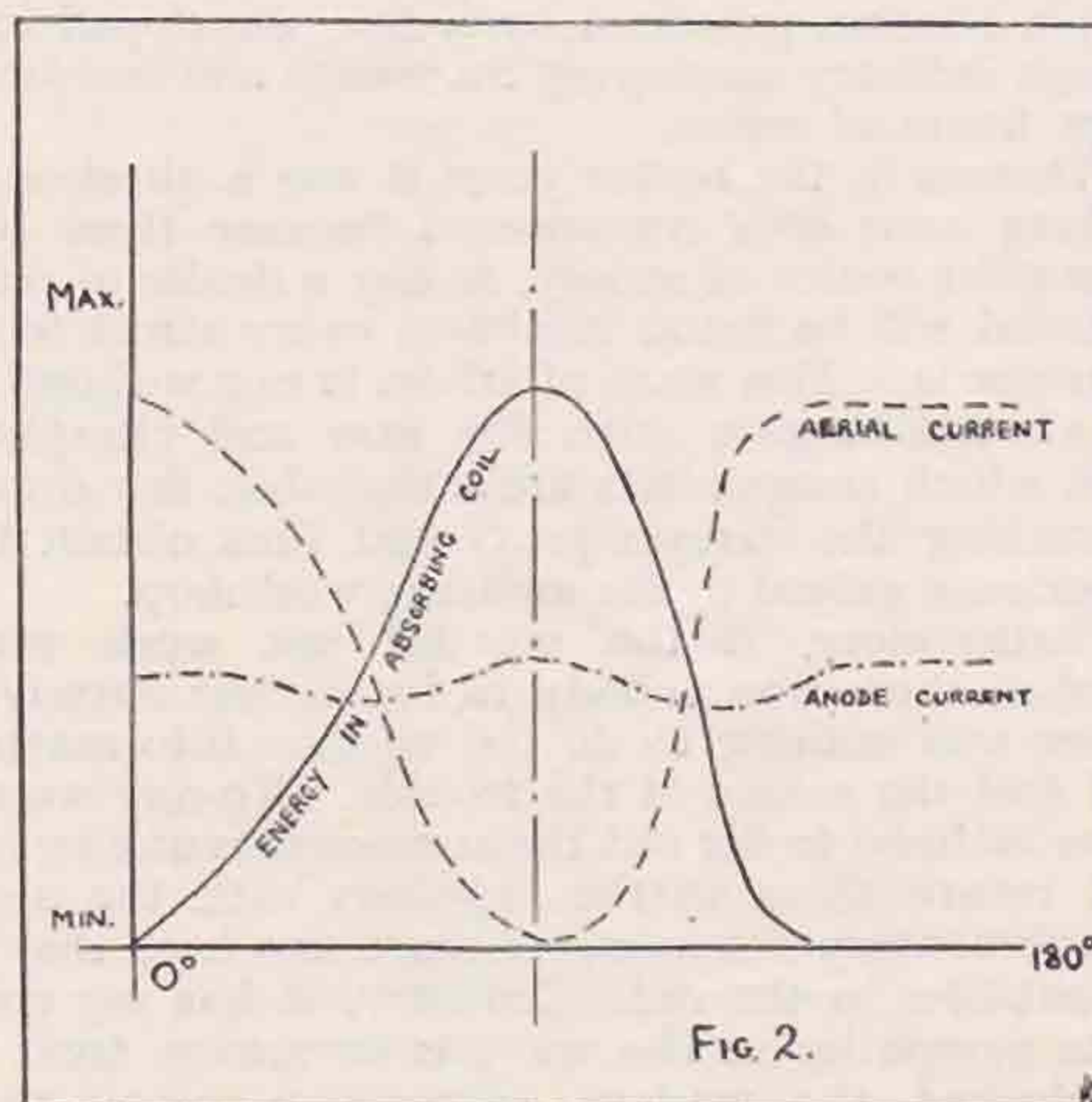
*Keying Without a Relay.*—Utilising only the back contacts of the key, the tuning of the coil is carried out as follows:—



After the aerial circuits have been brought into resonance, the transmitter is momentarily switched off and the absorption coil interposed between the anode and aerial inductances, roughly half-way between the two but rather nearer to the anode coil.

Switching on the transmitter again, the absorption circuit condenser is rotated until the Neon tube lights and the aerial current is seen to fall to zero.

The circuit is brought into resonance to that point at which the plate current reaches the value



which originally maintained, and the aerial current simultaneously drops to zero. This is shown graphically in Fig. 2.

If zero aerial current occurs when the anode current has not risen to the original value, then the absorbing coil must be coupled more closely to the anode coil, and *vice versa*.

In order to prevent a spacing wave, when it is considered that all energy has been blocked off from the aerial, a tuned circuit with a small lamp in series, like a rough wavemeter, should be applied to the aerial feeders, and should there be any wave still going out, the lamp will naturally light up, in which case the keying coil is not yet properly tuned.

When all spacer has been eliminated, press the key of the transmitter and correct the tuning of the aerial circuit, if it requires it, which is probable when working on 14 M.C.

One may now go ahead secure in the knowledge that the operating is clean cut and totally devoid of any chirpy effects. Some of our CT friends might reasonably employ the system!

A few words of warning are necessary to prevent slight accidents. The frequency of the transmitter should be checked when the key is up. If it is very different from that which goes into the aerial when the key is down, beware of the valve heating up suddenly due to the plate circuit being pulled out of resonance with the grid circuit. When this happens, the coupling of the keying coil is definitely too close.

It is recommended that a Neon tube is not



included in the circuit since the ballasting resistance in the base of the tube heats up after running and alters the tuning of the keying coil.

When no tube is used, make sure that the coil really is absorbing and not simply altering the frequency of the transmitter. The writer prefers to hold a Neon tube on to one end of the absorption circuit when true resonance will light up the tube and the valve is saved from attempting to represent a tropical sunset. One soon remembers the rough setting of the condenser for each band.

*Operating by Home-made Relay.*—The relay made at G6LI for this type of keying is constructed from an old electric bell made to operate in such a way as to open the circuit as the key is pressed down—which is opposite to the usual performance of a relay.

Six volts of large capacity dry cells operate the magnetic circuit which consumes .35 amp. However, the batteries stand it very well. The contacts of the key should be shunted by a variable, high resistance in series with a 1 MF. condenser in order to prevent an inductive spark.

L.T. lines may be any length, but must have H.F. chokes in them which should be close up against the "instrument."

Fig. 3 shows the rough design of the relay, which can really be made just as the individual desires. It will operate at 30 w.p.m. with a gap of 1 to 2 mm.—which is all that is required.

The contacts must be of good metal or they may fuse together. They should be periodically cleaned. Mount the entire instrument on Sorbo rubber, and as near to the coil as is possible. A strip of paper is pasted at the back of the iron armature to deaden noise and to insulate it from the magnet winding cores. To ensure good working, see that the armature is set square with both of the magnets touching both equally when the windings are energised.

Other adjustments are made to suit the individual instance.

In conclusion, the disadvantages can be tabulated with the advantages.

*Advantages.*—(1) Absolutely "clickless"; (2) no sparking at the key; (3) no possible chirp; (4) no spacer wave.

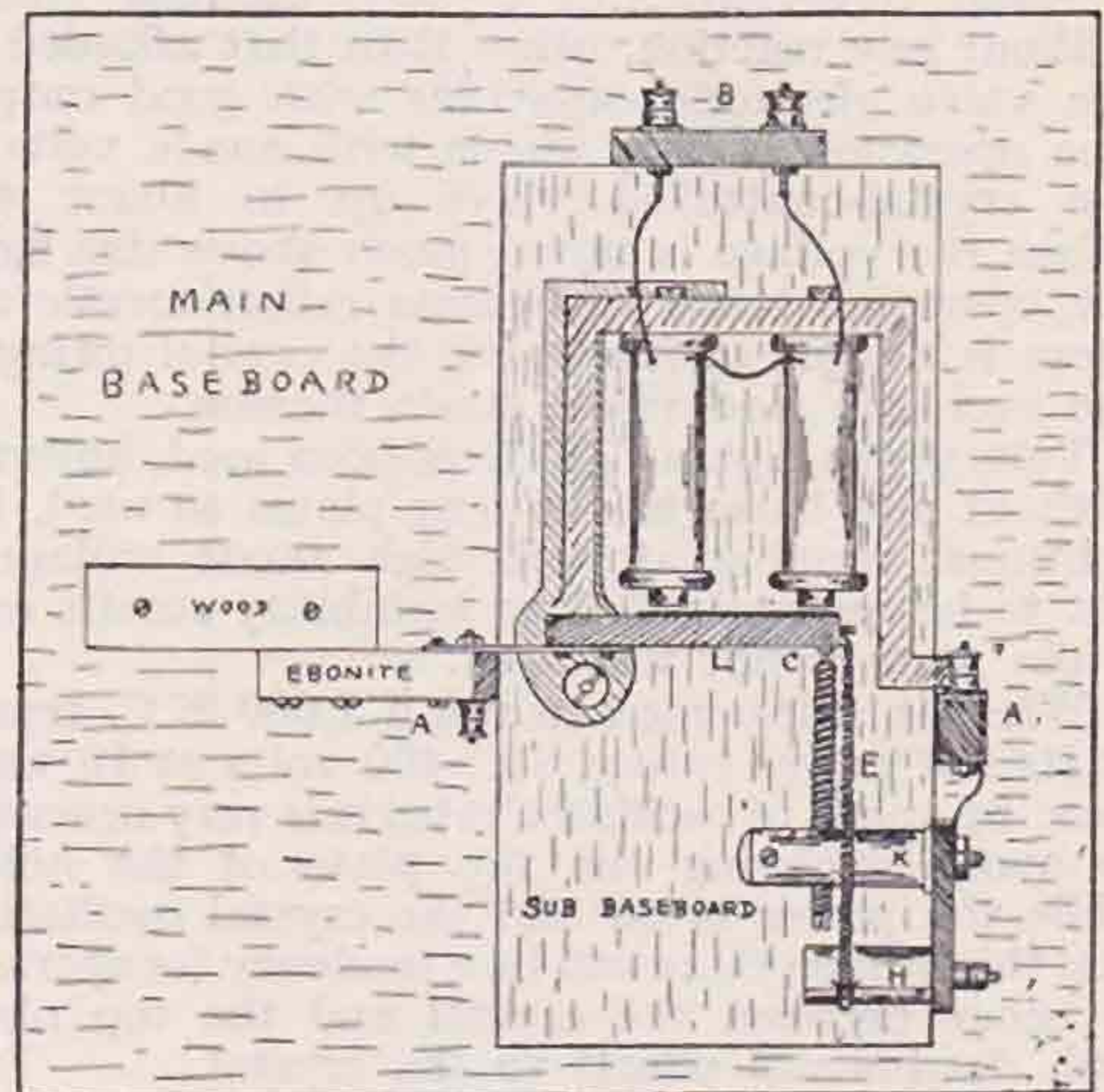


FIG. 3.  
 A — output or H.T. side. E — return spring.  
 B — input terminals. H — adjustable spring holder.  
 C — contacts. K — adjustable contact holder.  
 L — armature.

*Disadvantages.*—(1) Constant anode load; (2) awkward at first sight; (3) generally requires a relay.

The system has been most rigorously tested at G6LI and has passed with flying colours. It is possible to apply it to the grid coil of the transmitter, but the writer has not yet tried this.

## Some Experiments with 7,000 K.C. Quartz Crystals.

By R. L. VARNEY (G5RV).

IT is thought that a résumé of the results obtained at this station recently with a number of specimens of 7,000 K.C. quartz crystals, and their application to the needs of the amateur transmitter, will be of use to members. The writer intends to set out the results obtained during the tests in the form, more or less, of notes.

The bare useful facts are to be presented and it is hoped that they will suffice to encourage fellow-amateurs to give this simple and efficient method of frequency control a trial.

Until quite recently, it was impossible to obtain quartz plates having a fundamental frequency of 7,000 K.C.'s upon the market. Indeed, they are still somewhat of a novelty amongst amateurs.

A number of people seem to think that a 7,000 K.C. crystal is too fragile to use conveniently. Let me say at once that this is a fallacy, and that,

provided ordinary care is exercised when using them, they are capable of quite as reliable service as the better known and now widely used 3,500 K.C. quartz crystals.

The writer was fortunate enough to obtain four 7,000 K.C. crystals for these tests, and the results were in each case very gratifying.

When one realises the fact that it is possible to eliminate a stage of frequency doubling, as against a 3,500 K.C. crystal, when working on 7 or 14 M.C., the great advantage of using a 7,000 K.C. crystal is apparent.

### MECHANICAL OBSERVATIONS UPON 7,000 K.C. CRYSTALS.

These crystals are naturally very thin and must therefore be handled with due care. Although they appear at sight to be rather frail mechanically, they will stand quite a lot of rough use without fracturing.

It is important to keep the crystals quite free of grease and moisture or difficulty will be experienced in getting them to oscillate.

They are capable of a very long useful life with reasonable care.

#### ELECTRICAL OBSERVATIONS.

Seven thousand K.C. crystals oscillate readily without any reaction, other than that afforded by the valve electrode capacities with good output. The operation is very stable with anode volts on the crystal-controlled valve up to about 400. When the voltage is raised much above this figure the operation tends to become rather erratic and there is danger of fracturing the crystal owing to the excessive mechanical strain thereon.

Voltages as high as 700 have been used, however, without any harm to the four plates so used, but continual running at such high anode voltage is not to be recommended as instability results even if the plate is not fractured.

When it is intended to run a 7,000 K.C. crystal at its full power rating, *i.e.*, 400 volts at 10 watts max. on anode of oscillator tube, it is very necessary to avoid removing the top plate of the holder while the power is on and the crystal oscillating, as if this is done there will be a tendency for sparking to occur between the crystal and the top plate, with detrimental effects to the crystal.

In this connection it is noted that these crystals will also work perfectly well with an air or mica gap when the risks of sparking or fracture are very much reduced.

Pressure upon the crystal has been found to be rather important, noticeably increasing the output of the C.O. stage when correctly applied to the top plate of the crystal holder. The pressure afforded by the average size top plate is not enough, and some method of variable pressure is strongly recommended. The applied pressure should not be too great, however, or the crystal will cease to oscillate.

#### TYPE OF TRIODE BEST SUITED FOR USE WITH 7,000 K.C. CRYSTALS.

Many types of triodes were used in conjunction with these crystals, and it was early apparent that a valve having a high anode impedance with a good mutual conductance was necessary for the best output for a given plate input wattage.

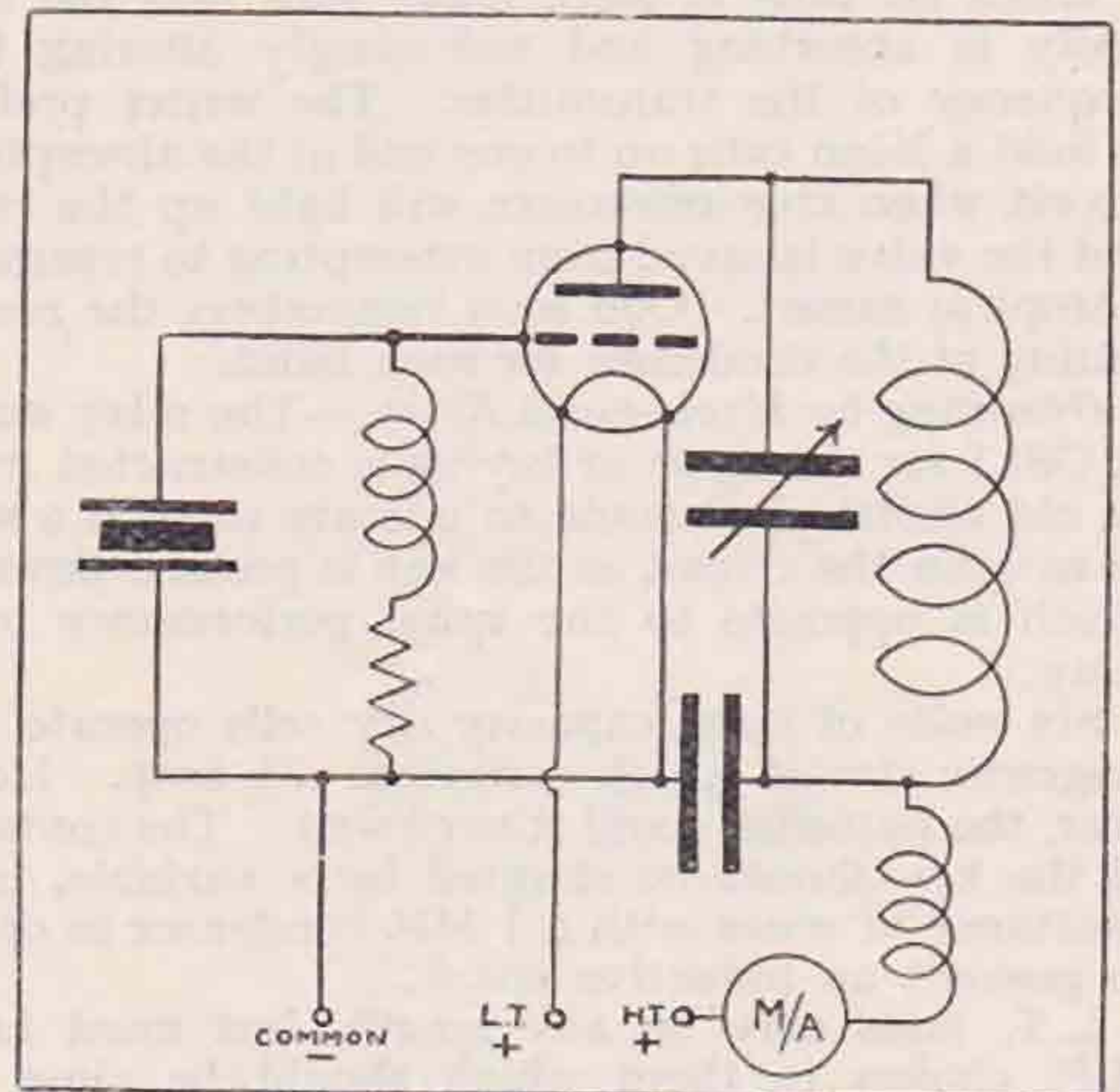
The LS5, much favoured by the average amateur, was quite useless, giving only a very poor output. However, the LS5b was very good, as was the DEH610 type of valve, these latter both being well-known valves of the Osram series. For low power use the DEH610 is recommended, but if the crystal stage is to be run at the full 10 watts input, the LS5b should be used.

When a suitable valve is used with a 7,000 K.C. crystal in the circuit arrangement shown in the figure, the output for a given input, as compared with a T.P.T.G. or similar self-excited oscillator, will be very satisfactory.

A practical test of the capabilities of the circuit as against a conventional T.P.T.G. transmitter was made and gave a very interesting result. This test was carried out with the kind co-operation of G5VB, to whom the writer is indebted.

Briefly, a C.O. using one of the 7,000 K.C. crystals was set up and a half-wave end-on Hertz antenna was clipped directly on to the plate coil. At G5RV, two miles distant, the signal on a two-

valve receiver was R4 with perfect T9 tone which did not vary with the keying (*i.e.*, there was no tendency for the crystal to jump off control).



Next, a T.P.T.G. was connected to the same antenna and with the same input the signal at G5RV was perhaps a shade over R4, but so small was the difference that it may be ignored. Thus, under practical conditions the 7,000 K.C. oscillator justified its use.

Using the crystal directly across the grid coil of a T.P.T.G. set, as in the popular method of "Harmonic" control, very good results were obtained with very low powers, but for over 10 watts to the transmitter a system using a 7,000 K.C. oscillator followed by a PA (for 7 M.C. operation), or by an FD and a PA (for 14 M.C.), is advised.

The frequency stability of these quartz crystals, when used at the fundamental frequency response and under the conditions specified by the makers without reaction other than valve capacities, is very good and may be safely stated to be better than .1 per cent. of stated frequency, especially when used in a sealed or protected holder.

#### SUGGESTED METHODS OF USING 7,000 K.C. CRYSTALS FOR PRACTICAL TRANSMISSION.

To sum up, then, there are three main ways of using a 7,000 K.C. crystal for transmission on the 7,000 K.C. amateur band:—

- (1) As a plain C.O. without an auxiliary grid L.C. circuit.
- (2) As a C.O. driving a neutralised P.A. on the same frequency.
- (3) As a system of "Fundamental" control with the crystal holder directly across the grid L.C. circuit of a T.P.T.G. transmitter.

For transmission on the 14,000 K.C. band a frequency doubler may be interposed between the C.O. and the P.A. of (2) above, or the C.O. on 7,000 K.C. may be just followed by a frequency doubler for 14,000 K.C. working. When the system of (1) above is used, a loose-coupled antenna is advised.

In conclusion, the writer desires to express his sincere appreciation of the kindness of Messrs. Brookes Measuring Tool Co. (advertisers in the T. & R. BULLETIN), who supplied the 7,000 K.C. quartz crystals which proved so successful in these tests.

# Smoothing Circuit Design.

By G6OT.

## III.—DESIGN OF CHOKES.

**I**N the last instalment we investigated a few simple magnetic properties of iron. The next thing is to see how we can use them to make a smoothing choke. Before getting down to the actual design, however, there is still a little more theory that must be considered. What follows is largely applicable to air cored coils in general principle, and may therefore serve a dual purpose.

As in the case of the previous article, it will be impossible to treat the subject right from fundamental principles in a concise article; so will those who know better excuse the writer if he only mentions the bare necessities of the subject?

Let us first of all see what constitutes the unit of inductance—the henry.

In any circuit the inductance is given by:—

$$\frac{\text{Total Linkages}}{\text{Current.}}$$

And what on earth is a "Linkage," says the tyro? Well, now we see what inductance really is. It explains the connection between the electrical and magnetic circuit. If we had one turn of wire through which passed one solitary line of magnetic force we should have one "linkage" between the magnetic circuit in which the line of force was present, and the electric circuit in which the turn of wire was. Thus, in the general case, the number of linkages is found by multiplying the total flux by the number of complete turns encircling it.

If we divide the linkages by the current in the circuit in amperes and again by  $10^8$  (or 100,000,000) we shall get the value of the inductance in henries.

Now, if we have any circuit in which the flux, turns and current are known we can find the inductance. Let us see how this works out in the

what is the magnetising force which we called H last month. It is:—

$$H = \frac{4\pi IT}{10l}$$

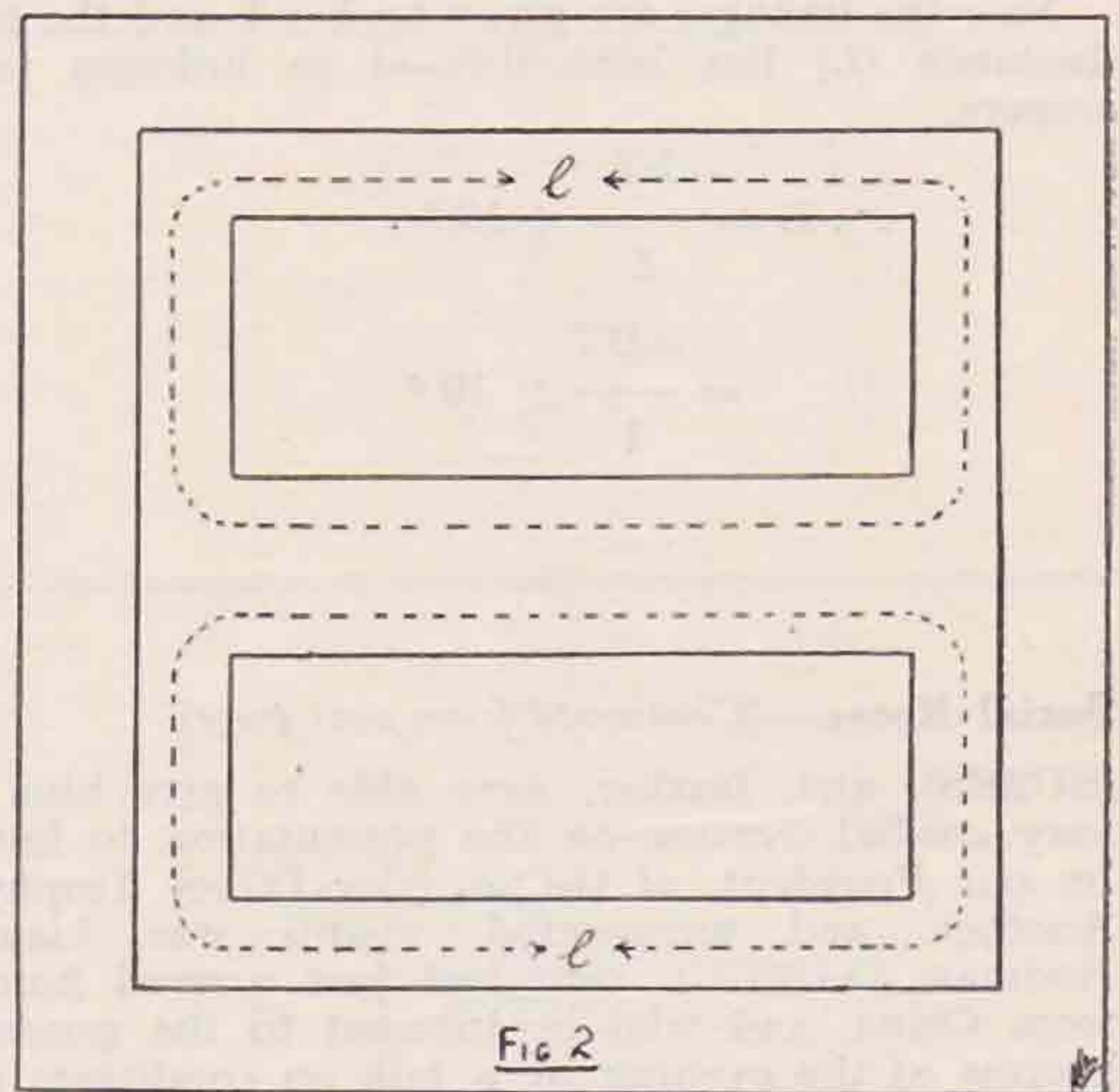
In this

I=current in the winding in amperes.

T=turns on core.

l=length of flux path in the core.

$\pi=3.142.$



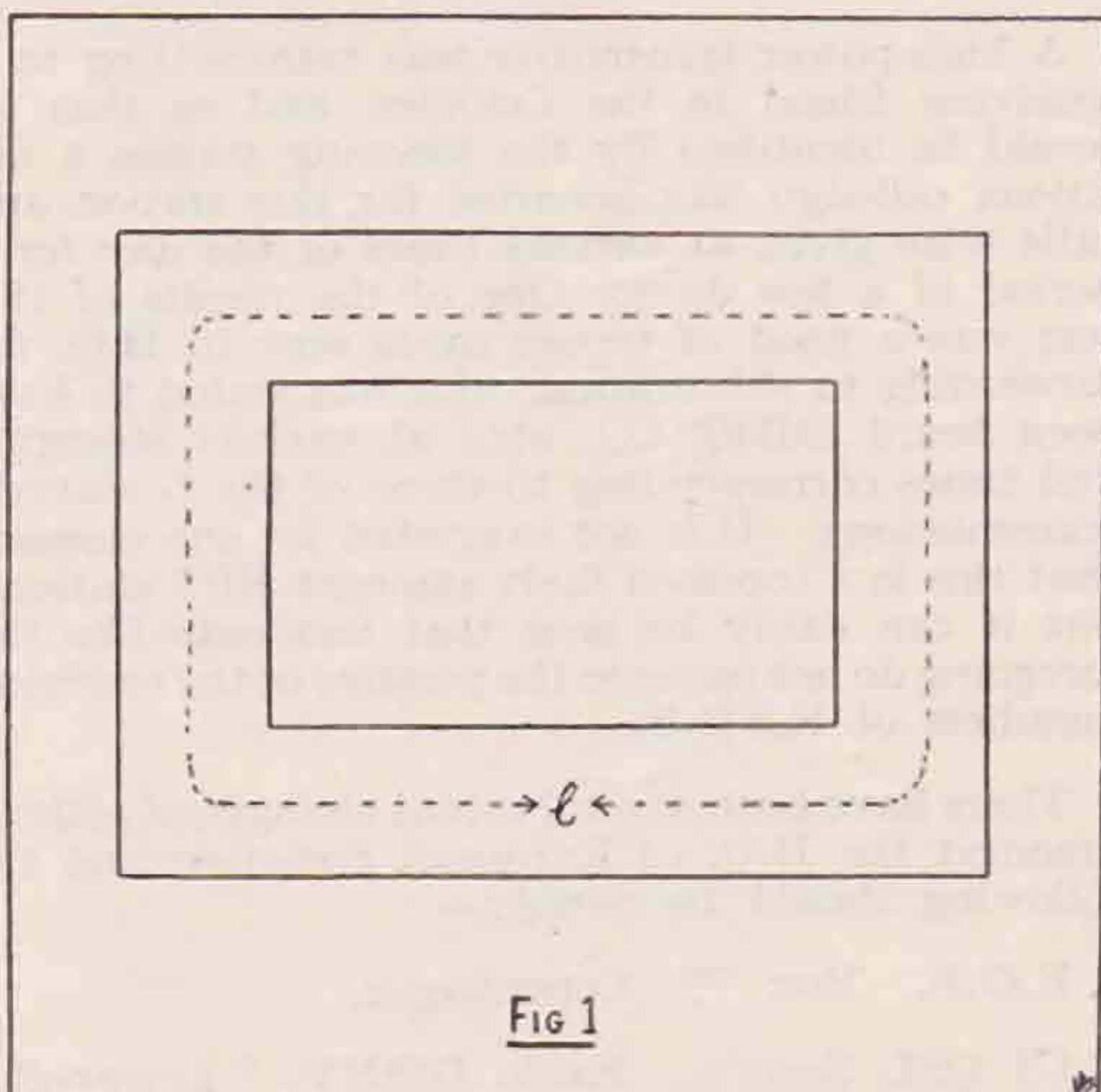
The quantity  $l$  may require some explanation. Fig. 1 shows a common form of core that might well be used to make a smoothing choke. The average length of the iron path through which the magnetic flux has to pass is shown by the dotted line. The length of this is that referred to by  $l$ . This should be in centimetres for use in any of the formulæ which follow.

The type of iron circuit shown in Fig. 1 (which is known as the "core" type) sometimes gives way to the "shell" type illustrated in Fig. 2. Here we have to be a little more careful. There are now two magnetic circuits in parallel, and we must only consider the length of one of them.

Now last month we saw that the flux-density in lines per square centimetres was obtained by multiplying H by the permeability  $\mu^1$ . This must be the loop permeability since we are considering A.C. Thus:—

$$B = \frac{\mu^1 4\pi IT}{10l}$$

But if B is the number of lines per square centimetre, then we obviously find the total number of lines in the core by multiplying B by the effective area of the iron in the core. Two points are worth noting in this connection. Firstly, the area required is that on which the turns are wound. In



case of a simple iron cored choke which is carrying A.C. only.

There is a simple little formula which tells us

the case of the core type of Fig. 1 there is little difficulty, but in Fig. 2 care must be taken to consider the area of cross-section of the centre leg, which will, in general, be the sum of the areas of the outer legs.

Secondly, owing to the insulation which is generally put on core stamping and also due to burrs on their edges, the actual area of iron is always less than that measured. To get the real effective area of iron we must multiply the measured area by a "stacking factor." For small machine punched laminations of the type generally used by amateurs this may be taken as 0.9. Let us suppose that the effective area has been found and call it  $A$  sq. cms. Then calling the total flux or lines of force passing through the core  $F$ , we have that

$$F = A.B.$$

Now the linkages are given by  $F+T$  and the inductance ( $L$ ) has been defined as linkages per ampere.

$$\begin{aligned} \therefore L &= \frac{FT}{I} \times 10^{-8} \\ &= \frac{ABT}{I} \times 10^{-8} \end{aligned}$$

#### Social Notes.—(Continued from next page).

(SU8RS), and, further, were able to give him a very cordial ovation on the presentation to him, by our President, of the Wortley-Talbot Trophy. Another, and unexpected, visitor was Lieut. Rodman (XU2UU), who had just arrived home from China, and who contributed to the general success of the evening by a talk on conditions in that country, radio and otherwise.

In conclusion, I want to air one grouse in connection with the Hamfest—that is, I think that, considering the circumstances, some of our absentee London members could have torn themselves away from tests for a couple of hours and have come long.

C. S. B.

#### SUBSCRIPTION RATES.

The Annual Subscription Rates to the Radio Society of Great Britain and British Empire Radio Union are as follows:—

##### CORPORATE MEMBERS.

Town Members (those residing within 25 miles of Charing Cross) ... .. £1 1 0

Country Members (residing outside the above area) ... .. 15 0

Colonial and Foreign Members ... .. 12 6

##### NON-CORPORATE MEMBERS.

Associates ... .. 10 0

Members automatically receive the "T. & R. Bulletin" monthly.

But we found that

$$B = \frac{\mu^2 4\pi IT}{10l}$$

Putting this value for  $B$  in the formula for  $L$  gives:

$$\begin{aligned} L &= \frac{4\pi \cdot \mu^2 AIT^2}{10lI} \times 10^{-8} \\ &= \frac{4\pi \mu^2 AT^2}{10l} \times 10^{-8} \\ &= \frac{1.256 \times \mu^2 AT^2}{l} \times 10^{-8} \text{ Henries} \end{aligned}$$

Perhaps it would be best to work out an example, using this formula by way of illustration. All the required information to calculate the inductance of a choke in which the air gap can be assumed to be zero is easily obtainable with the exception of the value of the permeability. This, of course, can only be found by a series of tedious and rather difficult experiments which are somewhat beyond the average ham's means. I propose, therefore, in the next article, to give in the form of graphs the average value of the normal and loop permeabilities for the commoner varieties of iron used in the construction of chokes.

#### QSL Section.

BRS stations are sometimes heard to complain of the poor return that they get for their cards, and there is no doubt of the slackness that exists amongst transmitters in replying to report cards, but, as the following incident will show, the blame does not always lie with the transmitter, and receiving stations would be well advised to be certain of the calls of stations before they send in reports:

A high-power transmitter was transmitting to a receiving friend in the Colonies, and so that he would be identified by the listening station a fictitious call-sign was invented for this station and calls were given at various times of the day for a period of a few days. One of the results of this test was a flood of report cards sent to H.Q. for forwarding to this station, who was stated to have been heard calling CQ, etc., at various strengths and times corresponding to those of the G stations transmissions. It is not suggested for one moment that this is a common fault amongst BRS stations, but it can easily be seen that incidents like the foregoing do not increase the prestige of the receiving members of R.S.G.B.

There have been several recent changes of address amongst the H.Q. of European Societies, and the following should be noted:—

E.D.R. Box 79, Copenhagen.

GI QSL Section. Radio GI5HV, "Lynwood," Myrtlefield Park, Belfast.

REF QSL Section. 19, Rue Claude-Vellefaux, Paris (Xe).

# HIC et UBIQUE.

## *First Contact Claims.*

In view of the difficulty of checking first contact claims, it has been decided to discontinue publication. It is regretted that the early amateurs of this country refrained from registering their premier contacts.

Great Britain and Costa Rica.—G5XY and 1UR, April 10, 1927, 05.30 G.M.T., 7 M.C.

Great Britain and Dominica.—G5XY and HIK, February 5, 1927, 17.50 G.M.T., 7 M.C.

Great Britain and Jamaica.—G5XY and NJ2PZ, April 2, 1927, 05.00 G.M.T., 7 M.C.

Australia and Sudan.—VK3WL and ST2A, November 11, 1930, 20.50 G.M.T., 14 M.C.

\* \* \*

## *W.B.E. Certificates.*

W.B.E. Certificates have been issued to G. H. Grossin (F8RJ), H. E. Whatley (G2BY), S. W. Cutler (G2OL), H. N. Walls, G2DH and C. G. Phillips, G5PH.

\* \* \*

## *British Empire Radio Week.*

All logs for B.E.R.W. are wanted for check and comparison purposes. No matter whether you scored one point or 50 points, send your log in. Apart from checking the results, they are required to assist in the formation of the most reliable B.E.R.U. traffic routes.

\* \* \*

## *B.E.R.U. Badges.*

Council have decided to issue B.E.R.U. badges free to all B.E.R.U. members applying direct to Headquarters. The new badges are smaller than the present R.S.G.B. badges, and are made for lapel or tiepin fitting. Home members will be permitted to wear the new badge. Price to home members, 1s. post free.

\* \* \*

## *Summer Outing.*

Council at their last meeting decided in view of the fact that most districts are arranging annual conventionettes, no useful purpose would be served by arranging an official summer outing on the lines adopted in the past few years.

It is therefore suggested that all D.R.'s should immediately notify headquarters of the dates fixed for their annual district conventionette.

Wherever possible, all D.R.'s should notify adjacent D.R.'s of their plans, so that no clashing of dates occurs.

\* \* \*

## *Calibration Services.*

A Calibration Service will be transmitted from G2NM, Mr. Marcuse's station at Sonning-on-Thames, Berkshire, on 3,583.13 K.C., according to the following schedule:—

At 11.00 every Sunday (Telephony).

At 23.00 every Sunday and Thursday (Morse). Times are G.M.T. or B.S.T., as in force. The frequency has been checked and approved by the Post Office.

## *S.A.R.R.L. Conference.*

The annual Conference of the S.A.R.R.L. opened in Cape Town on April 4. Delegates from all parts of South Africa attended. His Excellency the Governor-General graciously consented to accept the presidency for the ensuing year and presided at the opening ceremony of the Conference.

Heartiest congratulations to the S.A.R.R.L. on their good fortune in obtaining the support of His Excellency.

## Silent Keys

It is with deep regret that we have to record the passing of three of our oldest members, Mr. Bakewell (G6UZ), Mr. Berlyn (ST2A) and Mr. Cope (G2MJ).

G6UZ was one of the really "old gang" and had many fine records to his credit. He was very well known in the Midlands and North Country and a staunch member of the Society.

ST2A was the first amateur to open a station in the Sudan and also operated a station in this country when home on leave.

G2MJ has passed on while still in his early twenties, after a long illness. A brilliant mind and lovable nature, his cheery voice will be greatly missed.

The Society loses three excellent fellows, and extends its sincerest sympathy to their respective families.

## Social Notes.

There is one date in April that I would particularly advise members in and around London to make a note of—that is Wednesday, the 29th. On that evening there will be a lecture and demonstration by Mr. G. G. Blake, M.I.E.E., F.Inst.P., etc., at the Institute of Electrical Engineers. This lecture is described as a "Journey into the Realms of Science," and promises to be a red-letter event in the history of R.S.G.B., and those who miss it will find it a matter for regret.

On Saturday, March 7, a party of members paid a visit to the Bankside Station of the City of London Electric Lighting Co., Ltd., and our thanks are due to the engineer-in-charge, who took us for a very comprehensive tour round the station. Altogether, I think everyone spent an enjoyable afternoon, which gave them an insight into the running of a modern electricity supply station.

Another interesting event was the London Ham-fest at Pinoli's Restaurant on March 17. On this occasion we were able to welcome Mr. Runeckles

(Continued in col. 1 previous page).

## Apparatus Worth Buying.

WE have received details of the new POLARGANG Condenser, which has been designed for assembly in multi-stage receivers requiring from two to five capacities ganged. Each condenser is screened and fitted with a trimmer: the POLAR drum drive is incorporated, and may be illuminated if desired. This component shows the usual excellent Polar workmanship, and should find favour with multi-stage receiver builders.

\* \* \*

The CLIX Non-Short Accumulator Connector has recently appeared on the market, and consists of two units, a small lead-coated pin which is permanently connected to the terminal of the accumulator and a socket. The latter is, of course, fitted to the loose-lead, and consists of a CLIX Resilient socket enclosed in insulators, so that no part is exposed and risk of short circuits is therefore eliminated. The whole is very compact and ideal for fitting to accumulators on which the leads have constantly to be changed: it is sold in two colours, red and black, suitably engraved.

\* \* \*

The low-priced FERRANTI Audio-Frequency Transformer has been released, and bears the name of "AF8." The ratio is 1—3.5, and from the response curve shows good overall amplification with a very slight peak on 6,000 cycles and a cut-off of only 50 per cent. at 50 cycles. This is, of course, surpassed by transformers of considerably higher price, but is undoubtedly good for one of the small low-priced nickel alloy class. The primary current should not exceed 3 milliamps. from electrical considerations. Fuller details will be found in pamphlet WA505.

\* \* \*

G2YI has handed us two small components for test. The first to be considered is a fixed condenser of 2 mfd. capacity, rated at 1,650 volts (test) and very low priced. This was tested as a smoothing condenser in a transmitter where the voltage was 1,400 with key up and 1,000 down, and the condenser behaved splendidly. Later the voltage was raised to 1,600 with key up, but the condenser broke down, though there was a small drain on the supply.

A Q.M.B. switch of very reasonable price was also examined. This is designed for working at 250 volts 2 amps. It is very neat, and constructed for single-hole panel mounting. Two spring contacts are fixed into the moulded casing and connected together, when in the "on" position, by means of a laminated copper connector held in an insulating block.

\* \* \*

### New Parmeko Permanent Magnet Moving Coil Loud-Speaker.

This new speaker is made with all the precision of workmanship associated with other Parmeko products, and has several points worthy of the attention of the serious amateur. One's first

impression of the job is that nothing has been skimped or sacrificed to the achievement of a low price—though the price has actually been kept down to £6 10s., which in itself is an achievement, when one considers the thoroughgoing excellence of the product.

The apparatus is housed in a robust diecasting of aluminium, to which attaches a separate base containing the output transformer. This transformer is arranged to give a change-over from 11:1 to 22:1 and from 2,000 ohms primary impedance to 8,000 ohms for pentodes, etc. Strap connections are used to effect the change-over by series-paralleling, a system which entails none of the loss of efficiency common to tapped transformers.

The permanent magnet gives freedom from energising costs, and has a field strength of no less than 9,000 lines per sq. cm. in the gap. This makes the speaker extremely sensitive to weak signals and at the same time able to handle sufficient volume to fill a dance hall or small cinema. Reproduction is very nearly perfect throughout the audible range, owing in a measure to the diaphragm material, which has been selected from hundreds of others after very extensive tests. A very free paralleling movement is obtained by absolutely rigid centring. The impedance of the speaker is 15 ohms.

As mentioned above, the price of the speaker is £6 10s. and the price of the transformer in special base is an extra 30s. The speaker is manufactured throughout at the Leicester factory of Messrs. Partridge & Mee, Ltd., whose London office is at 74, New Oxford Street, W.1.

\* \* \*

### A British Stand-Off Insulator.

We have received from Messrs. Stratton & Co., Ltd., of Birmingham, a stand-off porcelain insulator. This was subjected to a pressure test of 15,000 volts at 50 cycles for two minutes and passed satisfactorily, no brushing effect being observed. The porcelain is well glazed and is a British product retailed at 1s., and at this price will be welcomed by all transmitters. The base measures 2½ inches, and the height of the insulator, excluding the 2 B.A. plated terminal, is 1½ inches.

### Strays.

G2XY, of Leeds, who has recently commenced transmissions again with low power on 7 and 14 M.C., complains that some station appears to be using his call for 'phone work, as he receives reports. If the identity of the unlicensed station becomes known he will be reported to the authorities.

\* \* \*

London and Home County members who intend to be present at Mr. Blake's lecture, on April 29, are invited to apply immediately to H.Qs. for an advance copy of his paper.



By C. S. BROWN, BRS290, 39, Westfield Way, Dormanstown, Redcar, Yorks :—On 1.75 M.C. : g2ai, g2ap, g2bm, g2ip, g2mx, g2oa, g2oi, g2qi, g2ws, g2xs, g2yi, g2zc, g5av, g5gy, g5st, g5vl, g6dr, g6fo, g6iz, g6lr, g6mn, g6np, g6uj, g6yq, g6zh, gi5hv, gi6yw, ei2b, ei7c, d4abg, d4nuz.

By CPL. CHERRY (ex VU2AH), 31 (A.C.) Squadron R.A.F., Quetta, Baluchistan, on 14 M.C. during February :—ap6jm, aulai, d4lrm, eu2db, f8eq, f8ex, f8pz, f8swa, f8sx, f8ul, g2ay, g2by, g2gm, g2ol, g2vq, g5bj, g5ml, g5vm, g6nf, g6rg, haf2d, haf6d, kaljm, oh1nf, og2og, oh2ow, oh5nf, oh5ng,

oh7nb, oh7nf, oh7ng, ok2op, ok2rm, ok2sk, ok3nf, on4ip, on4uu, pk4aj, splyl, sulaq, uohx, vk2lr, vk3bq, vk3hu, vk3oc, vk5gr, vq2ty, vs7ai, vs7ap, vu2ah, vu2fz, vu2pn, yilej, yi6ag, yi6ht, yi6kr, zl2bz, zl3ar.

\* \* \*

By BRS438, 17, Lawn Road, Uxbridge, Middlesex, on March 15, 16 and 17, 1931. On 14 M.C. : cmlby, cm8fr, ct2aa, kalza, k4kd, oa4z, pyler, py2az, py2qa, vk2dy, vo8ae, w1bft, w1bte, w1cps, w1me, w1wv, w1zy, w2adp, w2aca, w2bak, w2bda, w2buy, w2byp, w2cod, w2jd, w3auo, w3my, w8adj, w8aj, w8aoo, w8bin, w8cfo, w8cfw, yi6ag.

### NEW MEMBERS.

J. H. WETHERILL (G2TK), 30, Sculcoates Lane, Hull.  
 M. GRIFFIN (G2XA), 9A, Dunraven Road, W.12.  
 E. I. LOW (G2TS), 7, Maple Square, Sutton Road, Southend-on-Sea.  
 F. R. DREW (2AMZ), Frampton Cotterell, Bristol.  
 S. N. JOHNSON (G15S), 191, Holywood Road, Strandtown, Belfast.  
 C. LEVY (BRS503), 103, Highbury Quadrant, N.5.  
 T. H. PHIPPS (BRS505), 4, Epps Road, Milton Regis, Kent.  
 J. H. HARGREAVES (BRS506), Brierley, Kingsgate, Bridlington.  
 H. J. PENFOLD (BRS507), "Roseneath," Burdon Lane, Cheam, Surrey.  
 J. N. WATSON (BRS508), 54, Beechwood Road, Sanderstead, Surrey.  
 S. LAMBERT (BRS509), 131, Hampton Road, S. Chingford, E.4.  
 W. BYCROFT (BRS510), 323, Crookesmoor Road, Sheffield.  
 W. REDDISH (BRS511), Beacon Lodge, Grantham.  
 D. G. SAINSBURY (BRS512), Chyryton, Cheltenham Road, Evesham, Worcs.  
 A. F. R. LOVE (BRS513), Rylton, Hersham Road, Walton-on-Thames, Surrey.  
 J. H. STRIKE (BRS514), 16, Woodhouse Cliff, Hyde Park, Leeds.  
 F. A. ROBB (BRS515), 3, Worcester Terrace, Chamberlain Street, Belfast.  
 L. O. ROGERS (BRS516), The Cottage, Hambutts, Painswick, Glos.  
 A. E. SORRELL (BRS517), 32, Colman Street, Southend-on-Sea.  
 E. V. JAYNE (BRS518), Birchwood, Ystrad Mynach, Glam.  
 D. G. SCLATER (BRS519), "Kinnoull," Dollerie Terrace, Crieff.  
 E. W. TAYLOR (BRS520), 125, Westbourne Grove, Westcliff-on-Sea.  
 S. W. P. HENTON (BRS521), 11, Kelham Road, Newark, Notts.  
 A. DELLBRIDGE (BRS522), Normanhurst, Laindon Hills, Essex.  
 E. W. TAPPER (BRS523), 141, Croxted Road, Dulwich, S.E.21.  
 A. MACSTOTT (BRS524), Old School House, Sowerby, Sowerby Bridge, Yorks.

J. B. ASHE (BRS525), Emmerdale, Rhiwbina, Cardiff.  
 H. HARRISON (BRS526), 60, Kenilworth Road, Luton, Beds.  
 E. WOOLLEY (A), 9, Kenilworth Avenue, Derby.  
 E. HACKNEY (A), 154, Brynn Street, St. Helens, Lancs.  
 S. R. BRILL (A), 25, Lee Street, Limehouse, E.14.  
 W. A. GRIFFIN (A), 27, Park Road, Leyton, E.10.  
 R. J. C. DAVIES (A), 13, Glanmor Crescent, Uplands, Swansea.  
 J. P. STOVE (A), 35, Melville Street, Glasgow, S.1.  
 CORPORAL H. W. CHERRY (VU2EK), 31 (AC) Squadron, R.A.F., Quetta.  
 P. GODFRIN (F8BJ), 103, Rue de Grenelle, Paris.  
 V. SHARP (VE2CR and VE3VS), c/o R.C.A. Photophone, 366, Mayor Street, Montreal.  
 L. DE LA TAPIA (EAR117), calle Tabern No. 26 (S.G.), Barcelona.  
 A. J. NEWMAN (VE2CL), 65, Elm Street, St. Lambert, Quebec, Canada.  
 MRS. L. E. HUTCHINGS (VK3HM), "Bryn Avon," Callawadda, Victoria, Australia.  
 H. E. J. PHILLIPS (VK3JO), 178, Mitcham Road, Mitcham, Victoria, Australia.  
 E. JONES (Y11EJ), WT Section, No. 84 (B) Squadron, R.A.F., Shaibah, Basra, Iraq.  
 W. FRANZOK (DE1135), Haus Laubgewind, Haffkrug-Lubeck, Germany.  
 SHYAMA CHARAN, M.Sc. (FRS14), Agra College, Agra, India. (Temporary address: Xantenerstrasse 11-111, Berlin).  
 J. C. ROSEN LUND (LAM008), Blindern, Studentertjhem, Oslo, Norway.  
 A. YATES (BERS54), Munnar, S. India.  
 R. A. YOUNG (BERS55), Wireless Section, No. 5 (AC) Squadron, R.A.F., Kohat, India.

### QRA Section.

Manager: M. W. PILPEL (G6PP).

The prefix and call-signs of all Southern Rhodesian stations have recently been changed. The new prefix is ZE, and the call-signs consist of the figure e1 followed by two letters.

#### New QRA's.

G2MI.—A. O. MILNE, 79, Victoria Avenue, Broadstairs, Kent.  
 G2XA.—M. GRIFFIN, 9a, Dunraven Road, London, W.12.  
 G2YC.—H. J. STANNARD, 18, Wimpole Mews, Cavendish Square, London, W.1.  
 G2YD.—G. A. WRIGHT, "Melbury," Kingston Hill, Surrey.  
 G2ZQ.—J. HUNTER, 63, Hervey Road, London, S.E.3.  
 G2ZX.—A. N. PORTER, 32, Tyndales Park Road, Bristol.  
 G5CV.—P. D. WALTERS, 45, Fairfax Road, London, W.4.  
 G5DI.—T. BROWN, 253, Helmsley Road, Sandyford Road, Newcastle-on-Tyne.  
 G5TR.—J. A. J. COOPER, 47, Canterbury Avenue, Ilford, Essex.  
 G5UF.—A. A. BARRETT, "Sydcote," Cabbal Road, Cromer, Norfolk.

G5WV.—D. WOODS, "Malolo," St. Edmund's Road, Felixstowe, Suffolk.  
 G6JG.—C. W. JENNINGS, 150, Longmead Avenue, Bishopston, Bristol.  
 G6JP.—G. R. JESSOP, "Oakbank," Lena Gardens, London, W.6.  
 G6NK.—R. J. DENNY, 32, Waverley Road, Weybridge, Surrey.  
 2AHK.—G. R. SCOTT FARNIE, "The Grange," Cefn Coed, Merthyr.  
 2AHR.—D. G. RUMARY, "Pineholm," Upper Station Road, Heathfield, Sussex.  
 2AHY.—H. S. WOODHOUSE, 42, Springfield Drive, Ilford, Essex.  
 2AOP.—S. PARR, 18, Harris Street, London, S.E.5.  
 2ARZ.—A. J. PAGE, 41, Mayfield Road, Chadwell Heath, Essex.  
 2AUT.—R. H. FARRINGTON, 15, West Street, Sittingbourne, Kent.  
 2AXD.—W. H. PETERS, Stone Lodge, Stoneleigh Road, Gibbet Hill, Coventry.  
 2BIQ.—E. C. GIBBS, 62, Victoria Road, Bury St. Edmunds, Suffolk.  
 EI7D.—E. R. MELLON, 5, Templemore Avenue, Rathgar, Dublin, S.2.

The following are cancelled :—2ABS, 2AUN, 2AYP, 2AZU, 2BAI.



## 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.*

### Variable Frequency C.C.

*To the Editor of T. & R. BULLETIN.*

DEAR SIR,—G6FY's abstract of the "variable frequency" crystal control article in "Q.S.O." in the February BULLETIN, interested me.

While I have not yet had the opportunity to try out the scheme, some members may remember that I put it forward in a talk on 28 M.C. Transmitters, given at the I.E.E., on May 16 last. As Mr. Cosyns is probably aware, the fundamental idea was put forward by the Marconi Company in a patent specification, although I cannot remember whether the specification made any mention of the use of series valves to balance out the drive frequency.

Again may I say that I am glad that G6FY has brought the circuit to the Society's notice, as it does seem a useful way to get very nearly full stability from the crystal while giving a method of dodging interference without the need to invest in a row of quartzes at the end of a multi-contact selector switch.

Yours faithfully,

H. A. CLARK (G6OT).

50, Rosebery Gardens,  
Harringay, N.4.

### Concerning the Anode Circuit.

*To the Editor of T. & R. BULLETIN.*

DEAR SIR,—In the article entitled "Transmitter Efficiency" in the March issue of the BULLETIN, G6XC states that, out of 20 watts supplied to a valve working at 50 per cent. efficiency, 10 watts heats the valve and the other 10 are dissipated in the tank circuit. I think this may appear rather misleading to those of us who are not completely *au fait* with transmitter design, as there seems to be no power getting to the aerial itself, which is, of course, what we want.

I think, therefore, it would have been better if G6XC had elaborated his remark about the anode circuit.

Losses in the actual tuned circuit are, of course, wasted power, and contribute to reduce the efficiency. Until the aerial is coupled the tank circuit

$$W^2 L^2$$

impedance ——— should be as high as it is possible

$r$

to get it. This is achieved by keeping L as high and C as small as possible, and then making the coil very efficient, *i.e.*, with very low  $r$ . Now, the aerial is coupled until the load thrown into the tuned circuit is such as to reduce the value of the impedance till it matches that of the valve. Then maximum energy will be transferred to the aerial. For example, suppose the load required to match the valve is 10,000 ohms, and that the aerial looks like 100 ohms at the transmitter end of the feeders (approximately C/F half wave). That 100 ohms has got to look like 10,000 to the valve, and for this

purpose we want a transformer of ratio  $\sqrt{\frac{10,000}{100}}$

*i.e.*, 10 : 1 step down from the anode to the aerial coil. But suppose that the impedance of the tank without the aerial added is only 50,000 ohms, we

shall have to include these in the 10,000 before we add the aerial. 50,000 in parallel with 10,000 is 8,300 ohms, so that, out of 10 watts supplied by the valve, only 8.3 get to the aerial, and the step

ratio is now  $\sqrt{\frac{8,300}{100}}$  *i.e.*, 9 : 1.

The efficiency from valve to anode load is still 50 per cent., but the overall from valve to aerial is only 41 per cent., since out of 20 watts supplied only 8.3 get to the feeders.

Usually things are much worse than this, and it is not possible to deal with the design of an anode load here, but it is hoped to do so later in the "bill." An impedance of 50,000 ohms on 10 metres is a bit of a feat; it is usually less than 10,000 ohms, and then we are in a mess!

Again the writer only deals with the 50 per cent. efficiency case, but higher efficiencies can be obtained, but in these cases the value of the load is not the same as the valve impedance, and is not quite so simple to determine. This will be dealt with by the writer in a forthcoming article.

However, it is hoped that this note will help to remove the possibility of misunderstanding the points outlined by G6XC.—Yours faithfully,

F. CHARMAN (G6CJ).

### The 28 M.C. Tests.

*To the Editor of T. & R. BULLETIN.*

DEAR SIR,—I find that in my "write-up" of the 28 M.C. Tests I credited some harmonic reception to BRS310, when, in fact, it should have been BRS327 to whom the credit was due. BRS310 has kindly pointed this out to me, and I wish to apologise to both of them for the mistake. This particularly refers to my reference to 5VL's report on the 1930 Tests.

BRS310 tells me that he used a resistance as an H.F. choke on several of these cases of harmonic reception, so that my suggestion with regard to chokes does not apply in his case. He also tells of reception of 14 M.C. signals on 7 M.C. and 28 M.C. signals on 14 M.C., but I think that there is a quite straightforward explanation of this type of reception. Neglecting the possibility of receiving a station's 14 M.C. FD radiation when the station is radiating on 28 M.C., the oscillating receiver will be generating a double frequency oscillation because of the curvature of the lower end of the characteristic. The amount of second harmonic component produced in the receiver will depend on the conditions under which the grid is working; with a high value of grid-leak as is usually used by S.W. receivers, it would seem that there will be quite a healthy double frequency component. If one has a receiver tuned normally to 7,100 K.C., the second harmonic, *i.e.*, 14,200 K.C., may beat with a station's signal on that frequency, and a slight variation of the receiver frequency will enable the 14,200 K.C. signal to be received apparently on 7,100 K.C. (not considering the frequency of the heterodyne note).

I understand that an Egyptian station had

(Continued on page 292.)

## Contact Bureau Notes.

By H. C. PAGE (G6PA).

THIS month I have to open with a piece of very sad news. The 56 M.C. Tests have been nearly a complete washout. It's very sad, but there it is. There have been absolutely no DX contacts at all. Even the local contacts have not been as good as usual. G2OL has let me have a complete report of all the contacts made, but, as he says, they are all very local indeed, and not worth writing home about. There is just one unusual feature about this, though. On the second Sunday of the tests, *i.e.*, February 8, there was a complete blank. G2OL fears that this was due to everyone departing to 14 M.C. for the joys of real DX, but as there were quite a few contacts on the third Sunday I am inclined to doubt this. If his contention was right, there should have been even less on the third Sunday, as one would most certainly be more fed up by then. Perhaps this is not a very scientific argument, but I feel I must make a plea for the heroes who stuck at the job, when there was so little doing. Now the fourth Sunday was a complete blank, too, but after three bad week-ends, what would you?

G6TW also sends in a report of nothing doing. He reports hearing a lot of harmonics of various commercials, especially GFA. He has been conducting some experiments to try and determine why harmonics are so well received. He has come to the conclusion that they are due to nearby bodies, such as aerials, guys, etc. When he is using his receiver right away from any such bodies he does not get any harmonics whatever. His own transmissions, however, come in quite all right. Last summer, though, he was able to hear his own station well, up to a distance of twenty miles, but now the limit is about ten miles. He is inclined to believe that dry climates are more suited to 56 M.C. work than wet, for as summer comes along, so results seem to improve.

He wants to know whether the extensive field of frequency radiation of 28 and 56 M.C. receivers extends in such a manner as to cause all objects in its vicinity to oscillate, and while all are in a state of oscillation the harmonics come along in mutual attraction?

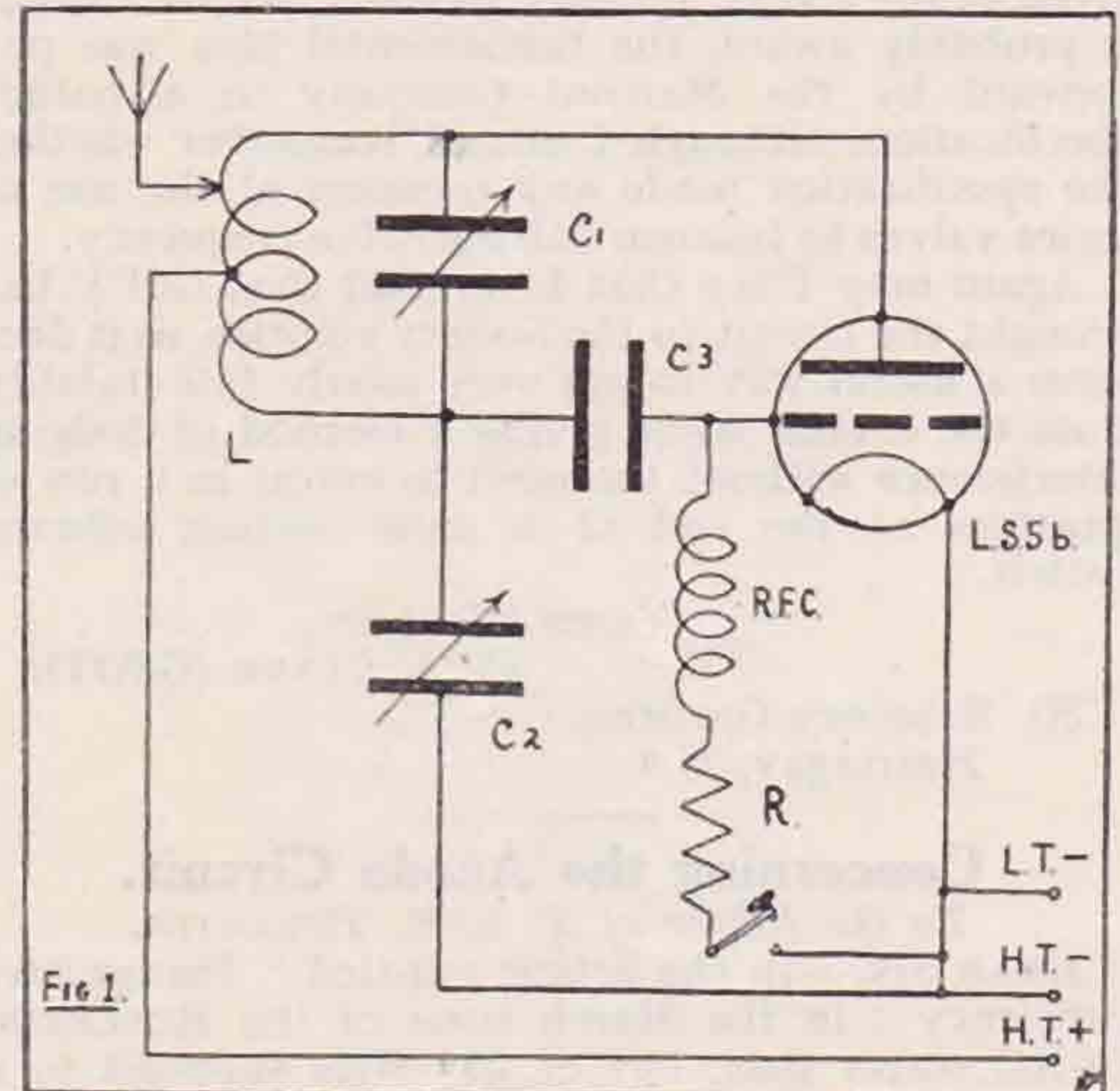
\* \* \*

The next item of news is the result of the Blank Trophy. You will probably remember that this is awarded to the six best contacts made by any one group; each group member having to send in his claim. This year the Trophy goes to QRP Group 8B. Group 8A ran them very close, however, there being a difference of only .7 miles per watt between them. Unfortunately Group 8C did not send in a complete claim, so could not qualify. This was a pity, as G5PH had one fine contact with Egypt, a distance of 2,000 miles, using only three watts.

VU2FX sent me details of his 28 M.C. transmitter last month, but these were not in time for the Notes. As the set has somewhat unusual values for the components I give the circuit in Fig. 1.

He also has been taking part in the 56 M.C. Tests, but, like the rest of us, he has had no luck.

It is proposed to form a VU—VS 28 M.C. Group on the lines of the C.B. Groups. Should the plan meet with any success the VU—VS people hope to include the men in Iraq and neighbouring countries, thus forming an "Eastern International



Group." I am sure we shall wish them the very best of luck. The idea is believed to be due to YI6HT, but VU2FX is not sure about that. All being well, a Letter Budget will be started.

BRS103 in a letter to GI6YW says he is very interested in the question of harmonics. He states that he never hears any harmonics now, but that about three years ago he used to receive harmonics of 2LO very strongly, also other B.B.C. stations. He wonders if this is due to improvements in the transmitters. He suggests that a C.B. Group be formed to investigate the matter. (We seem to come against this question of harmonics very often now, and I think a group might well be formed to look into the matter. Will anyone interested communicate with me (G6PA)?)

I have to thank VK2HC for sending me some weather maps and also a report of 28 M.C. work. The VK stations do seem to be very active on 28 M.C., and it will not be for want of trying on their part if a lot of contacts are not made with this country. More power to you OM's. VK2HC uses telephony on 28 M.C. and has had quite a lot of contacts, and reports. He is using a Telefunken system of modulation, and has W.A.C. three times with it, but not on 28 M.C., of course.

VK3WL also sends in a 28 M.C. report. He thinks that people do not spend enough time on the band. It is no use listening for about five minutes, and then, because you don't hear anyone, chucking up the sponge, or rather, the phones! He reports no results in the 56 M.C. Tests, but says

that as far as he knows, the only VK station to have a transmitter working on that band is VK4AT. However, several men are building 56 M.C. receivers now.

Everyone who works on 3.5 M.C. will, I am sure, want to congratulate G6RB on his fine contact with ZL2BE. This is the first G-ZL contact, so far as I am aware, since 1924-25, and I hope it is only the forerunner of many. Possibly 3.5 M.C. may not be so good during the coming months, but during the winter there would seem to be no limits to its range. Probably it will have its off periods like the rest of our bands.

1.7 M.C. also would seem to be changing considerably. Who would have dreamed of working OZ and OK there a couple of years ago? OZ7F has been heard over here at R8, too.

G2ZN is saving his sunspot observations for next month, when he hopes to have some information relative to the 2 M.C. Tests.

He informs me that quite a few people have upbraided him for the apparent failure of some of his forecasts. He wants it made clear that sunspots are not by any means the only things that affect radio. There are heaps of other causes.

### 28 M.C. Work.

G6VP, Group Manager.

*Group 1C.*—Very little work seems to have been done by any member of the group this month but it is not to be wondered at in view of the intensive activity on other bands. G6WN has run a sked with G6PM but without success, although they received a report of their transmissions from BRS403. They again report the reception of very strong harmonics of London 14 M.C. signals. They use an all-mains RX for all bands now and find it FB. G6DH is very busy on experimental work which, however, has not reached a sufficiently advanced stage for publication. G2XH is working fone on 28 M.C. and is now trying choke control. G6VP has been very busy on other bands but has, however, rebuilt a good deal and is now working on aerials. Some listening has been done on 28 M.C. and all was ready for transmission but no signals at all have been heard. Since writing above, news has reached G6VP that G6WN was QSO SUIAA on Sunday, the 15th ult. ! Surely merit is due to them for having had the courage to keep going. And they are to be heartily congratulated on their brilliant performance.

*Group 1B.*—An interesting letter was received from Group Centre G5SY in which he points out the many interesting channels of research still open on this band. He says that in view of existing conditions it can hardly be expected that our men will keep on 28 M.C. solid in the hopes of DX, but on the other hand he suggests that local contacts be encouraged with a view of keeping in touch.

*Group 1F.*—No reports from members, but Group Centre BRS25 writes that he is stimulating his members and has circularised them with particulars of French hams who are transmitting every day from 04.45 to 05.00 and 11.45 to 12.00 G.M.T.

### Fading, Blindspotting and Skip.

G2ZC, Group Manager.

*Group 2A.*—Subject discussed: Directional Effects. G.C. G6NK reports that 2AYX has had to drop out of the group, but they have a new member,

Mr. Grosvenor, of Aldridge, who has omitted to send his call. 2A has a vacancy for one more member. Directional effects have brought out some very peculiar results. G6SV and G6NK have found aerials to be directional, and the latter finds that using the same aerial, but fed at different ends, produces opposite results. G6SV sends polar diagrams of the Brookman's Park transmitters, and reports that the diagram of the National transmitter can be varied at will, by earthing various masts and stays. BRS403 is now 2APG (Congratulations from 2A and 2B.—G.M.), and he suggests that directional effects are due to screening. He finds that a N to S aerial gives best reception, and thinks this due to magnetic pole effects. Mr. Grosvenor suggests that signals travelling parallel to isobars are conducive to DX, while if isobars are widely spread, fading will be bad. He finds snow on the ground reduces signal strength by about 25 per cent., and he also suggests that high barometric pressure and frost are productive of good results, but G6NK disagrees on this point.

*Group 2B.*—We have one more theory (originally brought up by ex-CT1BL, our honorary member, and also by G2IM) which we can now offer as fact, namely, that earthquakes affect wireless signals. We were able to put this to proof after the last Jersey earthquake, and during the recent 'quake in New Zealand. We cannot give details here, owing to lack of space, but the fact remains that the theory became actual fact. Briefly, earthquakes have a "deadening" effect on short waves, as well as lifting the skip distance, quite suddenly. CT1BL forecast this owing to Changing Earth Potential, and gave proof how it affects cable work. G6YL, G6PP, and G2ZC were all able to testify to this, on actual work.

This month's subject is: Change of Fading from Night to Day, and Day to Night Periods, and also Ground and Reflected Waves Out of Phase. Next month's subject is: Aurora Display, and Changing Earth Potentials. After five months' discussion on the subject of the Heaviside Layer, the following is a sum-up of close on 100 pages of close-typed report. The figures are the number of the group who hold the following views:—

- Exists = 4. Doubtful = 2.
- Form. Ionised belt = 5. Ionised belts = 2.
- Shape. Regular = 1. Elliptical = 1. Irregular = 4.
- Wave form = 1.
- Skip due to it = 4.
- Affected by sunspots = 5.
- Pressure. Gale affects it = 1 (doubtful). Pressure system = cloud and thus absorption = 2.
- Movement. In relation to earth's surface = 3.
- Height, affected by day, night, electronic disturbance = 5.

The whole group agree on the earthquake effect on wireless signals.

### 3.5 M.C. Work.

G6RB, Group Manager.

Judging by the reports, activity on the 3.5 M.C. band has fallen off very considerably during the month, this being no doubt accounted for by the fact that conditions on 14 M.C. have again become good.

G6FO reports having got push-pull going, using a pair of Mazda 650's, and is getting splendid results with this circuit. Has overcome aerial troubles by adopting the "6JV" method. Has not done any

DX with this transmitter but is getting R9 reports from all over the Continent. Thinks holding of group party a good idea and gives it his support.

G6WY reports very little work done on 3.5 M.C. during the month. Has been unable to work DX in early mornings owing to the cold weather making radio room untenable. (What about a couple of overcoats and a hot water bottle?—G.C.). Cannot come to any definite conclusion regarding aerial systems on this band and is now wondering whether it is a case of any old skywire getting out. Suggests Sunday, April 19, 10.30 G.M.T. for the group party. Had a QSA4 R5 report from ZL4AP on January 3, but has not yet heard any ZL signals on this band.

G6QB reports nothing doing as he is very busy with tests, etc.

G2IP complains about the lack of stations on this band on Sunday mornings. Spent from 07.30 till 10.30 G.M.T. without a single QSO, the only stations heard being a couple of PA's. Wants to know why some of those stations who indulge in the weekly "dogfight" on 7 M.C. don't try 3.5 M.C. for a change. Is now using a Hartley transmitter, which can be used either self-excited or C.C. on the Goyder Lock principle. Antenna  $\frac{1}{4}$ -wave in conjunction with counterpoise, direct coupling being used with series condenser in antenna. Intends carrying out tests to compare T.P.T.G. and Hartley circuits.

G6RB has been on 3.5 M.C. practically every morning between 06.00 and 08.00 G.M.T. hunting for DX and found conditions very good, although they began to fall away during the last week. A total of 35 QSO's with U.S.A. was obtained and a sked was run with W3GS for a fortnight, failing in the end owing to bad conditions. ZL was heard at quite good strength at end of month and on the 28th ZL2BE was worked (R4). Would like to see an effort made to induce stations in other parts of the world to use this band, and feels positive that if this were done W.A.C. could be obtained on 3.5 next winter. How about some of the Empire Link Stations starting up on this band? Would like information on summer DX conditions on this band.

### 56 M.C. Work.

G2OL, Group Manager.

The tests are now over, and they have not been a complete failure as we half expected. On the other hand, they were somewhat worse than the 28 M.C. tests. The one bright spot in our gloom is an unconfirmed report, via G2DT, to the effect that signals emanating from W3UR, had been copied in Saskatchewan. If this proves to be true, there is yet some hope for the band as a means of long-distance communication, and will serve to keep our spirits from drooping.

As regards local working, the band is ideal, signals being easily copied up to 8 or 9 miles almost under any conditions, and with a total absence of QRM and background noises.

It is hoped to carry out several field days this summer, with a view to plotting the polar curve of a given transmitter, with a given antenna system. There is also much to be done with receiving aerials and their relative position and direction, compared to the transmitter. Offers of collaboration, loans of cars, etc., will be very welcome. As a suggestion, 56 M.C. portable work might well take the place of

summer picnics for anyone interested. The gear can be very compactly and lightly made, and takes very little space. Very little power is required for local work, a dry battery being quite sufficient. How about it, you fellows?

*Group 7A* (G.C. G2DT).—G.C. has the sad duty to report that no successes have come to light in the 56 M.C. tests, and presumably, therefore, nothing has been achieved beyond the report kindly furnished by G5UM to the effect that 5-metre signals from W3UR were copied in Saskatchewan, as above, and further details are eagerly awaited. The only information available is that transmitting antenna was an AOG.

G6MC is welcomed as a new member and is very busy getting everything into shape, and intends confining his experiments mainly to aerials, as he thinks that herein lies the key to success.

G6TW and G2DT have not heard anything at all and are lamenting the juice which has been wasted. (Hardly wasted, OM.—OL.) The former is awaiting kindlier weather to try out his 200 M.C. apparatus out of doors.

*Group 7B* (G.C. G2OL).—Nothing whatever was heard, seen, felt, or sniffed during the tests, barring local contacts, and these were numerous. All members send in reports, but as the letters ND are wearing a bit thin, we will refrain from repeating them! G6WN has tried frequency doubling to 56 M.C. from a 7 M.C. crystal, and although no visible signs of output, doubling was obtained on meter indications. Does not think CC worth while at this stage. His all A.C. receiver is functioning O.K. on this band, and seems quieter than on some of the lower frequencies. G6CO is using an indoor Dipole aerial with about 5 watts, and has worked G2OL on this at three miles. G6XN has applied for a 112 M.C. permit, and hopes to be on this band soon, P.M.G. permitting. Incidentally, why all this rush to 112 M.C. and higher? Surely 56 M.C. is bad enough! G2BY was heard by G6UN during the tests. He is using a 14 M.C. "Doublet" aerial (see "QST"), which he says works well, and reduces local QRM to a large extent. BRS327 reports hearing the 8th harmonic of GBM at a steady R3 on 56 M.C. Weather, light, or darkness have no effect on his strength. QRB 8 miles, and normal wavelength 43 metres.

The 28 M.C. tests, together with B.E.R.W., and the A.R.R.L. international traffic contest, have been responsible for a certain amount of lag, but after this month, work should again become more lively and interesting.

### QRP Work.

G2VV, Group Manager.

More QRP groups are needed! At the moment there are three groups running consisting of six men in each. This gives us a total of only 18 stations. This, indeed, is a very small percentage considering the number of QRP stations that exist among the membership of the R.S.G.B. I shall be pleased to hear from any QRP people who would join a new group. Foreign members are particularly requested to join this section. Now for reports.

*Group 8A*.—G.C. G5RV has been working mainly with QRO for experimental purposes and has worked four continents, all Europe, W1, 2, 3, and 8. VEI, SU, YI, CN, FM, CT2, using a T.P.T.G. and a DETI. Is now back on QRP from

his Chelmsford QRA. G5VB has been working with 3 watts during BCL hours only! QSO's include D, OZ, and HAF. Using 8 watts, has worked W1 and 2. Says 7 and 14 M.C. show noted improvement. G2WP has been trying 8 watts and has worked FM at R8. No luck on 14 M.C. Will shortly be on 3.5 M.C. with input of 3 watts. 2ABS has passed P.O. Morse test and is awaiting his call. (FB, OM.) He offers as bait for the coming one-watt week the following:—Recently he heard XF8FST on 7 M.C. at R5 QSA5. The operator later informed him that at the time he was using a portable outfit in a car near Tours, with an input of .5 of a watt! ONLY HALF A WATT! G6MB doubts the utility of the one-watt week! (Let's hear your views AFTER the tests, O.M.—G2VV.) Has done little work this month. G.C. G5RV says that he has heard a rumour that G6PM has worked W using 1.5 watts. Finally, Group 8A need another member. QRP men, forward, please!

*Group 8B.*—G.C. G2VV is now using an Ultraudion and 5 watts with V.F. Hertz. Experiments using an L.S.5, a B.T.H. BII, and a CT25X prove the CT25X most efficient for QRP work. Has worked most local Europe and CT2 at R6 to R7. QSA5 on 7 M.C. Cannot get a QSO on 14 M.C. and puts the reason down to aerial! Has applied for 3.5 M.C. permit and will be on that wave as soon as it arrives, and requests reports. Conditions greatly improved on 7, 14 and 3.5 M.C. Every district W heard on 14 M.C. but no QSO! Is now on 1.75 M.C. again on Sundays and wants reports. Hears plenty of stations on that wave now at good strength. G5CM says conditions improved on all waves. Has heard G6SO on 1.75 M.C. G5CM is the star station of 8B on 1.75 M.C. and has worked G2ZC and G2XS in Channel Islands and Worksop, respectively. Also QSO G.C. at R6. Hears only G6LK on 28 M.C. DX on 7 M.C. using 4.5 watts, EU, OH, FM, etc. Has been trying fone on this wave with good results. Has heard OMITB (QRA?) 2ANJ sends in usual good list of DX heard and reports 28 M.C. improving. Says that ZL3AS informs him that VP1AU is now VP1WS. QRA Fiji. Has now added R.C. stage to RX.

G6SO notes improvements on all bands. Is using Ultraudion with loose coupling and is taking part in 2 M.C. tests. G5JF very busy but still holds best DX for all QRP groups! Has been QSO W1, 2, 3, 4, 8, and 9, VE 2, 3, 4, 5, VU, ZL and VK. All on 14 M.C.

*Group 8C.*—G.C. G5PH says that his men are very slow in reporting and asks for better co-operation. Is now using C.C. with air gap of 3/16 in. Uses 5 watts to an L.S.6A. with good results, including some fone work. G2AV is using an L.S.5 with 4.5 watts and a new transmitter. G2WS sends his first report. Has worked LA and OH with one watt! Hopes to be using C.C. before long.

## 2 M.C.

G5UM, Group Manager.

The March issue of the BULLETIN might well have been called a Sunspot Number, so many were the contributions to this very interesting subject. It seems pretty definite that transitory outbreaks of sunspots do have a vast effect on general radio conditions, as G2ZN suggested last month. Further, it also appears reasonable to conclude that

radio conditions are subject to an eleven year cycle in sympathy with eleven-year sunspot cycles. One important fact that has not yet been mentioned, however, is a consideration of *why* do conditions on the lower frequencies improve when no sunspots are present? Both 3.5 and 2 M.C. are definitely better when there are no spots, but where is the dividing line? Round about 60 metres, one would think, though 45 metres seems still more probable. In fact, the 7 M.C. band seems just on the edge, so to speak. Comments, please, especially from those who are using all the four regular bands.

*Group 10A.*—All members have been actively engaged in the tests, G6FO has had some excellent QSO's, and comments on extraordinary skip effects on the band. The directional effects observed last year have again been noticed, and QSO's were easier westwards than eastwards, although the reverse usually applies. G5RX has worked OZ7F, in addition to a large number of nearer DX stations. He has been carrying out several aerial experiments to try and get equal radiation in all directions. At the time of writing he has a 66 foot A.O.G., running NNW-SSE. G5RX, after considerable observation, has come to the conclusion that dusk is the best time for DX. The QRN level is then not too high, yet distant stations have started to come in well. A schedule is now being kept with 2AZQ. The latter has had a little trouble with the receiver but is now in regular operation again. BRS164 finds conditions remain satisfactory, and has a good log of stations heard. His present concern is the effect that the new Moorside Edge transmitters will have when they are both in regular operation. Slaithwaite is only ten miles away, so 164 certainly deserves sympathy! G6ZH has been hard at work collecting points in the tests. Apart from this, he has had a QSO with D4NUZ, of Southern Bavaria, who reported him R6. G5UM has also worked D4NUZ, being reported R4. The 2 M.C. tests have occupied all G5UM's time—in another respect! However, one or two distant contacts have been made, including OK2AK. Skip effects have also been observed, signals being reported R1 in Leeds, and R7 in Wick, only a few minutes after.

*Group 10B.*—G6OO's men have also been taking a very practical interest in the tests. G2KO has unfortunately been unable, owing to unforeseen circumstances, to participate, but the other members have had considerable success. G6UJ has a characteristic T9 signal on the lower edge of the frequency band, and has carried out some very consistent operations. G6DR continues to secure wonderful results with very low power—this despite the fact that ship spark QRM has been particularly bad of late. G6MN had very bad luck at the beginning of the month by blowing two of his best valves, the cost of which ran into double figures. However, he soon got on the air again, and had really excellent reports up to some hundreds of miles. He is on 1782 K.C., with crystal control. G5YM has been almost wholly occupied with the tests. He finds that flatly tuned fone QRM is rather a nuisance at times, making long distance CW work occasionally impossible. G.C. G6OO regrets the absence of foreign hams in large numbers from the tests, and had hoped the OK men could have got on. He reports conditions quite good, but has observed a rise in the strength of mush and

QRN from 20.00 until midnight with a fade-out in signals.

## Television

G5CV (ex BRS273), Group Manager.

*Group 11A.*—G6MS reports that on two occasions he has observed three rows of two images side-by-side between two consecutive synchronising strips. This effect was noticed in each case during the midnight transmissions from the London Regional station. G.C. suggests that at that time a semi-extended view was being transmitted of two people side by side, as has been done on several occasions, although why the image was triple remains unexplained. G6MS is certain that they were *not* ghost images.

G.C. G5CV has nothing very interesting to report except that on several afternoons a faint television signal, QSA2, R2, has been heard on the 7 M.C. band. Attempts at further amplification were unsuccessful, owing to predominance of "mush." More members are wanted for this group. My address is:—P. D. Walters, G5CV, Fairfax Corner, Bedford Park, London, W.4. 'Phone: Chiswick 5982.

## Antenna Group.

G2OP, Group Manager.

I have been unable to start the first Antenna budget in circulation at the moment of writing, as I have not yet received from several stations the description of present equipment, etc., which I asked for. I hope they will be forthcoming shortly.

At the moment, of those who have sent in, no two appear to use the same type of aerial and it will therefore be interesting to compare results when using someone else's pet. The one outstanding and unusual type is that of G2YU. I will deal with this in the Budget.

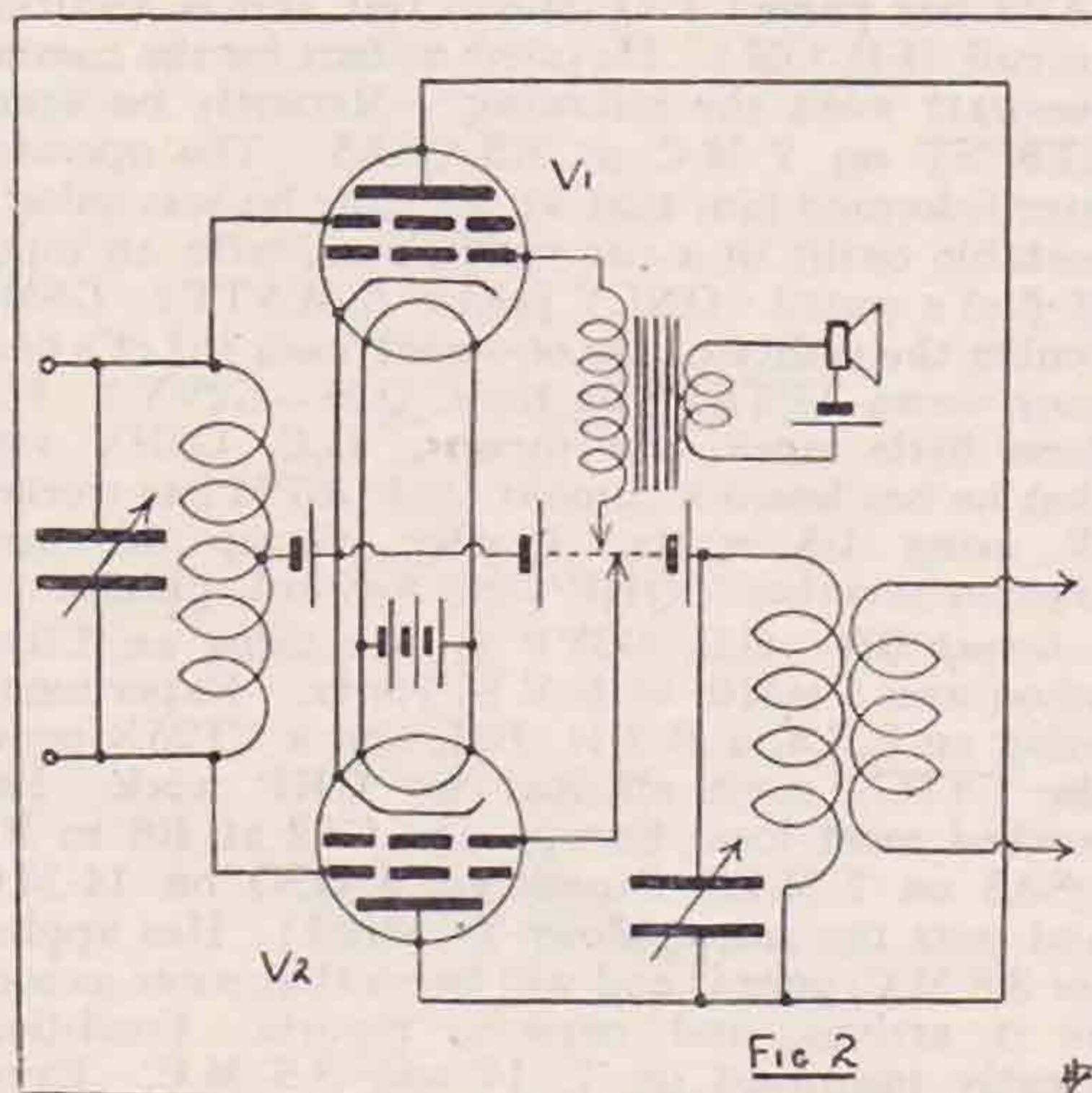
While I am waiting for the other descriptions, reasons, and experiences, perhaps I may be allowed to digress. I have recently heard that Sardinia has a first-class wireless telephone service to the mainland of Italy. I understand that a cable was not considered on account of earthquakes and volcanic disturbances; also, it was desirable to employ a very short wavelength owing to atmospheric conditions. Actually the wavelength used is somewhere between 5 and 10 metres, but it provides a regular and reliable service. I agree that only a few years ago such telephony would have been looked upon as a minor miracle, but at the same time I should be interested to hear what the 28 and 56 M.C. merchants have to say about it, more especially on account of the disappointing results of the recent tests. I can hear a chorus of "High power beam," or "Has he only just awakened to that?" Nevertheless it is distinctly interesting to one who has done but very little on these high frequencies.

## Review of Foreign Magazines.

Very little of ham interest has been published this month, the only paper which seems to merit attention being one by Messrs. Below and Kullmann in the December *Zeitschrift für Hochfrequenztechnik*.

This describes a new method of modulation, based on the fact that the mutual conductance of a four-electrode valve may be varied by variation of the auxiliary grid voltage. Such a valve is used as an

intermediate amplifier in a M.O.P.A. arrangement, and the audio frequency modulation voltage is applied to its auxiliary grid; thus the mutual conductance of the valve, and hence the amplification of the stage, vary at this audio frequency, so modulating the amplitude of the output.



Such an arrangement will not give more than 50 per cent. modulation, but by using the two-valve arrangement shown in Fig. 2, 100 per cent. modulation is attainable. The amplification due to  $V_1$  is continuously varying at audio frequency, and the auxiliary grid voltage of  $V_2$  is so adjusted that its amplification is equal to (and opposite) the lowest value reached by  $V_1$ . Thus, when the modulating voltage has its greatest amplitude, the net amplification is zero; full modulation is then obtained.

It appears from the February *OZ* that a number of Danish hams are active on the 2 M.C.'s band—a piece of news which will doubtless interest many G's.

## Stray.

G6PM is working with 2 watts on 7, 14 and 28 M.C., and requests reports from any source regarding his transmission. 28 M.C. reports are particularly asked for.

## Correspondence—(Continued from page 287).

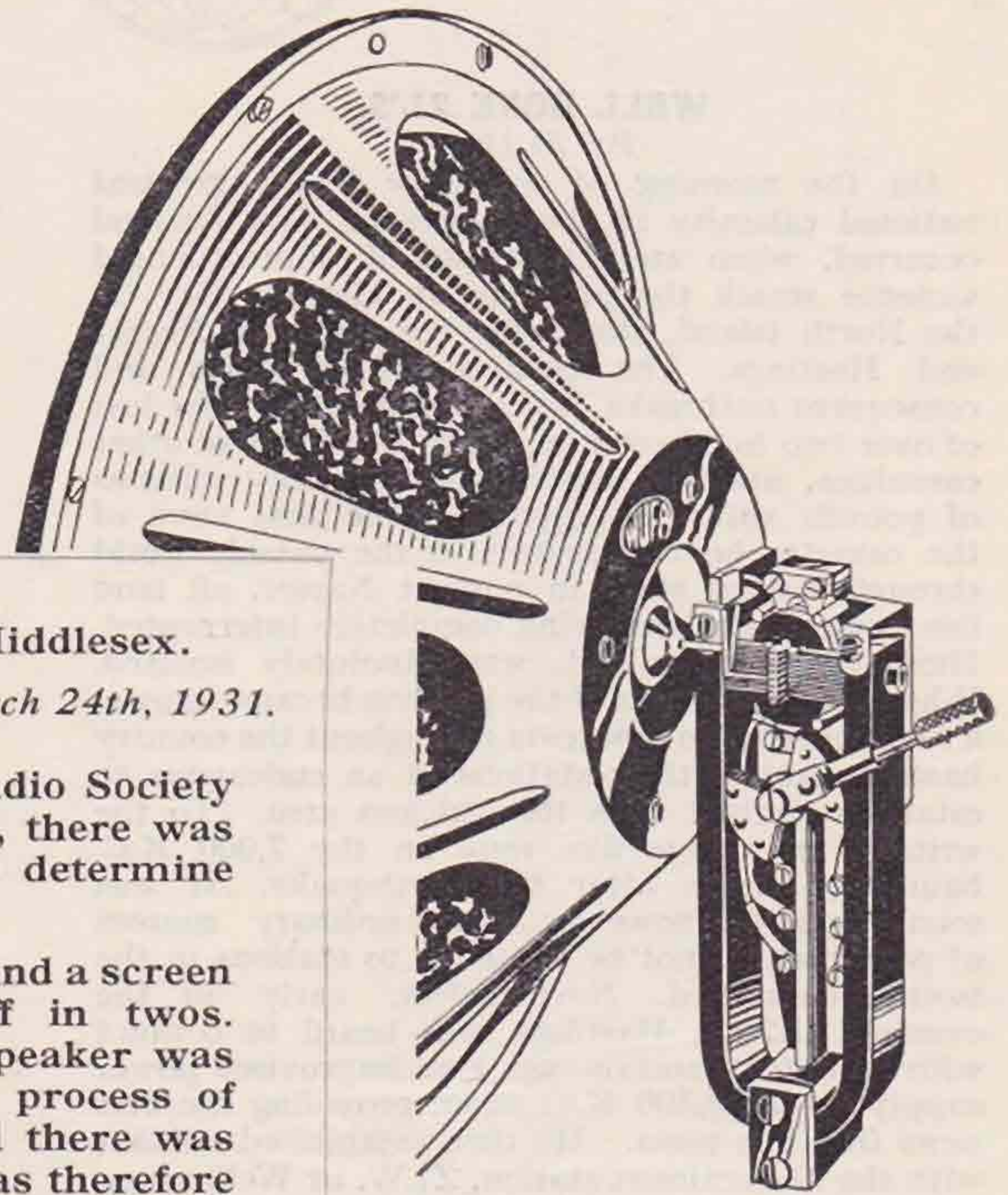
six QSO's on 28 M.C. in one day in March, and this would appear to confirm my suggestion that March might prove just as good this year as last year for 28 M.C.; in addition, I am told that 14 M.C. is extraordinarily good for D.X. at the moment, so where does the sun-spot pessimism come in?

I understand that one or two people with much more practical experience of 28 M.C. than GI6YW do not agree with my remarks in last month's BULLETIN. I sincerely hope they will come forward with their point of view; I have often regretted that there is so little in the "Letters" column of the BULLETIN, and so little helpful discussion.—Yours faithfully,

T. P. ALLEN (GI6YW).

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Southall, Middlesex.  
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At a meeting of our local Radio Society last Wednesday (March 18th), there was held a Loud-Speaker Test to determine the best loud-speaker.

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Although there were about twenty-five speakers there of all makes and including two moving-coil speakers, my "Wufa" was found to be the winner.

The members were amazed at the fidelity of its reproduction and afterwards a lecture was given on its merits.

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# Empire



# News.

## WELL DONE ZL'S.

By ZL1FQ.

On the morning of February 3, the greatest national calamity in the history of New Zealand occurred, when an earthquake of unprecedented violence struck the province of Hawkes Bay, in the North Island, shattering the towns of Napier and Hastings. The collapse of buildings and consequent outbreaks of fire accounted for the loss of over two hundred lives, many hundreds of other casualties, and the destruction of many millions of pounds value in property. The first news of the catastrophe was known to the outside world through several ships in port at Napier, all land line communications being completely interrupted. Hastings, being inland, was absolutely isolated. When the seriousness of the position became known, a number of radio amateurs throughout the country hastily manned their stations in an endeavour to establish contact with the stricken area. To the writer's knowledge five were on the 7,000 K.C. band two hours after the earthquake. It was soon realised, however, that ordinary sources of power would not be available to stations in the towns concerned. Nevertheless, early in the evening ZL2BE, Hastings, was heard in contact with an outside station, using an improvised power supply on the 3,500 K.C. band, providing the first news from his town. He then established contact with the Government station, ZLW, at Wellington, and handled large numbers of official messages regarding casualties, relief measures, condition of land lines, etc. At Napier, ZL2GE established communication with ZL2GK at Wellington, and organised traffic, handling a large amount in collaboration with the Government services. Other amateur stations also assisted and details will no doubt become known later, this being written just after the tragedy, when news is still rather scanty. However, the above-mentioned provided the most important channels. A relief expedition to Napier from Wellington was accompanied by ZL2BO, who established a station at Napier, accomplishing valuable work also. Even after the restoration of other channels of communication, the rush of work necessitated the continuation of the amateur services. In this great tragedy acts of heroism and of outstanding service have been done in plenty, and the work of the radio amateurs concerned will go to a large extent unnoticed, but to the amateurs of New Zealand it is comforting to know that a unique crisis has been successfully met. To those who took part we are truly grateful for a service which does credit to themselves and to our chosen realm of recreation.

## BRITISH ARABIA.

By P. SEYMOUR (BERS25), Aden.

Having only recently arrived here from Egypt, I cannot, of course, judge February's reception

results with any previous month, but taking into consideration the bad weather and generally bad conditions which have prevailed here and elsewhere lately, results have been good.

The receiver has been used mostly on 14 M.C., 7 M.C. having been found much too bad with QRN and QRM to have made much listening worth while. The best times for reception were, I found, from about 16.00 hours to 20.00 hours G.M.T. Star stations here are G6WT, G6VP, G6NF, G2VQ, G2CX, VQ5CRF, VS7AP and YI6HT. The tone and note of these stations and of G stations generally is very fine indeed compared with some others, and is a pleasure to copy. Would any of the above stations, or others, care to arrange skeds?

## CEYLON, SOUTH AND NORTH INDIA.

By VS7GJ, Frocester, Govinna, Ceylon.

Generally speaking for Ceylon and South India, hours for amateur transmission begin about 11.00 G.M.T. onwards. Conditions for DX working during February has been disappointing, and with marked daily variations. Just prior to the B.E.R.U. week, sigs on the 7 megacycle band were good, whereas on the 14 megacycle band they were indifferent, but during the B.E.R.U. week on the 7 megacycle band hardly anything was doing, whereas the curtain over the 14 megacycle band appeared to lift on the eve of the B.E.R.U. week. Even on this band VK's were good one day and dead the next.

Mr. Shepherd Nicholson, South India, reports on the 7 megacycle band as conditions fair, but not up to expectations. A good deal of time has been spent listening in on the 28 megacycle band but nothing was heard.

BERS14, who is situated in Punjab, Northern India, reports that conditions have altered considerably. On the 14 M.C. band G's and Europeans were coming in excellently, whereas VK's have faded out; J's and KA's are still there with reduced strength, and with an "echo."

## IRAQ.

By YI6HT, R.A.F. Squadron 84 (B.), Shaibah, Basrah (via G6WN).

British Empire Radio Week proved the principal interest during the past month. Unfortunately, unrest in the North prevented a number of stations from taking part. Conditions in the South during the contest were fair to good on 14 M.C., very poor on 7 M.C. and 28 M.C. proved dead, despite several efforts to work VU on sked.

One is very pleased to record, however, that the publicity given to the contest in YI has resulted in a considerably increased interest in amateur radio, which it is hoped will be reflected in an increased B.E.R.U. membership in YI.

BERS9 has left for G. We wish him the best of luck, and hope that he will continue his interest in amateur radio there.



YI6KR has been inactive, due to change of QRA, but is now back on the air. YI2BT and YI2DC are away from Baghdad with a desert survey party. They hope to work occasionally on 7 M.C., and would welcome reports.

**CANADA.**

By VE2BB, Ste Anne de Bellevue P.O.

We are glad to report that DX conditions are considerably improved and we are hoping that the good old times are returning again.

Many foreign countries are heard on 14 M.C. during the daytime (G stations predominating) and many fine contacts are made.

Just now during the B.E.R.W. "Test G" is heard all over the dial during the daytime on 14 M.C., but it is not easy to copy the messages. A good start was made the first day of the B.E.R.U. contest, but after that results were disappointing.

VE3ZZ reports working two G stations on 80 metres and he has also logged Hong Kong.

**IRISH FREE STATE.**

By EI2B, Fortgranite, Baltinglass, Co. Wicklow.

There seems to have been a marked improvement on all bands with the exception of 28 M.C., which still seems practically "dead." ZL has been worked on 7 M.C. and many W's on 14 M.C. by EI8B. who reports that conditions on the latter band have been quite good recently. Several of the more active stations have, for some time, been on the lower frequencies where conditions have been excellent, G stations coming in well after 18.00 G.M.T., and several being heard at about midday, although a temporary fade-out seems to occur in the early afternoon. Some of us have now

been granted permits for the 3.5 M.C. band under the same conditions as in Great Britain, and reports on EI signals would be appreciated.

**KENYA, UGANDA AND TANGANYIKA.**

By VQ4MSB, Radio Station Mombasa.

There is very little to report for the month in this division as not many stations have been on the air owing to troubles of various sorts. VQ5NTA says that G stations are coming through better on 14 M.C., although he heard nothing during the R.S.G.B. 56 M.C. tests. He managed to scrape up 3 watts for B.E.R.U. and is to be congratulated on being heard in England with this power. VQ4LMA and VQ3MSN are also active, but nothing has been heard of other stations in the area. Let's have a word from you, OM's.

VQ4MSB has not been on the air at the moment, but hopes to be working again at the end of March.

**SOUTH AFRICA.**

By S. H. WALTERS (ZUID).

A hearty vote of thanks is due to ZT6X for so ably carrying on these notes. ZT6X has done more than his share for the B.E.R.U., but has now, unfortunately, been compelled to give over.

The B.E.R.U. 28 M.C. competition, as far as South African stations were concerned, was a blank. We are hoping that the B.E.R.U. on 14 M.C. will be more successful.

ZUID has won the coveted W.B.E. certificate; an elusive VE turned up and was hooked.

The annual conference to be held during Easter at Cape Town will take the form of a "hamfest," although there are some important decisions to be made and amendments to the constitution are

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contemplated. The H.O.S. Trophy has just been competed for and was an undoubted success. C.C. is being employed by local hams in increasing numbers.

DX on 14 M.C. has been exceptionally poor and Europe has never been so silent. ZT5R suggests that it may be due to us being in the centre phase of the solar cycle.

It has been decided that telephony on the amateur band shall be grouped as follows: On 14 M.C. no telephony will be allowed except with special permission; on 7 M.C. a restricted amount will be allowed, but on 3.5 M.C. the band will be open to all 'phone stations.

#### SOUTHERN RHODESIA.

By ZEIJG (ex VP9SR), "Salcombe," Plumtree. Conditions on 14 M.C. have improved vastly. The last three weeks the band has been full every night. G's are coming in well—average R4 with C.C. notes. Not much district news as there are not many ZE's on the air, due to changes of QRA, transfers and leave. Most of those working seem to have got DX this last week. So far have had no cards or claims for British Empire Week competition and for the above reasons we do not expect any.

#### SUDAN.

By ST2D, Squadron 4 (B), R.A.F., Khartoum.

Conditions have altered considerably since November and on 14 M.C.'s very little DX is heard, except during the afternoon, when VK's and G's are of fair strength. After 16.30 G.M.T. QSB and complete fade-out seems to be the rule. Seven M.C. shows greater promise; KA, PK, VK, W9, etc., come in R8 to 9, after 15.00 G.M.T. Europeans are heard until about 22.00 G.M.T. and after that W stations fill the band. Nothing yet heard on 28 M.C.

ST2C has been heard on the air several times. One of the two operators at ST2D met him recently at Wad Medani and visited his shack. The transmitter in use is a Hartley with an SW1 and supply from a 100-watt ML motor generator.

ST2D made several transmissions on 28 M.C. during December, but no QSO's. The transmitter is also used on 14 M.C., and when tuned to that frequency the harmonic has been reported R4 in G with 60-watt D.C. and R9 in YI with 350 watts. A portable was in use during January and February, near the Kenya and Abyssinian borders, and communication was maintained on 7 M.C. with Khartoum, a distance of 850 miles.

## NOTES & NEWS FROM THE BRITISH ISLES.

#### DISTRICT No. 1.

Representative: G2XB, "Ravenhurst," Frederick Street, Oldham.

In view of the attendance at the Conventionette in Manchester on March 28, it is obvious that the majority of S.E. Lancs. amateurs do not desire to hold a field day, there being only four members present from that district. As the meeting was specially arranged to decide the particulars of a field day, the Social Committee feel that no further efforts can be made in that direction. The district Committee is very disappointed at the lack of response to this proposal, and feel that it should have received more support from the area. G2OA will welcome any visitors at the Liverpool field day, and will announce details of this later. The area members are suffering from the activities of a local station using an American call sign, and steps to bring the offender to book will be made if the nuisance continues. The appeal to members to install radio sets for the blind has met with a wonderful response, but there is still room for many more names on the list of helpers, so let me have your assistance in this deserving cause. Will members please note my change of address.

#### DISTRICT No. 2.

Representative: T. WOODCOCK (G600), "Santos," George Street, Bridlington, Yorks.

The 2 M.C. tests appear to be having a good deal of support from this district. G6UJ and G6DR seem to be the most active in this area (Hull and district). The usual monthly meetings have taken place, but the Letter Budget is not having a deal of success. It was anticipated that a conventionette would be held at Leeds on March 21, but this date was found unsuitable owing to the closeness of a conventionette being held on March 28 in No. 5

District, etc. We intended to visit the new B.B.C. station at Slaithwaite (Moorside Edge) if permission could be obtained. This, however, is not forthcoming as the station is not yet in full working order. The B.B.C. kindly offer to reconsider the application at a later date, so, perhaps, during our autumn (or winter) conventionette a visit will be made to this station.

Will all No. 2 District members please note that our conventionette will be held at the Grosvenor Hotel, Hull, at 3.30 p.m., Saturday, April 25, 1931.

This is a new departure as all previous conventionettes (for our district) have been held in Leeds, but I earnestly hope that equal, if not better support will be given to the conventionette.

Nominations will be requested at the above for a District Representative to take over (and represent our district at the annual Convention in London) in September.

#### DISTRICT No. 4.

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

The monthly Letter Budget is receiving the attention of only fifteen contributors, and more of our active stations are requested to send in reports by the 25th of each month. A definite subject is discussed in each issue. The following report active: G2HD, G2OC, G2VQ, G2XS, G2IO, G5BD, G5DM, G5FA, G5MH, G6HK, G6LI, G6MN, BRS365, BRS366, BRS402, BRS426, BRS453.

#### DISTRICT No. 7.

By R. C. NEALE (Acting Representative).

The Letter Budget is still popular, although it seems as soon as a newcomer arrives someone else drops out with his contribution. Come along fellows, what's happened to some of you who once wrote so regularly? Let us have something

## R.A.F. ECONOMY CLEARANCE

### Bargains Direct from Depots.

We have now taken delivery of the Final R.A.F. Sale goods. There will be no more when these are sold.

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**250-watt Bottles**, Mullard, and all sound, 35/- each to clear. Ditto for new filamenting, 5/- each.

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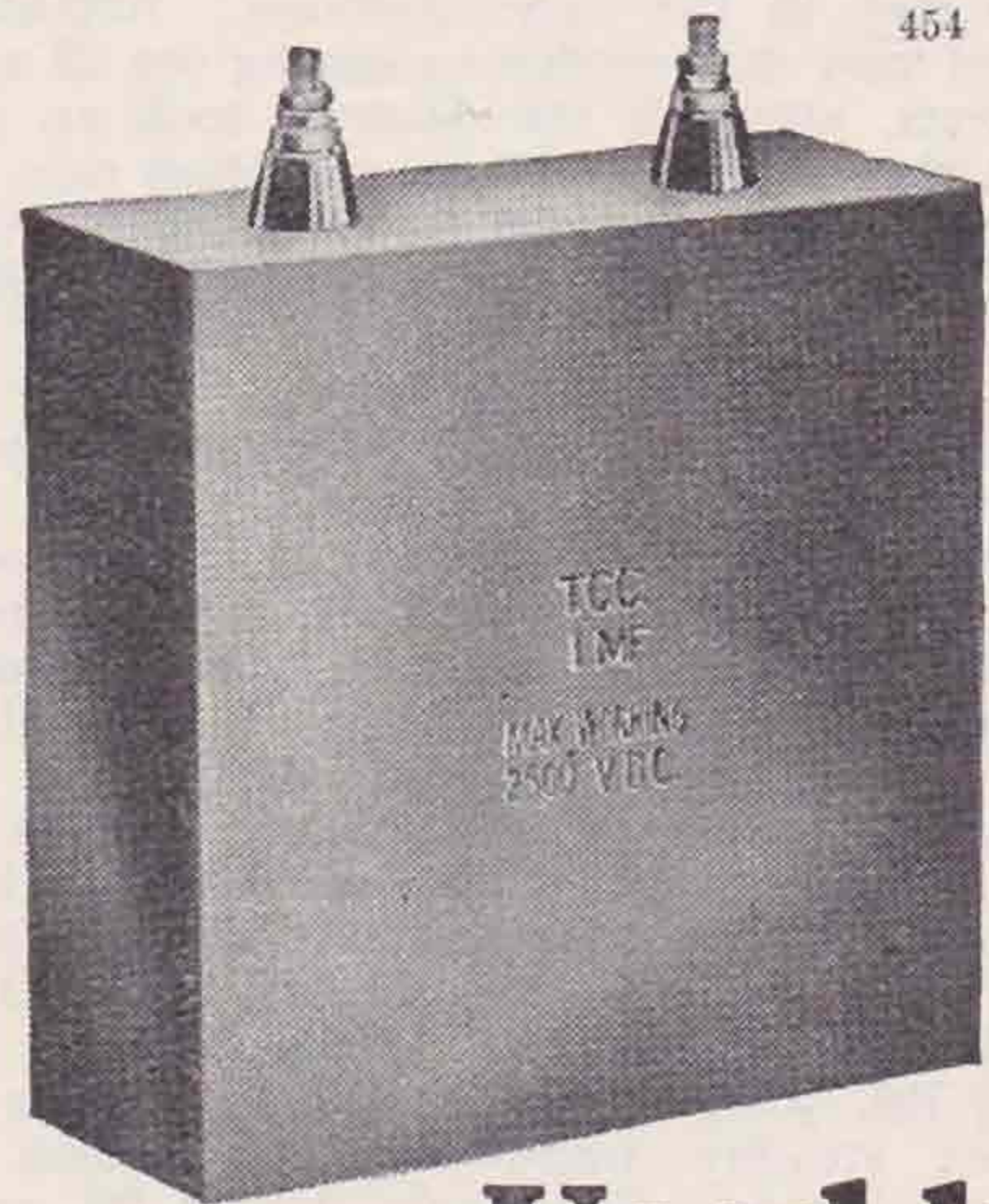
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from a few of the "originals." Improving conditions are reported on the higher frequencies, and good work accomplished throughout the District on all bands. C.C. seems to be gaining popularity, a sure step in the right direction. Reports are heard of very dud conditions during the 28 and 56 M.C. tests, although this District took an active part in them, particularly the reception side. The following report active: G5YM, G6NK, G2PF, G6PA, 2AHR, G5UY, G5MR, BRS432, G6WY, 2ANU, G2VV.

#### DISTRICT No. 8.

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

Thanks to all who responded to my "Trophy" appeal. By the time this appears in print you will know who has won it, no doubt. Letter Budget is still growing strong, although there is heaps of room for expansion yet. G2GG is interested in D.F., and would like to hear of others keen on this work. There is a growing activity on 3.5 M.C. in the District, and favourable reception of these signals reach me from Jersey via 2AHD. A QSO with OZ7TJ is confirmed on 1.7 M.C.—your D.R. getting R6. Other District activity on this wave reported steadily improving; also some very excellent 'phone. Conditions during 28 and 56 M.C. tests reported poor, and in consequence little heard. No information to hand at time of writing these lines regarding 2 M.C. and 1-watt tests, but I gather a good effort is being made in District No. 8. The following report active: G2WK, G2GG, BRS343, BRS157, G2BI, G6BU, G6NZ, G5UY, G6GZ, 2AHD.

#### DISTRICT No. 9.

At a meeting of the Bristol gang on Saturday, March 28, it was decided to hold a No. 9 District Annual Conventionette at Bristol on Saturday, June 13 next. Tickets (price 5s.) and further details can be obtained from G2OP or G6RB.

#### DISTRICT No. 12.

Representative: T. A. ST. JOHNSTON, 28, Douglas Road, Chingford, E.4. Telephone: Silverthorn 1557.

Members of this district congratulate Mr. H. J. Seagood (2AZR), 20, Sunnydene Avenue, Highams Park, E.4, in obtaining his permit. He has been allotted call sign G6SG.

Amongst those present at the last monthly meeting were SU8RS and VTVVZ, both of whom interested us with their experiences overseas.

Will members of No. 12 District note that the next monthly meeting will be held at the QRA of G6LL, Mr. J. W. Mathews, 178, Evering Road, Clapton, E.5, on April 28. These meetings will then revert to Chingford, and the May meeting will be held on the fourth Tuesday of the month, viz., May 26.

The members of this district responded well to the call of the "British Wireless for the Blind Fund," and already some have been allocated sets for installation.

#### DISTRICT No. 13.

Representative: H. V. WILKINS (G6WN), "Hills View," 81, Studland Road, W.7.

During the March area meeting it was decided to hold the "hamfest" on May 30. The time and place to be announced in the May "BULL." All those who intend attending please let me know at once, as the number will affect the charges.

May I take this opportunity to invite members outside the area to this social evening.

Ten members were present at the March meeting and April 18 was fixed for the next. This to take place at G2OL, 15, Queen's Gardens, Ealing.

Only seven reports are to hand this month, and among these are two from members who have not sent one before. Most stations report better conditions of late, but the only outstanding success is our own in working SU1AA on 28 M.C. This is the first contact outside England that G6WN has had on this band.

G5CV (ex BRS273) has got going on the 7 M.C. band on both 'phone and C.W.

#### DISTRICT No. 14.

Representative: H. HARDING (G2HH).

After a silence through illness, some of our stations are active again and taking part in tests.

BRS355 is now G2XX, and is getting on very well on the 7 M.C. band, while down on the 1.75 M.C. band, G6GW is getting some unexpected DX with low power. We welcome a new member in BRS493 and hope to hear a lot from him. Arrangements are being made for a conventionette in the near future.

#### NORTHERN IRELAND.

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

All the activity reported this month is on the 2 M.C. band, and five or six stations are getting out well. GI6YW, GI2CN and GI5HV are working in the tests and report conditions as having been good for the past month. GI6YW and GI2CN have been in contact with G5VL in Cornwall on 2 M.C. in daylight, using 10 watts, which is good DX for this band.

#### SCOTLAND.

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

There is not a great deal to comment upon this month. A new transmitter has started up in Aberdeen, the call being G2YA, and the address Mr. J. A. Yeats, 68, Bonaccord Street, Aberdeen. Mr. Yeats has joined the Society and we wish him every success in his work.

Mr. A. M. Hardie (BRS375) also of Aberdeen, has passed his Morse test and now awaits the issue of his licence.

I understand that a number of other applications are now lodged with the G.P.O., and I would ask those members to be so good as to keep me posted as to results.

The lower frequencies appear to be receiving quite a lot of attention in Scotland, and G2AP, G6IZ, G5JK, G5ST and G6SR are definitely known to be working on the 1.7 megacycle band. Several of these stations are also taking part in the 1.7 M.C. tests. Interest is also being evidenced in the 3.5 M.C. band, and G6SR, G6IZ, G6RG and G5YG have all applied for full permits.

G6IZ paid me a welcome visit a week or two ago, and I was pleased to learn of a more promising state of affairs in B District.

I have to apologise for cancelling the "A" District "rag-chew" due March 25, but my movements being a little uncertain at that time, I had unfortunately no alternative. Our next meeting will therefore take place on Wednesday evening, April 29.

(Continued on page 300.)

## District No. 5 Conventionette.

It is pleasing to record that over 30 members situated in No. 5 District were present at the Annual Conventionette held in Birmingham on Saturday, March 28, 1931.

The chair was taken by Mr. Fred Miles, G5ML (D.R.), supported by Mr. H. B. Old, G2VQ (Provincial Districts' Representative on Council) and Mr. J. Clarricoats, G6CL (Honorary Secretary).

Following a typical Birmingham high tea (less the tea!) provided by Mr. Eli Fletcher, the host of "Ye Hope and Anchor," Mr. Miles welcomed the company, and thanked Messrs. Old, Martin, Lees and Clarricoats for attending. He read a telegram of good wishes from Capt. Price (No. 9 D.R.).

The Hon. Secretary gave a short talk on Society matters in general. He criticised the British members who failed to support B.E.R.W., and asked all present to send in their log of stations heard and worked during the week. He asked for suggestions which could be adopted in future years. Mr. Scroggie Owner (G6XQ) recommended that the next B.E.R.U. tests should extend over a month, but be confined to the week-end periods as is done during other R.S.G.B. tests. He also pointed out that New Zealand and Australia were very favourably situated and showed that without serious effort stations in those zones could score 60 points (20 on each of the three higher frequency bands). He therefore recommended that a proportional point scheme be evolved before the next tests. The Hon. Secretary thanked him for his suggestions, and promised to place the matter before the Publicity Committee.

Comments were made concerning the use of the procedure "Test BERU." The Hon. Secretary stated that E.L. stations should only use this call when handling or standing by for B.E.R.U. traffic. Regarding the appointment of E.L.S., Mr. Clarricoats stated that any member could apply to Council for recognition. Providing the station is well operated and employs a means of frequency stabilisation, the appointment is practically assured.

Suggestions for improving the Annual Convention were called for, but none were communicated at the meeting. The Hon. Secretary emphasised the difficulty of the London Executive in providing a suitable programme without assistance in the way of suggestions from the provinces.

The question of providing help for B.R.S. members was mentioned. It was suggested that, wherever possible, these members should be invited to assist with the operation and maintenance of licensed members' stations.

The Hon. Secretary gave some interesting statistics covering membership of the district and the Society, the percentages of members against licensed calls, and the totals for each grade of Society membership. He pointed out that on March 15 the B.R.S. membership stood at 440, against less than 200 on January 1, 1930. The present full membership total was the highest recorded in the Society's history.

Mr. Singleton (G5UW) congratulated everyone concerned with the publicity work of the Society who had made the growth possible, and suggested

that some incentive should be given to encourage present members to obtain new members. The Hon. Secretary stated that a year's free subscription would be given to the No. 5 District member obtaining the most new members during the year ending March 31, 1932. (This is subject to Council's approval.—J. C.)

Mr. Clarricoats clearly explained the position regarding the issuing of 3.5 M.C.'s permits, and assured all present that every step would be taken to obtain the necessary facilities during April, when all Trans-oceanic permits are automatically revised. He mentioned the matter of high power permits, and explained that Council will carefully consider every application, providing the D.R. has been asked to give his comments on the applicant's capabilities, and providing the member agrees to use C.C. or some other means of frequency stabilisation.

The working of the QSL Section was explained and a request for criticisms made, but, judging by the replies received, it was apparent that one district at least is satisfied with the services rendered by the Section.

Regarding the future International Conventions at Madrid and Copenhagen, the Hon. Secretary stated that Council were fully alive to the issues likely to be involved, and were taking all possible steps to place our views in the right quarter.

On the conclusion of Mr. Clarricoats' address, numerous minor queries were raised and speedily cleared up.

Mr. H. B. Old followed, and gave a brief outline of the work carried out by Council, explaining that the old idea of London ruling the provinces was now dead. He said it was a pleasure to be present at the gathering, and expressed the hope that the members of No. 5 District would support the Letter Budget wholeheartedly.

Towards the end of the meeting Mr. Owner and Mr. Clarricoats discussed the question of Calibration Services and Fixed Frequency Checking. The latter explained why the R.S.G.B. services on 7 M.C. had been suspended, but stated that arrangements were being made for a recommencement almost immediately. Mr. Owner praised the work done by Mr. A. D. Gay (G6NF), and offered to co-operate with him in the work of checking fixed frequency stations. The Hon. Secretary thanked Mr. Owner, and assured him that his offer would be conveyed to Council.

Messrs. Miles, Old and Singleton gave some interesting opinions regarding aeriols. The meeting finally broke up into a series of private discussions on matters of general interest.

In concluding this brief commentary a word of sincere thanks must be accorded to Mr. V. Desmond, (G5VM) for arranging the dinner and circularising the membership. Thanks are also due to Messrs. Owner and Brown (G5BJ), who acted as honorary treasurers, and to the District membership at large, who gave such a warm and friendly welcome to the three other "foreign" provincials, and to the Cockney who signs himself "Clarry." Thanks, OM's!

**Notes and News**—(Continued from page 298).

A few of us took part in the A.R.R.L. contest, with varying success. G6RG got well started, then blew his filter condensers, which rendered his transmitter *hors de combat* for a few weeks.

The Society broadcasts from 2LO are apparently attracting the attention of the non-technical Press, as the writer has had two enquiries referred to him recently by daily newspapers.

**European Notes.**

The sixth Annual Convention of D.A.S.D. will be held in Hamburg on May 22-26, 1931. Visits to valve factories, air-port stations and observatory have been arranged for the first day, Friday. The official opening, with Presidential address, is scheduled for 8 p.m. Saturday. Sunday morning will be occupied with a board meeting, and a business meeting will take place in the afternoon: an informal meeting, dinner and movies is timed for 8 p.m. Monday, the 25th, will be given over to lectures and technical discussions, and the Convention closes on Tuesday with a boat trip to Heligoland Island. Rag-chewing and sightseeing trips will, of course, be fitted in, and all foreign friends are cordially invited to take part in the Convention. All intending visitors please communicate with D.A.S.D. Headquarters.

Interest in Norway is centring around the Norwegian Message Relay Contests, which took place during the week commencing March 15. These tests have been arranged to prove the possibility of message handling by amateur radio. Conditions generally are very good, and there is a great amount of activity on the 3.5 M.C. band.

Conditions in France are reported to be excellent, and with this general improvement in conditions there is a great increase in the number of French stations on the air. The States have been worked on the 3.5 M.C. band.

By the time these notes appear in print the Annual Convention of the U.S.K.A., which was fixed for April 12, will have been held at Berne. Swiss amateurs are always very glad to welcome British amateurs to their country.

**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  $\frac{1}{4}$ -plate as otherwise the reproduction will be poor.*

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

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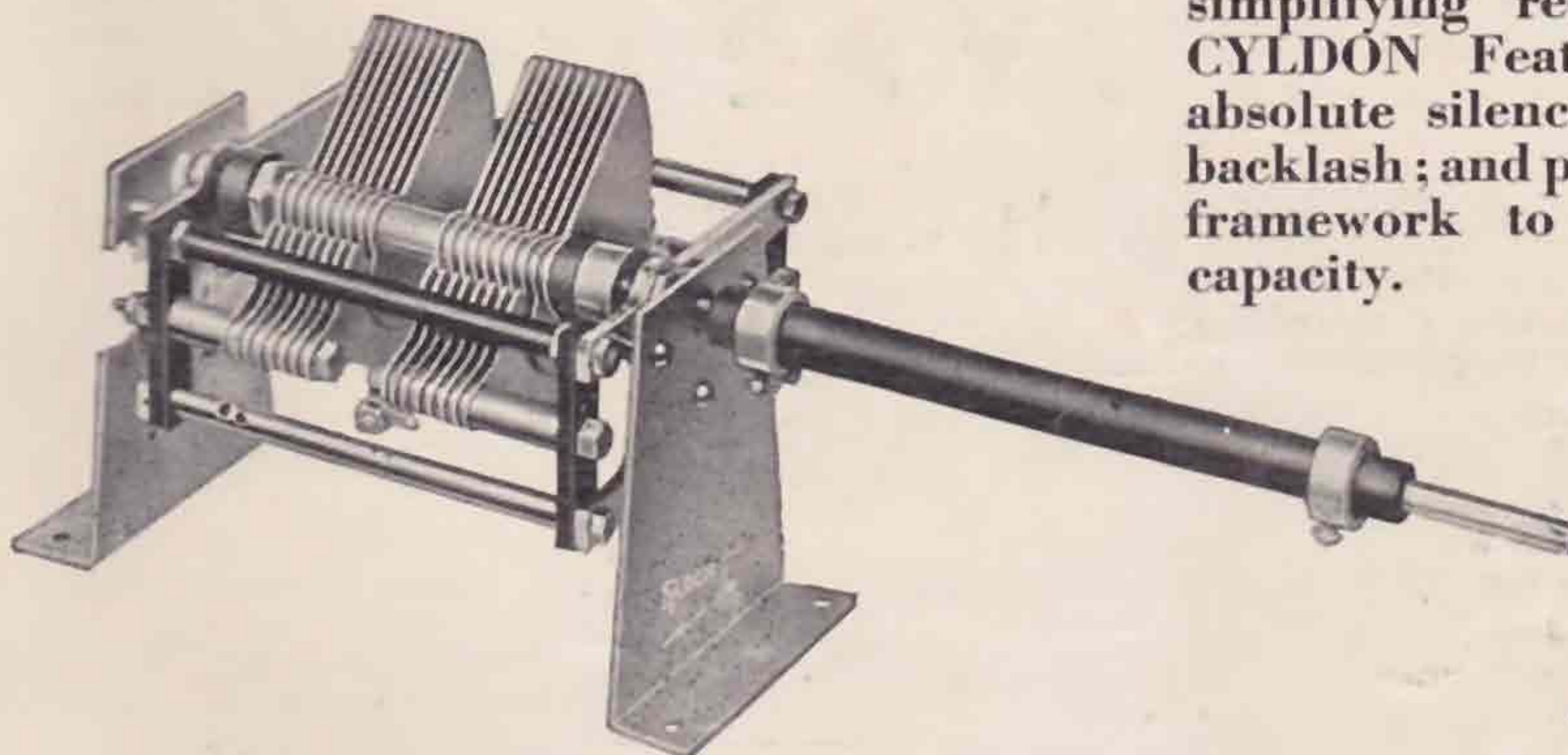
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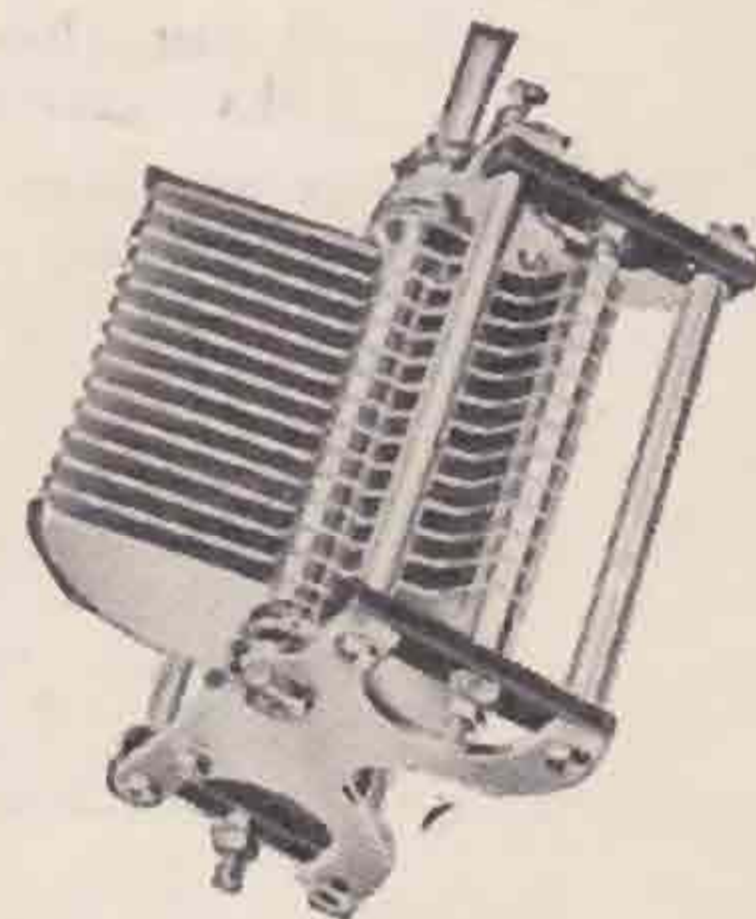
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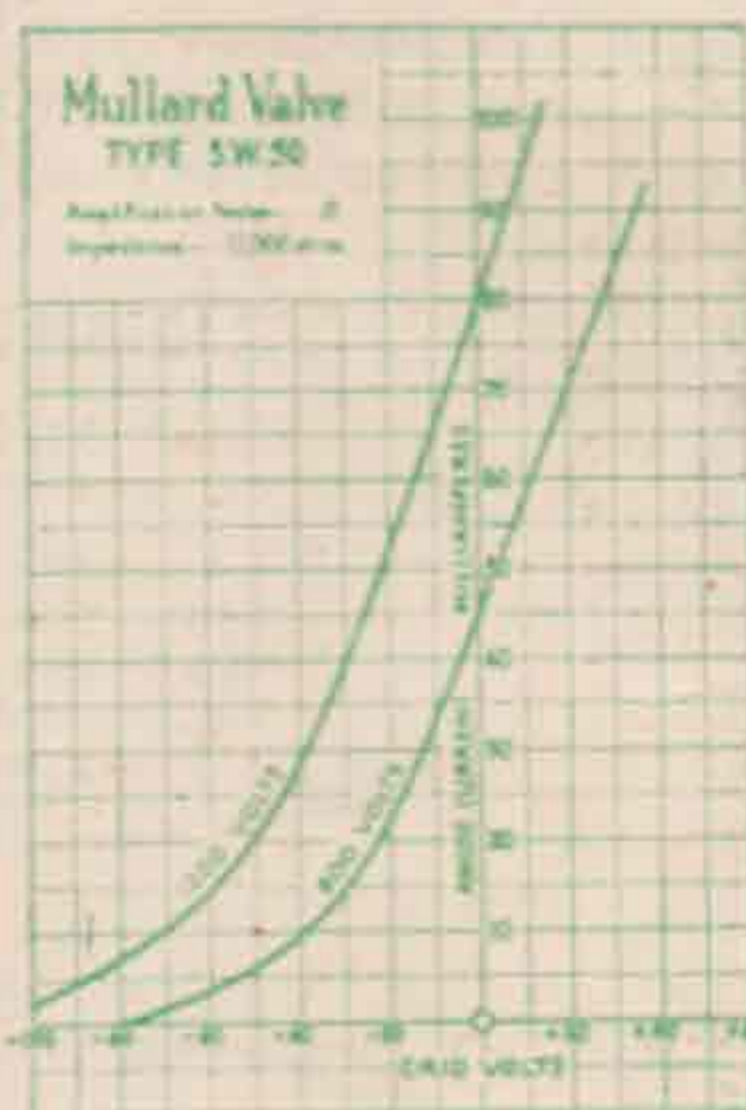
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