THE T. & R. BULLETIN

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CONTENTS

CLEANING UP 7 Mc.

MANY times in recent weeks it has been our good fortune to address gatherings of provincial and London members on matters of general interest. At every meeting some reference has been made to Cairo and Licence matters, and because these two subjects are so closely allied with the future progress of our hobby it is perhaps natural that more than ordinary interest has been shown by those attending.

At the Exeter and Southport meetings particular reference was made to 7 Mc., and it is about that band we would comment to-day. Last year and for many years past this very valuable piece of amateur territory has frequently been held up to ridicule as the playground of those who indulge in vain chatter and inane dissertations. During the "bad years" many old-timers migrated up to 14 or 28 Mc. for DX experiments, and down to 3.5 Mc. for local work. That they were justified goes without saying, for the band was certainly being badly misused by many of its devotees.

Then came the fearless criticisms of "Uncle Tom," who showed up the follies being committed by old and new licensees alike. Cold water was poured on those who either ran tea-parties before the microphone or adopted a special accent to impress their friends. Undoubtedly as a result of this sane propaganda things have changed, and although we should be loath to admit that 7 Mc. has been completely cleaned of its "blabbers," we are confident that a definite improvement is fast taking place. Common sense is winning the day.

By the reduction in the duration and the number of Test calls, by the judicious use of power, by working multiple QSO's between stations operating around the same frequency, by the avoidance of facetiousness (including HI !), it will be found possible to *enjoy* contacts on this recently despised band.

Let's begin to show the world that 7 Mc. is of real use to us —and that goes for you, too, Old Timer.

* * * *

With the passing of yet another National Field Day, scores of members have again had the opportunity of showing to their colleagues in other parts of the country that the equipment used at *their* station was X decibels ahead of anything used elsewhere.

They could not *all* be wrong !

Field Days, wherever they are held, are the salt of an active amateur's life, for besides providing him with the chance to try out pet ideas, they bring him into close personal contact with others similarly interested. Team work—such an important feature of everyday life—reaches its highest pinnacles during these popular events. Talking of pinnacles, how about some *real* DX on July 3 !

J. C.

A Review of Multi-Valve Amateur T.R.F. Receivers

By I. B. Clark * (2BIB).

THERE has, during the past few years, been a great deal written on the subject of the greater superiority of the super-het. receiver for amateur work; but the writer feels that with the conditions experienced in most parts of England, a T.R.F. receiver gives all that is required with respect to sensitivity, ease of operation, and selectivity. The latter naturally depends, to a large extent, upon the design of the gain circuits and the high-frequency input stages.

High-Frequency Stages

With one high-frequency stage, the possible circuit variations are but two, *i.e.*, it can either be tuned or untuned. However, the ganging of the high-frequency tuning condenser with that of the detector stage depends upon the degree of *off-tuning* of the tuned circuit effected by the aerial and, of course, on the design of the coils, if a periodic coupling is used.

Using two high-frequency stages the overall gain is greater, in fact there is sufficient gain at 28 Mc. to make an appreciable difference, a fact that is generally overlooked when designing receivers of this type. It must not be forgotten that it is well worth while to construct a T.R.F. receiver using Acorn type H.F. pentodes. If this is done, the stage gain per valve at 28 Mc. would be greater than that obtained by a normal H.F. valve working on 7 Mc.

With a pair of H.F. stages there are two possible *basic* circuits, i.e., tuned-untuned or untuned-tuned. The overall gain is obviously the same in both cases, and so at first sight there is very little to choose between the two methods, but if this question is studied a little closer, it will be found that it is better to employ the untuned-tuned type of circuit (Fig. 1). The reasons for this are :—

(*a*) It is generally found to fit in more easily with the receiver layout.

(*b*) The input to the tuned stage (i.e. the second H.F. stage) is kept at a constant value; hence the damping is also constant. This makes the design of the coupling coil simpler, and the ganging of the second H.F. tuning condenser, with the detector tuning condenser, a more straightforward procedure.

(*c*) It is possible to cut down the aerial input without affecting the tuning or the gain of the second stage. In the normal way, when the first stage is tuned, the gain control takes the form of a variable bias resistance, thus altering the working point on the characteristic curve of the valve, and thereby giving lower amplification.

It should be mentioned that although only two basic circuits have been considered, there is also the tuned-tuned type, but for the above reasons it is not recommended. The only advantage of this method is that it gives a greater degree of selectivity, but it has been found that using an untuned-tuned circuit with suitable gain controls, it is possible to separate signals sufficiently for all practical purposes. This, of course, is dependent on the degree of loss in the H.F. tuning inductances.

There is as well the possibility of using more than two H.F. stages, but this is not recommended, as the tuning difficulties with an increased number of stages are almost insurmountable. The largest T.R.F. receiver the writer has knowledge of is a 4-v-4 built for commercial work, but changing from one band to another entails nearly half-an-hour's work, although all the dial readings are known !

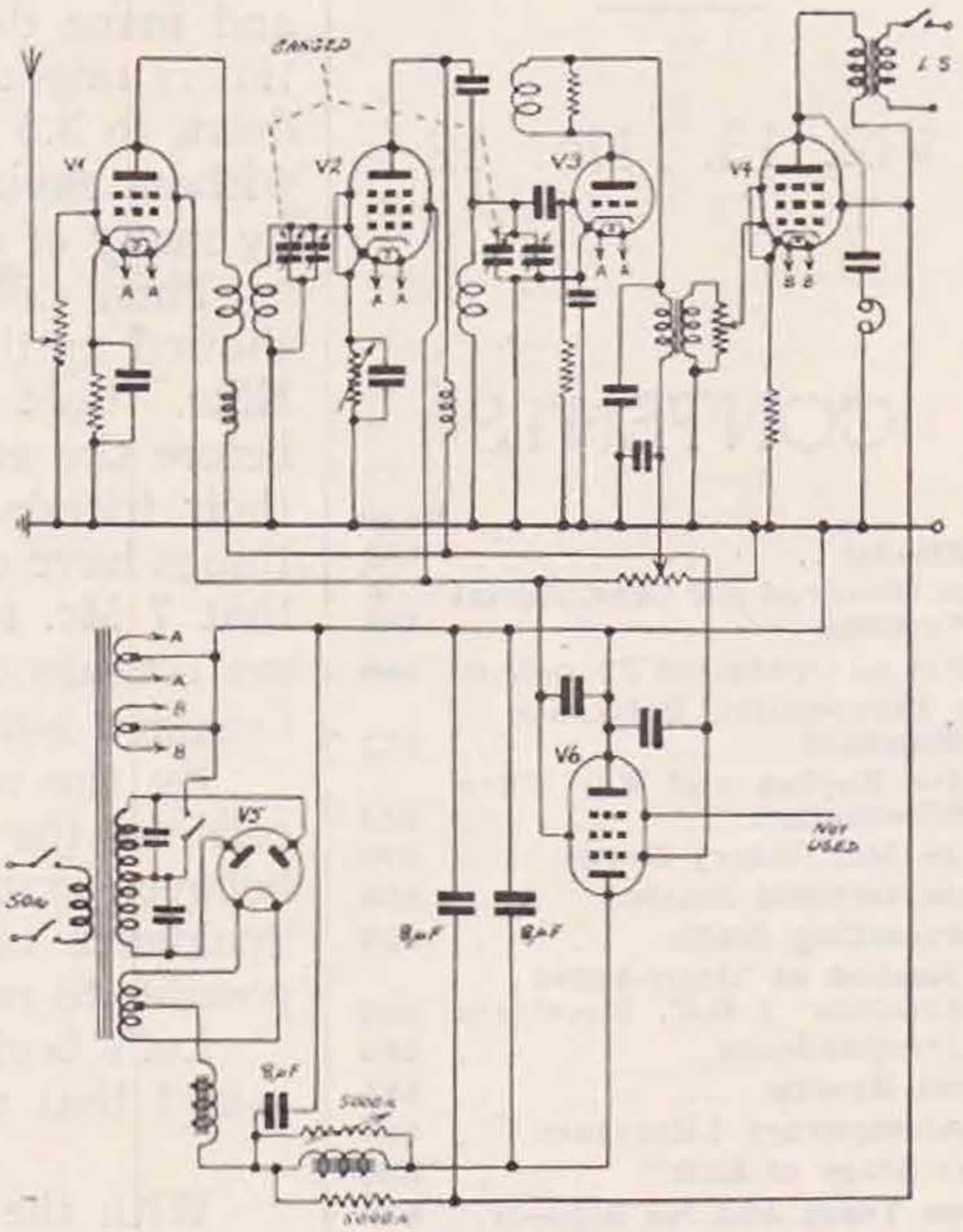


Fig. 1

Final 2-v-1 circuit as used by author

For coupling the H.F. stages there are, of course, all the old, well-tried methods, classed under choke-condenser and H.F.-transformer coupling, but it is not necessary to go into them in detail, as their principles are well known. The writer's receiver uses the H.F.-transformer type of coupling, mainly on account of its simplicity, the saving in cost, and the absence of choke resonance.

The last item to note before passing on to the next stage is the question of pre-detector gain control. There are several ways of achieving this, but such methods as the variation of the heater

* Receiver Group Manager, R.E.S.

voltage, anode voltage, etc., are now obsolete and will not be discussed. This leaves for consideration the following methods :—

(*a*) Variable condensers in the aerial circuit or feeders).
(*b*) Variable resistance across the input (i.e. between aerial and earth).
(*c*) Variable bias systems.

Considering these methods with respect to untuned-tuned circuits only, it is found that the best gain control comes under section (*b*), that is to say, the resistance normally placed between grid and H.T.— in untuned H.F. stages is turned into a variable resistance with the aerial taken to the slider. This control has to be of a carbon-type of very good make, as the slightest noise is subject to the total overall amplification of the receiver. If a wire-wound potentiometer is used instead of a carbon type, it will simply act as a variable inductance. The only time this control is used on the writer's receiver is when he is unlucky enough to hit the 7 Mc. band on a Sunday !

As the second H.F. stage is tuned, a gain control similar to the foregoing cannot be employed, and being H.F. transformer coupled to the first stage, there is no way of using a variable condenser gain control that will not shift the tuning point. This leaves only (*c*), and a normal bias system is employed by the writer, using a V.M. H.F. pentode.

Under section (*c*) comes the question of A.V.C. as applied to T.R.F. receivers, but the great drawback with this, is that it demands the use of some form of diode rectifier for the A.V.C. voltage. It is possible to employ (for telephony only) a diode-triode type of valve, but this is not recommended. In the writer's opinion, A.V.C. has little or no application to T.R.F. receivers. In such a design, if regeneration is not employed, insufficient amplification can be realised, on account of tuning difficulties, to make A.V.C. a practical proposition.

The Detector Stage.

Dismissing such circuits as Push-pull or Class B detectors, as being impracticable in general designs, we are left with four methods for consideration :—

(*a*) Diode or Westector rectification.
(*b*) Screen grid or H.F. pentode detection.
(*c*) Triode detection.
(*d*) Various multi-electrode valve detection.

Dealing with (*a*) first, such a system is not very applicable to T.R.F. receivers because :—

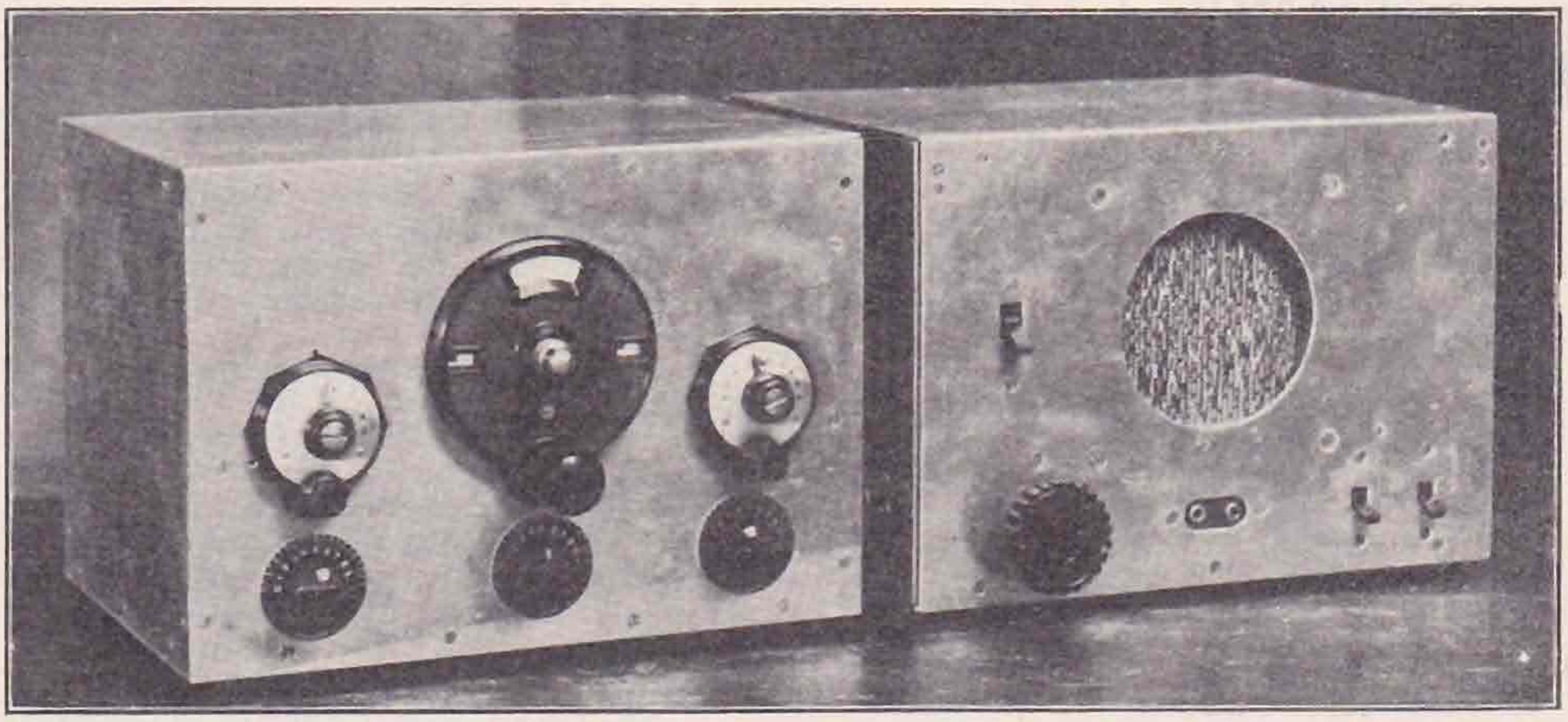
(1) The overall amplification, on account of tuning difficulties, is not sufficient to operate these devices to their full extent (*c.f.* remarks on A.V.C.).
(2) With the diode or Westector type of rectifier, it is very difficult to obtain a reduction of detector circuit damping with the use of reaction feed-back, as is possible with other detector circuits. This leads to a loss in amplification.

Dealing now with (*b*), one of the drawbacks of S.G. or H.F. pentodes, as detectors, is that they will not handle large inputs, and hence, when used after two H.F. stages, the danger of over-loading is very great. The use of this system has, however, several advantages, namely :—

(1) Regeneration control is easily effected by varying the screen voltage.
(2) The sensitivity to weak signals is much better than with other types of valves.

For general use, therefore, it can be said that nothing is better than the well-tried triode detector circuit, using reaction, but before leaving the subject, it should be pointed out that there is not the slightest difference between condenser and potentiometer control systems as applied to triode detectors. The only advantage of the potentiometer system is that it generally fits in better to the lay-out than the variable condenser method, obviating long leads at R.F. potential.

Coming now to multi-electrode detector circuits, (*d*), there is a very interesting system employing a hexode/triode valve combination for the reception of C.W. only. If the layout is correctly arranged, there is no difficulty in using a three-gang tuning condenser, but it is not advisable to attempt to gang the detector stage with the H.F. stage when band-pass is used (see Fig. 2), as this may lead to uncontrollable feed-back between the two stages.



The completed Receiver and associated output power supply and speaker.

The L.F. Stage.

The method of coupling the detector stage to the L.F. amplifier need not be discussed, as this will be largely dependent upon the types of valves used, and the amount of output required. Likewise the design of the low-frequency stage depends to a great extent upon individual requirements and tastes, but it can be pointed out that the use of too high a degree of L.F. amplification is likely to lead to a high level of background noise. The writer's receiver uses an L.F. pentode (*Telefunken* AL4), with a stage gain of 60.

In coupling the output valve to the speaker, it is suggested that a built-in speaker be employed, as shown in the circuit diagram.

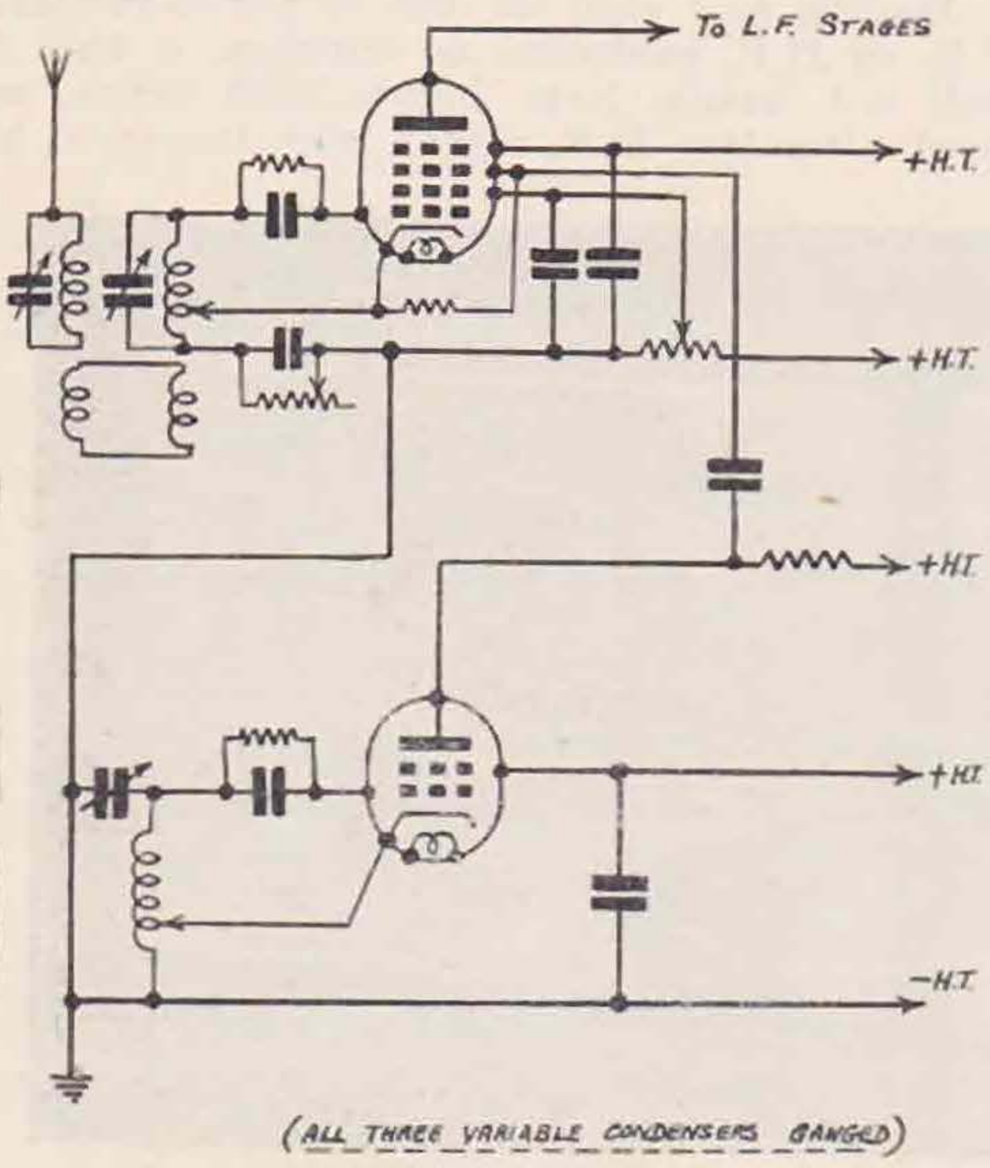


Fig. 2
E.C.O. detector with beat oscillator

Power Supply.

The question of power supply naturally depends upon what is available, but as most members possess A.C. mains, this method will be dealt with in the description that follows.

In these enlightened days of great technical achievements, it is no longer necessary to use the primitive method of voltage-dropping resistances in conjunction with myriads of large capacity by-pass condensers. The technically satisfactory way of voltage-dropping is by means of a neon potential-divider. Such potential-dividers are now available in this country from the *Marconi Company*.

The potential-dividers consist of five special alkali metal-plated electrodes, placed one within the other in a glass envelope containing neon at about 1 m.m. mercury pressure. Thus, a voltage of 280 v. can be subdivided into 70-volt steps, which, using normal electrodes, would be impossible. Each voltage step is independent, and the degree of regulation is between 0.01 to 0.02 per cent. The overall output voltage will not vary more than 0.1 per cent. with a 10 per cent. line voltage fluctuation. But the greatest advantage of this device is its very low A.C. resistance (approximately 12 ohms), therefore, it gives a very efficient filtering action, especially at low frequencies, where otherwise large capacities would be required to form an equivalent low shunt impedance.

These tubes, known as " Stabilivolt " dividers, must be operated with a voltage drop between them and the rectifier. The best type of resistance for this purpose is a current regulating hydrogen-iron barretter, various types of which are on the market. However, if the required resistance value is correctly calculated, a normal wire-wound resistance will be satisfactory. The average voltage drop across this resistance should be about 120 volts, which means that the rectifier output voltage will need to be at least 400 volts. This does not allow for the voltage drop in the smoothing equipment or speaker field, thus the writer's power supply is rated to supply 500 volts at 80 milliamps.

It can be seen that by incorporating a voltage drop before the neon potential-divider increased smoothing is given. It is not necessary to go into details of the design of suitable power supply equipment, as this subject is catered for in standard text-books.

Receiver Details.

The considerations to be observed when designing a T.R.F. receiver having been given above, we come now to the question of putting them into practice.

The writer has had constructed two aluminium boxes made from 2 m.m. sheet, to the outside dimensions of 11.2 ins. × 8.4 in. × 8.4 in., with brass angle pieces. The first box contains the two high-frequency and the detector stages, whilst the second houses the output pentode stage, together with the built-in 2-watt speaker, the power supply and the smaller associated components.

H.F. and Detector Stages.

The layout is clearly shown in the accompanying photographs, from which will be seen that the tuning condensers and coils are enclosed in aluminium screening cans. In the case of the tuning condenser screens, these are very easily made by bending suitable lengths of aluminium sheet to cover the condensers, and bolting same to the chassis.

The band-spread condensers are ganged, as any slight variations in the circuit capacities are easily corrected by the separate band-setting condensers. The method of calculating the value of the band-spread condenser is as follows :—

Take the percentage width of the required band (say 14 Mc.). Then top frequency/bottom frequency means a shift of 3 per cent., calling for a condenser capacity variation of 2×3 per cent.= 6 per cent. Thus the band-spread condenser must have at least a 6 per cent. variation over its whole scale compared with the band-set condenser's capacity, when the latter is just set on the required band. The band-setting capacity includes all the stray capacities of the circuit, etc.

The coils used in the writer's receiver are commercially-made 4-pin types, but it would be very much better to calculate the correct winding data for the coils with respect to the valves and condensers used. Skin effect should not be forgotten,

as its effect at R.F. is considerable. The best gauge of wire to employ for coils in this type of receiver at different frequencies, is as shown in the table below :—

Mc.			s.w.g.
1.7	...	...	21-22
3.5	...	...	18-19
7.0	...	...	15-16
14.0	...	...	15-16
28.0	...	...	12-13
56.0	...	...	10-12

Note.—This table applies for coil formers up to 2 ins. diameter and to tuned circuits only. Reaction windings, etc., can be of smaller diameter, if required.

When screening the coils, it should be remembered that theoretically, in order to make no great difference to the calculated frequency range, or increase the losses in the coils, the size of the screening can is governed by the radius of the coil-former ; that is to say, the diameter of the screening can should be four times the radius of the coil-former, and the can should clear the top of the coil former by a distance equivalent to the radius of the former.

The inter-connections between the two boxes are made by means of plugs and sockets, which method incidentally enables the receiver to be converted into a radio-gram or low-power modulator. The only other terminals are at the rear of the first box, for aerial and earth. Aerial systems using transposed feeders or tuned feeders are not recommended for use with an untuned H.F. stage.

Output and Power Supply Stages

The layout of this box can also be seen from the photographs. The speaker is a small mains-energised model, of 10 cm. diameter, and the field is used as a smoothing choke.

The method of voltage supply to the output stage is a little unusual, the reason for this departure from normal practice being that the output valve draws too much current through the neon stabiliser. This drain would be likely to prevent the stabiliser from striking, consequently the resistance across the speaker field is made variable for the same reason. The resistance which can be seen mounted on the screen between the output stage and the power pack, is adjusted until the neon strikes, and only requires occasional use, as the valves age.

Other details of the receiver can be seen from the photographs, and the circuit diagram. The values of the components are the same as in normal practice, except where specifically mentioned in this article.

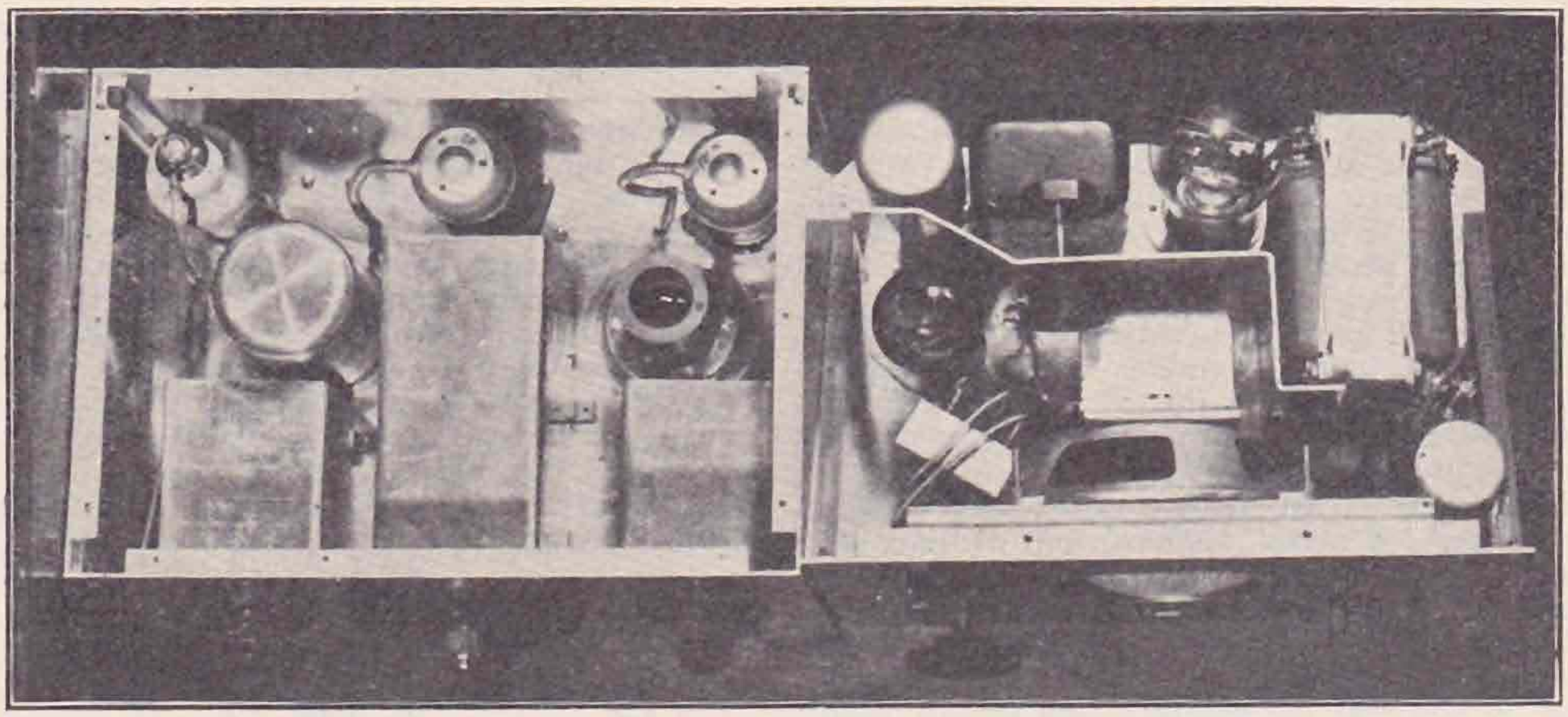
The receiver is very easy to operate, even though there are seven variable controls, and three switches, all of which are clearly shown in the photographs. From left to right the controls are as follows :—

Top row—

1.—2nd H.F. stage band-set condenser.—1st box.
2.—Ganged band-spread condensers.—1st box.
3.—Detector band-set condenser.—1st box.
4.—Speaker on-off switch.—2nd box.

Bottom row—

1.—Aerial input control.—1st box.
2.—2nd H.F. bias control.—1st box.
3.—Regeneration potentiometer.—1st box.
4.—L.F. volume control.—2nd box.
5.—Heater on-off switch.—2nd box.
6.—H.T. on-off switch.—2nd box.



A plan view of the two boxes showing position of components.

Thanks are due to D4BUF, who read through these notes and made several helpful suggestions.

Combined Super-het Adapter for 28-60 Mc. and Pre-selector Unit

The author of the above article, which was published in our May issue, wishes to correct two errors which appeared therein. Owing to a misunderstanding the rectifier valve was incorrectly quoted as a *Hivac* MR1. This valve is a mercury vapour half-wave type, and would obviously be quite unsuitable. The valve actually used was the *Hivac* UU60/250.

The second point concerns line 12 on page 598, which should, of course, read "every 50 kc. on the 14 Mc. range."

One Hundred per cent. Aerial Systems

By J. N. Walker (G5JU)*

THE writer often receives requests for a fairly simple method of ensuring that any given aerial system is working at maximum efficiency on a given frequency. The information which follows may be well known to the majority of readers, but it is hoped that there will be a large number, especially amongst the more recent recruits, to whom it will prove of service. Nothing new is claimed, but it is some time since details of the method used have been published.

In the "good old days," before crystal control came into general use, self excited transmitters enabled the resonant point of an aerial to be fairly easily found; one's note usually was not too good if one happened to work right on the resonant frequency. In these days, when crystal controlled driven transmitters are the rule, it is not easy to tell, from indoor indications, whether the aerial is correct or not.

Many readers will realise, from practical experience, that aerials cut to one of the published formulæ, cannot always be relied upon to be just right. Many factors control the length, including gauge of wire in both aerial and feeders, height above ground, proximity of masses of metal, stay wires, house wiring, and metal fences, etc.

It is also well known that adjusting the aerial to resonance will have a greater effect on signal strength at long distances than doubling the input to the transmitter, and this is specially important in the case of QRP transmitters.

This is not intended to be a dissertation on the actual design of aerial systems, but it may be pointed out, in passing, that there is no real advantage in using a gauge heavier than 16 s.w.g. for the aerial, or 18 s.w.g. for the feeders. A half wave aerial presents an impedance of approximately 80 ohms at the centre, rising rapidly each side of it, and therefore a few ohms more or less in the skin resistance of the wire used is going to make no appreciable difference in results. An exception is when very long aerials are used; then a heavier gauge wire is necessary only because greater tensile strength is required to prevent stretching.

Before giving details of the actual method of adjustment it must be stated that any adjustment will only hold good for a narrow band of frequencies, and it should therefore be made for the frequency most used. For example, if it is intended to use both ends of the 14 Mc. band it will be well to adjust the resonant frequency of the aerial to 14,200 kc., when good results will be obtained throughout the band. If, however, only one end is to be used, adjust for the exact frequency in use. Again, if a half wave 7 Mc. aerial is adjusted correctly for a specific 7 Mc. frequency, it will be quite a long way out on the 14 Mc. harmonic. In view of this, adjustment should be made on which ever band greater activity is anticipated, and this follows with any aerial used in harmonic fashion.

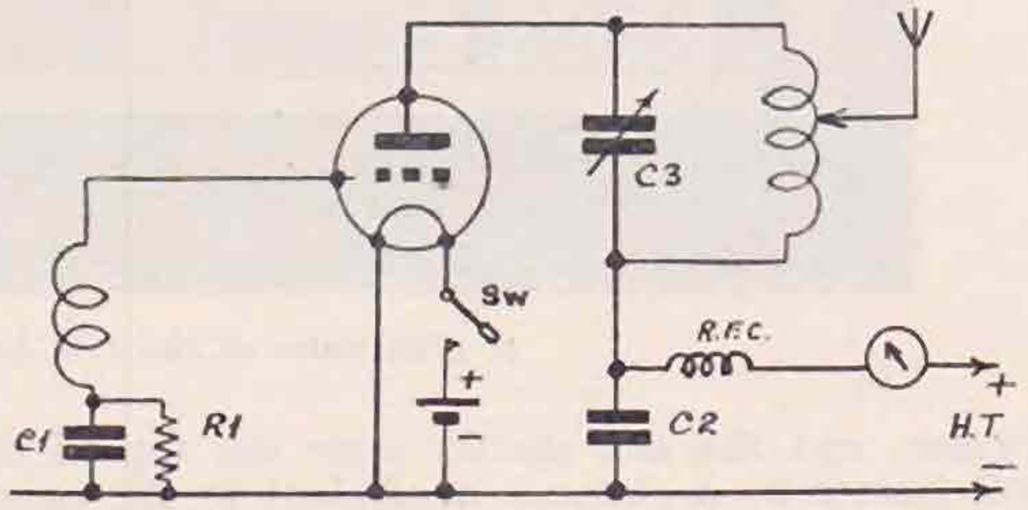
The methods given may be employed with the following types of aerial—Windom, 2BI, end-on, low impedance (80 ohm) feeders, and high impedance (600 ohm feeders). It will not necessarily be accurate with tuned feeders of the Zepp type, and for adjustment of Zepp aerials the reader is referred to the January, 1936, issue of the Bulletin, where the subject is fully dealt with in an article by Mr. G. W. Slack (G5KG).

To get down to "brass tacks" the following equipment is necessary :—

A simple self-excited oscillator.
A low reading milliameter, preferably a moving coil, dead beat type.
A frequency meter, or, failing this, a fairly accurately calibrated receiver.

The Oscillator.

The oscillator can usually be put together from apparatus on hand, as it is a very simple one; it is intended for battery operation, using a 2 volt valve of the LP2 type and a 120 volt battery, although there is no objection to a small mains valve, such as an MH4, being used, in conjunction with a small eliminator. The output must be constant over a fairly wide range, whilst only a single tuning adjustment is desirable, to obviate possible errors through several circuits having to be tuned, and also to save time. The "Tuned plate, resonant grid" (also known as the T.N.T.) circuit is adopted, and this is illustrated, together with component values, in the diagram.



Oscillator Circuit Used for Aerial Investigation.

C1	..	*.0003 μF.*
C2	..	*.001 μF.*
C3	..	*See table.*
R.1	..	*10,000 ohms.*
R.F.C.	..	*Eddystone Type 1010 R.F. Choke.*

The tank condenser can be any low loss one available, the maximum capacity being indicated in the table, which also gives details of coil sizes. Particulars are given for the 28 and 56 Mc bands in addition to the lower frequency bands, as so much interest is being taken in these bands to-day. The R.F. choke should be a good one (an *Eddystone* Type 1010 can be recommended) as otherwise false indications may be obtained. The grid coil is wound with turns touching, except on the higher frequencies. The anode coil may be constructed from 16 or 18 s.w.g. bare or tinned copper wire, a small diameter and many turns being used, in order to facilitate a finer adjustment of aerial coupling.

* Transmitter Group Manager, R.E.S.

An easily read slow motion dial on the tank condenser completes this part of the equipment.

The actual construction can well be left to the reader's own ideas. Some form of plug-in mounting should be arranged for the grid coil, whilst midget stand-off insulators make suitable mounts for the plate coil.

A compact form of layout should be adopted and the wiring made as short as possible. This latter is very essential on the two higher frequency bands, as otherwise difficulty may be experienced in tuning to a sufficiently low wavelength.

The size of the variable condenser will vary according to the bands in which the constructor is most interested. If necessary, two variable condensers can be incorporated, with a crocodile clip to bring in the extra one on the lower frequency bands.

The size specified for the grid coil may need slight alteration, should the maximum output—indicated by lowest reading of anode current on the meter—be obtained some way from the amateur band.

The aerial is clipped on three turns up from the cold end of the coil, the oscillator switched on and the condenser rotated until the meter reads maximum. The frequency is noted on the Frequency Meter and it will probably be found to be a little too low. Three inches should be cut off the aerial, the oscillator retuned for maximum anode current, and the whole process repeated until the maximum occurs at 14050 kc. as read on the F.M. or as shown by the oscillator heterodyne being heard on the same position in the receiver as the crystal oscillator forming part of the normal transmitter. More scientifically a series of readings can be taken at, say, every two degrees on the dial of the oscillator and the result plotted as a curve on squared paper. From this it will be apparent over what frequency band efficient operation may be expected and where serious falling off occurs.

Windom Aerial.—The same procedure is followed, except that the feeder will be clipped one turn up the coil, instead of three turns. When the correct length of top has been ascertained it is desirable to adjust the tapping point also for maximum feed. The best position will not be the same for both bands, and, as with the length, it should be adjusted for maximum efficiency on the most frequently used band. It occasionally happens, especially on the higher frequencies, that altering the aerial length makes little or no difference to the resonant frequency. This is apparently due to the feeder having an odd number of quarter waves on it and acting as a "Marconi" aerial, the far end being in effect tied down to earth, the aerial proper acting as a counterpoise. The remedy is to alter the length of the feeder.

With Windom aerials it is important that the feeder be brought away at right angles for at least one sixth the length of the aerial, or proper operation may not follow. Note that the feeder need not necessarily be vertical.

The 2BI Type.—The method accepted for the Windom aerial will be used in the first place, both for correct length and tapping point. Afterwards 7 Mc. coils will be used in the oscillator, in place of those for 14 Mc.; the feeder (now part of the aerial) tapped on four or five turns up from the cold end, and the length of feeder wire altered until resonance is obtained at the desired frequency in the 7 Mc. band. Note that it is possible to obtain two correct lengths of feeder, one using the long arm of the aerial, and one the shorter arm. In the former case the feeder should be made 46 feet to start with, and in the latter 27 feet.

COIL AND CONDENSER DATA.

Frequency Band. Mc	Grid Coils. No. of turns.	Grid Coils. Wire Gauge (enam. copper)	Grid Coils. Diameter of Former.	Anode Coils. No. of turns.	Anode Coils. Wire Gauge (bare copper)	Anode Coils. Diameter.	Condenser Capacity. µF
1.7	75	30 s.w.g.	2 in.	25	20 s.w.g.	3 in.	.0005
3.5	42	30 ,,	2 in.	15	18 ,,	3 in.	
7.0	20	28 ,,	2 in.	10	16 ,,	2½ in.	.00016
14.0	12	26 ,,	2 in.	6	16 ,,	2 in.	
28.0	8	22 ,,	1½ in.	4	14 ,,	1½ in.	.00005
56.0	5	18 ,,	1 in.	4	14 ,,	¾ in.	

The Meter.

The lowest reading meter should be used, preferably one which reads not higher than 5 mA. This should be of the "dead-beat" type, i.e., the needle should not oscillate excessively.

The actual current passing will depend on the valve used, and it should be kept as low as possible by reducing the anode voltage to a value at which steady oscillation is still maintained, and by using a grid leak of as high a value as possible, taking care that the carrier does not become "split." If necessary, shunt the meter, so that the needle is at half scale, with no aerial connected.

The Frequency Meter.

Every station worthy of the name should possess a heterodyne frequency meter, accurately calibrated on one of the amateur bands. If one is not available the normal receiver can be pressed into service, the edges of the band being known, and also, preferably, a few definite frequencies obtained from crystals of one's own, or from the transmissions of local amateurs.

Method of Adjustment.

End-on Aerial.—We will take as an example a half wave 7 Mc. aerial which it is desired to adjust for working at maximum efficiency on the low frequency end of the 14 Mc. band, say 14050 kc.

The aerial must be cut longer than necessary, and a length of 70 feet is suggested. The End-on type is the easiest to deal with, and will be taken first.

Low Impedance Feeders.—A low impedance feeder must be connected at the centre of a half wave aerial, in order to obtain proper matching. It is not possible to use the aerial on more than one band, although, of course, further half waves may be added. Taking 14 Mc., the top may be made 17 or 51 feet each side of the centre to begin with. The house ends of the feeder should be connected to a single turn coil, and this is then coupled to the tank coil of the oscillator, now on 14 Mc. The coupling should be loose electrically, but very firm physically. The resonant point with this type of feeder is usually shown very clearly by the anode current meter kicking sharply upwards. As before, the aerial length is reduced until resonance on the desired frequency is obtained, an equal length of wire being removed from each end.

High Impedance Feeder.—It is usually necessary to employ a matching section at the far end of feeders possessing a surge impedance of between 400 and 600 ohms, unless the Delta connection is used. This complicates matters, as the matching section itself is resonant to a particular frequency, in addition to the aerial. The procedure to adopt is to disconnect the matching section from the aerial, and adjust it for correct resonance first. The feeder should be coupled as described above, only using 2 turns for 14 Mc. and 4 turns for 7 Mc. It will be necessary to adjust both the feeder taps, and the shorting bar on the matching section, after which the aerial is reconnected, and adjusted until the oscillator anode current again reads maximum. The aerial in this case should be 35 feet each side of the centre, where it connects to the matching section.

Other Bands.

The same principles apply when it is desired to adjust an aerial on higher or lower frequencies than 14 Mc. as dealt with previously. The appropriate coils will be used in the oscillator, the overtone or harmonic of which will be used for calibrating against the receiver or frequency meter, which will not be altered.

The aerial length can be judged, to commence with, from the figures given. Always err on the long side, as it is much easier to chop off than to add. When the aerial shows signs of coming nearly into resonance with the required frequency make the cuts smaller and smaller.

The tapping point will require a certain amount of varying, according to the band on which measurements are being made. It will always be near the cold end with a Windom type, and rather farther away with an End-on. The feeder coupling coil should of course be coupled to the cold end.

Other Methods.

The foregoing method is a very reliable one, requires only fairly simple equipment, and all indications are obtained in the " shack."

Another scheme is to use a broadly tuned wavemeter connected to a valve voltmeter as a field-strength indicator. This can be very effective on 56 Mc. where the meter readings can be easily read, since it will be only 8 feet or so away. On lower frequencies the help of another person is necessary, but very interesting experiments can be carried out in addition, by plotting the lobes of radiation, as well as the general intensity.

The method of putting a lamp or meter in the centre of the aerial is a very unreliable one, as it is difficult to observe small variations, and there is no guarantee that the aerial characteristics will remain identical when the lamp or meter is shorted out ; it should therefore be avoided.

Notes on Operating Procedure

By W. Stirling (GM6RV)

FOR the benefit of newcomers to Amateur Radio, the following hints and suggestions are put forward in the hope that they will help to improve their operating procedure.

Searching the Bands

In the first place, it is usual to start searching the end to which your transmitter is tuned. When it is known that a fairly strong signal is being put into a particular country at a certain time, it is quite good operating policy to use a frequency near the middle of the band, for test calls, in order that the transmission may not be swamped by QRM at the edges. The frequency in use may sound free at *your* end, but it does not follow that the same conditions will prevail elsewhere.

This brings us to another important point : an indication should always be given before going over, as to which way the band is going to be searched for a reply.

To have stations replying at both ends, simply adds to the existing QRM. If the band is to be searched from the middle to the low frequency end, send QML, meaning " middle to low." The appropriate signals for other methods of searching can also be used, QLM, " low to middle," QMH, " middle to high," and QHM, " high to middle." These Q signals will be found of great assistance to both sending and receiving stations.

Test, and Answering Calls

When making a Test call, send " Test " three times, followed by your call sign three times, and repeat the whole for a period of about two minutes. It is no use calling a station for longer than the time it would take you to reach your frequency on your receiver. If you have not raised him, he must either have heard another station before he reached your frequency, or passed over your transmission in QRM.

The Correct Use of the " K " Signal

It is not advisable to terminate a Test call by sending K, as the contact has not yet been established. If a listening operator hears K he will assume that communication has already been affected and refrain from replying on that surmise. A Test call should be terminated with A R (end of transmission). It is, of course, quite correct procedure to send K when changing over, after communication has been established.

When replying to a transmission, don't send ROK even if you have copied solidly. All that is

required is R and this should only be given when the message has been copied in its entirety.

Rag Chews

When contact has been established with a station, give the operator a chance to open up. He may be wanting to tell his life story or to give the results of some experiments he has carried out but is held back by the frozen manner in which the contact starts. A frigid attitude will probably result in the QSO fading out in a few minutes time.

Let the other fellow see that you want to be chummy and you will be amazed at the amount of good fellowship and real enjoyment that can be had from a contact.

Break-in

If a station calls you and sends " BK," even if you cannot break-in, his call can always be terminated by changing over and replying to him. Call him, say, four times, then sign twice and the QSO will then be in progress. There need be no fear that he has not heard the reply, as he would not have called BK if he was unable to receive a reply. Many operators have called a station and sent BK a few times and switched off in disgust to find the station reply SRI OM NO BK HR.

Speed

It is usually understood that a call should not be sent out at a speed faster than the operator making the call can receive. It is found that many operators send out a call at high speed and then commence transmission at about ten words per minute. If an operator hears a call given at a high speed and he can read it, he naturally supposes that if he replies at the same speed, the operator can take it.

If at any time a station is heard calling Test or CQ at a high speed, don't be afraid of replying to his call at a slower speed, because if he is a decent fellow, he will come back at your speed.

The Correct Use of the "VA" Signal

When terminating a contact be sure that you have really finished before you send VA, and don't abuse it. When VA has been sent, it conveys to all that you have finished with that station, so, as a good operator, stick to it and what it signifies —" End of work."

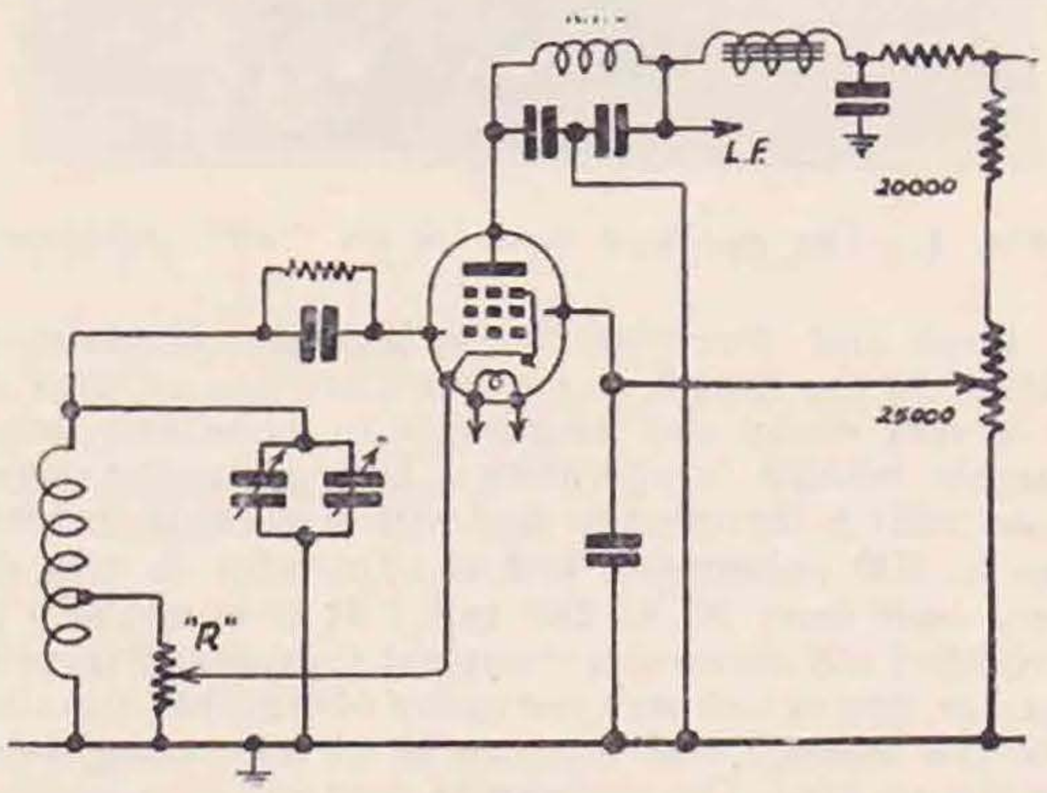
Other stations may be waiting for that VA and when it is heard, they may commence to call you. It is very annoying to hear a station give VA and then call him and upon going over, find he is still in communication. Cultivate a good style, both of sending and station operation and you will make Amateur Radio more enjoyable both for others and yourself.

ALTERNATIVE REGENERATION CONTROL FOR I.H. R.F. PENTODES

The potentiometer R in the circuit is connected across a few turns of the grid coil, and should have a value in the order of 5,000 Ω.

The advantage to be gained is obvious in that the screen voltage may be set for maximum efficiency, whilst regeneration is controlled by R.

A very high value of resistance for R will result in a marked minimum position in the centre of



the potentiometer ; the correct value is best determined by experiment and in any case the damping of the tuned grid circuit will be very small.

BRS2749.

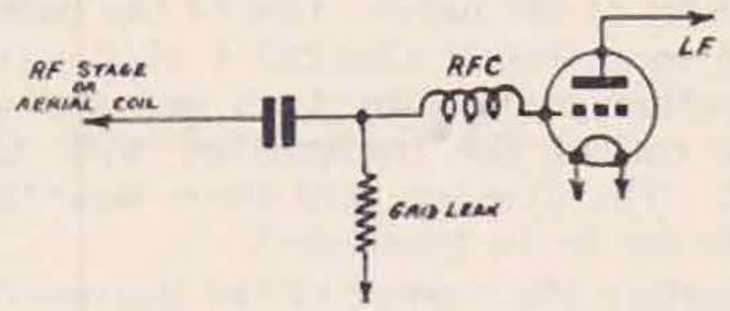
"Sago" Panels

A pleasing rough finish for wood panelwork can be obtained by coating the surfaces with sago. The selected panels should be given a coating of glue, and then thickly sprinkled with sago, and allowed to dry. Any surplus sago should then be dusted off and the whole surface given a further thin coating of glue ; when this is dry, the surface may be painted. The finished panel is easily worked and may be cut, drilled or sawn with satisfactory results.

2CUM.

Curing B.C.L. Interference

Many amateurs have experienced trouble with broadcast listener QRM, due to the use of obsolete receivers, and it is often impossible for the offending



receiver to be replaced by one of more modern design. In such cases, a cure may usually be effected by placing a radio frequency choke of suitable value in the grid circuit of the detector valve, as shown in the accompanying diagram.—

GM8NW.

British Isles Calls Heard

ZD2H (G2QN), A. Tomlinson, Posts and Telegraphs, Lagos, Nigeria. April, 1938.

1st : Off Cape Finisterre : g2yf (4.5) ; 3ax (3.5) ; 5zl (5.5) ; 8qf (5.5) ; 8it (5.6).

5th : 300 miles South of Las Palmas : g6sn (5.7) ; 8js (5.5) ; 8lv (5.8)) ; 8rq (5.6) ; 8ty (5.7) ; 8ug, (5.7) ; 8uz (5.6).

16th : At Lagos : g6rh (5.6) ; 2xd (5.5) ; 6us (5.6).

23rd : ei5f (5.6) ; gi5sj (4.5) ; 2pl (5.7) ; 2hi (5.7) ; 5ux (5.6) ; 5an (5.5) ; 6yz (5.7) ; 6gn (5.6) ; 6td (4.6) ; 6vx (5.6) ; 6rh (5.7) ; gm6hz (5.6) ; 8ha (5.6) ; 8hi (5.7) ; 8jb (4.4) ; 8pc (4.6).

24th : g6hl (4.4).

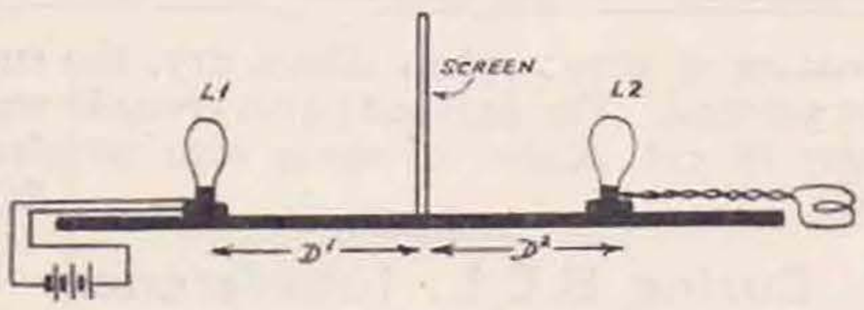
25th : g2cx (5.6) ; 2jt (4.4) ; 2zp (4.5) ; 5ug (5.6) ; 6td (5.6) ; 6vx (4.4).

26th : g6vp (5.6).

A Simple R.F. Output Meter

By J. S. Wollatt (2DGB).

Amateurs are often heard to remark that their input is, say, 10 watts, although they have not the slightest idea of the amount of R.F. output. It can be easily appreciated that it is the output that matters, for whilst one man may be putting 10 watts into his transmitter and only getting 3 watts out (due probably to one or more causes or defects) another may have an efficiency of 80 per cent. It is intended in this article to describe a useful device which will enable the actual output to be computed. The apparatus is simple to construct, easy to operate and should only cost a few shillings to make. A start should be made by constructing a light wooden framework about six inches square and provided with a small wooden foot to enable it to maintain an upright position when in use. Two batten lampholders will also be required, taking the same size of bulbs as are used for car lighting. The lamps should be of a reputable make as it is absolutely necessary that they should be exactly alike and correct as regards wattage rating.



A sheet of paper should then be glued over the screen frame and a single drop of hot grease dropped in the centre of the paper. One of the bulbs is then wired up to a freshly charged 6 volt accumulator and the other coupled by twin flex and a link to the tank coil of the transmitter, with the aerial removed. The diagram will show how the screen and bulbs are to be positioned.

To ascertain the output of the transmitter, tune for the brightest light in the lamp connected to the link, and move the screen to varying distances between the two lamps until a point is reached when the grease spot is not visible and the screen is evenly illuminated. The transmitter output is then found by the application of the following formula :—

$$\frac{L_1}{L_2} = \frac{D_1^2}{D_2^2}$$

where L_1 and L_2 is the wattage of the lamps and D_1 and D_2 the respective distances in inches from the lamps to the screen.

Editorial Comment

It is preferable to keep the lamp equi-distant from the screen and adjust the watts in L_1 for equal brightness. This is desirable because :— (*a*) Different wattages in the lamp produce lights of different colour making comparison more difficult, and (*b*) the formulæ given is not quite true as the light from a lamp is not a linear function of wattage, but follows various laws depending on the brightness and the type of lamp.

G5CD.

A Cheap Adjustable Overload Relay

By R. F. Galea (ZB1E).

In the course of his experiments with transmitter circuits and new valves, the writer, and probably many other experimenters, has often felt the desirability of substituting the fuse, the only safety device in the H.T. supply, with something more accurate and reliable; obviously an adjustable overload relay meets the case. Such a relay adjusted to operate at a predetermined current value enables certain experiments to be carried out without fear of damage to valves and apparatus, especially when testing out new or multi-electrode valves under various conditions, and more so when trials of unorthodox transmitting circuits are undertaken.

For some time past the writer has been using a home-made overload relay, and as this has proved to be such a boon in experimental circuits, and is so easily constructed, it is thought that the accompanying photographs, together with a brief description may prove useful to those who need such a device and are willing to spend a little time to construct it.

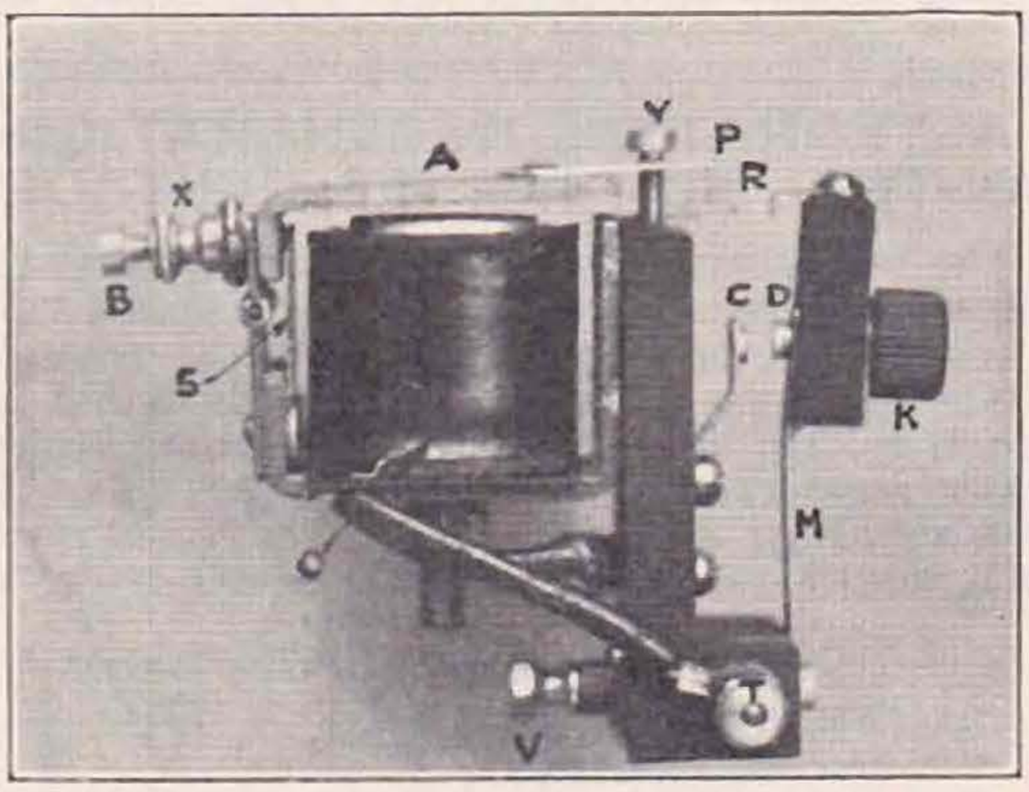


Fig. 1.—The overload relay in its "off" position.

First and foremost, no originality is claimed either in the design or construction, except that it is a very cheap and simple one to make and thoroughly reliable in operation. This particular overload relay is intended to deal with a working current up to 200 milliamps., and is adjustable to trip at any load from 30 to 250 mA. It is essentially a modified old motor-car "cut-out," procured from a garage (burnt out ones are easily obtainable, usually for the asking), and this can be at once recognised in the photos. The accessories required to complete the construction are : 2 ozs. S.W.G. 32 D.S.C. wire, a small piece of ¼-in. ebonite, three terminals (from an old valve-holder) and three flat german-silver springs (from a 'phone jack).

The operating coil is rewound with the No. 32 S.W.G. wire, and will have a resistance of approximately 20 ohms. This means that the maximum voltage drop at 200 mA. will be 4 volts; a negligible figure in the H.T. supply. The contacts of these burnt-out "cut-outs" are usually still in a sufficiently good condition to serve for the relay, and are, therefore, refitted on the springs shown at

"C," and "D." The rest of the detail and construction can easily be followed from the accompanying photographs.

In Fig. 1 the circuit-breaker is shown in the "off" position. "O" is the operating coil, the ends of which are connected to contact "C" and terminal "T" respectively. Terminal "V" connects through spring "M" to the contact "D." The screw "B," with its locknut "X" adjusts the tension of the spring "S," and therefore on the armature "A," thereby predetermining the current at which the latter is attracted to the poles, and thus through pawl "P" releases the trigger "R," enabling the spring "M" which carries the contact "D" to fly back to the "off" position. By pressing on the armature "A" and on the knob "K," the relay is restored to the "on" position (Fig. 2). The screw "Y" limits the travel of the armature "A." For the sake of clearness, the base and dust-cover are omitted in the photographs.

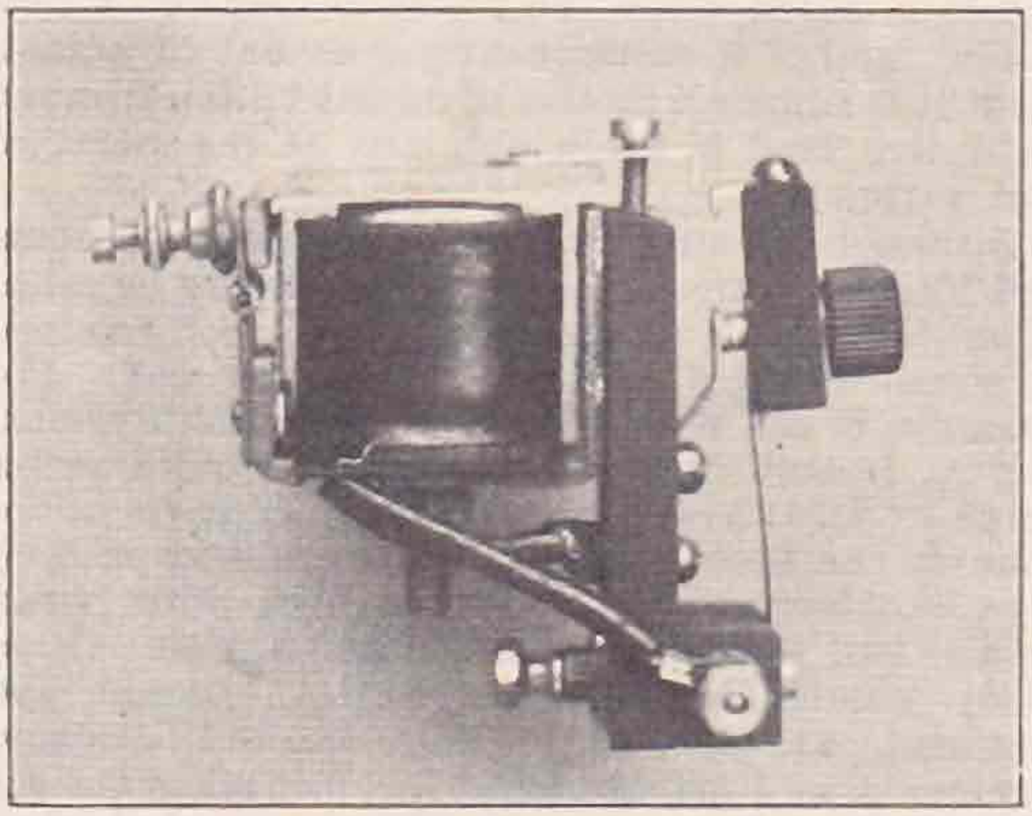


Fig. 2.—The relay shown operated.

This overload relay is best adjusted by connecting it in series with a milli-ammeter, a 400-ohm. rheostat and a 6-volt battery, adjusting the screw "B" to the tension required to trip at any current value desired between 30 and 250 mA. It will be found that the relay will operate repeatedly within one or two milliamps. of the setting, and will retain its adjustment for indefinite periods.

The First-Class Operators' Club

By R. Webster (G5BW).

We should like to correct a serious misapprehension which has arisen concerning the nature of the F.O.C. Apparently many members are under the impression that it is a British "edition" of the Rag-Chewers' Club (R.C.C.), but this is emphatically not the case. F.O.C. members are primarily concerned with "experiments in W/T," and the Club's slogan is "Genuine experimental work and first-class operating technique." We are of the opinion, however, that such experimental work can in most cases be performed more easily, quickly, and in such a manner as to cause less QRM, if the experimenter's theoretical knowledge is supplemented by good operating technique.

It is fairly obvious that a dually-qualified operator will be a more useful asset to the amateur fraternity than his less qualified colleagues. The F.O.C. wishes to organise these dually-qualified operators for the benefit of British Amateur Radio.

May we say a few words about test calls? Everybody seems to have his own method of calling, and nearly all are incorrect. Here is a suggested standard procedure, to be sent at not more than 12/15 wpm.: "Test test test de G4AA" (repeated 6-10 times according to the amount of activity on the band); "Test test test de G4AA G4AA G4AA, Test de G4AA QLH (or QHL) BK (if using) AR K." Under no circumstances should the speed exceed 15 wpm, and in particular the call-sign should be sent slowly and distinctly. If the band is very active, six repetitions should be ample to secure a reply, but this point must be decided by the operator's common-sense. The single "Test de G4AA" at the end will enable an operator just tuning on to the signal to know that it *is* a test call, and not a call to a particular station.

The following is a preliminary list of F.O.C. members up to May 30, 1938:

G5OQ, 8AX, 8HA, 8CK, 8QR, 2UJ, 2RO, 2AO, 5UA, 2ZQ, 8WI, 5LP, 8PG, 3FB, 5KV, 8IT, 2SG, EI5M.

It is significant to note that had every applicant for membership been elected, the above list would have contained over eighty call-signs. Readers will appreciate that, owing to the nature of the Club, the membership will be considerably restricted. Actually we do not expect to enrol more than 100 members, even under the most favourable conditions. Whatever the number, however, under no conditions will the standard be lowered to increase Club membership.

If any readers with artistic abilities would care to submit a simple and distinctive design for a Membership Certificate and an Emblem, we should be very grateful.

Address all correspondence to: Radio G5BW, Willingdon, Eastbourne.

Southend and District Radio and Scientific Society

Mr. J. M. S. Watson, G6CT, Hon. Secretary of the above Society, informs us that 61 members and friends, including 13 members of the Ilford and District Radio Society, took part in a highly successful 1.7 Mc. Field Day on May 15.

The start was from Battlebridge and the hidden transmitter was located in a little used lane two miles south of Brentwood, and 11 miles from the start. Mr. G. T. Peck was the first to arrive, having covered 20 miles in 1 hour 40 minutes. After a long interval Mr. E. B. Greenwood arrived to claim second place. Tea terminated a most enjoyable meeting.

The next 1.7 Mc. Field Day is to be held on June 26 and any member interested should communicate with the Hon. Secretary.

Visits to GM and GI

Members of the City of Belfast Y.M.C.A. Radio Club intend to visit Stranraer on Tuesday, July 12, and would like to meet Scottish amateurs living in the vicinity of that town. Those interested should write for further particulars to GI6TK, City of Belfast Y.M.C.A., Wellington Place, Belfast. The same Club extend a hearty welcome to all amateurs visiting Northern Ireland this summer.

An Inexpensive Frequency Reference Standard

By D. Niven (2CHN).

IT can hardly have been accident that led the B.B.C. in fixing the frequencies of its Scottish Regional and National transmitters to provide at the same time for GM amateurs a reliable and entirely free frequency standard right in the 1.7 Mc. band. If the number of saxpences spent on 100 kc. bars north of the Border is few, this must surely be the explanation. The method of obtaining and utilising this frequency is, however, not as well known as it deserves to be. Reference to the current frequency lists shows that Scottish Regional operates on 767 kc. and Scottish National on 1,149 kc. The sum of these frequencies is 1,916 kc., which is conveniently within the 1.7 Mc. band.

A straight receiver having an R.F. stage, preferably untuned, suits best. If a tuned stage of R.F. is included, its input circuit should be damped by shunting temporarily a resistance of some 50,000 to 100,000 ohms across it. In either case the aerial should temporarily be tapped directly on to the grid of the first R.F. valve. The receiver should, of course, be set to tune over the 1.7 Mc. band. In this condition the selectivity of the first stage is almost negligible, so that a strong signal voltage from each of the local broadcast transmissions is imposed on the grid of the R.F. valve. Due to the non-linear characteristic of such a valve to large signal inputs, partial rectification occurs, and a heterodyne effect is obtained between the two imposed signals, and there will be present in the anode circuit of the valve not merely the 767 kc. and 1,149 kc. frequencies, but also the sum and difference beat frequencies, 382 kc. and 1,916 kc.

The selectivity of the remaining circuits is adequate to reject the first three, but on tuning through the 1.7 Mc. band the frequency of 1,916 kc. tunes in just like an independent external signal, and is, moreover, easily recognised in that it is modulated simultaneously with both the programmes borne by the carriers from which it originates.

The frequency meter in use at this station is the two-range model, operating on 1.7-2.0 Mc. fundamental, described in the third edition of the R.S.G.B. Guide. This instrument has proved very reliable and stable—to achieve stability the ceramic-based, mica-dielectric trimmers are essential, likewise robust and complete screening—and it was found that the temperature and voltage variations met with did not amount to as much as 250 cycles/sec., which corresponds to a plain 4-in. 180 deg. dial read to $\frac{1}{4}$ deg. The output can be taken off from the anode through a minute capacity consisting of two $\frac{3}{8}$-in. angles of brass mounted $\frac{1}{16}$th-in. apart, and, with this arrangement and 60 v. H.T., readable harmonics have been obtained down to 30 Mc.

To check the setting of the frequency meter it is coupled up to the receiver; operating from the same power supplies may suffice. The reference beat-note is tuned in on the receiver as described above, and if the detector valve is oscillating it must be backed off out of oscillation. The receiver controls are then left alone. Switching on the frequency meter will probably swamp or "block" the receiver detector. Nevertheless, on tuning the frequency meter through the frequency of 1,916 kc., a clear heterodyne audio note will be heard, which can be adjusted to zero beat. The meter dial reading at which this occurs is noted when the meter is first being calibrated, and if it subsequently goes out of adjustment it is simply a matter of adjusting the trimmer until zero beat is again obtained at the standard dial setting.

Although the summation beat of the local National and Regional carriers can almost certainly be relied upon to give a strong signal, two well-received Regional carriers will serve just as well. For example, in the West of Scotland, Scottish Regional and N. Ireland Regional give another quite usable check at 1,744 kc. Amateurs in other parts of the country can soon ascertain the possibilities in their own location by a few minutes' work with paper, pencil, and the current list of frequencies. Other likely combinations are: North Regional and National, at 1,817 kc.; London and Midland Regionals, at 1,890 kc., etc. In other areas the use of an E.C. oscillator tuned to 200 kc., and checked against Droitwich, may be a better scheme, extreme care being necessary to avoid radiation, however.

The writer is informed from an authoritative source that the B.B.C. carrier frequencies are never permitted to remain more than 10 cycles/sec. off the rated figure, and seldom in fact even approach that divergence. Thus our standard beat-frequency can be relied upon the well within ±20 c/s., which is far closer than is necessary for amateur requirements and negligible compared with the incidental errors of normal types of meters.

The reliability of this method of standardisation can perhaps best be illustrated by a note of some actual measurements on 7 Mc. amateur signals, made with this meter over a period of three months during 1936, when the system was undergoing trial.

Station.	*QRG measured.* kc.	*Crystal frequency (notified per QSL or over the air).*
EI9D	7066±1	7065
G5NS	7232 ,,	7232
G6PL	7122 ,,	7120
G5XN	7276 ,,	7280±2
G5YY	7164 ,,	7165
G8AH	7082 ,,	7081
G5JO	7050 ,,	7051
G2AV	7280 ,,	7280

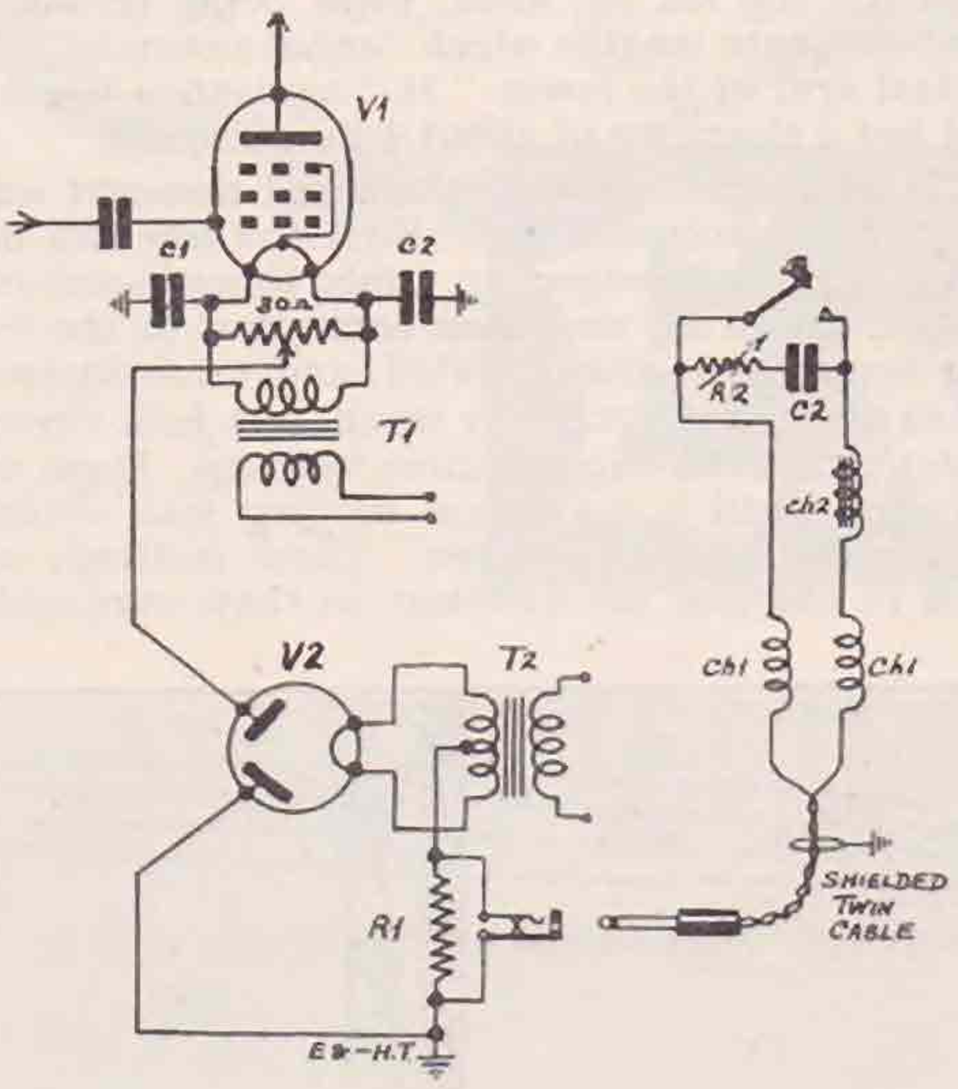
It should, however, be mentioned that in these days, with the increasing popularity of certain types of tritet circuits giving "elastic" crystal control, it becomes necessary to accept with reserve the statements of many stations as to their radiated frequency.

Although the foregoing method of standardising and re-setting frequency meters has been found to work well in practice, the writer has no information as to whether the possession of such apparatus would be acceptable to the authorities in lieu of a crystal.

Valve Keying and Key Click Elimination

By J. MacIntosh (VS1AA).

IT is not an easy matter to prevent interference being experienced on a shortwave broadcast receiver when the transmitter is situated in the same room and runs off the same mains supply, but it *can* be done with careful design and the use of valve keying. The diagram given below shows the circuit. V1 is the valve being keyed, in this case a frequency doubler running at 500 volts, with 50 to 60 milliamps on the anode. V2 is the keying valve, and although any low impedance valve capable of passing the required current may be used, the mercury vapour type of rectifier is the answer to the problem. As many as four audio type valves have been tried in parallel as V2, but even then there was a resistance in circuit of 700 to 800 ohms, resulting in a drop of 50 to 60 volts. Apart from the drop of valuable volts, the voltage drop made the cathode or centre tap to the filament of the F.D. positive, and so the grid became negative by an extra 50 or 60 volts, which was not always desirable. A type "83" mercury vapour rectifier has a voltage drop of about 15 volts and will pass up to 250 milliamps. Would one of the anodes work as a grid? It did, so an "83" was installed as V2. R1 can be any value from 50,000 to 100,000 ohms, and need not be anything more than 5 watts rating. The key which is connected directly across R1 by means of a plug and jack, is mounted about 10 ft. from the transmitter. Interference was fairly bad until the shielding of the twin cable was earthed and the R.F. chokes, CH1—fitted. These chokes are easily constructed by winding 80 turns of No. 24 D.C.C. wire on a 1½ in. diameter former. The audio choke CH2 is not always necessary, but if used it should be of very low resistance—a few ohms only—and its inductance should be one or two henrys. The chokes must be fitted close to the key contacts with R2 C2 across the contacts. R2 is a variable 0-400 ohm resistor while C2 is .5 μF. The best values for R2 and C2 can be ascertained only by actual experiment. If the twin cable can be kept short all the better. A relay across R1 would probably solve the problem of radiation from the cable, since the leads would then be very short. A point to remember is that the resistance of the cable, plus the chokes, must be kept small, otherwise there will be a low resistance and not a short circuit across R1. This will have the effect of a small cathode resistance and will reduce the voltage on the anode of V1.



The valve keying circuit described by the Author.
C1.—.01μF.
C2.—.5 μF.
R1, 2.—.1 meg.
Ch. 1, 2.—See text.
V1.—F.D. or P.A.
V2.—Type 83 M.V. Rectifier.
T1, 2.—L.T. Transformers.
Note.—V2 must be fed from a separate L.T. transformer T2.

With the circuit shown in the figure, interference is reduced to a minimum at the writer's station. It is possible to receive the B.B.C. station GSF on 15.14 Mc. remarkably free from interference, with the transmitter operating on 14.03 Mc. at 100 watts input. The broadcast receiver is a home-built superheterodyne, with one signal frequency and three intermediate frequency stages. The broadcast receiving aerial runs at right angles to the transmitting aerial, immediately under it and about 30 ft. away. There is no interference whatsover when receiving GSG 17.79, Mc., and just a trace on GSH 21.47 Mc. With the transmitter on 40 or 10 metres no interference is experienced. As the transmitter and broadcast receiver are only 18 ft. apart, these results can be taken as satisfactory. In no case is the interference more than audible, and the value of the received programme is never in any way affected. On the other hand, the writer has often had the B.B.C. programmes (via the loudspeaker) interfere with a weak C.W. station being received on telephones!

It is hoped that this article may be of some assistance to those whose neighbours tear their hair every time the key is depressed. No interference whatsoever should be experienced by listeners on the 200 to 550 metre broadcast band, although the writer cannot definitely vouch for this, as no listening is done on that band.

VK6LJ

Mr. J. Mead, VK6LJ, Box J716, Perth, asks us to publish a request that all members who have contacted his station in the past shall send him their QSL. Some years ago, on taking up a broadcasting appointment, he disposed of his QSL's, but now that he is again active he would like to replace his collection. All cards will be acknowledged.

PA0FB

Mr. J. H. Adams asks us to mention that in future he can only reply to QSL cards sent direct to him at Waalsdorperlain, 42, Den Haag, Holland.

A 28 Mc. Rotary Beam

By Bryan Groom (GM6RG).

HAVING operated for some time with fixed beam aerials which had given excellent results within the limited coverage possible, it was decided to construct a rotating beam, but difficulties arose in putting a somewhat fantastic scheme into operation. For this reason it has seemed desirable to describe the difficulties encountered, as the information given may perhaps help others with similar problems.

The Requirements.

The problem was to design an aerial having a gain of over 12 dB which would give an angle of radiation not higher than 16 degrees. It had to be rotatable to cover all the world, further, remote operation was required with means provided to indicate at the remote controlling position the exact direction in which it was aiming. Finally it had to be strong enough to stand any gale up tc 80 m.p.h., and yet be as light as reasonably possible.

Constructional Details

A little calculation gave the minimum number of elements necessary, from that it was soon possible to assess the space which would be occupied by the elements, and hence the size of the supporting framework. With this data on hand a local building contractor was approached. He was most enthusiastic (and we have found out why, since !) and very helpful. It appeared that in order to have any safety factor at all the main supporting beam would have to be able to stand a steady weight of one ton whilst supported at the middle; in point of fact, the completed central beam only deflected half-an-inch when this test was applied. With the sizes of the central beam determined, a firm of engineers was approached for the gear-box; subsequently a very neat job arrived, weighing about 360 lbs.

The whole rotating aerial is supported by a Post Office pole, 50 ft. long and about 16 ins. thick. This is set into the ground for about 8 ft., and is also stayed at a height of 20 ft. with 7/10 galvanised wire, suitably broken up by strain insulators. These stays are attached to draw bolts, mounted through impregnated battens sunk down 5 ft. in the ground, thus making a very strong job.

The gear-box, which is on top of the pole, is affixed to it by a flange made of cast iron, and which is itself a tight fit on the pole. It is, in addition, bolted to the pole. It should be explained that the flange is flat on top, and circular in shape. The gear-box bolts to the flat top. The gear-box (a double reduction worm drive, giving a ratio of 1,400 to 1) is driven by a $\frac{1}{4}$-h.p. reversable electric motor, which is built in, and thus completely weatherproof. From the top of this, supported by a ball-race at both top and bottom of the gear-box, protrudes the drive-shaft for the aerial made of 2-in. steel, 3 ft. long. The central beam of the aerial is keyed to this point. The last item to be mentioned at this stage is the indicator, which is of a very simple type.

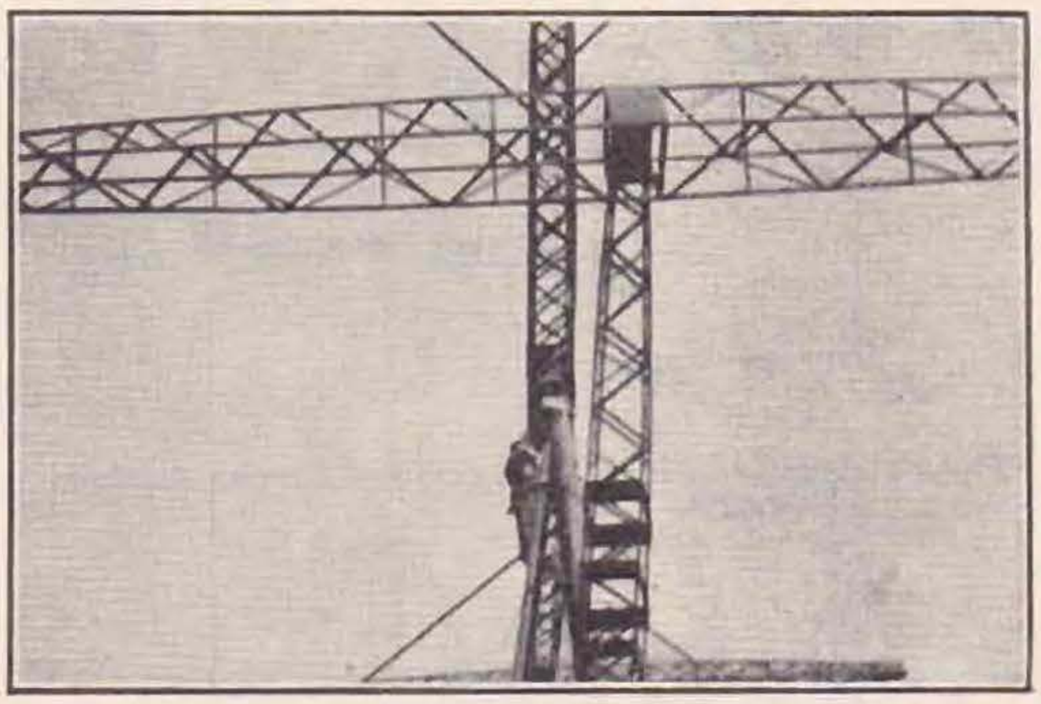
On top of the gear-box, but insulated from it, is a 16-contact commutator, with 15 of the contacts in use. Fixed to the drive-shaft is a wiper, wide enough to touch two contacts at a time. A 16-core lead-covered cable runs from this point down to the controlling position, and is there suitably connected to 15 lamps, so arranged that as the beam is rotated the correct lamp is brought into circuit. The lamps are arranged to illuminate that part of a great-circle map at which the beam is aiming. It will be appreciated that as the contactor makes for a short time on two contacts one can obtain a reading half-way between any two points, when both are alight.

The Beams

And now for the actual beams which hold up the aerial elements. Roughly, one may regard these as two large letters " H," the centre of the top " H " being the central supporting beam which is keyed to the drive. The aerial elements are stretched between the sides of the " H." Starting at the back, there are two reflectors, then two driven elements, then two directors, then two directors, then two directors, making two half-waves in phase, with a reflector behind, and with three directors ahead of each half-wave element. Below this set of elements, and similarly supported between the legs of the lower " H," is an exactly similar series of elements. The top two half-waves are in phase, and those below are inter-connected to form the usual horizontal four half-waves in-phase, with the inter-connecting section so spaced that the final impedance at the centre matches that of the air-spaced flexible co-axial cable used to connect the aerial to the transmitter.

The lower " H " of supporting beams is suspended from the top set by wires, these being broken by insulators into lengths which cannot resonate. The central arm of the lower " H " surrounds the pole, and has a clearance of about 1 in. all round.

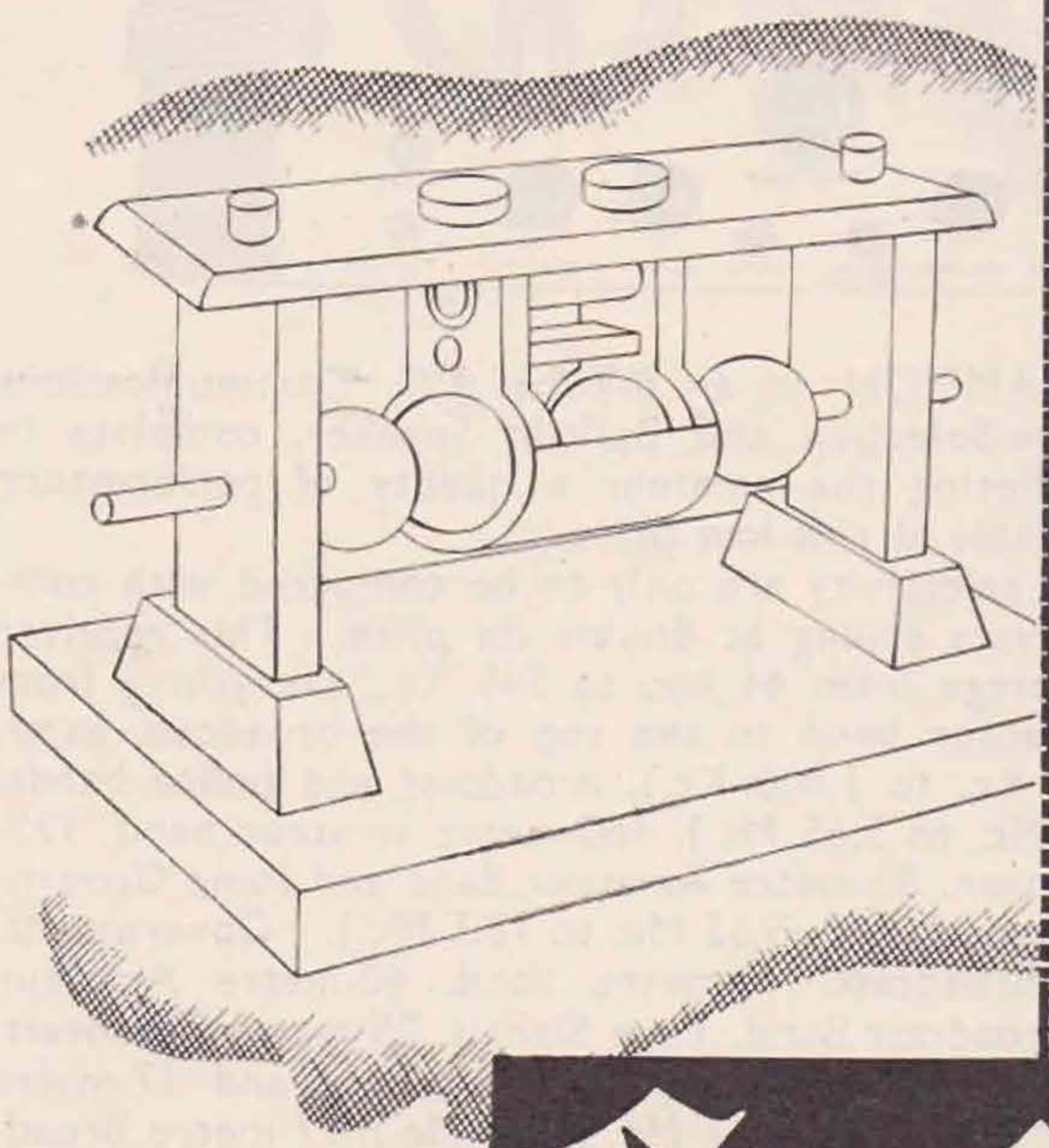
The method of aligning the aerial elements was a lengthy but accurate one. First the top two half-waves in phase were put up, tuned to resonance from a separate aerial, and then connected to the feed. The beams were then rotated, and a measurement taken at a remote point by means of a field-strength meter; then the two reflectors went up. These were adjusted until a maximum reading was obtained on the field-strength meter. These methods were used in aligning the directors as they were added.

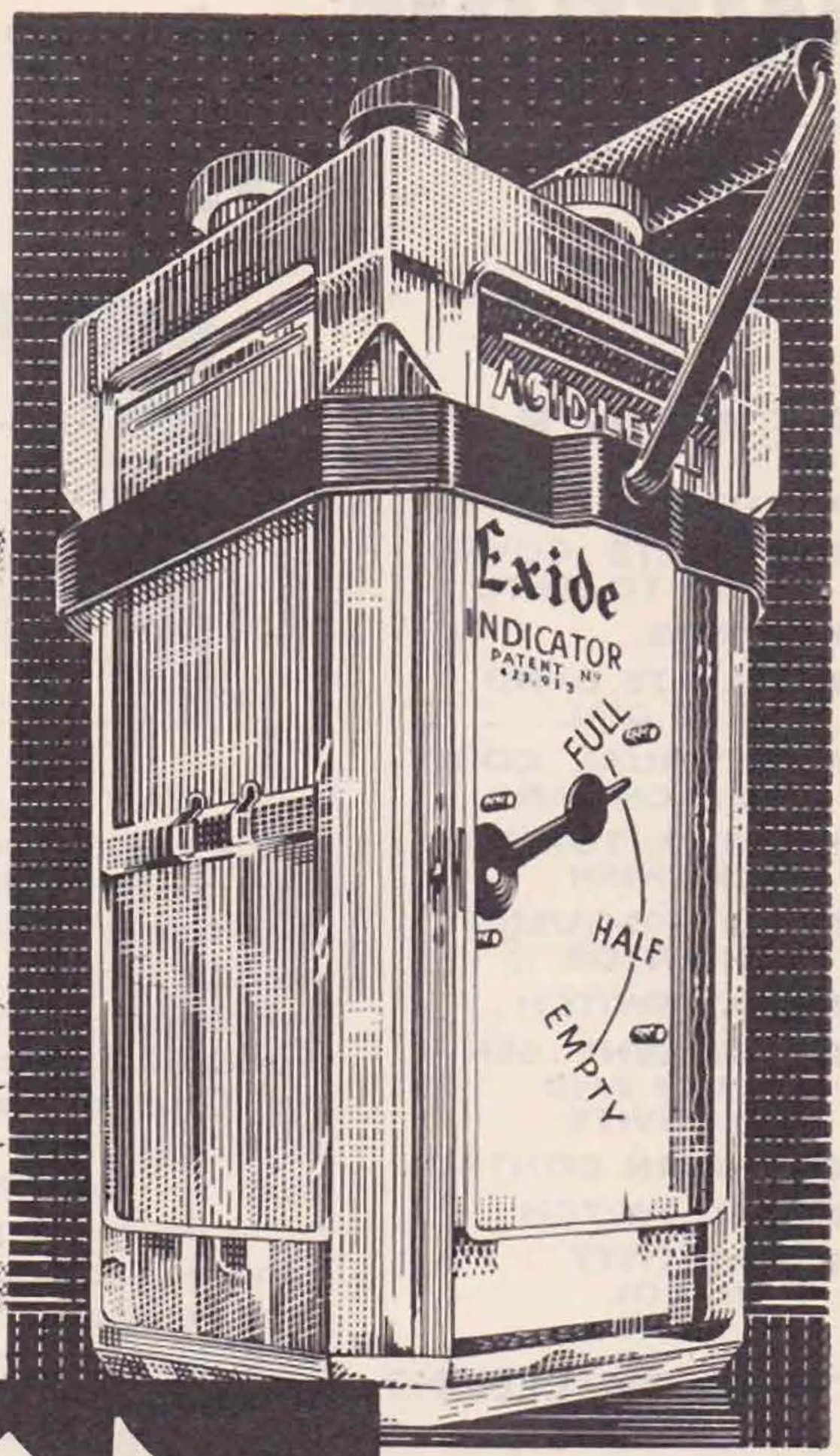


A close-up view of the rotating beam at GM6RG

OIL-IMMERSED OSCILLATOR

This oscillator was used by Marconi in his first demonstrations in England. It was about this time that the Chloride Company first made batteries. The oil-immersed oscillator has gone but the Exide Battery—made by the Chloride Company—maintains its predominant position.





R.28

Exide

BATTERIES FOR RADIO

'Still keep going when the rest have stopped'

• *For dry batteries ask for* **Drydex**

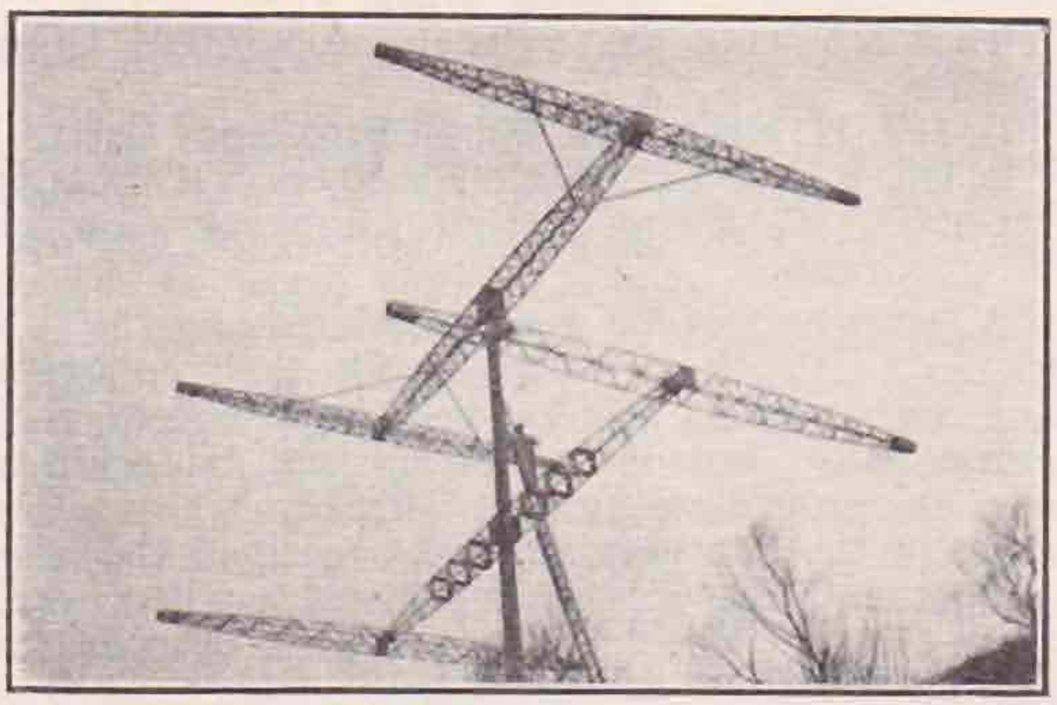
Obtainable from any reputable dealer or Exide Service Station.

The Chloride Electrical Storage Co. Ltd. (Exide and Drydex Batteries), Exide Works, Clifton Junction near Manchester. Also at London, Manchester, Birmingham, Bristol, Glasgow and Belfast

With the top elements correct, the bottom ones were then placed in position and aligned in exactly the same way, after first hanging detuning lengths to all the top elements. The inter-connection of bottom and top half-wave elements was then carried out, and the spacing of this link adjusted until the aerial drew maximum current. It was found that a spacing of about 2 ins. for these lines matched the aerial best. They apparently act as "Q" bars of about 400 ohms impedance. The co-axial cable has an impedance of about 100 ohms.

Results

Results with this aerial have been very good, and measurements made by W3CBT show that the angle of arrival of the signals with the rotating aerial is 14.3°, compared with the 13.5° of the rhombic in use at GM6RG, and which is aimed at W3. The rhombic is 4½ waves per leg on 28 Mc., and has given excellent results. The measurements at W3CBT



The rotating beam used by GM6RG.

were made over a period of ten minutes on each aerial using an unmodulated carrier at the writer's station, each period immediately following the other, with a break to change aerials. Signal strength reports with the two aerials were similar.

Spacing between all elements is quarter-wave, with half-wave spacing between the top and bottom sections.

Experiments are in hand with closer spacing of the elements, but it is not anticipated that much additional gain will accrue. The present gain seems to be about 13 dB, as nearly as the somewhat crude means at the writer's disposal would indicate.

Empire Calls Heard

Eric W. Trebilcock (*BERS*195), *Powell Creek, North Australia. April,* 1938.

7 Mc. 'phone: vk9ac, zs6cz.

7 Mc. C.W.: g3bu, 3cc, 3fm, 3fq, 5dw, 5kg, 5pp, 8ok, 8uk, ve4afi, 4ki, 4ge, 5hp, 5oj, 5po, 5qa, 5qp, 5tr, 5vo, zs1bd, 1bh, 1cr, 1g, 5cu, 5cy, 6am, 6cn, 6eo, 6et, 6v, zl1ft, 4br, 4dr.

14 Mc. 'phone: g2hk, 5dr, 5ka, 5ov, 5qn, 6dl, 6wx, 6xm, 6xr, 6yu, 8nj, ve5ot, 5vo, vr6ay, xz2ez.

14 Mc. C.W.: g2yl, 2zq, 8ha, 8kp, 8mf, 6wy, 6gl, gi2cc, 5qx, 5sj, 6wg, gm6hz, 6jh, 6vo, 8hp, gw3ax, ve1au, 3wa, 3vs, 4aed, 4iz, 4nz, 5eh, 5hr, 5mz, 5vo, vk9bw, 9dm, vp2ab, 2at, 2lb, 4ti, 6ln, vq3hjp, 8aj, vr4ad, vs7rp, vu2fh, 2fx, zd2km, zl3ja, 4br, ze1ji, zs1cg.

Crystal Control on 112 Mc.

It was intended to include some information on this subject in the article dealing with the Ultra-Modern Transmitter, published in the April issue. That the transmitter, with the special valves incorporated, should work well on 112 Mc. was a reasonable assumption, but time before publication did not permit of experiments being carried out. Such experiments have since shown that the results obtainable come fully up to expectation.

On 112 Mc. the final valve (a *Standard* 4316A) becomes a regenerative power doubler, and the operating conditions alter. It is necessary, first of all, to considerably increase the negative grid bias applied, and values of between 120 and 150 volts have been found suitable. An *Eddystone* 4-turn coil must be substituted for the 8-turn one in the output tank circuit, and, on applying the drive, an anode current of about 25 mA. should be obtained, with 400 volts on the anode. Resonance was found with the condenser vanes at half mesh (the exact dial reading was 45°), at which point the current dipped to 20 mA. A loop and bulb lit brilliantly when held near the tank, whilst a neon lamp could be struck with ease. By closing up the plates of the neutralising condenser the output could be slightly increased, but as doing so necessitates re-neutralising when returning to 56 Mc., it is hardly worth while.

No radiating tests have yet been carried out on 112 Mc., but it is intended to erect a special aerial for this frequency, and carry out experiments with stations at various distances, when such stations have suitable receivers available!

G5JU.

"Testing a Bottle."

Experimental Section

By A. M. H. Fergus (G2ZC).

IN reviewing the work of the past month it may appear to non-members of R.E.S. that our Notes, from what has so far appeared in the Bulletin, do not show great activity, so a brief explanation will not be out of place.

We are endeavouring to build an Experimental Section on a sound basis, so that once active as little disturbance as possible will take place ; therefore, care has been taken in the formation of Groups in avoiding hurried decisions. The closest co-operation is being maintained between the Group Managers, and no matter of policy is decided upon until it has been discussed and approved of by all concerned. Contact amongst the membership is maintained by means of letter budgets or circular letters, as it is felt that the Bulletin pages should only be used for publication of items of general interest to the Society, and, therefore, if items of "internal affairs" do not appear in print, this short statement will explain their absence.

We have received the greatest possible assistance from the staff at Headquarters, and the writer, on behalf of his G.M.s, would like to express appreciation to them for their valuable help.

Special Receiving Tests

Any member possessing a fairly sensitive receiver covering the 3.5 Mc. band, living in or near London, and who would like to take part in the compilation of data in connection with a phenomena associated with the B.B.C. Television transmissions, should write to Mr. I. B. Clark (2BIB), of 222, Sydney Road, Muswell Hill, N.10 (G.M. of the Receiver Group).

Membership

The following list of members is additional to those already published :—

Group Members.—J. C. Carslaw, 2ACY (T), G. J. Carpenter, 2DFJ (A—T), W. E. F. Corsham, G2UV (P), E. J. Dell, GW2UL (A), L. R. K. Gregory, 2AVI (T), P. Jones, G2JT (P), P. C. Morton, G3DY (A), Rev. S. Newby, G8CP (P), J. B. Parke, GI8PA (A—P), L. J. Stevens, BRS 1657 (P), W. W. Taber, G3GU (A—P), C. Turner, G8NL (A—P), G. Troy, 2DDB (R—P), T. R. White, G8TX (T—P).

Individual Members.—H. W. Bannister, G8OM (A), C. F. Biggs, 2DQO (A), H. Broadbent, BRS 2890 (A), W. Clegg, G8RP (R—T), A. L. Cusden, G3FB (A—T), W. R. Dainty, G2HP (P), D. J. Darnton, BRS 2227 (P), J. K. Fish, G8OL (R—T), E. J. Hartley, BRS 3268 (P), R. S. Jackson, G6JN (P), F. A. Jeffries, G8PX (T—P), W. D. Kieller, G6HR (P), H. W. Miles, G2NK (R), E. R. Radford, G2IM (A—T), H. J. Sherry, G6JK (T—P), H. C. Spencer, G6NA (A—P), H. W. Stacey, G6CX (T—P), H. E. Sutton, 2AAS (R—T), B. Wallich, G6BW (A), W. H. Wentworth, G8IU (R—T).

Certificates will be posted to all new members whose names have appeared before the end of May, and any member not receiving same should communicate with the Experimental Section Manager. About 20 forms came to hand too late for inclusion in this month's list, but these will appear in our next issue, and certificates sent in due course.

Owing to an unfortunate accident, several letters awaiting attention were destroyed. Any member (home or overseas) who has not had a reply to his letter should please write again, when the matter will receive attention.

Aerial Group

Group Formation.

Group "A" : 2AJP (G.C.), 2CSM, 2BDA, 2CAX, BRS 193, 2683. Individual members attached : 2AZQ, 2COY, G2FO, 3HP, 5QO, 8BD.

Group "B" : G2WR (G.C.), 2VV, GW3GL, G6ZQ, ON4AU, ST2CM. Individual members attached : G5BX, 5HF, 5PK, 5TN, 5VT, 5ZT, 6KR, 8LO.

Receiver Group

The following have been appointed Group Centres :—

G5HF, H. Heap : Ultra-high Frequency Group.
2CDS, R. Brett : Straight Receivers (TRF) Group.
G8MO, E. Ewing : High frequency Coupling Group.

A letter budget has been circulated and the G.M. wishes to thank all members for their comments and contributions. It has been impossible to reply individually, but all problems will be reviewed once the groups are formed. Members whose names came in too late may not have received the letter budget, but the G.M. hopes to communicate with them direct. The first Groups have been formed, and members will now have heard from their G.C.s The G.M. would like to thank all those who have wished R.E.S. a long and productive life, but would remind them that both the length and productivity of the Group rests with its members as well as the G.C.s and G.M.

Propagation Group

The G.M. wishes to thank those who replied to the request on p. 484 of the March Bulletin, and asks those who have not already done so to send the required information immediately. Group formation will thus be speeded up.

The following have been appointed Group Centres :—

G8DA : Magnetic Group.
BRS 3227 : Auroral Group.

Group Formation.

Barometric Group : G6FU (G.C.), G3JF, G5CI, BRS 3149, 2ALO. Individual members attached : BRS 981, BRS 3227, G6JN.

56 Mc. Group : G2XC (G.C.), G6PK, G5UK, G5NG. Individual members attached : G2JL, G8OS, G5TN, G5OJ, 2CYY.

28 Mc. Group "A" : Additional members : G6XL, BRS 1657. Individual member attached : VU2AN.

28 Mc. Group "B" : Individual member attached I1ER.

The April Letter Budgets of both 28 Mc. Groups were very large, and up to their usual high standard.

Group "A" : G6DH sent a very complete report dealing with the fade-out observed on April 15. Long-distance signals (over 1,000 miles) were most affected, being the first to go and the last to come back. The effect of the fade-out was progressively

greater the lower the frequency, right down to 4 Mc.—the low frequency limit of listening. The " hissing phenomenon " was inaudible on frequencies lower than 20 Mc., but G2YL pointed out that she has heard it on frequencies as low as 7 Mc., though it was weaker than on 14 and 28 Mc. at the same time. G6QZ discussed the mechanism of fade-outs, and has suggested some interesting problems for study by the Group.

Group " B " : G2XC commented at great length on the April 15 fade-out. The " hiss " was heard over the whole frequency band covered, namely, 20-32 Mc., but was strongest at the H.F. end. GM6JJ described experiments carried out with GM6RG using the latter's 28 Mc. rotatable beam, and suggested that 6RG's signals had travelled round the world before reception.

The formation of a 3.5—1.7 Mc. Propagation Group is under consideration. Members interested are asked to communicate direct with the G.M., Mr. Craig, GM6JJ.

Forecasting Static

By S. W. Allcorn, BRS3227*.

THE writer is convinced, after a long period of observation, that the degree of static which interferes with our radio reception varies with the atmospheric conditions—more particularly with pressure. Assurance of this relationship is based upon the correlation of reception conditions with the daily passing of high and low pressure areas. The relationship is so clear-cut that definite statements may be set out which will serve as guides to those desirous of forecasting the probability of static. To help with this work it was most important to have a daily weather map (in order to watch a given high pressure area), a good aneroid barometer, an outdoor thermometer, and a hygrometer.

Generally, if the pressure reads above 30 inches, static will be absent and if below it will be present. If the barometer is just below 30 inches in the morning and has been rising all the preceding night, the prospect of no static for the evening is excellent. If, on the other hand, the reading is just above 30 inches and the pressure has been falling during the preceding 12 hours, then static is almost certain during the next 12 hours. That is simple enough ; but exceptions creep in occasionally, and to make allowances for them the thermometer and hygrometer will assist. With the help of these two instruments, we can forecast static still more effectively with the aid of the following pointers :—

(1) Barometer above 30 inches and rising during last 12 hours, temperature and humidity falling—Static not likely within the next 12 hours.

(2) Barometer constant while humidity falls—Static likely to reduce in intensity if it has been current.

(3) Barometer below 30 inches and falling during last 12 hours, temperature and humidity rising—Static will prevail during the next 12 hours.

(4) Barometer constant while humidity rises—Static may increase if it has been current.

(5) Humidity and temperature remain constant while the barometer rises or falls—A change from intensity of static will be effected less quickly than if the humidity and temperature changed as in (1) and (2).

These pointers are not to be taken too literally ; they are merely guides to probable occurrences, and will occasionally be found to be inaccurate. These statements call attention to the popular misconception that when it rains or snows, static will be prevalent. The writer has often experienced some of the best reception conditions during such storms. On the other hand, much static has been experienced on clear nights under high pressure conditions, when on these occasions abnormally high relative humidity was accompanied by a sudden drop in temperature. In the former case the atmospheric pressure was far higher than is customary when rain or snow occurs. Since these cases are exceptional, although not always rare, perhaps it is best they should not be allowed to impress one too strongly. While an attempt has been made to suggest a simple instrumental method enabling the average person to forecast for himself the probability of static, we would again refer to the utilisation of the daily weather map by those desirous of making a detailed study of the whole problem. Many relationships have been found between the location of receiving and transmitting stations with respect to the extent and intensity of a high and low pressure area, and the probability of static. The details cannot be presented here, but a few major conclusions may be noted from a study of the weather maps :—

(1) If a line connecting the receiving station with the transmitting station crosses the intervening millibars at right angles, reception is at its best.

(2) The steeper the millibars gradient (that is, the closer the millibars to each other), the stronger the reception.

(3) The more nearly the transmitted waves approach parallelism with the millibars, the weaker the reception. Under these conditions fading occurs.

(4) Reception is better in winter than in summer because of the cyclones (Lows) and anti-cyclones (Highs) are more intense in the winter period.

(5) Shallow or flat pressure areas favour much static.

(6) Reception is weaker when the transmitted waves cross from one pressure area into another than when they travel only within one area.

We need more investigation into the field of the relationship of static to atmospheric conditions. Here is an opportunity eminently worth while for our members.

In conclusion, the writer would like to receive comments on his findings and deductions from any interested member.

* *R.E.S. G.C. Auroral Group Prop. Section.*

Stray

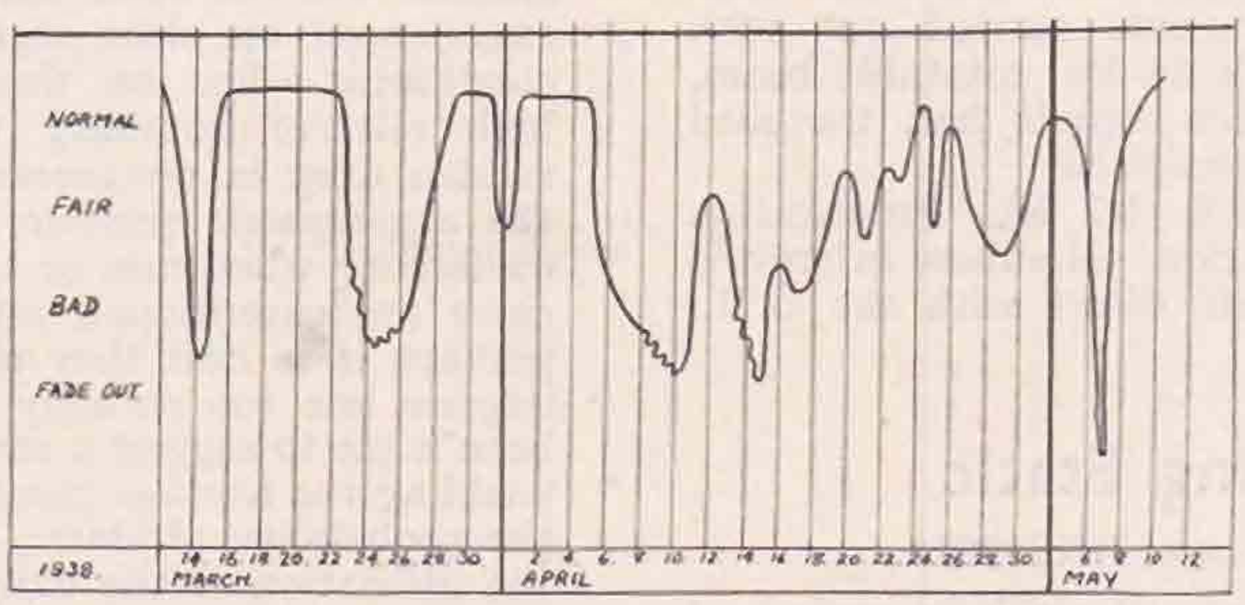
With reference to the paragraph on page 659 of our last issue titled " Believe it or not " the call sign of the American station requiring 7 Mc. reports is W2KJZ not W2KJK.

Aurora Borealis

By A. M. H. Fergus (G2ZC).

REPORTS to hand for the period March-May are very much more detailed than those for January-February, for whilst in the latter we considered the aurora, we now have to take into account sunspots, with associated magnetic storms, and possible Dellinger effects.

This month we publish a graph, similar to that which appeared in May, and again it should be made clear that this is drawn up on the results of the *average* behaviour of signals. It should also be mentioned that this information was arrived at by drawing a graph of each report on each band, the whole then being superimposed, and a mean taken for publication. It was apparent, however, that in the majority of cases each band followed closely on the characteristics of the others, and so we can take the graph as giving a fairly accurate résumé of conditions.



Aurora Borealis.
Graph showing the average results, as extracted from reports on the Amateur Bands.

The actual reports will be sent on to the Propagation Group for closer study, and we may expect more details from them at a later date. It will, however, be of interest to give a few facts, as extracted, and our thanks are due to the following for having sent in reports of their observations: G2HG, 2UP, 3GU, 3CQ, 5CU, 5IV, 5JH, 5JL, 6FU, 6YL, 8WI, 2AHH, 2ATU, 2DRM, BRS 2977, and SU1RD, together with several others reported via R.E.S. members.

Last month there was an element of doubt regarding 56 Mc., but we now have definite evidence (due to regular daily schedules) that this band was affected much in the same manner as the others. Unfortunately 1.7 Mc. seems to have been neglected (we have only one observer here), but all other bands reveal some interesting facts. For example, it would appear that a study of lines of magnetic force might be worth while at times of magnetic storms. Conditions appear to vary in different localities at the same time, and on the same band (a fade being noted on 3.5 Mc. at one station, which another station did not log), and while we must not rule out "imagination" as in the case of an expected fade-out which has been forecast, and which possibly did not take place, are we any nearer the fact that fade-out periods can be accurately forecast? An article published last month (J. Sinclair, BRS 40) could be studied with advantage by members interested in the subject.

If we extract some of the noted 1938 dates which were abnormal, we find the following: *January*—25th, rapid fading; 26th, band dead. *February*—8th, flutter (like conditions during Solar Eclipse in 1936); 25th, fade-out. *March*—22nd, band dead; 23rd, Aurora seen in Yorkshire, flutter noticed; 24th, band dead; 25th, Aurora seen in Scotland, flutter; 26th, high background level. *April*—9th, flutter; 15th, bad flutter, band dead; 16th, high noise level; 18th, bad static, large sunspot observed; 23rd, high background; 27th, bad background (locally); 28th, band dead but silent background. *May*—2nd, hiss (midday); 3rd, high noise level; 4th, band dead; 5th, fading noticed on B.B.C (Droitwich), bad static.

Perhaps it would be as well to add here that readers must not take the above to indicate that such conditions prevailed over the whole 24 hours. The effects recorded took place on the dates specified, and while we have hour to hour data in many cases these facts would be out of place in a summary. It is hoped, however, that interest may have been aroused in publishing these brief notes over the period.

Any reader who wishes to contribute further observations is requested to send same direct to the Manager of the Propagation Group, Mr. Wm. N. Craig, GM6JJ. It should also be added that details will be of greater value if they include regular schedule observations, for the more extended these are the easier it will be to make comparisons.

Seasonal Variations

By N. C. Hobbs (G8AA).

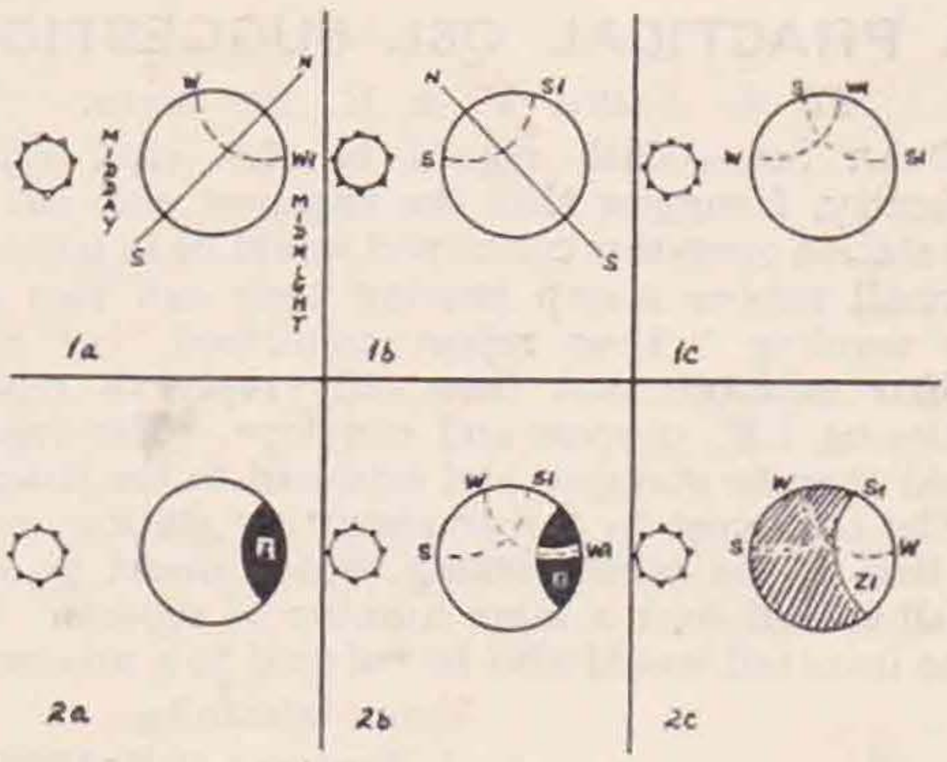
IT is common knowledge that certain daily changes of propagation conditions occur earlier in winter than in summer. The writer has two examples in mind. During the last few winters, at least, the 14 Mc. band has gone "dead" about 8 p.m., whereas in summer the band has kept open throughout the 24 hours. The other example is on 7 Mc. when the band clears of British Isles and European stations, and DX is heard. In this latter case, the variation is not so marked, as the time of change is only a few hours later in the summer than in the winter. The aim of this article is to attempt to give an explanation of these particular seasonal variations.

On the front page of most atlases, there appears a diagram showing how the seasons are brought about. The N/S polar axis of the earth is canted out of the vertical, relative to the sun. Now, take mid-winter when the polar axis is canted away from the sun, as in Fig. 1a. It follows that from midday to midnight, England will have described the path W—W, as the earth rotates. Also, at midsummer, the polar axis is canted towards the sun and the path described will S—S, Fig. 1b. For purposes of comparison, in Fig. 1c, the two paths are placed on the one disc.

This second part of the explanation is possibly open to criticism. There is nothing known about the sun's activity to link or correlate with these seasonal variations. Therefore, while the variations are *regular*, the reflecting layer is substantially

stable. That is, the various grades and zones of ionic intensity retains much the same distribution from winter to summer although they appear to vary.

Let us study 14 Mc. when it becomes " dead " at night in midwinter and " open " throughout the



24 hours in midsummer. In Fig. 2a the disc represents a rudimentary reflecting layer affecting 14 Mc. signals, and the black zone Z, representing a non-reflective area making the band " dead." The clear part is reflective with the band " open." In Fig. 2b we have Fig. 2a superimposed on Fig. 1c for final comparison. Now, it is seen that during midsummer England clears the " dead " part and the band is " open " all the time, whereas in midwinter England has worked down and under the non-reflective layer Z and the band becomes " dead " at night. Fig. 2c is a diagram on the lines of Fig. 2b, only the layer affects 7 Mc. signals. The shaded part provides daylight conditions and the clear zone Z_1, night conditions when DX comes over. It appears that when the daily conditions change earlier or later than usual the zones Z and Z_1 must expand or contract.

It is obvious that round the Equator the regular seasonal variations will be small, say, about half an hour or so. Amateurs living in Equatorial regions could check up this point.

Reports Wanted

VS2AL (Bahau, F.M.S.) on his 14,060 kc. C.W. transmissions between 14.00-15.30 G.M.T.

G3JX (43, Station Road, Harpenden, Herts) on his 7,179, 14,358 and 28,716 kc. C.W. transmissions. All reports answered.

G3IU (Hull) on his 7 Mc. C.W. and phone transmissions. All reports will be acknowledged.

Modern British Stations

It is proposed to publish at intervals descriptions and photographs of modern British stations. The Editor will be pleased to consider articles descriptive of such stations, and these should, as far as possible, be divided into paragraphs dealing with : (1) owner and QRA ; (2) gear and circuits ; (3) aerials ; (4) results.

To The Editor

"MAGNETIC STORMS"

To the Editor, T. & R. Bulletin.

Dear Sir,—There are one or two points in the May Bulletin upon which I should like to comment.

The article by BRS 40 on " Magnetic Storms " is particularly interesting. I notice he forecast the next period of poor conditions for May 18. Actually this occurred somewhat earlier, viz., May 11, which was 25 days after the previous poor period. The shortness of the period in this case seems to be due to a sunspot which is very close to the sun's equator. I first observed this spot on May 5, which crossed the sun's central meridian on the 10th, according to my observations. On the 8th I wrote to G6DH suggesting that a disturbance would occur on the 11th or 12th. Sunspots close to the sun's equator have a shorter period of rotation than those in higher latitudes. If this spot continues its existence a period of bad conditions would seem to be indicated to begin on June 5 or 6.

The letter from G8FP is also of interest for, as is mentioned in the 28 Mc. band notes, both G6DH and myself observed the " hissing phenomenon " at about 08.40 G.M.T. on Good Friday, April 16, followed by a fade-out of the Dellinger type on all frequencies with the possible exception of 30 Mc. The full details have been circulated in the R.E.S. Propagation Group letter budgets. The effect of this fade was most pronounced on the lower frequencies (3 to 10 Mc.) for whereas conditions were back to normal in under an hour on 28 Mc., the fade lasted much longer on 7 Mc., as mentioned by G8FP. A long period fade followed for U.S.A. signals. The magnetic storm occurred about 24 hours later.

Whether the storm of May 11 was preceded by a Dellinger fade is not known, but if the time interval was the same, then it should have occurred during the night of May 10-11, and would, of course, have no effect in this country, as such fades occur on the light side of the earth only. I presume the times mentioned in 8FP's letter are B.S.T.

Re 28 Mc. summer tests (page 637), there is little doubt that lack of activity is often a cause of scarcity of signals during the summer, but measurements of F layer ionisation and observations on commercial harmonics show that the periods when DX working (in particular, east and west) is possible are few and far between. However, good luck to these stations, and I hope we shall be favoured with a report on the results obtained.

Yours faithfully,

E. J. Williams, B.Sc. (G2XC),
(Member Propagation
Section R.E.S.).

APPRECIATIONS

To the Editor, T. & R. Bulletin.

Dear Sir,—Having read the Editorial in last month's Bulletin and learned how little we are likely to be affected by the decisions made at the Cairo Conference, I cannot fail to write and express my thanks to the President and Council of the Society for their efforts, which have proved so successful.

It is often not realised either in public life or in connection with societies or clubs how much time and care is devoted by those who voluntarily work in the interests of others. It can well be imagined the immense amount of labour and care that was expended by the Council in preparing our case at Cairo, and the results have proved that our confidence in them has not been misplaced.

On our President, who represented us, rested the major responsibility of presenting our case and our sincere thanks must be given to him for devoting so much of his time in making the journey and our congratulations on the successful results of his efforts.

It is only to be hoped that those who are not members of the Society will realise the signal service that has been rendered by all those concerned.

Yours truly,

Roger P. Hawkey (G5ZG).

THE UNITED STATES

To the Editor, T. & R. Bulletin.

Dear Sir,—In order to prevent possible misunderstanding, I would like to call attention to the fact that the list of the United States of America given on page 618 of the May issue is incorrect in one small detail.

The Union consists of 48 States not 49 as stated; the District of Columbia being the seat of the Federal Government is not considered a State. For the purposes of W.A.S. the A.R.R.L. ruling is that this area is considered part of the State of Maryland.

Yours sincerely,

G. Hutson (G6GH).

HIGH POWER ON 7 Mc.

To the Editor, T. & R. Bulletin.

Dear Sir,—May I be permitted through the medium of your columns to voice a protest against the use of high power when transmitting on 7 Mc.? This is not a new argument by any means, but a particular case which came to my notice recently prompts me to write this letter.

On April 30 I was listening to a station on 7 Mc., to whom I send very detailed reports each week. After a short time a certain G station came on the air and proceeded to tell his next door neighbours how well the Cup Final came over on his television receiver. He also announced his power as 200 watts, yet each station he worked was only in the next county. Incidentally, the operator is well connected with the Society, so one would expect a little more thoughtfulness for others than from the average amateur. His frequency was 6 kilocycles away from the station to which we were listening, the power of which was 50 watts. The QRM on 7 Mc. is bad enough at any time, but if 200 watt stations start up every time there is an outside broadcast from the Alexandra Palace, low power stations had better keep to 1.7 Mc., if they wish to do useful work.

Yours sincerely,

N. Owen (2AFO).

A PRACTICAL QSL SUGGESTION

To the Editor, T. & R. Bulletin.

Dear Sir,—With regard to the card report difficulty, I suggest that the cheapest way out for the station operators concerned would be to purchase a small rubber stamp bearing their call sign and the wording "Your report confirmed," or some similar message, and then only reply to reports enclosing I.R. coupon and envelope. The reports could then be stamped and returned to the listener.

The only cost to the transmitting station would be that of the rubber stamp, which would be very small spread over a large number of reports. The time involved would also be reduced to a minimum.

Yours faithfully,

L. J. Stevens (BRS1657).

BOOK REVIEW

Radio Receiver Circuits Handbook. By E. M. Squire. 88 pages and 43 illustrations. Published by Sir Isaac Pitman & Sons, Ltd., London. Price 4s. 6d. net.

The purpose of this book is to provide the theory-shy man with a good practical treatment of the principles of operation of the more important circuits of modern radio receivers.

The circuits fall into clearly defined groups: H.F. amplifiers, detectors, L.F. amplifiers, multiple-valve circuits, output circuits, push-pull stages, and power supply circuits.

Forty-one of the 43 illustrations are of circuits, the other two being diagrams to explain detection and the characteristic curve of an amplifier, respectively. This is a measure of how closely the author keeps his treatment to the "how it works" style, but, it should be added, he describes also "how it works best." Notes are added to explain how the use of wrong components or operational conditions may cause trouble.

The circuits described are modern, and much information is given regarding the usual values of various components. The treatment is concise, interesting, and entirely descriptive.

The absence of any treatment of tuning indicators, and of automatic frequency control circuits, will probably be noted with regret, but otherwise the book seems to cover the principal circuits in use to-day.

In Figs. 42 and 43, concerning A.C./D.C. mains supply circuits, one side of the mains is shown to be directly earthed. This is, of course, contrary to regulations.

This book will surely prove useful and interesting to amateurs or service men who want to learn the principles of the circuits and some practical information about them, without being confused by design data, or analysis of performance. To such it is confidently recommended as a useful, interesting book at a reasonable price.

T.P.A.

Contemporary Literature

By L. Fryer (GM2FR)

Two-Tube Five-meter Receiver. G. W. Brooks (W1JNO). *Short-wave and Television* (Amer.), May, 1938.

The author describes the construction of a two-valve super-regenerative set using an 89 as self-quenching oscillator-detector with a 42 as audio amplifier. Full constructional data is given and the results claimed are excellent.

* * *

A 40-Meter C.W. Transmitter. Question Box. *Short-wave and Television* (Amer.), May, 1938.

In answer to a request for a 40-metre transmitter which could later be adapted for 'phone use, a circuit is given which will interest the amateur whose banking account is not inexhaustible.

The transmitter uses a 47 as crystal oscillator, 6L6G as Buffer-doubler and push-pull 6L6G's as final amplifier.

Coil-winding data is given and all resistance and capacity values are shown in the circuit diagram.

* * *

A Battery-operated S.W. Super. Raymond P. Adams. *Short-wave and Television* (Amer.), May, 1938.

The author describes the design and construction of a super-het. covering the bands between 9 and 80 metres, with plenty of band-spread.

The set uses plug-in coils, has a separate beat oscillator incorporated and has an output of two watts.

The valves used are a 1D7G, 1E5-GT, two 1D5GP's, 1F7G, two 1H4G's and a 1J6G, all glass octal-base valves.

Image selectivity is obtained by using a 1,500 kc. intermediate frequency, and provision is made for using the audio section to plate modulate a low power transmitter or to modulate a medium power transmitter by the grid or suppressor grid methods.

* * *

The 1938 Beginners' "Ham" Outfit. George B. Hart (Ex 8DK, W8GCR). *Short-wave and Television* (Amer.), May, 1938.

The author explains in simple style how to build a reliable transmitter and receiver for the beginner, the total cost of which need not exceed fifty dollars (American).

The transmitter uses a 6L6 in a tri-tet circuit which is capable of putting 34 watts into the aerial with an input of 70 watts to the valve when working on the crystal fundamental.

The receiver is a four-valve super which is a modified version of the Jones Super-Gainer with ample band-spread incorporated.

Very full constructional data and diagrams for everything including aerials, power-supply and coils for all amateur bands is given.

* * *

Compact 250-Watt Amplifier for the Ham Station. Art Gregor. *Short-wave and Television* (Amer.), May, 1938.

This article describes an amplifier using a pair of 808's in push-pull in a standard circuit, a suitable driver for which would be a single 807 of the newer type.

The amplifier complete with power supply (a pair of 866's) is mounted on a chassis measuring 2×13×17 ins., and is as the title suggests a very compact unit.

* * *

Thermal Stability of Condensers. Philip R. Coursey, B.Sc., M.I.E.E., F.Inst.P. *The Wireless Engineer*, May, 1938.

The author, who needs no introduction to R.S.G.B. members, reports on some preliminary investigations made in the Research Laboratory of the Dubilier Condenser Company (1925), Ltd., to ascertain the behaviour of ceramic dielectrics at various tempertures and frequencies.

* * *

A New Modulation Meter. F. C. Williams, M.Sc., D.Phil., and A. E. Chester, B.Sc. (Manchester University). *The Wireless Engineer*, May, 1938.

The authors describe an improved Modulation Meter, which in all ways is an advance on earlier meters. The principle of the new instrument is described and the choice of component values to suit individual requirements is fully discussed.

* * *

An Aerial for Long-distance Television. S. West. *Television and Short-Wave World*, May, 1938.

The author discussed the construction of an aerial system using two directors and a reflector, which, although designed for reception of the Alexandra Palace transmissions (excellent reception is consistently obtained at a distance of 97 miles), will be of interest to all ultra-high frequency men.

* * *

A 10-watt Aero Transmitter. *Television and Short-Wave World*, May, 1938.

A description of an interesting two-valve telephony transmitter designed for aircraft use by *The Standard Transformer Corporation* of Chicago. The circuit uses an 802 pentode as a tri-tet crystal oscillator which is suppressor grid modulated by an 89 pentode.

The transmitter is very small, weighing less than 8 lb., and will no doubt be of interest to amateurs as a portable for field day use.

* * *

The Double-Doublet Aerial. *Television and Short-Wave World*, May, 1938.

In this article details concerning the double-doublet aerial designed by F. R. W. Strafford (G2TD), are republished with additional information supplied by G5ZJ. The later is the outcome of many months' use of the system at G5ZJ, and gives some sound practical advice.

* * *

Directional Antennas with Closely-Spaced Elements. John D. Kraus (W8JK). *Q.S.T.*, January, 1938.

A discussion of the construction and performance of a number of practical directive aerial systems.

The Story of

Greetings From

GOODNEWS BAY, ALASKA

"ON THE BERING SEA"

K 7 R T

Radio: RSGB Ur Sigs Wkd: —— RST: 5-99x!

Transmitter: 50T final, 200 watts, all bands. Receivers: DC SW3 SW34

DX Wkd: All Continents QRA: Located at a platinum placer mine.

Send all correspondence to: J. P. GRUBLE (W7RT)
1921 Atlantic Street, Seattle, Wash., U.S.A.

13 Jan 40

By J. P. GRUBLE (W7RT-K7RT).

MANY British stations called or worked K7RT in 1937, and the purpose of this article is to give these amateurs a brief description of Goodnews Bay, where K7RT was located.

The station was operated at a platinum placer mine about nine miles south of Goodnews Bay, on Alaska's Bering Sea, the exact position being near 161° 40′ West, and 58° 55′ North, which is about one hundred miles north of Bristol Bay, and about an equal distance south of the Kuskokwim Bay.

The country around Goodnews Bay is treeless, and consists of low-lying hills and valleys covered with tundra. The area has been intensely glaciated, and has many alluvial deposits of gravel, sand and mud. In places the tundra is very bumpy, and during the wet summer season is so soft that walking over the surface sometimes causes the ground to sink into a depression due to its elasticity. There are thousands of small creeks cutting the surface, all of which eventually flow into Goodnews Bay or the Bering Sea.

The summer weather at Goodnews Bay is very rainy and foggy. High winds prevail at all times of the year due to the lack of trees for shelter. It is not unusual to have 50 m.p.h. gales blowing for several days without a change. Sometimes a heavy fog settles over the area for a week or more at a time, which makes flying hazardous. Consequently weather reports by radio are absolutely essential for the safety of the planes.

During winter the weather is clear and cold. Temperatures drop to as much as 30 below zero. Snow does not accumulate evenly over the ground, as the high winds tend to blow it into huge drifts, while in other sections the ground is left uncovered. The ground freezes solid, beginning about October. Goodnews Bay freezes over completely, and block ice extends out into the Bering Sea several miles off-shore.

The most popular form of travel to Goodnews Bay is by aeroplane. Inasmuch as Anchorage, some 600 miles to the east, is the nearest rail terminal, most travellers travel from this point. Plane fare from Anchorage to Goodnews Bay is 100 dollars each way. Freight rates by aeroplane are 48 cents per pound. Under perfect flying conditions, planes can cover the entire distance non-stop in about 4½ hours.

K7RT made the trip to Goodnews by plane in May, 1937; but the transmitter and receivers were sent in by a small fishing-boat which was to call at Goodnews. The plane which took K7RT and five other passengers made the 600-mile hop without stop. Inasmuch as this was K7RT's first 'plane ride, he was initiated into flying in grand style!

There are some two hundred native Kuskokwim Eskimos in the Goodnews Bay section. They exist on raw meats, live in "igloos" built of sod, and wear skin and fur clothes. The natives are about as primitive as any found in Alaska, because this region has been invaded by modern means only in the last six or seven years. The white population of the Goodnews district is about three hundred people during the top mining season in summer. After the season ends, men and women leave for home, and the white population during the winter months dwindles to about twenty, mostly those owning the trading stores and business places at Platinum. The name "Platinum" has been given to a small boom town which grew as a result of last year's stampede. The little settlement now has a post-office, several trading stores, an hotel, and other smaller business establishments, but unlike other boom mining towns, Platinum has no gambling, no drinking to excess, and there isn't a law-enforcement officer within 150 miles!

At Goodnews Bay are located two of the largest platinum placer mines in North America, and this section is the only platinum placer district in Alaska. There is no underground mining, all the work being done on the surface.

The Gear Used.

K7RT's transmitter consisted of a crystal controlled 807 oscillator, 35T buffer-doubler, and a 50T final amplifier. The power input was approximately 200 watts, and all bands from 14 to 1.9 Mc. were used. The best work was accomplished on

Fig. 1.—Just prior to the take-off from Anchorage, Alaska, to Goodnews Bay, 600 miles to the West, on the Bering Sea coast. The plane, a seven-seater Bellanca, carried five men, and 1,000 pounds of food (frozen quarters of beef), and made the trip non-stop in 4½ hours, landing on the beach at Platinum on May 19, 1937. K7RT is on the extreme left, nearest engine.

14,012 kc., on which frequency all continents were contacted, including the following stations, VU2FX, VU2AM, PY2AC, ZU5Q, UPOL, and numerous VKs. Many British Isles and European stations were worked.

The receivers used were a battery-operated SW3 and an SW34.

Power for the transmitter was secured from either a 1,500 watt gasoline-driven D.C. plant, or a Diesel oil 6½-kW. D.C. plant. The 110-v. D.C. was converted through a 1,500-watt D.C.-A.C. converter, and the 110-v. A.C. was then stepped up through a regulation power supply which supplied filtered PDC. The power supply could be varied to give 1,500, 2,000 or 2,500 volts each side of centre-tap.

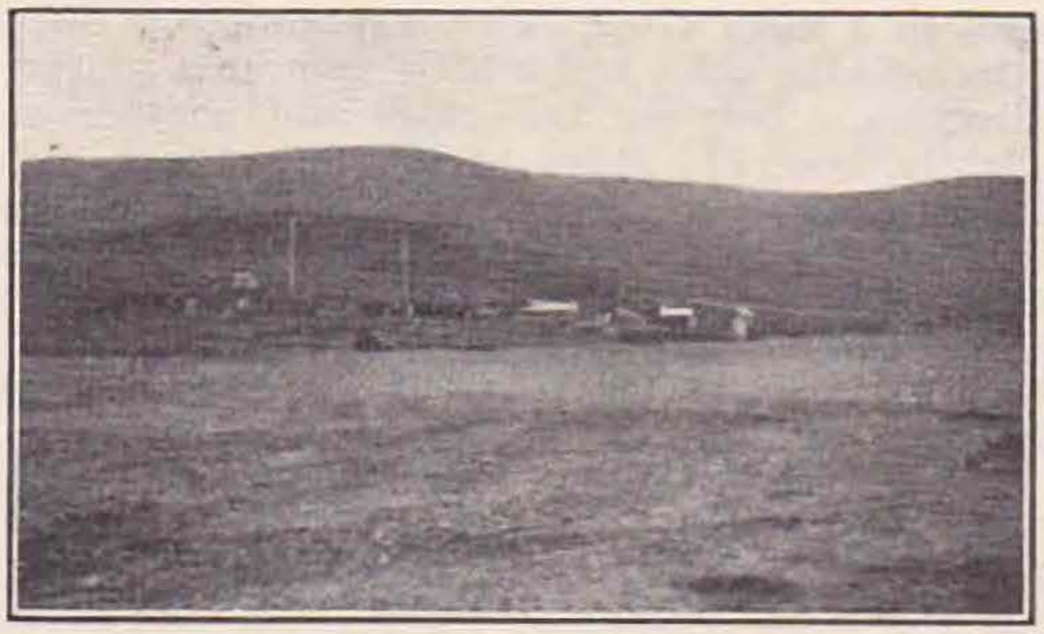


Fig. 2.—View of the platinum placer mine at which K7RT was located from May to December, 1937. Note aerial pole. In the background is Red Mountain, which separates the camp from Goodnews Bay, nine miles to the North. All creeks and rivers draining from Red Mountain contain varying amounts of platinum placer deposits. This is the largest platinum placer mine in North America, and Goodnews Bay is the only platinum placer district in Alaska known at this time.

Transmitting aerials were either a 3-5 Mc. fundamental straight wire, or a 1.7 Mc. fundamental "V" fed at the centre. Both aerials were about 50 ft. high at the far end, and 10 ft. high at the shack. The station was located amongst hills heavily laden with magnetic ores and iron-containing metals.

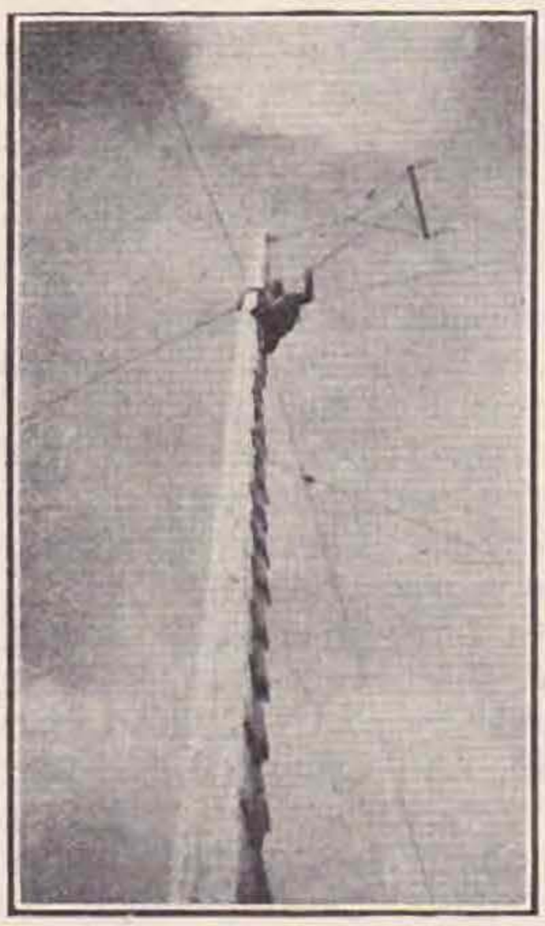


Fig. 3.—One of the two 60-foot masts at K7RT. There are no trees at Goodnews Bay. These poles were washed ashore from the Bering Sea, and probably came from a wooded area two hundred miles to the North.

Local Conditions.

The time used at Goodnews Bay is 165th Meridian Time, which is 3 hours earlier than PST, i.e., 9 p.m. PST would be 6 p.m. Goodnews Bay time.

The best period for G contacts on 14 Mc. was between 6 a.m. and noon, local time, although Europeans sometimes came in even later. Africa was heard best between 4 and 5 p.m., local time, whilst ZLs and VKs started coming in from 7 p.m., and continued through the night.

Life at Goodnews Bay is lonely, and the men work seven days a week. The only holidays are July 4 and Christmas, if work continues so late in the season. The country is desolate, and would be of no value whatever were it not for 'planes and radio.

Amateur radio at Goodnews Bay played an important rôle in despatching news, getting medical aid for the ill or injured, and provided a pastime during the long, lonely Arctic nights.

K7RT ceased operation in mid-December. The operator spent Christmas at Platinum, enjoying excellent dinners and a celebration during which Eskimos gave him gifts.

The writer left Goodnews Bay by 'plane, which made several stops at remote posts before reaching Anchorage, 600 miles away. A broken fuel line nearly caused disaster, but it was discovered in the nick of time, repaired, and the nine passengers arrived at their destination safe and sound.

So when you work a K7, please lend an attentive ear, for he may need you more than you might guess. Alaska is a land of pioneers, and its hams are pioneers too. "73" from the Land of the Midnight Sun.

* * *

(Mr. Gruble will be glad to QSL any stations contacted by him if communications are addressed to 1921, Atlantic Street, Seattle, Washington, U.S.A.—Ed.).

Book Review

FUNDAMENTALS OF RADIO. By Prof. F. E. Terman, with the collaboration of Lt. F. W. Macdonald, U.S.N. 458 pages and 278 illustrations. Published by McGraw-Hill Publishing Co., Ltd., London. Price 21s. net.

The author's "Radio Engineering" is so well known as a standard text that any new work such as this will arouse interest. But this publication is not quite a new presentation as it is based on the larger and more comprehensive "Radio Engineering." It is, in fact, a more or less abridged version of it. The object is to provide a text for an introductory radio course, and the treatment and style of the more advanced book has been maintained while there has been very considerable simplification. Many of the problems of the larger book were lengthy and complex, and unsuitable for the more elementary student, especially for class-work. The number of problems in the new book has been increased and are of a more suitable type for the work in view. But why not give solutions to the problems? This is an almost invariable practice in this country, and it is hard to understand how a problem can assist the individual student if he has no solution as a check on his work. The student in a class has the instructor: but the individual student gets a confidence, from the realisation that he can correctly solve the problems, that no amount of reading will replace.

The simplification for this book has been to concentrate on the fundamental principles and to restrict the number of new ideas such as the applications, consequences and implications of the principles. The reader should have a fundamental

(*Continued on page* 691.)

Four Years and No Signals

or Some Experiences on 56 Mc.

By W. H. Allen (G2UJ).

THIS article is written not to tell what the author has done on 56 Mc., but rather what he has *tried* to do and failed! It is hoped that what follows may be of interest to workers on this band.

To those (probably very few) who have got out well since they commenced operations, it will show that 56 Mc. is not always plain sailing, while for the struggling ones who wonder why they never hear a signal and never put out a signal that is heard, it may bring some explanation, but, it is feared, cold comfort!

Activity on 56 Mc. commenced at what is now G2UJ in the early part of 1934. Robin Hare (2BAW), now of the B.B.C., with whom the writer was then associated, had just published his constructional article on Transceivers in the Bulletin, and interest in the Tunbridge Wells area was at a peak. G5OQ was the only licensed amateur in the town at that time, and tests between his station, using one of the transceivers, and various receivers owned by 2BAW, 2AVN, several non-AA men and the author continued under fixed and portable conditions for some time.

Up to short ranges, good results were obtained, but many completely dead spots were discovered. Some of these were only a few square yards in area, while others were of much greater extent. They could not be explained by any visible screening or underground pipes, cables, etc., and the effects were put down, rightly or wrongly, to the presence of iron ore in the local sandstone, outcrops of which occur all over the district.

One of the most promising looking sites for 56 Mc. work was a hillside at Southborough, between Tunbridge Wells and Tonbridge, overlooking a wide, flat valley extending for several miles to Hadlow and beyond. G5OQ portable was set up, and two receivers were tried at various points. No signals could be received when more than a short distance away from the transmitter, and aerials in both vertical, horizontal and other planes failed to make any appreciable difference. Thinking that the transceiver was at fault, a push-pull TPRG transmitter was constructed, and the output fed to a half-wave Zepp aerial about 25 ft. from the ground. Signals in the direction of the valley were still poor, although the range was somewhat increased, as was only to be expected with the considerable increase in power, at least eight times that of the transceiver. In the opposite direction, where screening both by houses, trees and inequalities in the ground was present, signals were readable using the half-wave rod aerials on the receivers at well over a mile. Various similar tests were carried out from many places in and around the town, and it was found, generally speaking, that the best results were obtained when the worst theoretical conditions of screening, etc., were present.

When the author had obtained his radiating licence, followed shortly afterwards by permission to use the 56 Mc. band, several self-excited transmitters were constructed, and with two active stations in the town, many interesting QSOs took place.

The receivers were rebuilt transceivers of the self-quench variety, and it was very soon discovered that they had numerous disadvantages.

The writer's station is situated at a height of about 230 ft. above sea level, and the ground then rises to a ridge 420 ft. a.s.l. This ridge is distant ¼ mile to the S.E., and a little more in a southerly direction. Between this ridge and another only slightly lower 1¼ miles to the S.E. lies a valley 220 ft. a.s.l. at its lowest point, in which the town of Tunbridge Wells lies. Signals from 2UJ were received well in the lowest parts of the town, using a 66-ft. aerial on the transmitter, and it was obvious that there was no question of visual transmission in this case.

We naturally wondered what happened to the wave when it came over the crest of the hill, so a portable receiver, screened, and with a quarter-wave rod aerial, was built, and it was found that at most points on the first ridge a quarter of a mile from the transmitter, the wave was *descending* at an angle of about 45 degs., while there was next to no signal coming in either the vertical or the horizontal directions. Moving a short distance farther away from the transmitter, signals began to appear from a vertical direction, but were much more scattered, while in one place on the Common—which lies on the hillside between the aforementioned ridge and the town—practically nothing could be heard from the direction of the transmitter, but a good signal came from the opposite direction at an angle of approximately 45 degs. to the vertical. Obviously reflection, but what from?

Numerous experiences of a like character could be cited, most of them indicating severe reflection or scattering of the wave from the transmitter.

The self-excited TPRG or Hartley proved unsatisfactory from the stability point of view, and a single-valve longlines job was constructed. It gave plenty of RF, was stable, had an appalling efficiency with the unfortunate PX4 used as oscillator, and was used for most of the experiments described immediately above. The receiver had a separate quench oscillator with variable control of the H.T. voltage to the valve as well as to the triode detector, and although many hours were spent listening on the 56 Mc. band using various types of aerial, no signals originating outside the town were heard.

A new transmitter with long-lines grid circuit, and employing a pair of *Tungsram* 015/400s in push-pull was constructed by 2AVN, and the author, in December, 1936, and excellent RF and efficiency obtained with it with inputs of up to 25 watts, but, as usual, nobody heard it on either ICW or telephony, although listening schedules were run with other stations outside Tunbridge Wells.

On January 24, 1937, an S9 'phone signal was heard on 56 Mc., which proved to be G2AW oper-

ating from Ide Hill, Kent, about 13 miles N.N.W. of G2UJ. A call on 'phone raised him, and the first " DX " QSO on 56 Mc. was under way with a report of S8 on our signals with 2AWs horizontal rotating Windom and reflector beamed in our direction. The aerial in use at 2UJ was a 2BI Windom 50 ft. above the ground, with the top running N.E./S.W., and it is probable that the long vertical down-lead was responsible for the bulk of the radiation. The transmitter was the push-pull outfit mentioned above, but using a pair of 362 *Valve Co.'s* P625 valves, but no difference was noticed when the 015/400s were substituted.

Several QSOs were made between the two stations under various conditions, and little difference in results were noticeable using either vertical or horizontal aerials. 2AW got in touch with several stations both north and south of London while in QSO with the author, but although he shifted his frequency to coincide with and act as a marker for 2UJ, no reports on signals were received from beyond Ide Hill. The same thing applied in the opposite direction.

So far as can be ascertained from a contour map, the contact was made over a just not visual path with a graze at two points; the first at a quarter of a mile from Tunbridge Wells, and the second about three miles or so away.

A fairly close watch was kept on the band, but no signal other than 2AW was heard. Test calls were put out, schedules were arranged, but all to no purpose.

At the end of 1936, Mr. L. W. Gardner (G6GR) wrote an article in *The Wireless World* regarding a circuit for super-regenerative receivers using a quenching oscillation having a saw-toothed or very peaky wave-form. An all-mains receiver was constructed with an American type 58 as electron-coupled detector, followed by a 2A5 pentode, a 56 as a 50 kc. oscillator, and another 56 biased to cut-off or beyond, and driven by the oscillator to provide the necessary peaky wave-form. The set was made to tune to the Alexandra Palace television sound transmissions as well as to the 56 Mc. band, and the quench action thoroughly tested on the former frequency. Provision was made to vary the voltage applied to the anode of the quench oscillator, and also the grid bias on the " peaker " valve, and it was possible to use the first-mentioned two valves as a straight receiver. Stability was good under straight conditions, but whereas loud-speaker signals were obtainable from Alexandra Palace *without an aerial* with quench working, the carrier could only faintly be heard on 'phones without that aid, but with a good aerial attached.

Careful adjustment of the cathode tap on the EC detector, together with improved methods of quench injection produced a receiver which, at its most sensitive point, emitted only a slight breathing sound from the quench action, which sound *increased* to a small degree when a signal was tuned in. The next development was a TRF stage with a 6K7 metal valve preceeding the detector, the latter stage being screened against direct pick-up of the signal. This gave little audible gain, but greatly improved the selectivity and the signal noise ratio. It should be mentioned that a W8JK or " Kraus " flat-top beam aerial 30 ft. above ground and directional north and south was now in use, fed by *Belling Lee* low-impedance cable and a quarter-wave matching stub, but even with this and the improved receiver no contacts were effected nor stations heard. G2AW had by this time finished his tests from Ide Hill, and the ether, so far as the 56 Mc. end of the spectrum was concerned, was absolutely dead. It should be noted here that harmonics of any kind were not, and in fact never have been, heard by the author.

One day in September, 1937, the transmitter was put in operation, and the receiver taken out in the car, a half-wave horizontal aerial, Zepp fed, being mounted on short masts above the vehicle. A half-wave reflector was also carried, so arranged that when the car was stopped it could be placed in any position in relation to the aerial. It was found that on the top of the Hawkenbury ridge—the one previously mentioned as being a mile and a quarter from the transmitter—signals were very strong, and it was noticed that the reflector had to be placed 30 degs. below the horizontal plane of the aerial, and considerably closer than a quarter-wave from it to appreciably increase their strength.

A move was now made down the hill away from the transmitter, and as soon as the aerial was below the level of the top of the ridge, signals disappeared completely, and even at Frant, well over 500 ft. above sea level, and right in the path of the beam, they failed to reappear. Further reception was tried on the way back to Tunbridge Wells, but nothing was heard until actually in the town. The best position proved to be at the lowest point in the town by the West railway station, where screening, from all outward appearances was at its worst.

Further tests with the portable receiver in other directions also proved that the range of the transmitter was very low, and further transmissions on the band were suspended pending the design of an even more sensitive receiver.

After considerable experiment, the receiver was rebuilt with the TRF and detector stages so arranged that the length of all RF leads was cut down to a minimum, and a very satisfactory performance as a straight set was obtained. The television sound signal was now S8 on 'phones using the 2BI Windom tapped on to a parallel tuned circuit and link coupled to the RF stage. The receiver was taken to G5OX at West Wickham, Kent, a known good location for 56 Mc. signals, and it proceeded to bring in CW from G8CV at Farnham, Surrey, 46 miles distant, at S5, and several other but more local stations were also heard well. Back at Tunbridge Wells we were at last rewarded, on the evening of March 11, by hearing G8CV at R4 W5 with rapid QSB. His signals were only audible for a few minutes before completely fading out, but the reception was confirmed as being correct. Almost immediately afterwards weak CW was heard from G2HG at Sydenham, and the latter informed the writer over the telephone that conditions with him were poor with QSB on all signals over ten miles or so. This seems to point to indirect ray conditions being present on the night in question. Up to the third week in March 2HG had been the only signal received, and his strength varies from S2 to S5. A " short Kraus " beam is now in use, and is at the moment suspended vertically from the 99-ft. aerial used on other bands. A slightly better signal is obtained from 2HG, and, strangely enough, the television sound is the loudest so far recorded.

Continued on page 716.

The North-Western Provincial District Meeting

It was disappointing to find that the attendance at this meeting held on Sunday, May 22, was comparatively poor, having regard to the fact that No. 1 District is the largest in the country, but in spite of this, the meeting was a great success, and those who did attend were well rewarded for giving their support. Thanks are particularly due to GW6KY, who came from North Wales.

The weather could not have been better, and the hotel arrangements were exceptionally good, for which full credit must be given to Mr. J. Noden (G6TW), the District Representative.

Members were due to assemble at the Scarisbrick Hotel, Southport at 12 noon, and very shortly afterwards cheerful groups of individuals could be seen in various parts of the hotel renewing personal contact with one another and discussing technical matters. It would be interesting to know what other visitors to the hotel thought of the conversation and arguments carried on by these groups! Well, luncheon was fixed for 1 p.m., and by that time all present seemed very well acquainted. The usual "round up" was duly made, and 41 sat down to lunch, which finished about 2 p.m. As the business meeting was not due to start until 2.30 p.m., advantage was taken of the short break either to continue discussions started before lunch, or to take a breath of fresh air. It is known that our Secretary (G6CL) insisted upon seeing the sea, and refused to believe that this is a somewhat rare possibility at Southport. An attempt was made during this interval, however, to gratify his desire, but conditions were poor, and the attempt was postponed until later in the day.

At approximately 2.30 p.m. the business meeting was opened by the D.R., Mr. Noden, who proceeded at once with a review of District activities during the past twelve months. At the conclusion of his address he called upon each of the Town Representatives present to give a short account of the position in his own area. Manchester, Liverpool, Blackpool, Blackburn, Burnley, Birkenhead and Bury were all represented by their respective Town Representatives, and it was clear from their remarks that activity has increased in all areas, and a considerable number of new calls have been allotted during the past year. The District Scribe was then called upon, after which the D.R. asked "Clarry" to address the meeting.

Now this was the signal for everybdy to light up, settle down and sit back in comfort, hoping to hear of some new concessions obtained for them, and ready to be told of their past sins, or, rather, the sins of the other fellow, in regard to all manner of things pertaining to radio. The range of subjects covered by G6CL is too wide to repeat here, but the chief matters reviewed were the recent Cairo Conference, licences, the use of higher power than that stated on the licence, radiation of harmonics, the BULLETIN and off-frequency operation. At the conclusion of his address, G6CL invited questions and promptly let himself in for a very busy time. Those who did not attend this meeting have not yet seen "Clarry" at his best!

Proposals made by G2IN in regard to the election of a Lancashire representative to sit on Council and to the election of D.R.s as opposed to their nomination were discussed; but the feeling of the meeting was practically unanimous that the present arrangements were satisfactory.

Suggestions to organise two 1.7 Mc. Contests each year were considered, and some 15 members agreed to support a second event if arranged.

Suggestions to improve the method of electing T.R.s were also made, and it is understood that they will be given a trial this year.

At the conclusion of this part of the programme, the D.R. proceeded to conduct two raffles, the prizes having been very kindly contributed by Mr. Nightingale (G5NI) and Mr. Openshaw (2BIO). The chief attraction was an 852 valve given by 5NI, which, after a period of tense drama (as the movie adverts. say) while the tickets were being shaken up, was won by a member holding a 10-watt licence who immediately wanted to know if the winning of the prize would be accepted by the G.P.O. as a satisfactory reason for granting him a high-power permit! As a result of these raffles, the deficiency on the expense account for the meeting was completely wiped out. When the excitement had subsided a vote of thanks was passed in favour of the D.R., followed by a vote of thanks in favour of our Secretary. Both having fittingly responded, one of the members then proposed a vote of thanks to our President, Mr. A. E. Watts, for his work at the recent Cairo Conference, and this was duly seconded and passed unanimously, after which the D.R. was requested to write to Mr. Watts, informing him of the resolution and expressing the members' appreciation of his services.

Tea had been timed for 4.30 p.m., but as the business meeting did not conclude until nearly 6 p.m., the refreshment was particularly welcome, and the meeting finally broke up about an hour later. It was, however, with some difficulty that G6CL was able to break away from a large body of members who were apparently desirous of detaining him for the rest of the evening! He refused, however, to leave Southport without making a further attempt to find the sea. Fortunately, by this time the "skip" was considerably reduced owing to the action of the tide, and his efforts were duly rewarded, after which he raised no further objection to leaving the town. So ended a pleasant day spent in the cause of amateur radio, and both G6TW and 6CL have earned our thanks for another P.D.M. thoroughly enjoyed.

H. W. S.

The South-Western Provincial District Meeting

Up to this year members in the South-West must have considered themselves lucky in regard to weather when official meetings have taken place. But this year the luck changed. However, the rain did not prevent the attendance of a record number of 70 members. Such a fine gathering was mainly due to the efforts of the T.R.s in District 6, and support given by the D.R.s of No. 5 and 10. We thank them all for their help.

Members assembled at the Rougemont Hotel, Exeter, at about noon, and after refreshment, were persuaded to go outside in the rain for the official photograph, reproduced herewith. Luncheon was then taken, and at this there were no formal

toasts, but various members were suddenly called upon at intervals to propose the toasts of the various groups of members, such as "the G3s," "the A.A. members," etc.

The business meeting in the afternoon was first of all addressed by the D.R.s present, G5JU, 5VM, 6FO, and 5SY, all of whom gave accounts of the work and progress in their districts. "Clarry" was then invited to "say a few words," and in a speech lasting for an hour and ten minutes (!) dealt with a whole wealth of matter, including Cairo, the QSL section, R.E.S., THE T. & R. BULLETIN, licence matters, and station operating. His speech was much appreciated by all. A general discussion followed, in the course of which it was decided to hold a combined Conventionette at Weston in the Autumn. It was also suggested that in order to encourage the members in Dorset and neighbouring parts of District 7, a Conventionette should be held in that county next spring, and to include visits to Somerton and Dorchester, with a luncheon at Yeovil. We should like to hear from members in this region who are interested in the idea.

In the evening one party "invaded" G5QA, while another visited the Exeter Automatic Telephone Exchange. We should here like to thank Mr. Payton, who organised the visit. The two parties later returned to the hotel, when the Society films were shown, with G5YR as the operator. He, too, is heartily thanked for his assistance. The meeting finally broke up at about 10 p.m.

We desire to place on record our very deep appreciation of the work put in by Mr. H. A. Bartlett, G5QA, who was responsible for arranging hotel details and visits. Everything went off without a hitch, and the D.R. considers himself extremely lucky to have had the assistance of such a loyal member as G5QA. W.B.S.

The South Western P.D.M.
Held at Exeter, May 15, 1938.
Seated: Miss Bryan, 2CWF (one of Devonshire's three lady members). Messrs. J. N. Walker, G5JU (D.R. No. 5), H. A. Bartlett, G5QA. G5SY (D.R. No. 6), J. Clarricoats, G6CL, V. M. Desmond, G5VM (D.R. No. 3), A. Forsyth, G6FO (D.R. No. 10).

Visit to Rugby Radio

The 35 members and friends who visited the Rugby Radio Station on Saturday, May 28, had the opportunity of examining at first hand the "heart of the world's radio network." After a detailed inspection of the long wave transmitters, the party were shown over the new building which houses the short-wave equipment.

Space does not permit a detailed account of the visit but the opportunity is here taken of recording our thanks to Mr. Hollinghurst, the engineer-in-charge, who very kindly arranged for his staff to be available as guides.

"Guide" Cover Design Competition.

It is hoped to announce the names of the winner or winners of the above competition in our next issue. A very good entry was received.

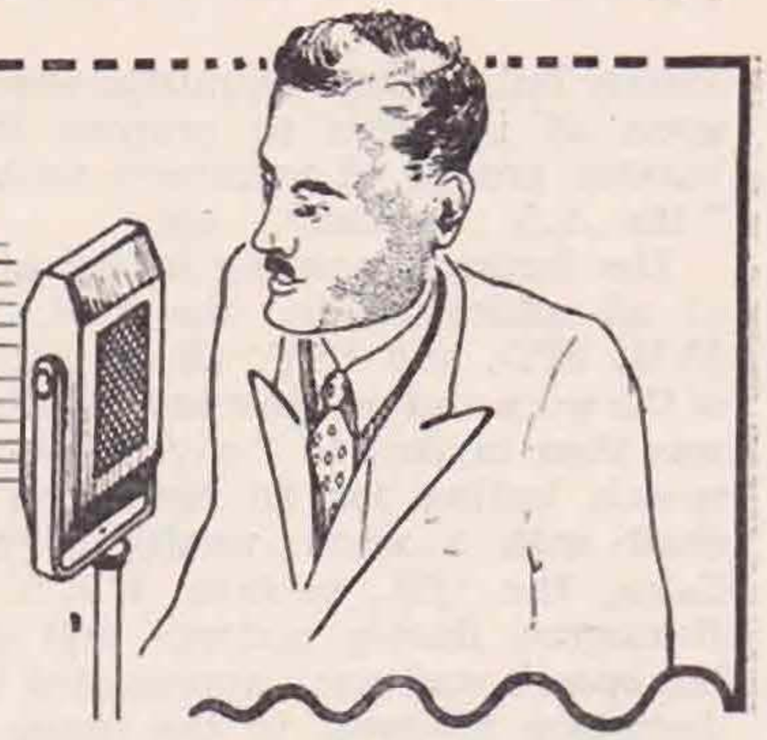
BOOK REVIEW—(*Continued from page* 687.

knowledge of A.C. and a reasonable knowledge of mathematics, but not necessarily including complex quantities.

The subjects covered are very much the same as in the more advanced book, and that means a wide field. One might have expected rather more than eight pages on D.F. work, just as one might feel that 11 pages is rather scant treatment in the more advanced book. But, otherwise, the treatment is excellently balanced and the problems very nicely graded.

To students and teachers alike this book will be welcome, and it is heartily recommended to those who wish to equip themselves with a sound knowledge of radio engineering principles with a minimum of mathematical stress: the book is not of the "popular" type, but is a sound engineering work written simply and interestingly. T.P.A.

HEADQUARTERS CALLING



Applications for Increase in Power

Members who wish to apply through the Society for an increase in power exceeding 25 watts are requested to note that their application, must be written in formal style, prepared in duplicate, and passed to Headquarters *via* their District Representative. If the application is recommended the original will be forwarded to the G.P.O.

Members who propose applying for a high power permit are requested to study the information given on page 197 of the November, 1936, issue of this Journal.

Those who wish to be recommended for a 25 watt permit should read the announcement which appeared on page 444 of the February, 1938, issue.

We would remind members that the Society can only deal with applications for high power, 25 watts and 3.5 Mc. permits. Applications for permission to operate portable or to use frequencies other than 3.5 Mc. must be made direct to the G.P.O.

Northern Ireland Representation

It is with very much regret the Council have to record that Mr. T. Palmer Allen, GI6YW, has resigned from his position as their Northern Ireland District Representative.

This opportunity is taken of thanking him for the invaluable work which he has carried out as D.R. during past years.

We are glad to record that Mr. Allen will continue to act as our official Book Reviewer; further, we are assured that he will, as in the past, give advice, based on his long experience of the Society's work, to his successor as opportunity occurs.

* * *

The Council, acting on the suggestion of the retiring D.R., have invited Mr. John Sang, GI6TB, Chairman of the Radio Transmitters Union (Northern Ireland), to take office as their new Representative, and it is with pleasure that they record his acceptance. Mr. Sang is one of the senior Northern Ireland amateurs and under his guidance we feel confident that the present progress of amateur radio in his country will continue.

W.B.E. and W.A.C. Phone Claims

During recent months we have received numerous claims from members for W.B.E. or W.A.C. Telephony Awards. On examining the cards it is frequently noticed that no reference is made to the fact that the contact was made on Telephony. We sympathise with members who have been inconvenienced by our decisions to withhold the claim, but it should, we feel, be obvious to everyone concerned that *written* proof alone can be accepted.

We would urge our own members to state clearly on their cards the system of transmission used for a particular contact, and would respectfully ask all National I.A.R.U. Societies to draw attention to this matter in their own publications.

B.E.R.T.A.

Council have decided that cards confirming contacts with Iraq and Egypt shall count for the new British Empire Radio Transmission Award providing in the case of Iraq, the contact was made prior to January 1, 1936, and in the case of Egypt prior to August 1, 1937.

For the purposes of this Award mandated British Empire territories including South West Africa, Tanganyika, Palestine and Transjordania count as British Colonial areas.

We have pleasure in illustrating the new certificate, which is printed in dark green.

The following members have qualified for the award :—

No.	1.	J. Clarricoats	...	G6CL
,,	2.	H. A. M. Whyte	...	G6WY
,,	3.	J. Hunter ...	...	G2ZQ
,,	4.	Miss N. Corry	...	G2YL
,,	5.	J. Lees ...	...	G2IO
,,	6.	F. Grossin ...	...	F8RJ
,,	7.	J. Davies ...	...	G2OA
,,	8.	F. Charman	...	G6CJ
,,	9.	A. J. Perkins	...	G6KP
,,	10.	G. Hutson ...	...	G6GH
,,	11.	J. Wyllie ...	...	GM5YG
,,	12.	A. D. Gay ...	...	G6NF
,,	13.	R. A. Bartlett	...	G6RB
,,	14.	A. O. Milne	...	G2MI
,,	15.	A. C. Simons	...	G5BD


The Incorporated

RADIO SOCIETY OF GREAT BRITAIN.

THE BRITISH EMPIRE RADIO TRANSMISSION AWARD.

This is to Certify that

NEW MEMBERS

HOME CORPORATES.

G. R. SILVERTHORNE (G2BG), Radio House, Abertillery, Mon.
F. E. HERZOG (G2UM), 3, Gt. Cumberland Mews, Seymour Place, London, W.1.
WM. FRASER (GM3BL), 5, Orchy Gardens, Stamperland, Clarkston, Renfrew.
H. G. WHITMORE (G3FS), 96, Woodford Crescent, Pinner, Middlesex.
A. B. WILLSHER (G3IG), 14, Lytton Gardens, Wallington, Surrey.
C. H. THORPE (G3IZ), 31, Stephen Hill Road, Sheffield, 10, Yorks.
E. REDFEARN (G8WG), 93, Gaythorne Road, West Bowling, Bradford, Yorks.
W. H. BANKS (2ARX), 4A, Garners Lane, Davenport, Stockport, Cheshire.
A. S. MCNICOL (2AXG), "Airlie," West Park Road, Cupar, Fife.
R. R. BUTLER (2BUW), 278, Evelyn Court, Amhurst Road, Hackney, London, E.8.
E. G. W. SCRACE (2CUS), 33, High Brooms Road, High Brooms, Tunbridge Wells, Kent.
A. E. MERCER (2CUX), 46, Westwood Road, Rusthall, Tunbridge Wells, Kent.
T. R. NISBET (2DIL), 35, Malcolm Street, Dunfermline, Fife.
F. E. GORSE (2DON), 76, John Street, Brierley Hill, Staffs.
R. P. POHLMANN (2DOR), 138, Skircoat Moor Road, Halifax, Yorks.
W. J. RICHARDSON (2DSA), 3, Fire Station, College Road, Erdington, Birmingham, 23.
MISS R. L. M. JEBB (2DST), The Lyth, Ellesmere, Salop.
A. D. MONKHOUSE (2DTS), Delgarth, Harpenden, Herts.
F. W. SAUNDERS (BRS3309), "Roidal," Pennsylvania, Exeter, Devon.
R. P. B. UDALL (BRS3310), Gorton, Longdon, near Rugeley, Staffs.
A. P. G. AMOS (BRS3311), Hawley House, Hawley Lane, Hale, Cheshire.
J. H. MACDONALD (BRS3312), Westwood House, Cooper Lane, Bradford, Yorks.
E. L. POSTANS (BRS3313), "Swyres," Kingston Crescent, Chelmsford, Essex.
A. M. AGNEW (BRS3314), 14, Chislehurst Avenue, N. Finchley, London, N.
E. S. RICHARDSON (BRS3315), 99, College Place, Camden Town, London, N.W.1.
J. W. HIGGINS (BRS3316), "Lewarne House," Lostwithiel, Cornwall.
A. PRYOR (BRS3317), 603, Finchley Road, Hampstead, London, N.W.3.
R. F. WILLIAMS (BRS3318), 25, Harley Street, London, W.1.
G. MAY (BRS3319), Thurnby, near Leicester.
T. G. PIDDUCK (BRS3320), 47, Moira Court, St. Nicholas Road, London, S.W.17.
D. A. MACQUEEN (BRS3321) c/o The National Bank of Scotland, Reform Street, Dundee, Scotland.
G. F. KEEN (BRS3322), 20, St. Leonards Road, West Hove, Sussex.
L. W. WILSON (BRS3323), 16, Dryden Street, Westcott Street, Hull, E. Yorks.
T. S. G. SEAWARD (BRS3324), "Lynnfield," Station Road, Norton-on-Tees, Durham.
J. D. NICHOLLS (BRS3325), The Link, Little Walden Road, Saffron Walden, Essex.
J. P. DAVIDSON (BRS3326), 18, Lintrathen Gardens, Dundee, Angus.
W. S. WILSON (BRS3327), 31, Smith Avenue, Inverness, Scotland.
E. JEEVES (BRS3328), 8, Sturton Street, Cambridge.
K. A. GOUDGE (BRS3329), Underbeeches, Reigate Hill, Surrey.
F. E. FORSDIKE (BRS3330), 112, Victoria Street, Ipswich, Suffolk.
J. A. HODGE (BRS3331), Seefar Cottage, Oakfield Street, Kelty, Fife.
L. GRUGEON (BRS3332), Dallen, Chiseldon, Wilts.
K. W. MAGEE (BRS3333), R. Signals Mess, Catterick Camp, Yorks.
E. A. CLARK (A), 22, Kingswood Drive, Roundhay, Leeds, 8.

DOMINION AND FOREIGN.

O. POSPISIL (OK2PN), Brno 12, Bozetechova, 2. Czechoslovakia.
G. S. POLLOCK (VK2XU), Henderson Road, Wentworth Falls, Blue Mountains, N.S.W., Australia.
H. W. MCNEILL (VO3X), St. Anthony, Newfoundland.
A. C. GOOPTU (VU2JK), 87, Rashbehari Avenue, Kalighat P.O., Calcutta.
I. DHARAP (VU2JL), 775, Parsi Colony, Dadar, Bombay 14, India.
L. H. WHITNEY (W1EER), P.O. Box 473, Noroton Heights, Conn., U.S.A.
O. A. SPALDING (W1FTR), Duncaster Road, Bloomfield, Conn., U.S.A.
J. PARMINTER (ZL2OU), Wairoa, Hawkes Bay, New Zealand.
D. W. WATSON (BERS440), c/o Post Office, Gudi, Northern Nigeria, B.W.A.
C. MALLIKARJUNARAO (BERS441), Chavalavari Street, Vizagapatam, India.
D. J. HOPLEY (BERS442), Central Wireless Station, R.A.F. Ambala, Punjab, India.
E. L. OWEN (BERS443), c/o Posts and Telegraphs, Dar-es-Salaam, Tanganyika.

Cairo Conference Report

In the Cairo Conference Report published in our last issue it was wrongly recorded under the heading "Frequency Allocations" that in the European Region the band of frequency between 3685 and 3950 kc. had been allotted to services not open to public correspondence and aeronautical services respectively. This should have read that the band 3685 to 3950 kc. is shared by amateurs with fixed and mobile stations in the same way as the band 3500-3635 kc.

Listener Reports

Mr. G. H. Jolliffe (VS7GJ) informs us that the Postmaster-General has advised him that in exchange for an Imperial Reply Coupon a 20-cent stamp will be issued in Ceylon. This value of stamp covers the air mail rate for letters up to ½ oz. to any part of the British Empire. The rate up to the introduction of the air mail service was only 9 cents.

Mr. Jolliffe tells us that a recent mail brought him 72 listeners letters and cards, the large majority of which were from non-members of R.S.G.B.

It is hoped that reports from B.R.S. members will always be of sufficient value to ensure an acknowledgment from British Empire stations.

R.S.G.B. Slow Morse Practices

Details will be found below of the slow Morse practices organised by the Society for those members wishing to learn or improve their code. As usual, test matter will be taken from recent issues of the T. & R. BULLETIN. The page number and month of issue will be given at the end of each test—by telephony. A telephony announcement will also be given at the commencement of each test to assist those interested in tuning in the sending station. It is emphasised that reports will be appreciated and are desired, in order to ascertain useful range and numbers utilising the service. If, however, a reply is desired, a stamp should be sent. Will stations in areas not at present served offer their services to Mr. T. A. St. Johnston (G6UT), "Normandale," Little Hallingbury, Essex. (Telephone: Bishops Stortford 785.)

	B.S.T.	kc.	Stations.	Location.
Mondays ...	2315	1741	GI6XS	Bangor.
Tuesdays ...	2215	1792	G8PZ	Colchester.
Wednesdays	2315	1741	GI6XS	Bangor.
Thursdays...	2115	1930	GW5OD	Llandudno.
,, ...	2215	1792	G8PZ	Colchester.
Sundays ...	0930	1792	G8AB	Loughton.
,, ...	1015	1920	G6VC	Northfleet.
,, ...	2115	1930	GW5OD	Llandudno.

Congratulations.

His many radio friends at home and abroad will join with us in congratulating Mr. Harold Old, G2VQ, of Nottingham, on his recent marriage to Miss Glover, of Risley, Lancashire. Mr. Old was for several years a member of Council and Provincial District Representative. He is at present a Home Office official responsible for Police Radio in the Midlands. Mr. and Mrs. Old are living at Papplewick, near Nottingham.

THE 56 Mc. BAND

By L. G. Blundell (G5LB)

AS was expected by many, May provided further incentive for long spells of observation on the band when, towards the end of the month, commercial harmonics were heard at various times.

However, as there was plenty of material to hand for these notes, it seemed that it would be well worth while to extract from the various logs and reports in greater detail than usual. It will be seen that, in addition to several definite pointers to "summer skip" conditions, there is still an increasing number of active stations ready and willing to fix long-period schedules. Note that there are now a number of receiving stations also ready and anxious to co-operate in similar activities.

And now for the reports.

G6DH, on the eve of his departure to VE and W, very thoughtfully supplied the following information as to conditions over the period May 21 to May 24 :—Sunday, 22nd : Commercial harmonics heard up to 48 Mc. after 16.30. Monday, 23rd : OER on 40 Mc. was S6 at 07.15, and at 07.30 several A.C. carriers heard up to 53 Mc. These are thought to be due to diathermy apparatus somewhere on the Continent (G6YL and others, please note). 6DH mentions that this kind of signal (?) is always indicative of good short skip conditions, and should therefore be carefully listened for. At 08.45 on this same day IRS on 46 Mc. and IBX on 48 Mc. were logged, and later between 11.00 and 11.10 SPW was S9 on 40 Mc., an unidentified commercial signal on 55 Mc. and a fading carrier was heard on 55.5 Mc.

However, 6DH's ears fairly flapped when at 13.35 SM5SN was heard calling "Test de SM5SN Luma Sweden 56.7 Mc." with tone modulation on D.C. carrier. Signals peaked to S7, but faded out within ten minutes. A report was wired to SM5SN with instructions as to 6DH's frequency, etc., but the conditions did not last apparently, as he was not heard again during the next few days. But to continue. This day (the 23rd) provided signals from German television and sound channels on 46-47 Mc. which were audible from 14.00 throughout the afternoon. At 16.20 an ICW signal on 57 Mc. was S6/0, and at 17.00 IES was S5/0 on 50 Mc. After 17.30 no signals were heard above 40 Mc.

May 24 : Excellent U.H.F. conditions prevailed. 07·00 A.C. carriers heard up to 50 Mc., 08.00 duplex French phone S9/6 on 50 Mc., and similar transmission on 46 Mc. S9. Tone modulated carrier on 55.6 Mc. S9/4 at 0845, and a MCW signal on the frequency used by SM5SN was S4/0 for a few minutes.

G6DH concluded with the remark : "If we are ever to get QSO with Europe there *must* be much more regular and consistent observation on the band. In the last three days chances of inter-European 56 Mc. contacts have been literally thrown away—it only takes a few minutes each morning, lunch time and evening to check conditions by listening over the frequency range of 20/60 Mc." Well, the truth of that statement cannot be denied, but there are very many of us who could not possibly manage to develop such a habit owing to other demands on our time by the workaday world. However, 6DH's experience over the last few days of May will no doubt move a number of keen stations to extend their activities as much as is possible under normal circumstances.

To continue. Commercial harmonics were heard also by G2HG, 6FU and 2KI. Those stations' reports are as follow :—G2HG : On May 21 two commercial harmonics were heard in the band from 14.30 onwards. On the 22nd a harmonic of IBE on approximately 56.15 Mc. was audible from 17.00 onwards. Regarding amateur activity HG mentions that G6FL was heard on the 6th, 12th and 20th, and G6QZ (Norwich) on the 22nd. On the 8th all stations between 2 and 30 miles distant were noticed to suffer from fading. A total of 29 different stations were heard during the month.

G6FU logged a harmonic of DFQ on approximately 56 Mc. S4 at 20.15 on May 14. On the 22nd IBE was logged on 56.15 Mc. at 19.00/15. Signals were variable between S2 and S5 during the time mentioned.

G2KI logged very fast automatic on approximately 57.6 Mc. at 22.30 on the 28th. Due to flutter and the speed of transmission the call was difficult to decipher, but on peaks of S5 it was read as IAH (or possible ITH).

Getting back to inter-G work, G6QZ reports contacting G6CW, of Nottingham, on the 20th, after arranging schedules. 6CW was first heard at 21.04 at 439 with fading, and 6CW received 6QZ's call at 21.15 with signals 458, with some fading. However, signals very shortly fell to 238 and finally became inaudible. The distance between the two stations is 107 miles. G6QZ was operating a T20 in the final with 24 watts input and a W8JK beam. Receiver is 1-v-1 with standard valves. G6CW had 100 watts input and an east and west long wire radiator. Receiver 1-v-1 with Acorn valves. This station was heard again at 6QZ on the 24th, but signals were extremely weak and no contact was possible.

6QZ adds that during the early morning of the 24th commercial signals were audible up to 40 Mc. (LCJ), and by lunch-time others were logged up to and including 45 Mc. He also mentions that 6CW heard a harmonic of IBE on about 56 Mc. on the 23rd.

G5JU reported variable conditions during the month with signals from GBR (Rugby) being logged a number of times. Other but unidentified commercials have also been heard. Frequent contacts continue with 6FO in Newport (25 miles), signals being S8/9 each way. 5JU adds that his frequency is now 56.9 Mc., and tests are being carried out with 6YL in Northumberland.

G6VF, also in Bristol, has been checking up on a report recently received from Austria. Frequently active in conjunction with 5JU and 6FO, his frequency is 56.8 Mc.

G6YL now busy with schedules (see last issue), and hopes for some 100-200-mile contacts. She reports that F8AA is active daily between 2130 and 2140 G.M.T. on frequencies of 57.8 to 58.2 Mc. No details as to whether CW or phone is used, but

input is given as 2/300 watts PDC. Please note, 6YL's frequency is now 57.6 Mc., and not as given in these columns last month.

Schedules Required

G8LY in Winchester, Hants., desires schedules with English and Continental stations, particularly during afternoon hours. Those willing to co-operate are asked to write direct to Miss Constance Hall (G8LY), North Waltham Rectory, Winchester, Hants. Miss Hall mentions that transmissions are now C.C. on 56.273 Mc.

* * *

BRS3322 and 2OFG require schedules with stations in London and the Home Counties. Tests with portable equipment are made every Sunday on Devils Dyke near Brighton between the hours of 1430 to 1830.

Signals have already been heard from stations up to 50 miles distant, and it is hoped to improve on this during the coming summer. Interested transmitters are requested to write direct to BRS3322 at 20, St. Leonards Road, West Hove, Sussex.

* * *

56 Mc. N.F.D.

In connection with this event G6QZ, of Norwich, advises that he will be operating a C.C. transmitter on 56.34 Mc. at a height of about 250 ft. Contacts with London and the Midlands are hoped for, and to this end 6QZ would like to fix schedules. Write to G6QZ, 84, Cecil Road, Norwich, for same.

* * *

Note for 56 Mc. Telephony Stations

BRS2601, of Ewell, Surrey, remarks on the failure of the great majority of telephony stations to give their call-sign in code at the conclusion of transmissions. Frequently, he says, telephony signals are heard at very good strength, but owing to poor stability at the transmitter very little of the transmission is intelligible. On the other hand, when signals are weak (though highly stabilised) it is very often impossible to make out the call of the station concerned, and it would be to the mutual advantage of both transmitter and receiver if the call sign was repeated in code—C.W. or M.C.W., it matters not which so long as the readability is improved.

* * *

56 Mc. News from the U.S.A.

W9NY still maintains daily operation, but has not yet observed any improvement in conditions, only local stations being heard. However, the band was expected to open up for inter-State working during May, as has been the case over the last year or so.

G2YL kindly passes on some information from W9FM to the effect that short skip conditions existed in Arizona during April, but no contacts were effected in that locality. W4EQK was due on the air in May with an input of 200 watts C.C. W8RV in Buffalo contacts VE3ADO in Toronto frequently between 1830 and 2100 local time. W8IPD is now C.C. on this band with 60 watts input.

Included in this report on U.S.A. activity is a note on the gear at GM6RG when that station was heard by W1KTF and 2JCY in February last, the input being 500 watts on 57.016 Mc. Aerials were a rhombic with nine wave-lengths per leg, and a vertical array of four half-waves in phase with four reflectors plus twelve directors and rotatable.

56 Mc. Annual Field Day

In accordance with the announcement made in the May issue, we publish below a list of those members who have informed us of their intention to operate portable transmitters during the 56 Mc. Field Day event arranged to take place on Sunday, July 3.

Call sign.	*Operator.*	*Location.*
G2JK	E. C. Ilott	Epsom Downs, Surrey.
G2WS	W. Scarr	Bardon Hill, Charnwood Forest, Leicestershire.
G5CD	D. N. Corfield	Near Wendover.
G5CI	W. Crossland	Mount Ephraim, near Whitstable.
G5CM	T. H. Streeter	Nr. Cranleigh.
GW6AA	D. Mitchell	Top of Snowdon.
G6QZ	A. G. Parker	Tower of a country church, Norfolk.
G8KZ	P. Bradley	Steyning, Sussex.

The following members have informed us of their intention to operate portable receiving stations :—

Call sign.	*Operator.*	*Location.*
2CGY }	T. Purves	Over Whitlow, Selkirk.
2CXC }	W. Anderson	,, ,, ,,
BRS1657	L. J. Stevens	Blackdown, Mendips.
BRS2601	H. W. Parker	Epsom Downs.

56 Mc. Tests from Snowdon Summit

In connection with the Annual 56 Mc. Field Day, Mr. David Mitchell, GW6AA, has arranged to operate a portable station from the summit of Snowdon. Transmissions will commence at 17.00 B.S.T., July 2, and will continue until 24.00 B.S.T. Immediately after midnight GW6AAP will stand by on 1.7 Mc. for calls from stations who have logged, but not contacted the 56 Mc. station on Snowdon. GW6AAP will work on either 1,800 or 1,965 kc.

All reports should give exact time the 56 Mc. signals were heard as aerial systems will be continually changed.

Transmissions on 56 Mc will recommence at 09.00 B.S.T. on July 3, and will continue until 15.00 B.S.T. when 1.7 Mc. will again be used to collect reports.

C.W., I.C.W., and phone will be employed from GW6AAP, and any type of incoming signal will be receivable, although it is hoped that C.C. I.C.W. will predominate.

Members wishing to arrange schedules for the Saturday tests should write to Mr. Mitchell as soon as possible. No fixed schedules will be arranged for the Sunday as it is expected that a great number of stations will be on the air.

CORRESPONDENCE

C.W. *v.* PHONE FOR 56 Mc. WORK

To the Editor of T. & R. Bulletin.

Dear Sir,—In this latest 56 Mc. bone of contention, "C.W. versus 'Phone," may I make another appearance in your correspondence in order to put Mr. Heap (G5HF) at his ease regarding the mentality of the C.W. operators?

I dread the thought of "class warfare" in amateur radio and I am sure that such a state of affairs could never exist among the members of this Society—no matter what interests are incurred.

However, the fact remains that at least one member has developed the idea that C.W. operation has been, and is being, overdone, to the detriment of the art of telephony. It is of course true that C.W. has become increasingly popular during the last year or so, but I maintain that this was inevitable and a natural expression of our views regarding the potentialities of this band, irrespective of the experimental work which may be incurred. This last item, in my opinion, is indeed deserving of the term used by 5HF—i.e., " fiddling with so-and-so," this being pure experiment.

Finally, and in spite of our differences, I wish Mr. Heap all success in his own work.

Yours faithfully,
L. G. BLUNDELL (G5LB).

THE 28 Mc. BAND

By NELLY CORRY (G2YL).

THE usual summer slump in conditions and activity has made the band very quiet during the past month, and on several days there was not a signal to be heard. The best periods were May 7-8 and 21-23. On May 22, G6DH logged signals up to 48 Mc. and the band was open till at least 23.00 G.M.T., and the following morning commercial harmonics were audible up to 55 Mc.

G2XC, who has recently been receiving the Magnetic Data broadcast from W1XAL, points out that moderate or large disturbances invariably coincide with poor conditions on this band, while the best days are those when magnetic conditions are quiet. The magnetic storm of May 4 and the storm and Aurora Borealis of May 11 were both accompanied by partial fade-outs on the lower frequencies and a lack of 28 Mc. signals (apart from one or two from the Southern Hemisphere).

No oceanic signals were reported during the month, and VU's and U9's were scarce after May 8, though Japanese commercials sometimes came through at good strength in the early mornings. Stations in Africa were logged on at least 10 days, the most consistent being SU1RO and SU2TW. Others who made spasmodic appearances were FA3JY, SU1RD, VQ2FJ, ZE1JJ, ZE1JU, ZS1AN, ZS2AF, ZS2CW and ZS6T.

W signals from all districts except the 7th were heard, but on about 20 days they were inaudible, as is general at this time of the year. BRS25 reports unusual conditions on May 21 at 20.15-21.40 G.M.T., when W4EDD was coming through at S8, mostly working other W's, but also reporting G6BW " a good S8." During this period the only other signals logged were a W6 'phone and a few HA harmonics, though earlier several HI, K4, K5 and LU stations were audible.

Central American stations were audible on nine or more days, and those reported were: HI3M, HI7G, K4EIL, K4EPO, K4FAB, K4FCE, K4FKC, K4SA, K5AN, TI2RC and XE1AX. The majority of these were using 'phone, as were the South Americans, viz., CE3BH, LU1DJ, LU3DH, LY3FB, LU4BL, LU7AZ, PY2AC, VP3AA, YV1AP and YV5AA. European signals from 14 countries came through during the month, but the number of stations audible at any particular time rarely exceeded half a dozen, and daytime activity appeared to be exceptionally low.

The above is based on reports kindly sent by G2XC, 5BM, 6DH, 6QZ, 6YL, BRS25 and 3179. In case it may lead anyone to suppose that the band is hopelessly dead and contacts well-nigh impossible, it should be mentioned that from May 1-23 G2XC had 16 QSO's with W2, W6, K5, VU, U9, ZE, SU, D, HA, YL, YU and SP, and probably participators in the 28 Mc. Summer Tests were even more successful. G5BM, who sends test calls daily at 14.15 and 18.00 to 19.00 B.S.T., reports that recently all his QSO's have been the result of sending " Test " on an apparently dead band.

28 Mc. Summer Tests

The special 28 Mc. tests announced in the May BULLETIN have aroused considerable interest and many of the stations worked by G6BW, 6VK and 6RG have notified their intention of keeping as far as possible to the published schedules. Many G stations are also taking part.

The full list of DX stations who are co-operating is as follows: W1DQK, KTF, JTG, W2JAS, AZB, GO, HGU, JKQ, W3CBT, EOZ, FIL, GSV, GZN, W4CDG, CYU, EDU, EPX, W5EB, W6NLS, NCR, W8AHC, LUQ, VE1BR, VE2CP, K6MVV, CO7CX, HI7G, TI2FG, XE1GE, K4FKC, ZE1JR, YV1AP.

European stations taking part are: PA0FB, SV1CA, EI8J, EI9J, EI5F, G2ZV and G5BM.

G5JU.

Holidays Abroad

By D. CHISHOLM (G2CX).

One of the most pleasant aspects of amateur radio is the friendship that it encourages between amateurs in the different countries of the world; in these troublous days its work in this direction is more than ever necessary. The theme is a familiar one and often heard when our hobby is being discussed, but one has the feeling that, among Englishmen anyway, these pious sentiments are often spoken in sentimental lip-service to an unattainable ideal.

Those whose good fortune it has been to travel about the world will know how pleasant this camaraderie between " hams " can be—how glad one is to feel among friends in a strange place. On our return we may feel a little shame-faced if we compare our own welcome with that accorded to a foreigner visiting Britian. We may even be inclined to write our own countrymen down as inhospitable—although this would be far from the truth. The average man in this country is scared of demonstrations and from his fear of appearing effusive will keep aloof. Most of our foreign friends are agreed, however, that once the natural reticence of an Englishman has been overcome he is as warm-hearted and friendly as anyone.

Obviously it is stupid to expect our national reserve to disappear overnight, but it seems equally stupid to continue to miss the enjoyment of fellowship with our brother " hams."

The best way to get to understand people is to go and live amongst them—and " hams " are the finest people in the world to be among. A scheme by means of which amateurs can visit each other with the minimum of expense has been devised, and it is proposed to organise bureaux in the various countries, to facilitate the exchange of holiday visits. The D.A.S.D., the prime-movers in the

scheme, have already appointed a special representative to deal with these matters, and the E.D.R. (Denmark) and N.V.I.R. (Holland) have followed suite.

The R.S.G.B. do not feel that it will be necessary to establish a bureau here, but they are willing to publish these notes, and possibly others, when the scheme is working more fully.

Briefly, the idea is as follows : D4ABC, wishing to go to, say, Holland, sends to D.A.S.D. for a form, on which he states where and when he wants to go and what accommodation he can offer in return. He also gives an idea of his business, hobbies, etc. This form goes to the N.V.I.R. who have a member wishing to go to Germany, and so the two are put in touch.

It is rather late in the year for the launching of such a scheme here, but if anyone is interested the writer would be glad to forward any further details. As an enthusiastic "rolling stone," he would be glad to give what help possible concerning passports, visas, etc. The names and addresses of two OZ amateurs wishing to visit England are in the writer's possession, and exchanges are invited.

Communications may be sent to G2CX, c/o R.S.G.B., or, if preferred, direct to the Exchange Manager, D.A.S.D., Berlin-Dahlem, Cecilienallee 4 ; or Het Irato de N.V.I.R., Post Box 400, Rotterdam ; or A. Flensborg, OZ1D, Ringsted, Denmark.

DX Century Club

The A.R.R.L. advise us that the following British Isles members have qualified for the DX Century Club :—

H. A. M. Whyte ...	G6WY	130	Countries
J. Hunter	G2ZQ	120	,,
J. Clarricoats ...	G6CL	100	,,

Mr. Whyte holds first place, whilst Mr. Hunter ranks fourth.

Others approaching the century mark are :—

R. L. Varney ...	G5RV	... 90
B. Hall	G2DZ	... 86
H. Hornsby ...	G5QY	... 83
G. Hutson ...	G6GH	... 82

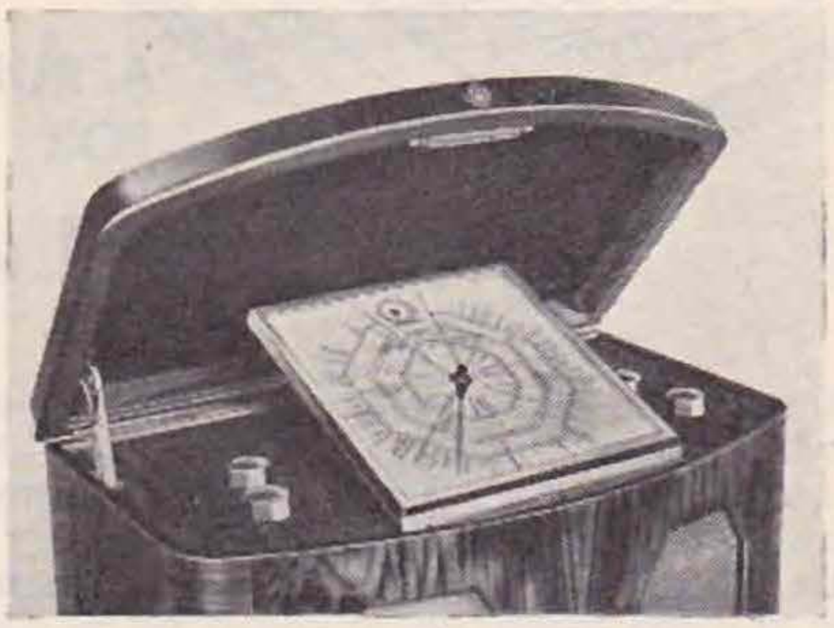
Members who have cards confirming two-way contacts with at least 75 countries as per the list published in January, 1938, QST, are invited to send their cards with reply postage enclosed to A.R.R.L., 38, La Salle Road, West Hartford, Conn., U.S.A.

Trade Notice

Walking around the Radio Exhibition last year our eye was attracted to a crowd of spectators around the *McMichael* stand. Closer investigation showed that the interest centred around a model of the new Giant Tuning Dial introduced by that company.

It has recently been our good fortune to test one of the 1938 *McMichael* broadcast receivers (Model 137) which incorporates this dial. No one who has handled broadcast receivers employing the usual small knob can but be impressed by the great advance in tuning methods brought about by its introduction. The dial is self tilting, for as the lid of the cabinet is raised it moves upwards, automatically given an ideal viewing position.

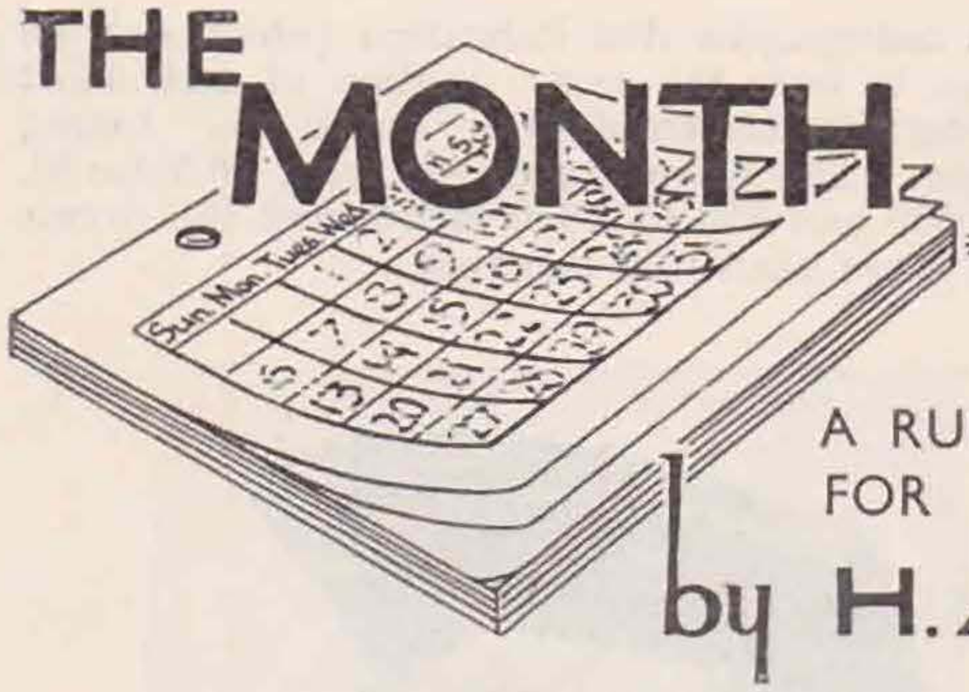
The model under review employs twin speakers has an autographic dial indication (which enables the user to note the exact position of each short wave station), and employs a "magic eye" tuning indicator. The wave ranges are from 16.5 to 50, 200 to 550 and 850 to 2,000 metres and the circuit is an 8 stage band pass superhet.



On performance the receiver gives amazingly good results both on the broadcast and short wave bands. We have only one regret—why cannot such a perfect receiver be made available with band spread, so that it may be used for amateur work as well as broadcasting ?

Common with all other *McMichael* receivers the Model 137 shows how a delightful appearance can be combined with simplicity in tuning, and a unique cabinet design.

The price for the A.C. model is 17 guineas or 19 guineas with stand.



THE MONTH ON THE AIR

A RUNNING COMMENTARY OF RADIO CONDITIONS
FOR THE MONTH OF . . . . . MAY, 1938

by H. A. M. WHYTE (G6WY.)

THE month of May produced some new countries while some "old" countries came to life again. Other "rarer" areas have produced more stations, so the DX man is kept every busy. Conditions were not very good during the month, and 28 Mc. has fallen off as seems to be usual at the time of year, although we cannot help feeling that contacts should take place fairly frequently between the Northern and Southern hemispheres throughout the summer — only activity can prove this.

G2QN has put Nigeria on the map again by operating ZD2H. He tells us that there will shortly be another, ZD2G. ZD2H has been working DX most evenings, although his signal is weak (14,300, T8-9). Cards will reach him at the following address: A. Tomlinson, Posts and Telegraphs, Lagos. Cards for ZD2G should also be sent to this address. Another new country is represented by UX1CN whose QRA is: Polar Expedition, Rudolf I, Franz-Josef Land. G2IO raised him for his 93rd country (HF 14 Mc.). We learn that ZC6AA in Palestine is quite genuine, but operating a 50 watt transmitter unlicensed; cards should be sent *via* 2AIJ, J. Oswald Dykes, 5, Sunnyside, Sandown Park, Liverpool 15. OY1C reported by G8TY is mysterious, but we hope he will prove to be in The Faroes, although we still have no definite evidence from OY1B that he was really operating in these islands. G6QS who worked Fiji for the first two-way contact now states that he has worked FK8AA in New Caledonia and believes this to be the first G/FK8 QSO; we know of no other claim. G6QS answers our appeal about Nevada and tells us that he worked a W6 in this rarest of rare States during the DX CW contest and has received confirmation. He does not tell us the call or frequency; was it W6GUW? QS wonders if this is the first G/Nevada contact; we think not, but we should like to learn from other G's who have contacted this State and have received confirmation.

AC4YN is with us again, G5BD, G2YL and G5VU having worked him on 14120. He is using a new c.c. transmitter, so we hope that he will burn much midnight oil to give us the elusive Zone 23! We still require news of UO's in Zone 19. Honduras is a "teaser" to many, but HR4AF has recently been worked by G2DH and HR5C by G2XV, both on 14 Mc. The latter operates on phone on 14024 kc. and we can give no QRA yet; it is useless to QSL *via* the R.S.G.B. for this country. G2DH also managed to contact AC4YN as well as EL2M and CE3CO (phone) for new countries. With 40 watts suppressor grid modulated phone he worked all continents and is now looking for the cards. Other DX worked includes TF5M 14310, VQ3HJP 14380, XU6LN, PK1MF 14350, ZC6AA, UK8IA, VP2BX on CW and VK3KX 14060, CO2GY, PY4CT, LU1UA on phone. Stations of interest heard at G2DH are: VP1BA (worked by G6NF G6WY and G6RH) on 14080, VE5ACN, VP3AA, HC1FG (phone), LZ1ID (QRA given as Sofia), PX1A and XU8XA.

GM6JD asks if VQ3FAR QSL's; yes, he does, even though he is in a country where there are less amateurs than in Kenya or Southern Rhodesia! Incidentally a card was received at G6WY about a week following a QSO with ZE1JA, so don't believe all you read in print! GM6JD mentions working SU1A, the N.F.D. station in Egypt, during its initial tests as well as PX1A (Andora, QSL *via* REF), ZC6AA and TF5M who states he *does* QSL. BRS2763, of Snodland, Kent, has heard 147 countries according to the R.S.G.B. list. On 7 Mc. his recent additions include YN2LT, XE3AR, K4ERY (Virgin Is.), HH4C, VE5EO 7010 and ZL4AH, so "40" hasn't gone to sleep yet. On 14 Mc. his best have been VR4AD 14310, K7GIE 14340, K6MOJ 14260, K6PAH 14330 on CW and K6KGA 14220, TG9AA 14380, XZ2EZ 14360 and 14200, VP1BA, VE5PE 14140 and VE5EF 14120 on phone. We understand from W1COI that TG9AB is the second licensed station in Guatemala, but he has not yet been heard in G.

2AOU of Jersey, C.I., sends in an interesting report full of the cream of the bands. He includes amongst a long list of stations heard, VK9DM (HF 14), K6OCL (HF), EO (LF), KEF (14200), FAZ (LF), HZI (LF), BNR (LF), OQE and NZQ, the last two being on phone, K7GIE (LF), VR2FF (LF), XU8AG (HF), 8MY, 8RL, and 7CK; VP4GA appears to be the only phone representative in Trinidad this month. Rarer States heard were W6CVW (Arizona), and W9IQZ (S. Dakota); the last State is the only one keeping G6QS from W.A.S.! 2AOU remarks that VP3AA was heard on the same frequency as old VP3BG, and is wondering if VP3AA-BG-NV are one and the same. He has beaten Eric Trebilcock's "HAC" by receiving VE1GY, LU3DH, VK5RS, VU2FS, CN8MI and HA2L in 4 minutes, between 21.08 and 21.12 G.M.T. on May 21. He asks if anyone has information on OX2AB and LDOX? His country total has now reached 144. It is only right that BERS195 should appear now and his report is full of interest. He confirms that there are no VK8 stations active at all, and he offers the suggestion that VK8SS must therefore be elsewhere

* 9, The Mead, Beckenham, Kent.

than in N. Australia. Unusual signals heard on 14 Mc. were HCAC (reported by I1IR last month), X2DMO and ZD2KM (calling G6VP). We believe that these calls originate from ships. On 7 Mc. his best loggings included: K4ERY, LA1H, SP1KB, SM5NU, K6DSF (Baker I.), K6NVJ (Jarvis I.), VK9AC (phone), EA7AD and HB9T. VK3TL is seeking European QSO's on 14100 phone; VK9DM and VK9BW are both genuine in New Guinea. Trebilcock has received a card from VR2FF to bring his "QSL'd countries" to 120, while his total of countries heard has now reached the high record of 163. Special watch is being kept for N.F.D. stations by BERS195.

We are glad that OQ5AQ has arrived safely back in OQ after his holiday in Belgium. He has started giving a few of us a new country and puts a fine signal through on 14370. G6YR reports working him as well as VQ3HJP, TF3C, UX1CN and ZD2H, and heard TG9AA, VP1BA, EA8AE (14075 phone), TF5F (a new one). G6XL worked HK3AL on 14090 and J8CD (14400) for new countries, and contacted FI8AC, XU6LN and PK1MF; the best heard included UK8IA (Tashkent Aero Club), HI2T 14052, XU7MM 14000, YV5AP 14295, YV5AK 14308, PK1PK 14000 (phone and CW). A rare State was worked by G8AP, who reached Arizona with 25 watts, W6CVW on about 14320. Here's another G8 with 15-20 watts input to a single 6L6g; G8JR reports contacts with VU2FV, 2FQ, 2LK, HS1BJ, XE1AG, ZE1JF, VK7KR, TI2FG, YV1AP, HH1P, K4EJG, 12 VK/ZL's and 120 W's; this should be an incentive to all low power operators.

GM8MN has received a card from VP9L, but does not state whether this was for phone or CW. We mention this because there seems to be some doubt about VP9L heard recently on CW; however, VP9R was worked by G6WY on phone for a new country. According to W1COI there are 6 active VP9's on phone. G2QT has been extremely active and has some fine results to show, as he worked AC4YN and now only lacks K7, XE, UO and K6 for W.A.Z. These should be easy except for UO. On phone QT (we wonder if his "handle" is "cutie"), QSO'd OQ5AA, VP6MR, 6LN, 6TR, XZ2EZ, VS7GJ, HH2G, YV5ABY, VP3AA and CE1AH and on CW, HK1PA (ex HH5PA) and VQ4KTF. CR1OZS has been heard working VK's on HF 14 with a rough note.

We reported G1VE last month, and we now believe that this is one and the same as VT1VE worked by G8CV on 14000. This call is believed to come from a ship in the Persian Gulf using 500 watts input. G8HA worked XU8LS (Box 575, Shanghai), XU8AG (Box 685, Shanghai) and J8CG, a new Korean. He tells the Welshmen to give VU2FV a call as he wants this country for the DX Century Club. Monmouthshire stations need not trouble, because their contact won't count! BRS3213, of S.E. London, sends a long list of phones heard, including HH2B (the YL), HC1JW, TI2AV, PK1MX, KA1ME, VS7GT on 14 Mc. and is still hearing weak W's on 3.9 Mc. BRS2917 of Belvedere, Kent, heard K6OUE, VE5MQ, 5OP, 5EF, 5ACN, and HR5C onphone. GW2XZ nearly collapsed with astonishment when ZS5AU came back to his call *on 7 Mc.* at midnight on April 9 and a sked was successfully kept on the 10th for an hour. The reason for the excitement—the input at GW2XZ was exactly 10 watts and the report 569!

It will be remembered that we corrected ourselves about the Cocos Is., where ZC2OP was supposed to be operating. We said that this should have read Caicos Is. Well, it appears we have to make yet a further correction, for G2ZQ and W2IXY point out that the Cocos Is. are in the *Pacific Ocean*, a few hundred miles from Costa Rica; we live and learn, but we do think G6BW might have come to our rescue as we are only radio experimenters, not geographists! This still does not excuse the operator using the prefix ZC2 which is allotted to the Cocos Is. in the Indian Ocean. G6CJ reports a new Trinidad station on CW—VP4TI on 14260 and the QRA given to him was: Knowles, Customs House, Port of Spain. CN1AA gave "Dud" a new country and he is still to be found c/o Italian Consulate, Tangier.

This is the G3's paragraph, so here goes. G3GU worked SU1SW (who is genuine but does not appear to QSL), ZB1R and a W4. He heard CN1AA, ZD2H, ZC6AA, CR7AL, RB, J2KN, U9BK, 9HK, 9ML, XU8LS, and PK1MF. G3JR comes next and had only been licensed three weeks up to the time of reporting; using a 6L6g CO with 10 watts he worked XU8LS, ZC6AQ, VS7RA and the "phoney" TA1AA as well as all districts W (except 6-7) in 20 States. This is not surprising when one remembers that G3JR is ex-2CYP, one of the leading receiving stations. G3BQ challenges G3GU to be the first G3 to WAC, but actually G3DO was the first to achieve the honour. 3BQ has now 34 countries in 4 continents to his credit, and added ZE1JI, U9ML, VE1 3, K5AN, as well as two more W6's who gave him S8! PX1A on 14300 (T5-6) completed a satisfactory month in the life of a 10 watter!

G6YL points out a "typographical" error in last month's issue. We said that K6HCO was on both Canton and Enderbury Is., whereas he is on Canton and K6GNW on Enderbury I. Thanks YL. VP3NV was heard on 28 Mc. CW signing VP3NV. G5AC wants information on XS7QV, who gave his QRA as Strangnas, which we suppose is in Sweden. G8MS asks if VQ8AA is in Mauritius as he worked him at 04.45 on May 23, his note was chirpy at S5-6 outside the LF end of 14 Mc. Yes, he is quite genuine. BRS3003 of Coulsdon, Surrey, tells us that VP1BA was heard to say that there are only two VP1 phones. VP1DM is presumably the other. 3003 received the usual early morning phones and his best included XE1K, 1GK, 1Q, K6OQE, and in the evening, PK1MX, 1JR, 1ZZ, 2WL, 4DG. G6LH worked TF5C in 1936 and only received his card a few weeks ago, so this will answer those who wonder. BRS2317 of Leeds heard VK2HF on phone at 21.40 BST (the day following the last Aurora display), and CE3AA, TG9AA, VP3AA, YN3DG, VP9L and CR7AU on an O-V-2.

Here is some more news from "down under." VK4RF tells us he has been appointed the official QSL officer for VK4 and asks for cards to be forwarded to him. He sends an appreciation from the members in Queensland for the Country List. A few tit-bits worked were K7EIM (HF 14), SM6VX, VK9DM (HF), VS1AI, VP2AT, J8CF, MX2B, MX5A, I7AA, SV1RX, OE7JH, VR4AD, FI8AC,

(*Continued on page* 716)

NOTES and NEWS from the BRITISH ISLES

DISTRICT REPRESENTATIVES.

DISTRICT 1 (North-Western).
(Cumberland, Westmorland, Cheshire, Lancashire.)
Mr. J. Noden (G6TW), Fern Villa, Coppice Road, Willaston, near Nantwich, Cheshire.

DISTRICT 2 (North-Eastern).
Yorkshire (West Riding, and part of North Riding).
Mr. L. W. Parry (G6PY), 13, Huddersfield Road, Barnsley, Yorks.

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

DISTRICT 4 (East Midlands).
(Derby, Leicester, Northants, Notts.)
Mr. G. W. Slack (G5KG), "Inglenook," Racecourse Road, Mansfield, Notts.

DISTRICT 5 (Western).
(Hereford, Wiltshire, Gloucester.)
Mr. J. N. Walker (G5JU), 4, Frenchay Road, Downend, Bristol.

DISTRICT 6 (South-Western).
(Cornwall, Devon, Dorset, Somerset.)
Mr. W. B. Sydenham (G5SY), "Sherrington," Cleveland Road, Torquay.

DISTRICT 7 (Southern).
(Oxfordshire, Berkshire, Hampshire, Surrey.)
Mr. E. A. Dedman (G2NH), 75, Woodlands Avenue, Coombe, New Malden, Surrey.

DISTRICT 8 (Home Counties).
(Beds., Cambs., Hunts and the towns of Peterborough and Newmarket.)
Mr. G. Jeapes (G2XV), 89, Perne Road, Cambridge.

DISTRICT 9 (East Anglia).
(Norfolk and Suffolk.)
Mr. H. W. Sadler (G2XS), "The Warren Farm," South Wootton, King's Lynn, Norfolk.

DISTRICT 10 (South Wales and Monmouth).
Mr. A. J. Forsyth (G6FO), 29, Stow Park Avenue, Newport, Mon.

DISTRICT 11 (North Wales).
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)
Mr. D. S. Mitchell (GW6AA), "The Flagstaff," Colwyn Bay, Denbighshire.

DISTRICT 12 (London North and Hertford).
(North London Postal Districts and Hertford, together with the area known as North Middlesex.)
Mr. S. Buckingham (G5QF), 41, Brunswick Park Road, New Southgate, N.11.

DISTRICT 13 (London South).
Mr. J. B. Kershaw (G2WV), 13, Montpelier Row, Blackheath S.E.3.

DISTRICT 14 (Eastern)
(East London and Essex.)
Mr. T. A. St. Johnston (G6UT), "Normandale," New Barn Lane, Little Hallingbury, Bishops Stortford.

DISTRICT 15 (London West).
(West London Postal Districts, Bucks, and that part of Middlesex not included in District 12.)
Mr. H. V. Wilkins (G6WN), 81, Studland Road, Hanwell, W.7.

DISTRICT 16 (South-Eastern).
(Kent and Sussex).
Mr. W. H. Allen (G2UJ), 32, Earls Road, Tunbridge Wells.

DISTRICT 17 (Mid-East).
(Lincolnshire and Rutland.)
Mr. W. Grieve (G5GS), "Summerford," New Waltham, Lincs.

DISTRICT 18 (East Yorkshire).
(East Riding and part of North Riding.)
Mr. W. A. Clark (G5FV), "Lynton," Hull Road, Keyingham, E. Yorks.

DISTRICT 19 (Northern).
(Northumberland, Durham, and North Yorks.)
Mr. H. C. D. Hornsby (G5QY), "Newlands," 105, Kenton Lane, Newcastle-on-Tyne, 3.

SCOTLAND.
Mr. James Hunter (GM6ZV), Records Office, 51, Camphill Avenue, Langside, Glasgow.

NORTHERN IRELAND.
Mr. J. A. Sang (GI6TB), 22, Stranmillis Gardens, Belfast.

New Members are cordially invited to write to their local District Representative.

DISTRICT 1 (North-Western).

THE North-Western Provincial District Meeting was held at Southport on May 22, and a full report of the proceedings will be found elsewhere in this issue. Although the attendance was disappointing the meeting was a complete success, and also a very pleasant affair from the social point of view. The venue chosen for 1939 is Chester, and it is hoped that this will make it possible for many of the members in North Wales, who support the cause so well in many ways, to attend.

Whether due to the remarks of the D.R. and the Scribe on the subject of District Notes or to some other cause, it is interesting to note that reports from T.R.s are fewer and shorter than usual this month! Those received up to the 27th of the month are published below.

Liverpool.—No reports of special interest are available, but there is a fair amount of local activity.

Blackburn.—At the last meeting a presentation was made to G6BH on the occasion of his marriage.

Burnley.—Two new members, G3HK and BRS3268, have joined this group and a hearty welcome is extended to them. 3HK started well by working a few W stations on 7 Mc with a 6L6g to a Zepp aerial. The following are also active: G2RB, 2OB, 5ZN, 8FI, 8TD, 8UA, 2BFB, 2DKR and 2CVI.

Bury.—Two meetings were held during May, the regular monthly meeting and a special meeting at G8NL to make final arrangements for N.F.D. Four members attended the P.D.M. at Southport and had the pleasure of meeting many of the No. 1 District members known to them only by their call signs. The T.R. would appreciate reports on the portable station operated during N.F.D. under the call G2GAP. All reports will be acknowledged.

G2GA has been busy organising the N.F.D. station, 3CJ is trying out the Jones exciter with regeneration and is understood to be working on a small article for The Bulletin. 8NF is testing new transmitter on 1.7 Mc. which was used for

Field Day. 8NL now has 25-watt permit and would like reports on signals from his portable station which was in Scotland from May 28. 8QS now has has 6A6 doubler working on 14 Mc., and has had good contacts on low power with PY, SU, W and VE. 2BGF is concentrating on obtaining full ticket and BRS3008 is also active.

FORTHCOMING EVENTS

June 16.—District 15 (W. London Section), 8 p.m., at G8VM, 14, Park Mansions, Colehill Lane, Fulham Palace Road, S.W.6.
,, 17.—District 12, 7.30 p.m., at the Orpheum Cinema, Finchley Road, N.W.11.
,, 22.—District 14 (East Essex Section), 8 p.m., at G2UK, Eastwood Lodge, Rayleigh Avenue, Eastwood.
,, 22.—*District 15, 7.30 p.m., at G8KZ, 348, Portobello Road, North Kensington, W.10.
,, 23.—District 14 (Chelmsford Section), 8 p.m., at G5RV, "Arvika," Galleywood Road, Chelmsford.
,, 23.—District 12 (Watford Group), at 2BTV, 6, Hemstead Road, King's Langley.
,, 23.—District 13 (Central Areas), 8 p.m., at Brotherhood Hall, West Norwood.
,, 28.—District 14 (East London Section), 7.30 p.m., at 2DJI, 23, Mornington Road, Chingford.
,, 29.—Scotland "A" District, 7.30 p.m., in Room "A," Institution of Engineers and Shipbuilders, 39, Elmbank Crescent, Glasgow.
July 1.—District 8 Meeting at Cambridge.
,, 6.—S.L.D.R.T.S., 8 p.m., at Brotherhood Hall, West Norwood.
,, 7.—Bristol Section, 7.30 p.m., at Carwardines Café, Baldwin Street, Bristol.
,, 7.—District 14 (Colchester Section), 7.30 p.m., at G8PZ, 19/21, Artillery Street, Colchester.
,, 10.—Eastern Provincial District Meeting, at University Arms Hotel, Cambridge. See separate announcement.
,, 10.—District 19, 6.30 p.m., at G2LD, 4, Priors Terrace, Tynemouth, Northumberland.
,, 21.—District 10, 8 p.m., at Globe Hotel, Duke Street, Cardiff.

*Sale of disused apparatus at this meeting.

DISTRICT 2 (North-Eastern)

Barnsley.—The H.B.E. certificate has been granted to G8TZ and the following stations report active, G2BH, 5DW, 5IV, 5KM, 5UA, 6AJ, 6LZ, 6PY, 6XG, 8NM, 8TZ, 2CGD, BRS3068, and 3207.

Sheffield.—Members are reminded that the meetings discontinued during the summer months, will be held again in September. Details will be published later. Mr. Gould, a new member, is BRS3301 and 2973 has become 2DTJ. Active stations include G2JI, 2LT, 3FN, 5TO, 5HK, 6LF, 8JP, 8NN, 2BXA, 2APF, 2CXN, and 2CVU.

Halifax.—Mr. Blagborough is now licensed as 2DUX, and the following are active, mostly on 56 Mc., G5DF, 5QS, 8CB, 8SJ, 2ABC, 2AKO, 2BHI, 2CMP, 2DGK, and 2DOR.

Leeds.—The T.R. will be away from July 1 until September 17, and all reports should be addressed to him c/o J. H. Squire Celeste Orchestra, Beach Gardens, Gorleston-on-Sea, Suffolk. BRS2317, the T.R., asks members to co-operate with him in compiling a list of local stations, including details of power, aerials, transmitters, frequencies, receivers, etc., and asks for a QSL card containing the information. G5CX newly returned from Texas, has left again for the Gulf of Persia. Best wishes to two new members, G3HI and G3HV, and also to two new AA members, 2DQT and 2DRO.

G6XL is adjusting two W8JK beams, one at each end of the 14 Mc. band. Experiments are not yet completed, but the length of the stub appears to be correct at about 12 ft. 6 ins., and not 14 ft., as stated in the recent article. 2XY is using a pair of half-wave doublets on 14 Mc., and asks for reports. 5PW, 8OG and 8WS are also active.

Ilkley.—Field-strength measurements are being made at G6SN with some new gear, and reports will be made later. Beam aerials on 56 Mc. occupy 8BT and 6SN, and it is hoped to use the field-strength meter on this band. All stations are active.

Bradford.—It was arranged at the last meeting to commence holding the station meetings again in September. Details in these notes later. G2QM is testing aerials specially loaded to give better radiation, while experiments at 6KU using negative feedback are being made with 6BX. Results later. Most local stations are active.

DISTRICT 3 (West Midlands)

Malvern.—G6IH is completely rebuilding his main 56 Mc. transmitter, using 6L6G F.D. valves (instead of 53's), link coupling and series tuning for same F.D.'s and push-pull output. He heard G6CW on 56 Mc. 'phone fairly consistently during May, and maintained schedules with G5BM, 8ML and 8DT.

Coventry.—Stations are asked to look out for G5GRP, who will be operating on 7 and 14 Mc. on occasional Sundays during the summer. The rest of Coventry's news can be summarised by the fact that G5QN, 6TZ, 2AV, 2JR, 8NJ, 2DK, 8LH, and 5PP have all gone 8JK beam "mad"!

Staffordshire.—G6SW is on 7 Mc. most week-ends. 2YV is operating 7 and 14 Mc. and a 56 Mc. rig is being tested.

We very much regret that G5GR has had to give up the position of District Scribe and our thanks are due to him for services rendered. We now need a successor: any offers?

DISTRICT 5 (Western)

Several new members were welcomed at the Bristol May meeting held at Carwardine's Café, Baldwin Street. The D.R. gave a brief résumé of important matters dealt with at the D.R.'s Conference held in London recently, and final arrangements for N.F.D. were discussed.

Thanks are due to G2IK for organising a visit to Portishead Generating Station on May 7, when

25 members and friends spent a very interesting afternoon.

A thoroughly modern station has recently been installed at Bristol Airport, and permission to visit this on June 18 has been obtained. Full details from the T.R.

While reports are scarce, activity in the town is high, stations heard including G2IK, 2HN, 5JU, 5KT, 5UH, 6GN, 6RB, 6VF, 6VK, 6BW, 6OZ, 8TC, and 8WW. The latter has erected a semi-vertical dipole aerial for 14 Mc., and would appreciate reports on his signals.

A party, including the D.R. and T.R., attended the Exeter P.D.M., and extend their thanks for an interesting day, to the organisers of that very successful event.

G5HC, Dursley, built the 1.7 Mc. N.F.D. transmitter, and he and G5JH have been busy with final preparations. 2AYP has taken his Morse test, and should have a full call very soon.

DISTRICT 6 (South Western).

No reports have been sent in from the usual areas, with the exception of North Devon.

North Devon.—Although the usual meeting could not be arranged, the T.R. has been visited by nearly all members during the month. A pleasant surprise was the visit of G6GM and VS6AH. Assisted by these "old timers" in the erection of a 14 Mc. G2BI type Windom, G3GH is now working DX, both CW and telephony, and has a daily sked with SU1RK, who reports her telephony S8/9 round about midnight. Our best wishes for a speedy return to health to G8US, who is in hospital recovering from a serious operation. Most members are active, but the T.R. would appreciate a report on their various activities from all by the 20th of each month.

DISTRICT 7 (Southern).

The long-projected visit to the B.B.C. Empire Station at Daventry has been fixed definitely for Sunday, June 26. The party is limited to 25, and therefore is open only to members of No. 7 District and to members of the South London and D.R.T.S. Members will have to make their own travelling arrangements between their homes and Daventry, but it is hoped that arrangements for tea and lunch can be made at a hotel near the station. Those who wish to attend should write to G2NH immediately, enclosing a stamped addressed envelope, so that a copy of the detailed arrangements can be sent.

The D.R.'s remarks on individual reports seem to have been taken to heart, and to borrow an expressive phrase from our U.S.A. friends, "reach a new low"! From personal observation, 56 Mc. activity seems to be very high in the District, and it is certainly encouraging to note that at least 80 per cent. of the stations heard are frequency controlled.

The Daventry visit mentioned above replaces the usual monthly meeting for July.

Portsmouth.—At the May meeting of the South Hants R.T.S., held at Fareham, over 50 members and friends from Southampton, Alton, and Winchester heard Mr. Cholot, of *Lissens, Ltd.*, give an interesting talk on short wave sets and components. A hearty vote of thanks was accorded the speaker. The annual meeting is on July 7. Local activity seems to be increasing, despite summer conditions.

Croydon.—G2MV is still active on 56 Mc., and results are more encouraging with greater activity on the band. His gear is ready for phone, or C.W. G3IG has his rig working well, and has ZL and U9 to his credit after a few weeks on the air. G5AN has been testing aerials to solve an E-W situation, and finds a 137 ft. end-fed superior for all-round DX on all bands. G2KU is testing RK34's in push-pull as P.A., results so far are very encouraging. No further reports to hand, but plenty of activity from other local stations.

Reading.—There are no reports from Reading and District this month, but local members should please note that the T.R. has changed his address to 26, Zinzan Street, Reading.

EASTERN PROVINCIAL DISTRICT MEETING

SUNDAY, JULY 10, 1938

THE UNIVERSITY ARMS HOTEL CAMBRIDGE

PROGRAMME.

10.30 a.m.—Assemble Car Park, Market Square, Cambridge.
10.45 a.m.—Visit Cavendish Laboratory, by kind permission of Dr. W. B. Lewis.
10.45 a.m.—Ladies visit places of historical interest.
1 p.m.—Luncheon, University Arms Hotel. (Tickets must be presented on entering Dining Hall.)
2.30 p.m.—Photograph. (Copies will be available at nominal price later in day.)
3 p.m.—Presentation of Granfield Trophy, followed by Business Meeting.
3 p.m.—Ladies' River Trip in Private Launch.
5.15 p.m.—Tea.

Tickets from MR. G. A. JEAPES (G2XV), 89, Perne Road, Cambridge.

By post in advance: Adults, 6s.; Children, 4s. 6d.

On the Day: Adults, 6s. 6d.; Children 5s.

River Trip, approx. 1s. 6d., payable on boat.

Note.—Applicants for tickets should send stamped addressed envelope for their return.

DISTRICT 8 (Home Counties)

Fourteen members attended a most enjoyable meeting held on May 6 in the "Land of Cheese"—to wit, the Talbot Hotel, Stilton, Hunts. Many interesting matters were discussed with a view to making future meetings more generally interesting. It was decided to form a small committee to deal in detail with matters which may arise, and then to submit their deliberations in a condensed form to the following meeting for general approval or otherwise. This should save much time on lengthy discussion at meetings. Members nominated were G5BQ, 5JO, 3BK, 5DR, 2XV, and after balloting, G2XV, 5JO, 3BK were elected. Business matters will in future cease to be discussed after 9 p.m., unless of a very important nature. The rest of the time will be given over to discussion on technical and other matters of a general nature.

Most stations are active, but outstanding news is lacking apart from reports of an interesting aerial system which is being perfected for use in restricted space by G2NJ.

On the previous page will be found an announcement concerning the Eastern Provincial District Meeting, which will take place on Sunday, July 10. This, it is hoped, will prove to be the most successful event of its kind ever staged in the District. Visitors will be able to view the largest of the only two "Cyclotrons" which are in existence in the world, and which uses about *one hundred and twenty thousand watts* of radio frequency energy at a frequency of about 12 Mc. for its operation. It is particularly desired to impress upon intending visitors that ladies are to be well provided for by visits to various places of interest in Cambridge during the morning, and a two-hour river trip in the afternoon on a private launch specially chartered. Even if the weather is against us, this will be quite pleasant, as the launch is fitted with waterproof awning. The cost of this trip will be about 1s. 6d. per head. Reservation for this trip should be made when booking tickets for the P.D.M., but no money should be sent, as it will be collected on the launch. Cash should, however, be sent for the actual function, together with a stamped addressed envelope for the return of the tickets. Further details of the programme, if required, can be obtained from G2XV upon application, enclosing stamp.

DISTRICT 9 (East Anglia).

Summer Meeting.—Owing to unexpected difficulties, we have cancelled the 56 Mc. D.F. event and Norwich meeting, which was to have taken place on June 26. Instead a station is being entered for the Annual 56 Mc. field day on July 3, under the call of G6QZP. The site will be the top of the church tower at North Tuddenham, near East Dereham, Norfolk. The event is to be made the occasion for holding a picnic hamfest on the Sunday afternoon at North Tuddenham, when it is hoped that District members with 56 Mc. receivers will listen for signals *en route* to the site. A C.C. transmitter and rotating beam aerial will be employed, and G6QZ wishes to arrange schedules with stations in other districts. Will those interested please communicate with G6QZ, A. G.Parker, 84, Cecil Road, Norwich, Norfolk.

The following notes have been received :—

Ipswich.—We welcome to the area BRS2381, who has been transferred to Bawdsey experimental station. G8MU, 8IS, 8AG and 3IN are inactive. 6TI is now W.B.E. (congrats. O.M.), 8KB and 2JD are working DX on 14 Mc. 8AN is testing D.F. aerials for 56 Mc. work. 8CU has completed a S.S. super. 2AN is getting ready for activity on 56 Mc. 2CWZ and 2CBX are awaiting their morse test.

Norwich.—G5IX at Swannington is building a power supply and constructing a beam aerial. 2MN has been active with the N.F.D. transmitter. 8VW has bought 8IY's transmitter, and is now licensed for 25 watts. 2UT is still on 14 Mc. 6CW, of Nottingham, recently visited 6QZ and arranged a twice-weekly 56 Mc. schedule. The second test produced a QSO between these two stations, which are situated 107 miles apart. No other reports have been received.

Important Notice.—Will T.R.s and all those reporting please note that commencing with the July issue of the BULLETIN, all District notes will have to be very much shorter, and only activities of an outstanding nature will be printed in full. If a number of stations are known to be active, but not doing anything of an unusual nature, it will only be necessary to group their call-signs together and merely state that they *are* active. All reports to G5QO at Lowestoft, not later than the 25th of the month.

DISTRICT 10 (South Wales and Monmouthshire)

Activity is being well maintained, and interest in 56 Mc. has brought a number of new stations, both receiving and transmitting, on to this band. We would particularly welcome reports on results, and in this connection we now record 56 Mc. contact between GW5KL and GW2UL.

Swansea.—A well-attended meeting was held on May 25, at which the D.R. had hoped to be present. A last-minute hitch made this impossible, and apologies are due accordingly.

Cardiff.—To the R.S.G.B. meeting on May 12 came 2BG, 2JL, 2UH, 2XZ, 5AB, 5BI, 5PT, 5XN, 6FO, 8AM, 8NP, 8UH, 2ACT, 2BQB, 2BUF, 2CDM, 2CPA, 2DBO, and 2DSD. An impromptu discussion drew very interesting comments from 2JL, 5PT, 8AM, 8UH, and several others.

Blackwood.—The flag is kept flying by 6BK, 8CT, and 8PU, but we would like to hear more from them.

At the Exeter P.D.M. on May 15, the District was represented by 2BG, 2JL, 5BI, 6FO, 2BQB, 2BUF, and 2CDM, all of whom had a most enjoyable time at a very well-attended gathering. Of particular interest to us was the fact that it was decided to hold a big show jointly with the Devon and Somerset groups at Weston, the tentative date being Sunday, October 9. Present indications are that about two hundred could get to this meeting, but even if we only had fifty or sixty, we are assured of official support in the shape and form of G6CL. Full particulars will be circulated to all concerned in good time.

DISTRICT 12 (London North and Hertford).

N. London.—The North London District meeting held on Friday, May 20, was mainly occupied in dealing with final N.F.D. preparations. G2AI produced a financial report of the District dinner held in April, and it was found that our funds had benefited considerably by this function. A suggestion was made that a further social event be held some time in July. The majority of members present were in favour of an outing, which would take the form of a picnic. The tentative date fixed was July 17 (Sunday), but further details will be circulated at a later date.

2CPL has received his two-letter call, and may now be heard on the air as G3GC. G8KO has submitted an interesting report on experiments with a new aerial on 1.7 Mc., which he claims has given a 100 per cent. increase in signal strength. The system has not yet been tried out on the higher frequencies.

Welwyn.—When the Central Herts Amateurs met at G2YN, Welwyn Garden City, on May 6, they were favoured with a visit by the North London contingent comprising G6CL, 2AI, 2GO, and 5QF. We were pleased to learn at this

meeting that 2AUV had received the call G3JX. Using CO and FD only, he is already working many U.S. stations on 14 Mc. C.W. with a genuine 10 watts. Another new call is 2DXC, Mr. Deering, of Hatfield.

Watford.—The Watford group met at 2BUP in Bushey on May 26, nine members attending.

G5RD continues his successful schedules with G2GG at Newbury with 56 Mc. C.W., and occasionally with phone. 5RD also reports hearing a number of Italian stations whilst listening on 56 Mc. at Ide Hill in Kent, but G2AW, who is familiar with this district, states that these are all harmonics, and appear on this frequency, due to some nearby power lines. 2ADM is now G3KP. The next meeting of the Watford group will be the last until the autumn.

DISTRICT 13 (London South)

A meeting of the Central Areas took place at West Norwood on May 26, and was well attended. Final arrangements were made for N.F.D. and the D.R. would like to take this opportunity of thanking all those who have assisted and helped to make a success of this year's event.

Items of general interest are very scarce this month. In the Balham and Tooting Area the following report active : G5PY, 2CU, 3DF, 2UX, and 2JK; the latter has now received an extension of his licence to cover the 28 and 56 Mc. bands. In the Anerley area 2LW continues his 56 Mc. experiments and in Wandsworth 2RC is still active.

During the last few months a great increase in the number of local phone contacts on the 14 Mc. band has been noticed in South London. We hesitate to criticise, but surely it would be possible to conduct these local experiments on some other band. It is well known that the 14 Mc. band is already very overcrowded, and we feel sure that some members do not fully realise the great amount of extra interference they are causing. It must not be assumed that we consider local contacts of no value *if some real experiments are being conducted*, but we do feel very strongly that the 14 Mc. band is not the one to use. It is hoped that those who use phone in District 13 will consider these remarks and realise that they are made in the interests of all.

The next Central Areas meeting will take place on June 23, and it is hoped that many new members will again attend. The proposed meeting in Blackheath has been postponed for another month.

DISTRICT 14 (East London and Essex)

Brentwood.—Congratulations to 2BJV now G3LA, 2BKT now G3JW and BRS3131 now 2DRI. 2CRJ is applying for full permit. The Brentwood Amateur Radio Society are now affiliated to the R.S.G.B. Individual members will be notified of details of next meeting by the T.R. G3LA will shortly be on 56 Mc., using C.C. and wants schedules and reports. 2DRI is very active with 56 Mc. gear. A party from Brentwood attended the Chelmsford " hamfest " at Galleywood.

Colchester.—All members are building receivers and at the next meeting results will be published. On meeting nights G8PZ will demonstrate a transmitter on 1.7, 7 and 14 Mc. A party from Colchester hope to attend at Cambridge on July 10.

East Essex.—There was an attendance of 15 at the May meeting held at 2DDL, Leigh-on-Sea. The chief items discussed were the local QRP Test and N.F.D. By the June meeting, results of the QRP Test should be available. The Morse classes held at G2LC are being discontinued during the summer months. G2UK is using 'phone and 6CT building superhet, 5UK new QRO gear, whilst nearly all local stations are active. 2CGF awaits his Morse test. We are sorry to lose BRS3211 (now at North Harrow), who will eventually reside in Bucks.

Chelmsford.—The first Chelmsford " hamfest " was held at the " Running Mare," Galleywood, and the attendance was 32. The guest of the evening was YI2BA, who gave an interesting talk on conditions at Basra. Brentwood and Southend were well represented, the D.R. was also present and several new members were enrolled. G2GN, of Chelmsford, has applied for a 25-watt permit.

East London.—The May meeting held at G8AB, Loughton, was well attended and N.F.D. formed the chief topic. G3AI, who attended his first meeting, is applying for 1.7 Mc. facilities. G8TL and G6AH, of Seven Kings, and G8PL, of Romford, have applied for 25-watt permits.

A portable station is to be fielded on the 56 Mc. field day on Sunday, July 3. Will those able to attend inform the D.R. and, if possible, mention what gear, if any, they can bring along ? Several from this area hope to visit Cambridge on July 10.

G8SMP AT CHOBHAM.

A photograph taken during the T.V.A.R.T.S. 7 Mc. Field Day held on May 22. Mr. F. Crocker, G2NN, President of the Club, is seated centrally with G5LC on his left. G8SM centre of group at back.

DISTRICT 15 (London West, Middlesex and Buckinghamshire).

Nearly 30 members attended the May meeting at G6VP and our thanks are due to both VP and his daughter for their hospitality. See " Forthcoming Events " for date of next month's meeting.

As the D.R. will be unable to cope with the " Notes " and " Letter Budget " for the next two months, G6CO has offered to undertake the task for both June and July, so *will members please note that all reports should be sent to him at* 22, *Chipstead Gardens, N.W.2, by the* 25*th of the month.* Watch the August issue for the new address of the D.R., to which August reports should be sent.

A welcome to VU2GA (now G3KK), who joins the district, also to G2UM, another new member.

Congratulations to G5SR, who is the second member of the district to be elected to the A.R.R.L. A1 Operators Club. G8MA puts the district on the map by achieving WAC and WBE on 'phone in one day (Sunday, May 22) using 25 watts input. BRS3211 has joined the district.

West London.—The following are active: G6CO, 8WR, BRS3074 and BRS3227. G6WN has a super working on 3.5, 42 and 56 Mc., during the month 6RW contacted W7 on telephony on 14 Mc.

South Middlesex.—G2VV built 56 Mc. receiver, 6GB finished superhet, while 2KI, 2LA, 2NN, 3JG and 2DDV are all active. G3BQ now at Staines.

North Middlesex.—G6LJ worked his first W on telephony, while 5SR reports.

Bucks.—BRS3211 only one to report.

The T.V.A.R.T.S. held a 7 Mc. field day on Sunday, May 22. The stations taking part were G6GBP at Box Hill, 6PKP at Pitch Hill, 2GKP at Burwood Park and 8SMP at Chobham Common. The scores (subject to confirmation) were 76 points, 71, 44 and 22 points, in order as above. The winner took the opportunity of testing N.F.D. gear.

DISTRICT 16 CONVENTIONETTE

SUNDAY, JULY 24, 1938

at

ADELPHI HOTEL, WARRIOR SQUARE, HASTINGS

Assemble	12 noon
Lunch	1 p.m.
Short business Meeting	2.30 p.m.
Tea	4.30 p.m.

Charge 5s. inclusive. Reservations to Mr. W. H. Allen (G2UJ), not later than July 19. Car parking facilities near Warrior Square Station.

DISTRICT 16 (South-Eastern).

In accordance with the decision reached at the recent D.R.s' conference in regard to the length and subject matter of District Notes, it is proposed to keep these down to a minimum in future and only to include those items which can honestly be considered as of interest to the membership at large. Please do not forget that the District Conventionette will take place on Sunday, July 24, at the Adelphi Hotel, Hastings. Further details will be found above.

Ashford.—Majority of stations are active.

Brighton.—Fourteen members attended a meeting on May 5, when G8OQ spoke on "Frequency Meters and Monitors." We regret that 8AC has been forced to resign from the T.R.-ship owing to pressure of work, and Mr. H. T. Lunson, 2CTO, has been elected in his stead. (Many thanks, 8AC, for your past services.—D.R.) Congratulations to 2ASG and 2CSX, who are now 3HP and 3JF, respectively. 6CY and 6RM also report active.

Chichester.—The "West Sussex" enjoyed lectures during the past month by "Avo" and "Weston," demonstrations of measuring instruments, etc., being given on both occasions. 2AAH claims to have heard an aeroplane on 56 Mc. 'phone while the machine was flying over Paris. Details, please! The following are active, many on 56 Mc.: 2PF, 2ZV, 3JM (ex-2CNA. Congratulations.), 5PF, 2BGH, 2BAG, 2CDR, 2CIX, 2DDD.

Beckenham and Bromley.—N.F.D. was the subject of the May meeting and the 1.7 Mc. transmitter to be used was demonstrated. A welcome visitor was W1KJJ. Next meeting will be on June 25 at ACS Radio, Bromley.

Dover.—BRS2965 is now 2DYL. *Gravesend.*—Active: 2IZ, 3HU, 5IL, 5SI 5SU and 6PG. *Tunbridge Wells.*—Active: 2UJ, 5KV, 6ML, 6OB, 2AKQ.

Whitstable.—G2UJ gave a talk on his new TRF 56 Mc. receiver at a meeting of the W.R.A. on May 7. The Club will participate in the 56 Mc. field day, using the call G5CIP. Active: 3BD, 5CI, 2AAN and 2AXU.

DISTRICT 18 (East Yorkshire).

Hull.—Activity in the town seems to be on the decline again, only 17 attending last month's meeting, this being very poor support for those who made the arrangements. G5MN is busy on aerial experiments and 2CAQ is collecting data on frequency measurement.

Scarborough.—Congratulations to Mr. S. Stephenson, ex-2CIW, now G3KS. G2TK recently demonstrated his NC 100 receiver which spoke for itself. G2CP constructed and erected on site the N.F.D. transmitter. 5MV is adopting front of panel control band switching for exciter stages.

At the latest local short-wave club meeting G6TG brought along a 28 Mc. Johnson Q aerial and demonstrated its construction and erection. He also explained its principles of operation.

The Secretary of the Club asks for more support from fully licensed members, as the A.A. and B.R.S. members look to them for advice and assistance. Stations active: (C.W.): G2CP, 2TK, 6CP, 8BB; (phone): G3KS, 5MV, 5GI, 6SO, and 2BGO, 2DDA, 2DSY, 2DSB.

Channel Islands

There is very little activity at present in Guernsey. Owing to poor conditions prevailing on 14 Mc. G8MF has migrated to 7 Mc. and has been deluged with S.W. listeners' reports. He is building a new transmitter using Tritet and PA.

Congratulations to 2DUP, of Jersey, on obtaining his A.A. Call.

No reports have come to hand, so it is impossible to compile a list of the C.I. stations that are actually on the air at the present time.

All English amateurs visiting Guernsey during the summer are cordially invited to call on G8DO.

Northern Ireland

Hearty greetings to all GI members. The writer would like to record on their behalf a warm appreciation of the fine work done by GI6YW, the retiring D.R., and of the great amount of unobtrusive energy and time expended by him during his term of office. The District will remain greatly in his debt.

There seems to be a general increase in activity, although reports are lacking from many members who are doing good work. 3ML is putting his new call-sign round Europe. We are glad to see that

8DB has recovered from the effects of the recent sad canoeing tragedy on the Bann river, and he should be on the air by the time these notes appear. 5QX and 6YW are still putting circles round the globe. 5NJ is also active on 14 Mc., using a Johnson Q, and is rebuilding for phone. 8PA is also rebuilding in steel, rack-and-panel fashion. 5SJ and 2SB are collaborating in experiments with various aerial rigs, and the means of eliminating QRM to adjacent B.C.L.'s which has made a startling appearance with some of these arrays. 8UW has passed his first half-century of W contacts.

Reports from GI members would be welcomed by the District Scribe, Mr. S. Johnson (GI5SJ), 10, Cyprus Avenue, Belfast, or the writer, GI6TB, *not later than the 26th* of each month.

A District meeting is to be held shortly after Field Day, and members will be notified individually.

SCOTTISH CONVENTION, 1938

SUNDAY, SEPTEMBER 18

at

GRAND HOTEL, CHARING CROSS, GLASGOW

Assemble—12 noon.
Lunch—1 p.m.
Business Meeting—2.30 p.m.
High Tea—5 p.m.

All reservations to Mr. J. Hunter (GM6ZV). Tickets (7/6 each) will be ready early in July.

Scotland

The reorganisation of "E" District, mentioned last month, has now been completed, and it is hoped that it will prove of advantage to the members involved. The new "E" District comprises the counties of Ayr, Dumfries, Wigtown and Kirkcudbright and Arran. Renfrewshire, Lanarkshire, Dumbartonshire and Argyllshire will be reabsorbed into "A" District for the meantime. Mr. H. McConnell, Jr., of "Ashgrove," 23, Carrick Road, Ayr, has kindly consented to undertake the duties of District Officer for the new "E" District, and it is hoped that the members will co-operate with him to the full.

"A" District.—We again wish to draw the attention of members to the fact that a meeting will be held in June on the usual day when it is hoped to discuss the aftermath of N.F.D. At the May meeting, the chief operator of each N.F.D. station gave a brief outline of the transmitter, receiver and aerial to be used at his station. Congratulations to GM6MS on the arrival of a junior "op."

"B" District.—News is still lacking from this district.

"C" District.—Meetings continue to be well supported and subjects for discussion are now being set beforehand. GM6RT has encountered an unusual snag in connection with his power pack. General activity is high and amongst those reporting are GM3IX, 3IW, 5SC and 6KO.

"D" District.—The district decided to purchase four portable masts for N.F.D. use. Most stations are active, although there has been some falling off due to the advent of warmer weather.

"E" District.—As mentioned earlier, the reorganisation of the district is now completed.

"G" District.—News is scarce; GM6RG is rebuilding his transmitters. Others reporting are 2CXC and GM5FT.

"H" District.—We wish to apologise to Mr. Craig (GM6JJ) for the mention last month that he was active on 56 Mc. This is incorrect, as Mr. Craig is not licensed for that band. This district also purchased masts for N.F.D. use. Meetings are being well supported and many interesting short talks are given. GM8MQ and 8KR are rebuilding, while 6JJ is testing various P.A. couplings, although much of his time is taken up by R.E.S. work. 2DIT and 2ANL are building frequency meters and monitors, and 2DVV has started construction of his first transmitter. The D.O. has presented the district with a flag.

Egyptian Notes

Generally speaking, conditions do not call for much comment other than that which can be heard on the air every day. 14 Mc. is still the only band at present occupied and very little of interest is reported.

SU1SG has returned to activity, but so far is only using his buffer stage as the 805 final is causing some trouble. ZC6AQ recently stayed with SU1SG, and nearly all the Alexandria amateurs took the opportunity of having a personal QSO with him. Many very pleasant evenings were spent together and it was with real regret that we had to say goodbye.

To SU1RD we offer our congratulations on the occasion of the birth of a daughter to his XYL. We understand the future YL operator has already begun training in microphone technique by practising on the local land line!

Two calls heard recently which will possibly arouse a certain amount of interest were those of OY4C (worked by the writer on May 22) and ZC4AC. The former signal was later heard signing ZL2QR so - - - ! The latter was not actually heard here, probably because of skip—assuming the station to be a genuine one. Information about this would be appreciated.

Apart from HI, YV, VR2FR and ZD2H there is not much else of interest to report. These stations were worked by SU1WM, whose activities will be curtailed until October, when he returns from holiday in G. During his absence, SU2TW has very kindly offered to take over the duties of scribe.

SU1WM.

BOOK THE DATES NOW

SEPTEMBER 1, 2 and 3

ANNUAL CONVENTION

BRITISH EMPIRE NEWS AND NOTES

British West Indies (Eastern Group)

By VP2AT.

A very pleasant afternoon was spent when W1WR and VE3GZ visited VP2AB and 2AT in Antigua. Other stations visited during their trip were 6YB (Barbados) and 3AA (British Guiana). The latter station is a new one in B.G. The operator, like 3TEST reported last month, is also an ex-operator of 3BG. 3AA used 3NV for a short time before his present call was assigned to him.

The following is a full list of new Antigua calls :—

2AA : Reserved.
2AB : C. E. DeSilvia (ex 2CD).
2AC : E. Vanier (ex 2BX).
2AD : James C. Lett (ex 2TG).
2AE : T. Derrick (ex 2DA).
2AT : A. Tibbits (as before).

VP2LA in St. Lucia would like reports on his 7,010 kc. transmissions. These will be acknowledged.

Ceylon

By VS7RP.

Conditions for April were distinctly poor. QRN was worse than in the previous month, especially on 7 Mc., which, apart from local contacts, is hopeless at the moment. 14 Mc. has been very little better in this respect, apart from a few evenings when signals from XU and J came in fairly well. Signals from VK and ZL have been very poor, and are not likely to improve until about August. Pitcairn Island (VR6AY) was heard one Sunday morning on telephony working a W6. No reports are to hand from other VS7 amateurs, though there are about eight stations active.

Eire

By EI9D.

We extend our very deepest sympathy to EI4D, who was recently bereaved by the death of his mother.

EI5J, continuing his telephony experiments, and helped by certain apparatus kindly lent to him by the Ministry of Posts and Telegraphs, has now perfected a novel and efficient system of " push to talk." We hope later to receive sufficient details for a BULLETIN article, for, although there is some reason to think that the idea has been employed previously, it is certainly not usual practice. In the meantime those interested should communicate direct with EI5J.

The undernoted new licences have been issued : EI7N, F. W. Goodman, 3, Woodlands Avenue, Stillorgan, Co. Dublin ; EI8N, The Hon. John Forbes, Castleforbes, Newtownforbes, Co. Longford.

Malta

By ZB1E.

By the time these notes are in print NFD will have come and gone, and as these lines are being written it is not certain whether the ZB1-Group portable would, owing to the present working of unscheduled duties by most of the members, have taken part as in previous years. In such a case, however, it is certain that individual members supported the event.

Conditions on the 14 Mc. band have improved considerably and PY, LU and J have been worked in the evenings. The 28 Mc. band is also opening up for some hours.

Stations active are : ZB1C, 1E, 1H, 1J, 1K, 1L, 1O, 1P, 1R, 1T, 1U and 1V.

Northern India

By VU2AN *via* G5OV.

The early arrival of the hot weather in Northern India brings the usual tale of woe from the DX stations. Many districts being on D.C. mains, QRM from 'phone obliterates weak signals until late at night when the European variety does the rest !

AC4YN is active occasionally with a very nice signal on approximately 14,120 kc. 2EO, after a complete rebuild, is getting out satisfactory, using a push-pull 5/400 final. With the new set he has worked W8, VK, ZS, Europe, and is a popular signal in G.

VU2FX is sticking to his old transmitter but hopes to be on 'phone again soon with a new crystal microphone. He is keeping daily schedules with SU1WM, and has worked unusual stations in LX1AS and CN8MA. 2FV is active and was heard working PY. 2AN is still trying to raise the elusive South Americans and VE, though K6 is rapidly becoming a " local " through almost daily contacts.

We are sorry to hear that 2AU is leaving for G for health reasons, but hope to hear him active with a new call shortly.

South Africa

Division One.—The thirteenth annual Conference of the S.A.R.R.L., which was held at Durban during Easter, was an unqualified success.

We understand it is possible that ZS amateurs will in the near future be granted licences to operate up to 200 watts.

ZS1AN has been testing grid modulated 'phone. 1B having been given a frequency meter and 100 kc. bar by ZS1H is exceedingly grateful to him for his generosity. 1AH may have left our shores for good by the time these notes appear. He contemplates returning to England.

Congratulations to ZS1H on his recent engagement. Mr. Shoyer assures us he has definitely given up amateur radio, but we hope the call of the key will eventually induce him to return to the fold.

We regret the notes are short this month, but it is impossible to make something out of nothing ! We would again appeal for news, in order to make these notes interesting to members in other countries.

ZS1B.

Division Six.—A record in 56 Mc. two-way communication has been established by a number of amateur radio stations in Durban and on the North Coast, Natal. This distance, and greater, has been covered overseas, but not previously in South Africa. The Natal Amateurs claim that for the first time in South Africa a 20 miles non-visual distance has been covered. The communications took place between 14.30 and 15.30 G.M.T., on the evening of April 13.

ZS6DM has, since January, contacted over 600 DX stations, resulting in a total of 48 countries. 6EM is rebuilding. 6T has been heard on 14 Mc. 6Q, 6BK, and 6CS are inactive, the latter being engaged in building an outdoor station. 6BT, ex G6UO, after contacting G2IT, discovered they were old friends, having met during 1927.

ZS6AM has been active on 7 and 14 Mc., and the quality of his telephony and musical transmissions is excellent. 6BL has moved to a new locality, and his address is now 8, Schuller Street, Forest Hill, Johannesburg. He is on 14364 kc., using C.W. 6EN is on 7 and 14 Mc., using C.W. 6C is experimenting with 56 Mc. apparatus, and will be listening for ZS signals in this band.

ZS6DZ has added two new countries to his log, namely VS6 and ZD2. His present aerial is a semi-vertical end fed Hertz—A.O.G.—33 feet in length. Reports from Asia have been satisfactory.

ZS6DZ (ex ZU6V).

AROUND THE EMPIRE—No. 9

VS2AK.

THIS station built, owned and operated by Mr. T. A. Dineen (a radio engineer employed by *The General Electric Co., Ltd.*, of England), is located approximately three miles from Kuala Lumpur, the capital of the Federated Malay States.

The equipment depicted comprises from right to left, the 28 and 14 Mc. transmitter, operating rack with receiver, microphone and monitor, stand-by receiver and logs, reference books, etc.

Transmitter.

The transmitter is built on a telephone type steel rack with $\frac{3}{16}$ in. steel panels and $\frac{1}{16}$ in. sub-chassis. Incidentally, the panels and chassis were all drilled by hand, a feat which considerably reduced the weight of the constructor! The bottom panel contains the power supply for the speech amplifier and modulator, supplying 600 v. at 250 mA for the modulators, 300 v. at 60 mA for the speech amplifier and 200 v. for grid bias. The next panel contains the power supply for the radio frequency section supplying 1,000 v. at 120 mA and 400 v. at 120 mA together with the necessary filament voltages, etc. The third panel contains the speech amplifier and modulator. The speech amplifier and driver comprising a MS4P first stage, MH41 second stage, and 2-MH4s in push-pull, driver. These drive two Osram DA30s in class A B, giving a maximum output of approximately 55 watts if necessary. Jacks on the front panel enables either a carbon, moving coil, or crystal microphone to be used; the two controls are volume and tone.

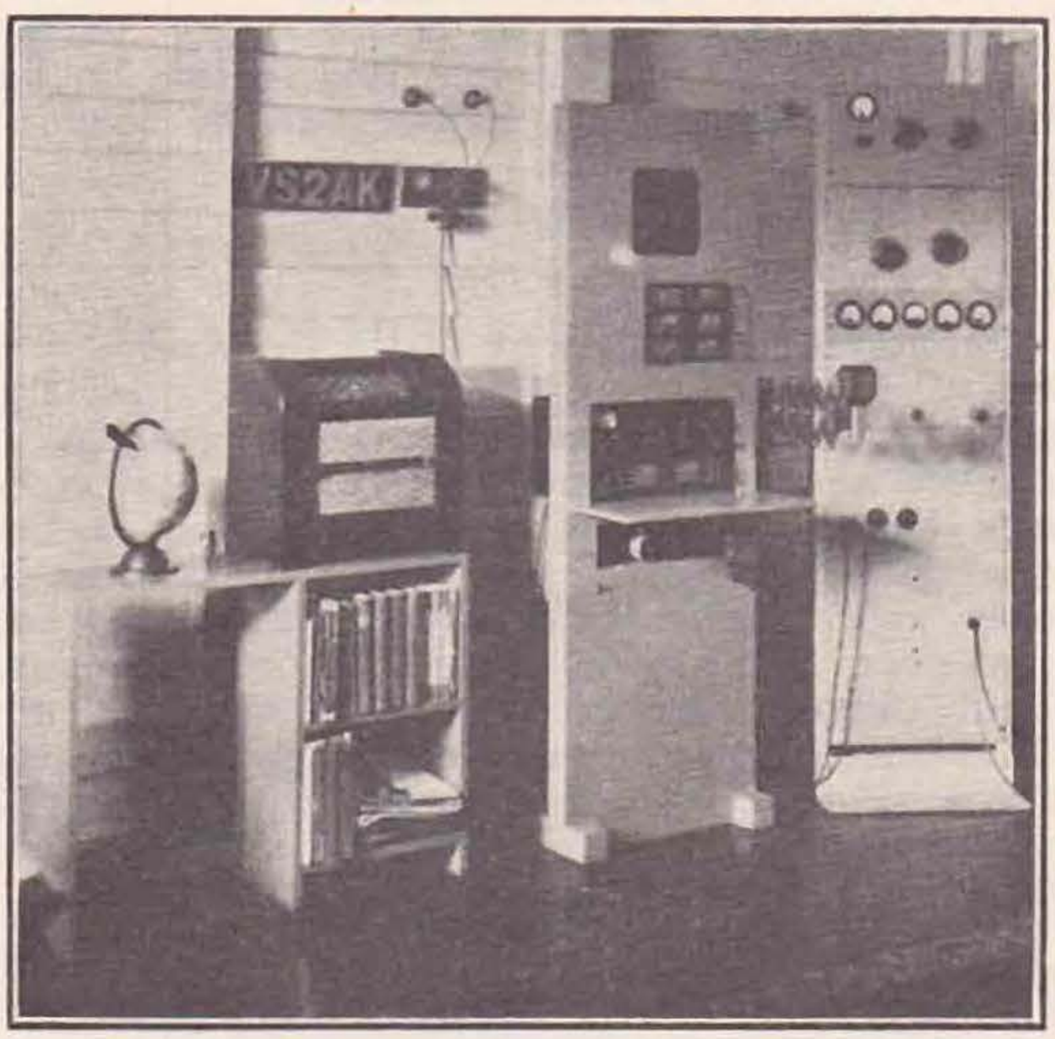
The next panel contains the crystal oscillator and exciter stages. The crystal oscillator, frequency doubler, and the driver are all KT66's. These are the *Osram* equivalent of 6L6G. A *Bliley* variable frequency crystal is used which gives a frequency change of approximately 20 kc. Band switching is incorporated on the exciter giving approximately 15 watts output on 14 or 28 Mc.

The next panel, which was incomplete when the photograph was taken, contains the final radio frequency stage, consisting of 2-801s in push-pull running at approximately 900v. on the anode and about 110 mA. Plug-in coils are used in this stage for easy band changing. Excitation failure and overload relays are also incorporated.

The top panel contains a Pi-section aerial filter, the small knob at the left controlling ganged switches throwing any one of three aerials to the transmitter output.

Receiver Rack.

This rack houses a *National* HRO Senior receiver, power supplies, audio amplifier, loud-speaker and coil blocks. The HRO is slightly modified, the normal output pentode valve being removed and the output fed to a paraphase push-pull amplifier



A recent view of VS2AK

using 2-MHL4 and 2-PX4 high quality triodes. This amplifier gives an undistorted output of 6 watts to either the monitor speaker located on the receiver rack or the distant points in the bungalow. The small aerial network seen to the left of the receiver rack on the wall is for reception. This is a 7 Mc. di-pole terminating in a parallel tuned circuit coupled by link to the input of the HRO.

Other equipment not shown but which normally has its position on the small table to the left, includes a crystal controlled frequency meter and a portable monitor.

This station functions normally on 14 Mc. 'phone and occasionally on 28 Mc. 'phone, but the operator is willing, if necessary, to work C.W. on either of these frequencies. Normal operating frequencies are 14,255 and 28,510 kc.

Any correspondence relating to this station, or reports should be addressed to VS2AK, T. A. Dineen, c/o The General Electric Co., Ltd., Kuala Lumpur, F.M.S.

A Visit to PY and LU

By H. B. Groves (2BGN).

FOLLOWING an illness the writer set out early in 1938 for a South American holiday, during which he had the good fortune to meet several well-known Brazilian and Argentine amateurs.

The station of Dr. J. R. Baccarat (PY2AJ), located at Santos, was the first visited, and although the operator had not been active for some time reconstruction work had continued. The operator of this station, as prophesied last year by Dr. Gee, (G2UK), won the 1937 Brazilian Contest, but at the time of the visit the award had not been made. Shortly after the first meeting with Dr. Baccarat, the writer had the pleasure of meeting PY2AK, a cousin of 2AJ. Although operating on 28 Mc. at the time, 2AK kindly changed frequency to 14 Mc. in order to try to contact a British station. Several G's were heard but unfortunately no contacts resulted. The input power at 2AK was around 400 watts, plate modulated.

After leaving Santos visits were made to Rosario and Buenos Aires. In the latter town LU2AX was met and an enjoyable evening spent seeing the "City of Light." One is apt to wonder what short-wave reception is like in districts where there are countless electric signs. May this not explain why it is frequently difficult for Europeans to contact LU stations?

After a tour of the city, LU2AX invited the writer to attend a meeting of the Argentine Radio Club. During the evening proficiency certificates and medals were presented. It is of interest to record that the speeches made by the Head of the Department of Posts and Telegraphs, the manager of a prominent newspaper, and various club officials, were radiated by amateur transmitters working on four different wave-bands.

Conversation presented little difficulty as many of the amateurs met that evening speak exceptionally good English. The Secretary of the Club extended an invitation to visit the Club Rooms at any time during the writer's stay.

It was learned that interest centres mainly around the 7, 14, 28 and 56 Mc. bands. The chief difficulty encountered on 56 Mc. is the lack of listening stations outside the towns, necessitating local working, with little "medium distance" operation between 50 and 200 miles. On the other bands, local phone QRM is experienced, due to the stations being grouped in the towns and to the fact that most of them are using comparatively high power.

The Club runs a Radio School, at which all branches of radio are taught, including Morse for intending amateurs. This school is very popular, certificates being awarded for proficiency in radio subjects.

LU2AX suggested that any amateur who contemplates a visit to South America should write to the radio clubs in the countries to be visited, in order that suitable entertainment may be planned. Ths suggestion is passed on in the hope that it will be useful.

"Ham spirit" is very much in evidence amongst the PY's and LU's, and the writer would like to express his deep appreciation of the welcome accorded to him by all the amateurs he met.

Empire Calls Heard

In view of the fact that a very large percentage of the operators of the overseas stations whose calls appear in Empire Calls Heard lists are not readers of this Journal, we feel that no useful purpose is served by publishing such information.

As from the July issue we shall only publish Calls Heard lists of British Isles stations submitted by members *resident outside Europe and Northern Africa.*

* * *

Martin G. Bourke, 2AOU, "Crediton," Samares, Jersey, Channel Islands. April 1 to May 23, 1938, on 14 Mc.:—

VE5 : ot (59f), er (58f), acn (58f), vo (559), acr (559).

VK2 : xd (56f), gv (579), kj (459), tf (568), qi (559), vu (579), kx (56f), np (559), bk (56f), aq (55f), ade (559), abe (55f), cr (56f), bj (559), acn (549), ((579), eo (589), vv (57f), ahx (589), nq (56f), a (589), ns (579), di (569), zf (557), aez (589), kj (57 agd (559), hz (589), nf (55f).

VK3 : kx (56f), aek (589), xn (559), eo (569), cx 579), xg (549), ku (57f), bj (579), zd (579), xu (579), wl (569), qk (569), iw (579), wo (569), vu (568), nr (559), zr (579), jk (579), ek (549), wa (56f), mv (579), ns (579), vb (559), vj (558), ng (579), zj (589), ce (558), ja (569), hg (589), ds (479), vb (569), ir (449), vf (558), pe (568), xd (58f).

VK4 : el (539), hr (539), sd (589), rf (569), hd (559).

VK5 : ai (569), rs (589), wr (569), ml (579), js (569), ll (567), sw (549), jo (559), wk (589), ww (558), bh (549), rt (559).

VK6 : af (569), pk (559). VK7 : cm (559).

VK9 : dm (556). VP1 : ba (58f).

VP2 : ab (579), at (588). VP3 : aa (55f), nv (55f).

VP4 : ga (48f). VP5 : br (54f).

VP6 : mr (589), fo (58f). VP8 : d (557).

VP9 : g (58f). VQ2 : cm (559), fj (589).

VQ3 : hjp (448). VQ4 : cri (597), ktb (58f), ktf (579).

VR2 : ff (338). VR4 : ad (569). VR6 : ay (57f).

VS1 : ai (589), af (559). VS7 : gj (588), ra (589).

VU2 : ed (567), gb (577), fv (588), ca (47f), fx (589), cq (57f), cr (567), fq (579).

XZ2 : dy (469), ez (59f). ZC6 : aa (478), aq (588).

ZE1 : ja (59f), ji (568), jz (559).

ZL1 : hy (569), fe (569), mq (548), ke (559).

ZL2 : gw (559), lb (558), la (579), qr (548), bi (578), vm (547), gn (559), ub (569), fi (569), ou (559).

ZL3 : aj (579), bi (578), sm (539), jr (569), ap (549), gr (568), dj (569).

ZL4 : ac (568), gm (579), br (579), dr (558), fb (578), fv (579), af (569), fs (579), dk (549).

ZS1 : ac (559), af (45f), ah (579), au (579), av (588), b (559), cc (548), co (579).

ZS2 : am (588), j (577), x (579).

ZS3 : f (448). ZS4 : l (589). ZS5 : q (589).

ZS6 : cx (569), cz (549), dk (549), dm (579), dy (569), eu (468).

Figures in brackets denote RST values. F = 'phone.

Congratulations

To Mr. and Mrs. Stan Henton (G5VU), of Nottingham, on the arrival of a daughter, and to Mr. and Mrs. Jack Schefer (G3JX), of Harpenden, on the arrival of a son and heir. Both are learning the Code!

QRA Section

Manager: H. A. M. Whyte (G6WY).

When sending in new, or changes of QRA, members are requested to print their names and addresses in block letters, as frequently signatures and names of streets are illegible. This necessitates reprinting the corrected address in the next issue of the Bulletin.

New QRA's

GW2BG.—G. R. Silverthorne, Radio House, Abertillery, Monmouthshire.
G2DT.—F. L. Nunn, 41, Oxford Street, Ipswich, Suffolk.
G2QN (ZD2H).—Art. Tomlinson, 19, East Park Road, Blackburn, Lancs.
G2UM.—F. E. Herzog, 3, Great Cumberland Mews, Seymour Place, London, W.1.
GM2UW.—Ft.-Lt. A. J. S. Wilson, Officers' Mess, No. 1 F.T.S., R.A.F., Leuchars, Fife, Scotland.
G2VM.—F. Horace-Hulme, F.R.A., "Kilvin," 77, Shenstone Avenue, Rugby, Warks.
G2XX.—F. Wilson, "Laureldean," West View Road, Dean, Winchester, Hants.
GW2XZ.—L. W. Hancock, "Oakleigh," Eastbrook, Dinas Powis, Glam, South Wales.
G3AT.—J. H. Ayre, 17, Garfield Street, Accrington, Lancs.
G3FA.—H. Hinchliffe, 165, Causeway Head Road, Dore, Sheffield.
G3FG.—J. R. Davidson, 31, Carshalton Park Road, Carshalton, Surrey.
G3FK.—E. W. Taylor, 38, Sutton Grove, Sutton, Surrey.
G3FS.—H. G. Whitmore, 96, Woodford Crescent, Pinner, Middlesex.
G3HC.—Victor Delnevo, 17, Corn Street, Witney, Oxon.
G3HN.—W. W. Cock, 79, Longmead Avenue, Bishopston, Bristol, 7.
G3ID.—A. A. Tupman, 10, Brook Street, Dawlish, Devon.
G3IJ.—C. C. Harris, "Hamdene," Queen's Road, Fleet, Hants.
G3IZ.—Chas. H. Thorpe, 31, Stephen Hill Road, Sheffield, 10.
G3JB.—C. R. Taylor, Marlborough House, Greenhill, Oldham, Lancs.
GW3JI.—R. Jones, Palm Villa, 1, Victoria Street, Llandudno, Wales.
G3JR.—C. A. Heathcote, Marlow Cottage, Lostock Hall, Preston, Lancs.
G3JS.—W. L. Baillie, 10, Holly Road, Handsworth, Birmingham, 20.
G3JU.—S. G. Abbott, Tetworth, Everton, Sandy, Beds.
G3JX.—Jack Schefer, 43, Station Road, Harpenden, Herts.
G3JZ.—E. T. Webster, B.Sc., Ph.D., 5, Diglands Avenue, New Mills, Via Stockport.
GM3KC.—James Stevenson, 115, Murray Street, Montrose, Scotland.
G3KD.—R. Priestley, 49, St. Georges Avenue, Cleveleys, Near Blackpool, Lancs.
G3KH.—A. H. Parker, 6, Nursery Road, Scraptoft Lane, Leicester.
G3KM.—B. Arnold, "Draycott," 976, Bristol Road South, Birmingham, 31.
G3KS.—Q. S. Stephenson, Garwhin, 145, Stepney Road, Scarborough, Yorks.
G3KX.—W. Gould, 61, Ashcombe Park Road, Weston-super-Mare, Som.
G3KZ.—R. D. Holland, 233, Sherrard Road, Manor Park, London, E.12.
GW5AB.—A. E. Ashfold, 10, Alexander Road, Canton, Cardiff, South Wales.
G5CS.—C. Coates, 15, Austin Road, Luton, Beds.
G5SB.—J. Monahgan, 6, Johnson Street, South Shields, Co. Durham.
G5XK.—W. E. Sykes, Radio House, Kennedy Avenue, Fixby, Huddersfield, Yorks.
G6IX.—S. P. Mason, "Nanteos," 71, Melrose Avenue, Sutton Coldfield, Warks.
G6OD.—C. F. Suffolk, 43, Lucerne Road, Thornton Heath, Surrey.
G6PB.—G. Ball, 21, Highfield Road, Walker, Newcastle, 6.
G6ZC.—James Twatt, 33, Second Avenue, Chelmsford, Essex.
G8AO.—E. Clarke, Romaldkirk, 140, Hanton House Road, South Shields, Co. Durham.
G8GN.—R. W. Arnott, The Garth, Monmouth.
G8MK.—H. M. Campbell, 461, Walsgrave Road, Stoke, Coventry, Warks.
GW8NP.—C. Parsons, 11, Gileston Road, Pontcanna, Cardiff.
G8SW.—R. S. Hennig, 7, Francis Road, Eastcote, Middlesex.
2ACJ.—W. Brook, Brook Lea, Haigh Moor Road, West Ardsley, Near Wakefield, Yorks.
2AQF.—M. A. Floyer, 8, East Avenue, Bournemouth, Hants.
2ARI.—K. Gooding, 7, Broadbent Avenue, Ashton-under-Lyne, Lancs.
2BHO.—R. G. Batt, 98, The Vale, Southgate, London, N.14.
2BVG.—F. S. Gell, 113, Red Hill Road, Arnold, Near Nottingham.
2BRY.—G. R. Barmby, 29, Crystal Street, Hull, Yorks.
2CAX.—Ray Waite, c/o Mrs. Kerry, Sibelius, Westville, Hucknall, Notts.
2CHR.—M. G. Glenster, 65, Heathwood Gardens, Charlton, London, S.E.7.
2CXI.—R. F. Laurence, Grove Lodge, Dorney Grove, Weybridge, Surrey.
2DFR.—F. N. Shelley, 54, Avon Road, Bitterne Park, Southampton.
2DJF.—V. Hill, 87, Bishop Street, Fratton, Portsmouth, Hants.
2DJL.—Eric Wolstenholme, 5, Well Street, Leeds Road, Dewsbury, Yorks.
2DJX.—G. R. Martin, The Dees, Shepherds Lane, Dartford, Kent.
2DOP.—J. D. Kingston, 51, High Drive, New Malden, Surrey.
2DRR.—J. D. Morris, 17, Lynton Road, Heaton Moor, Stockport, Lancs.
2DSP.—R. Allen, 37, Highfield Road, Bognor Regis, Sussex.
2DTF.—A. Gilmour, 5, Chilwell Road, Beeston, Notts.
2DTG.—A. G. Ashfield, "Woodstock," Drury Lane, Houghton Regis, Beds.
2DTQ.—A. Goode, 5, Silverdale Avenue, Mansfield Woodhouse, Mansfield, Notts.
2DTU.—S. J. Vamplew, 41, Willoughby Road, Boston, Lincs.
2DVG.—R. D. Walmsley, Beaufort House, Canford School, Wimborne, Dorset.
2DVO.—John Stevenson, 14, Hillcrest, Chryston, Glasgow.
2DVV.—Thomas Paton, 339, High Street, Cowdenbeath, Fife.
2DVX.—C. G. Middle, 50, Ashley Down Road, Horfield, Bristol, 7.
2DWH.—D. Summers, Tobacconist Farm, Minchinhampton, Glos.
2DWT.—P. Kirkby, "Ruan," Weston Way, Northampton.
2DWY.—B. B. Fulton, 3, Anderson Street, Bonnybridge, Stirlingshire.

We regret that G6YD was stated to have been cancelled in May Bulletin; this should have read G6YF.

Cancelled: G2HL, G2RV, G2XB, G2ZF, G5AI, GI5DU, G5FS, G6FQ, G6PN, G6SI, 2AGO, 2AHL, 2ARI, 2ASC, 2AUO, 2AUV, 2AYO, 2BCM, 2BHA, 2BMY, 2BON, 2BRA, 2BRL, 2BTT, 2BTX, 2BVD, 2BVH, 2CBO, 2CFN, 2CGI, 2CHG, 2CIW, 2CMF, 2COX, 2CQU, 2CRO, 2CSL, 2CSV, 2CUJ, 2CWB, 2CXP, 2CYP.

MONTH ON THE AIR—(*Continued from page* 701)

FM8AA, VQ8AS, and many of the rarer European countries. He heard VP7NT, LA7J, VO6D, YM4AA, FY8AB, ZB1H, 1E, CR7AK and XZ2EZ.

Elsewhere in this issue appears a list of the first holders of the B.E.R.T.A. We think it might be a good idea to list each month those who are aspirants for this award. Members interested should please send in the number of *confirmed* contacts under two headings: (1) Dominion Radio Districts, and (2) Other Empire Areas. The total cards required to claim the award is 40; 25 Dominion and 15 Colonial. Only those who have 30 or more need report, and we will then have a record of those who will shortly be eligible for the certificate. As soon as a member has the required number of cards, it will of course be necessary for him to send them to HQ for approval, but not before.

One final word. We think it should be more generally understood that the licensed operator of an amateur station is the *only* person who may operate his station. Wives, sweethearts and friends (radio or otherwise) do not come under this heading and the authorities do not think it amusing when a wife is heard wishing 88's to an operator at the other end.

Late News

G6VQ has also worked Nevada. The call was W6LCJ (14030) and the QSO was made on April 21. Confirmation has since been received. VU2CR writes to say his QRA is not correct in the call book as his is only a temporary permit until his full licence arrives. Cards should be sent under cover to W. H. S. Metcalfe, 3rd Indian Divn. Signals, Meerut, U.P. India. He reports XU1CY, Box 15, Changsha, in Central China, on about 14290 T7.

FOUR YEARS AND NO SIGNALS—(*Continued from page* 679.)

It would be interesting to have accounts from other 56 Mc. workers regarding their difficulties on the band as well as their successes, and the author would take this opportunity of asking any station that hears his 56 Mc. signals to be good enough to send a report giving strength, other stations audible at the time, whether fading is present, and a note on the conditions prevailing on the 56 Mc. band at the time of reception.

AMERICAN PUBLICATIONS

The summer edition of the Radio Amateur's Call Book is due to arrive in England within the next few weeks. Members are asked to place an early order to ensure definite delivery.

* * *

We regret that the price of the Radio Antenna Handbook was advanced to 3s. 6d. without warning. All members (except one) out of the 90 who had booked at the 2s. 6d. rate kindly forwarded the extra 1s. on demand.

* * *

Good stocks of the A.R.R.L. Handbook are kept at headquarters. The price is 5s. 6d. to members.

EXCHANGE AND MART

(*Continued from Back Cover*)