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BULLETIN

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

- SCIENTIFIC OBSERVATION
- TRANSMITTERS FOR N.F.D.
- THE TWO-METRE BAND
- AMATEUR BANDS STRAIGHT RECEIVER
- FIVE METRE CONTEST RESULTS

R.S.G.B. BULLETIN

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SCIENTIFIC OBSERVATION

THE British National Committee for Scientific Radio, which is a joint committee of the Royal Society and representatives of various British institutions interested in this subject, was recently invited by the International Union for Scientific Radio to undertake the organisation in this country of co-operation with Amateur Radio observers.

It is extremely gratifying that the British National Committee formed the opinion that observations by amateurs could best be organised by the R.S.G.B. and they suggested that the matter be referred to the Society by Dr. R. L. Smith-Rose (Director of Radio Research in the Department of Scientific and Industrial Research), who is a member of the British National Committee and an Honorary Member of R.S.G.B.

Discussions between Dr. Smith-Rose and Council members followed and at the beginning of this year, the Council set up a "Scientific Observations Committee" for the purpose of handling all group observational work carried out by the membership, to organise special projects suggested by the "Union Radio-Scientifique Internationale" (U.R.S.I.) and to arrange for the reception, collation and publication (or transmission) of results.

Dr. Smith-Rose has kindly consented to serve on this Committee and will act as liaison officer between the Committee and the British National Committee for Scientific Radio. Membership of the Committee for 1948 is as follows :

W. A. Scarr, M.A. (G2WS), (Chairman).
R. L. Smith-Rose, D.Sc., Ph.D., M.I.E.E.
D. W. Heightman, M.Brit.I.R.E. (G6DH)
E. J. Williams, B.Sc. (G2XC).
H. R. Hatch (G2CBB).
L. Blagborough (BRS15012).
J. Clarricoats (G6CL), (Secretary).

Each country in membership of U.R.S.I. has a national committee to facilitate and co-ordinate the study of scientific questions, principally with an international object. There are at present four Commissions of the Union, namely :

1 *Measurements and Standards :* President, Dr. J. H. Dellinger (U.S.A.).
2 *Propagation :* President, Sir Edward Appleton (Great Britain).
3 *Atmospherics :* President, Monsieur R. Bureau (France).
4 *Radiophysics :* President, Dr. B. van der Pol (Netherlands).

Certain suggestions for observations which could suitably be made by amateurs have already been issued and are as follows :

(*a*) Ionospheric Propagation (M.U.F. and "skip distance" effects).
(*b*) Solar, meteor and auroral effects.
(*c*) Tropospheric Propagation.
(*d*) Wave interaction ("Luxembourg Effect").

The phenomenon of the "skipped distance" effect is already well-known to amateurs and nowadays it has become possible to calculate skip distances for given frequencies from a knowledge of ionospheric conditions. Observations will be made for the purpose of checking M.U.F. predictions from known data on distances, times, frequencies, etc. Long series of observations on one station will probably provide the most valuable information.

The study of solar, aurora and meteor effects is perhaps more complex. Sunspot areas are known to be powerful emitters of short waves—detected as the well known hiss in short-wave receivers. Systematic records of this effect are required.

Attempts are also to be made to ascertain whether the aurora itself emits radio waves.

Many V.H.F. workers will already have learned to recognise the effect produced by the reflection of signals from meteors. Although best heard when listening to an unmodulated carrier, the whistles can also be detected as momentary increases in signal strength during the reception of C.W. The collection of a substantial amount of observational material on this phenomenon should be of considerable scientific interest.

Five-metre workers are well acquainted with tropospheric wave propagation. In order to provide useful data on the subject, observers will be required to make simple field strength measurements of signals received from fixed transmitting stations such as the Alexandra Palace and Eiffel Tower television transmitters. These results will be considered in relation to the prevailing meteorological conditions over the path.

It is well known that in the range of wavelengths between 200 and 2,000 metres, it is sometimes possible when listening to the unmodulated carrier of one station to hear weakly the modulation of another station operating on quite a different wavelength. On the long wavebands this is usually called the "Luxembourg Effect." Recently, the effect has been reported on shorter waves (between 10 and 100 metres) and observations of the phenomenon on these latter frequencies should be of particular interest.

Responsibility for the organisation of different parts of the above programme has been divided between certain members of the R.S.G.B. Scientific Observations Committee who for the purpose will be styled "Group Managers."

Messrs. Heightman and Blagborough will take charge of groups (*a*) and (*d*) (above); Mr. Hatch (*b*); and Mr. Williams (*c*).

It will be apparent at once that certain of the studies to be carried out will require systematic watches (daily where possible) by small groups of

(*Continued on page 192*)

TRANSMITTERS FOR N.F.D.

By J. N. WALKER (G5JU)

Although written before the rule regarding power supplies was amended, this article contains many useful hints and tips which should help readers to produce highly efficient low power transmitters for National Field Day.

WITH the approach of National Field Day and in view of the changed conditions which apply, a few thoughts on transmitters suitable for the new requirements may not be out of place.

Personally speaking, the writer welcomes the new low power regulations, under which N.F.D. should be more interesting. All areas will be on a more or less equal basis and in particular the difficulties of organising transport and power supplies (including petrol engines) will be greatly simplified.

In the post war era, low power battery transmitters have been neglected, except by a few enthusiasts, and some hints on suitable designs may assist members.

Desirable Characteristics

The major considerations in a really portable transmitter are as follows:

Efficiency for the low input power possible.
Low consumption, both H.T. and L.T.
Overall weight.
Simplicity of design.

The efficiency will depend largely on the valves and the associated components, so that losses are reduced as much as possible.

The consumption again depends on the valves and will be lowest with the 1·4 volt types, but, since the latter are usually of low mutual conductance and relatively inefficient, it is well to rule them out, except in circumstances where the use of a 2 volt accumulator is inadmissible.

Greatest efficiency and also greatest battery consumption (particularly L.T.) will be secured from 6·3 volt valves but the weight of a 6 volt accumulator

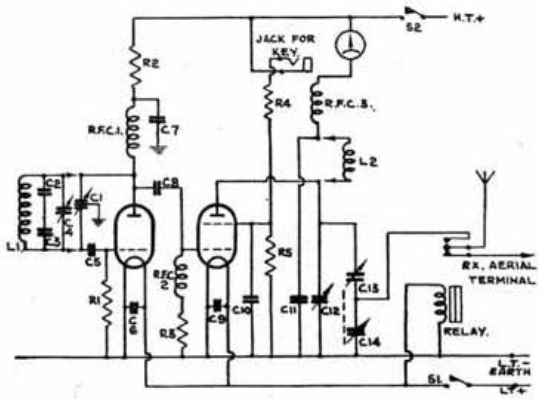


Fig. 1.
Circuit of Two Valve Battery Transmitter.

C1	See text.	
C2, 3, 4	See table.	
C5, 8	50 pF ceramic.	
C6, 7, 9, 10, 11	·001 μF mica.	
C12	100 pF *Eddystone* No. 1130.	
C13, 14	60 pF *Eddystone* No. 582.	
R.F.C. 1, 2, 3	R.F. Chokes, *Eddystone* No. 1010.	
L1, 2	See table.	
	120 *Volts H.T.*	240 *Volts H.T.*
R1	47,000 ohms.	47,000 ohms.
R2	1,000 ,,	15,000 ,,
R3	10,000 ,,	10,000 ,,
R4	4,700 ,,	47,000 ,,
R5	47,000 ,,	100,000 ,,

S1 and S2 are combined in one D.P.S.T. Toggle Switch (*Bulgin*).

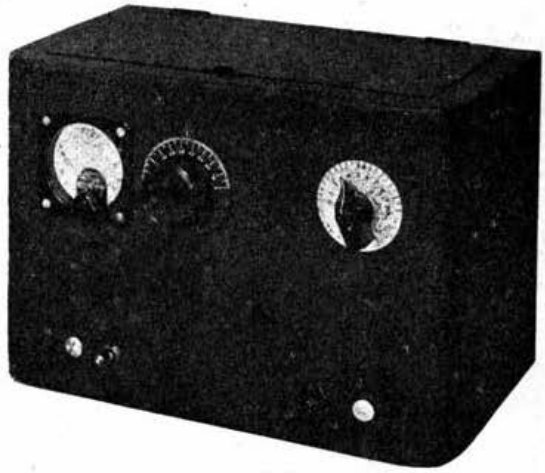


Fig. 2.
External appearance of a low power transmitter. Anode tuning control in centre, aerial coupling adjuster on right, P.A. anode current meter on left. On-off switch and jack for key below.

is excessive in proportion and the necessity of keeping the heaters running continuously is a serious drawback. When circumstances permit, a very efficient transmitter can be built around modern miniature valves, examples being the *Mazda* 6F12 pentode (as C.O. or V.F.O.) and 6L18 triode (as neutralized P.A.). The latter valve is particularly good for this application. Both are 6·3 volt 0·3 amp. indirectly heated types.

Generally the choice, for maximum convenience, will fall on 2 volt valves. Switching on and off can be done in the filament circuit, so that no power is being wasted during standby periods. Unfortunately, the range of suitable valves is somewhat restricted. The pre-war *Osram* PT7 2 volt transmitting pentode is ideal but it is no longer available. In its place one can use the *Osram* KT2 or its more modern counterpart, the KT24. Other valve manufacturers make equivalents, one being the *Mullard* KL35 (octal based).

Design Factors

The design of a transmitter for portable field-day operation calls for simplicity, compactness and robustness. In some ways, it will be advisable to have a variable frequency oscillator, but this will complicate matters by calling for several plug-in coils and more time for tuning two or three circuits. It is suggested that several amateurs should pool their crystals and so obtain a number of alternative operating frequencies.

For some time, the writer has had in use a small battery-operated transmitter, which has given very satisfactory results. The particular features of this transmitter will therefore be discussed. The circuit is given in Fig. 1, and Figs. 2 and 3 are photographs illustrating the exterior and interior. In actual fact, the first valve (an HL2) may be employed either as a crystal oscillator or as a master oscillator. In the former service, C1 is set at minimum and the crystal plugged in, the valve acting as a Pierce

oscillator. As a master oscillator, a simple single winding coil is inserted in place of the crystal. The pin spacing on the coil base must naturally agree with that of the crystal—usually $\frac{3}{4}$in.

To ensure good stability, high C is used in the oscillator tuned circuit, the combination of fixed and variable condensers providing both balance and band spread. In practice, the stability has been found excellent, even on 14 Mc/s. The tuning condenser, C1, is an *Eddystone* split stator type, 17 pF. overall (No. 584) for the lower frequencies and 12·5 pF. (No. 583) for the higher. The oscillator tuning condenser is mounted, for convenience, on the rear of the chassis. The fixed condensers C2 and C3 may be mica or ceramic types, since the power is low and space restricted. They may be fitted either inside the coil or on its base. The trimmer C3 can be dispensed with if one cares to adjust the coil turns and hence the inductance, but it is useful for setting the low frequency end of the band to coincide with 100 degrees (max. capacity) on the dial of C1.

Calibration of the master oscillator stage is most easily carried out by tuning-in the signal on a calibrated receiver. A note should be made of the dial reading which coincides with the high frequency edge of the band whilst a graph showing frequency against dial reading for each band will prove useful.

With the specified condenser values, complete coverage can be obtained over each amateur band except 1·7 Mc/s., where the range is of the order of 1750–1950 kc/s.—quite adequate for the purpose.

The P.A. Stage

Capacitative coupling is employed between the two stages. RFC2, in the grid circuit of V2, is necessary to maintain adequate excitation. The anode tuning condenser, C12, is (like C1) mounted directly on the front of the cabinet. If a triode is employed in this stage, a split-stator condenser will be required for C12, together with a small neutralising condenser.

Copper braid connections are made from the rotors of C1 and C12 to a soldering tag fitted under one of the valveholder fixing screws, so that the return paths for R.F. currents are direct rather than through the metal work.

Aerial Coupling and Matching

Often, when operating portable, one has to run up any odd length of wire as an aerial and it is convenient to be able to match-in long or short aerials equally well. By using a pair of variable condensers, ganged with an insulated coupler and mounted to give "differential operation," it is feasible to match into almost any type of aerial or feeder, although possibly with some slight unbalance since one feeder must be earthed, in the circuit shown. Other arrangements are possible but will not be dealt with here.

By differential operation is meant that the capacity of one condenser is increasing whilst that of the other is decreasing. C13 in Fig. 1 must, of course, be completely insulated above earth. The pointer knob on the differential condenser assembly should be set at zero with C14 at maximum capacity, this corresponding with minimum aerial coupling. The additional capacity introduced across the P.A. tank circuit has been allowed-for in arriving at the coil windings given in the panel.

It should be noted that, as described, the method is only applicable directly to a single-ended circuit. If a balanced circuit is employed, a separate aerial tuning unit, link coupled to the tank, will be necessary.

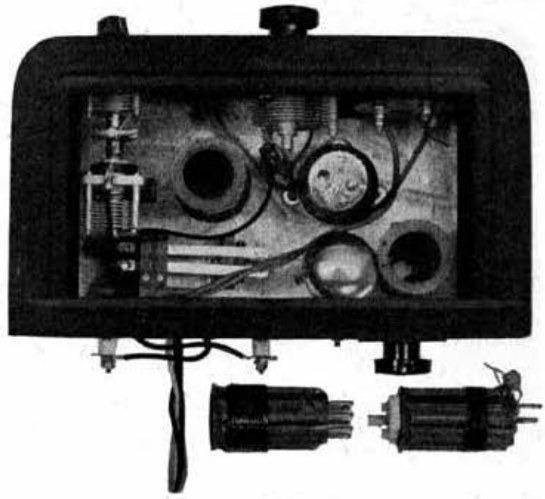


Fig. 3.
Plan view of the transmitter. The P.A. coil and valve in the centre, M.O. coil and valve to right, and aerial coupling condenser assembly to left. The dial of the M.O. tuning condenser can be seen lower right, whilst, in the foreground, are the 7 Mc/s. P.A. and M.O. coils.

Other Features

If separate aerials are used for transmitting and receiving, all well and good. It is suggested, however, that, for N.F.D., the best possible aerial be erected (more than one, if convenient, to give different directional effects) and used on both transmitter and receiver. To avoid manual change-over, a small relay (actually out of a TR9 type of equipment) has been fitted. Additional contacts are available for switching the H.T. if this is deemed necessary.

A meter reading the anode current to V2 is wired permanently into circuit—a loose meter jacked-in as required is too liable to suffer damage.

No separate bias is provided for the P.A., and it is undesirable to arrange for self-bias derived from a resistance in series with the H.T. negative line, since the applied H.T. will thereby be reduced and the bias will vary with keying. The point chosen for insertion of the key should be in the screen feed to the P.A. valve but, if the latter is a triode or if break-in operation is desired, the H.T. current as a whole should be keyed.

A key click filter will not normally be necessary. A simple one consisting of a ·1 μF condenser in series with a 1,000 ohm resistance, placed across the key contacts, may be fitted if desired.

The transmitter was originally built for operation off a small rotary converter delivering about 240 volts. It will be necessary to reduce the value of some of the resistances if operation from a 120 volt battery is intended and tests have been made to find the correct values. Two lists are given in the caption

PARTS LIST

(Other than shown in Fig. 1)

1 Chassis, *Eddystone*, Cat. No. 643.
1 Cabinet, *Eddystone*, Cat. No. 644.
1 Coil base (for L2), *Eddystone*, Cat. No. 964.
Coil formers (for L1 and L2), *Eddystone*, Cat. No. 537.
2 Miniature direct drive dials, *Eddystone*, Cat. No. 595.
1 Pointer knob and dial, *Eddystone*, Cat. No. 425.
3 Midget stand-off insulators, *Eddystone*, Cat. No. 1019.
1 Insulated bracket, *Eddystone*, Cat. No. 1007.
1 Flexible coupler, *Eddystone*, Cat. No. 529.
1 Closed circuit jack, *Igranic*.
1 Moving coil meter 0-25 mA., *Pullin*.
1 Crystal holder.
2 British 5-pin valveholders.
1 HL2 valve or similar (V1).
1 KT2 valve or similar (V2).
1 Relay (optional—see text).

below Fig. 1 to allow for variation of the applied H.T. voltage.

Tests have also been made with the KT2 valve using 240 volts H.T. and no trouble of any kind has been experienced. This figure is in excess of the valve makers' recommendation but, since the valve is operated under efficient Class C oscillator service, the dissipation is not excessive.

Coil Data

Band	Turns L1	Wire Gauge	C2, C3	C4	L2	Wire Gauge
1·7 Mc/s.	40	28	200pF.	30pF.	60	24
3·5 Mc/s.	26	24	100pF.	30pF.	30	20
7 Mc/s.	12	24	50pF.	30pF.	15	18
14 Mc/s.	6	24	40pF.	10pF.	7	18

All wound on 1½in. formers.

Earth or Counterpoise

An effective earth should be connected directly to the chassis—otherwise, in some cases, the aerial may tend to act as a half-wave end-fed and the transmitter will be "hot" to R.F. Better still, a counterpoise, cut to represent a quarter wavelength at the operating frequency and well insulated at the far end, should be connected. The use of a counterpoise is likely to improve the electrical stability and also the efficiency of the radiating system as a whole.

Tuning up

To prevent damage to the P.A. valve, tuning-up should be carried out with about 120 volt H.T. and the latter increased, if desired, when the aerial loading adjustments are complete.

The aerial coupling dial should be set at "5" (mid-point), no aerial connected and no crystal in position. After switching on, with a suitable P.A. coil plugged in, a standing current of up to 12 mA. will be indicated on the milliammeter. Upon plugging-in a coil or crystal, the reading will increase but will drop to a low value (4 mA. or less) when C8 is rotated to bring the tank circuit into resonance.

The aerial should now be attached and the aerial coupling dial set to zero—C8 will require increasing to restore resonance. Then increase the aerial coupling in steps of one division, each time re-adjusting C8 for minimum anode current. The meter reading will gradually increase up to a maximum. The coupling must be reduced so that the final current is well above the minimum but below the maximum. No difficulty should be experienced in loading up to 18 or 20 mA. at 240 volts, which is just nicely within the maximum permitted power of 5 watts.

This procedure, with practice, takes less than a minute to carry out.

Second Old Timers' Dinner

Old Timers' will be glad to hear that it is proposed to hold another Old Timers' Dinner during the coming autumn.

Eligibility for attending the Dinner will be (a) inclusion in British Old Timer Club membership lists as published in our contemporary the *Short Wave Magazine*, or (b) the holding of a radiating licence issued by any British authority at a date *not later than June 30, 1928*, with possession of a transmitting licence (but not necessarily issued by the same authority) current on *June 30, 1948*.

The dinner will be held in London and organised jointly by the *Short Wave Magazine* and members of the R.S.G.B. The cost will not exceed one guinea per head (exclusive of wines).

Since nothing can be done until the organisers have some idea of numbers, all who are eligible and would like to attend are asked to notify either the General Secretary, R.S.G.B., or the Editor, *Short Wave Magazine*, by means of a postcard by not later than June 30th next.

It would be a convenience if members of the B.O.T.C. wrote direct to the *S.W.M.* and all others to the R.S.G.B.

It is anticipated that the party will number at least 150.

Ministry of Supply Surplus Transmitters

The Ministry of Supply have informed the Society that no further transmitters will be available for disposal, and that all which are surplus to their requirements have been relegated to scrap and breakdown depots. For the information of members more than 5,000 transmitters have been purchased through the various Surplus Transmitter Schemes, realising a figure of £10,000 paid to the Ministry.

The Society wishes to thank the organisers of these schemes (Dr. G. F. Bloomfield, G2NR, and Mr. C. H. L. Edwards, G8TL), as well as the County and Town Representatives, for their unstinted assistance, patience and tolerance in a thankless task. Without their help success would have been impossible.

The Society assures the membership that every effort has been made to negotiate for receivers, oscilloscopes, frequency meters and other items of useful equipment. Time and again the Ministry of Supply has been approached and various suggestions put forward, but a point-blank refusal to negotiate has been obtained.

The Ministry has changed its policy and no longer allows purchases by private tender, but insists on all sales being made by public auction which, they emphasise, any member of the Society may attend.

EDITORIAL (*Continued from page* 189)

reliable observers who are able to make and record observations with absolute regularity. Other problems, such as auroral and solar effects, will not be the subject of specific watches but will be recorded whenever observed incidentally by a member in the course of his ordinary amateur activities. It is hoped that a very large number of members will be able to give this kind of assistance.

During the early days of radio, amateurs provided valuable data concerning propagation on the higher frequencies. To-day the amateur holds a high reputation which he has justly earned. This reputation is again recognised by the fact that he is now called upon to co-operate in this important work.

The Society is confident that members will willingly assist in providing a great deal of useful information and calls upon both the B.R.S. and fully licensed members for their full support and co-operation in this undertaking.

Offers of co-operation should be made as soon as possible and details of the method of application are given elsewhere in this issue. Particular emphasis is laid on the need for regular and systematic watch by those who volunteer for the M.U.F. and Tropospheric groups.

W. A. S.

THE TWO-METRE BAND

By W. H. ALLEN, M.B.E., G2UJ.

FROM the many letters that have been received from readers following publication of the article under this title in the January issue, it would appear that there exists already a considerable amount of interest in the soon-to-be-released two-metre band.

At the present time we are rather in the position which applied to Amateur Radio as a whole during the war years, inasmuch as we can plan and discuss what we intend to do, but are not in a position to put our ideas to work on the air. In many ways this is not a bad thing, for the results of careful planning are more likely to prove satisfactory when translated into actual apparatus than any hastily conceived gear that might be rushed into service in an endeavour to get on the band at all costs.

Without exception all correspondents are in agreement with the views expressed in the previous article as to the undesirability of the super-regenerative receiver plus modulated oscillator technique being employed. Let us hope that all users of the band will appreciate the wisdom of using modern circuits and methods.

Band Planning

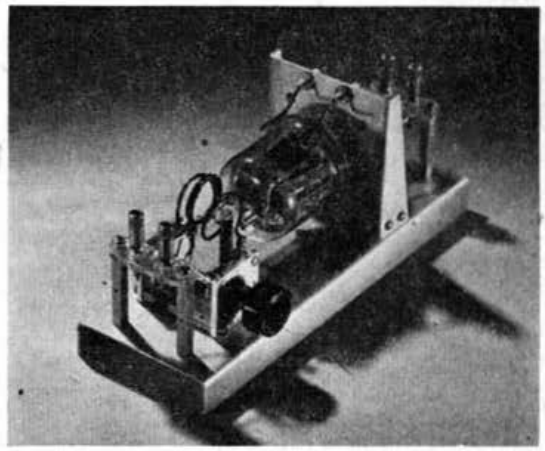
Band planning was mentioned by Mr. Peter Matthews, G3BPM, in regard to catering for those who will, despite everything, insist upon using simple and unstabilised transmitters. The suggestion put forward was that a definite part of the band be reserved for such transmissions. We feel, however, that this would prove impracticable inasmuch as operators who were content to use out-of-date transmitters and receivers could hardly be expected to be in possession of frequency measuring apparatus of sufficient accuracy to ensure their operating within comparatively narrow limits. It is the writer's opinion that that sort of frequency planning is not going to lead us anywhere. At best it savours of segregation of those whose technical knowledge or pocket is not as deep as others, and at worst it probably would not work anyway, and would only lead to confusion and dissatisfaction with the band in general.

The Question of Cost

While advocating the use of modern circuits and methods on the V.H.F., we must not lose sight of that very important factor mentioned in the last paragraph; the question of cost. This aspect of our work looms large for most of us at the present time, but it has always been the proud boast of the devotees of the art that an amateur is judged not by his academic knowledge, his station in life, nor the size of his bank balance, but by the signal he radiates and his behaviour on the air. Long may this democratic state of affairs continue, and in order that expensive gear shall not prohibit the enjoyment of V.H.F. work in general, technical development, and the ingenuity of its application must be substituted for expensive complication.

Transmitters

Where transmitters are concerned, our present use of stable oscillators on the lower frequencies must be extended much higher in the spectrum, and already two readers have tackled this problem with

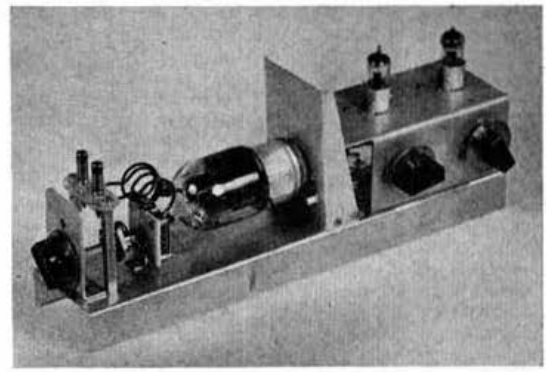


Photo, Courtesy QST.

Rather large for us. An example of modern American amateur design: A final amplifier using a type 829B valve.

success. Basing their work on a design in the American press,* Messrs. Benzies (GM3DDE) and Bradford (GM3DIQ) have produced a 144 Mc/s. oscillator of most satisfactory stability. For the benefit of those who do not have access to the original paper, the principle of operation is as follows.

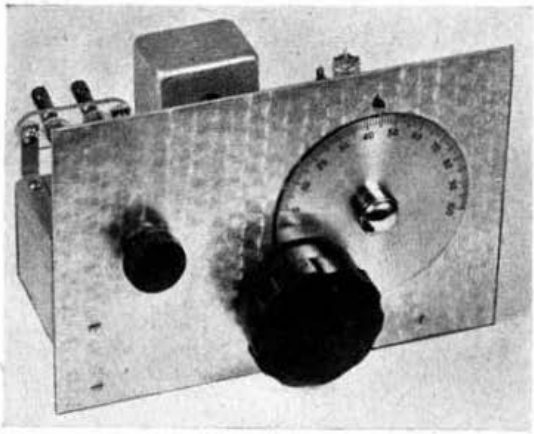
The tuning condenser, consisting of two massive brass plates with a "floating" rotor, forms the chassis upon which all components are mounted. The valve, a 6F4, has its anode in direct contact with one plate and its grid with the other. Two inductances are used, one on either side of the stator plates—blocking condensers being inserted to prevent the application of H.T. voltage to the grid. Thanks to the solidity of construction and the symmetry of layout, the frequency stability is claimed to be superior to the majority of linear circuits, and suffice it is to say that on test a quite negligible change in frequency resulted when the bench on which the oscillator was working was struck a sharp blow with a 14 pound hammer! Even so, we are assured that this oscillator will *not* be used on the air as a single-stage transmitter, but as a driver for a M.O.–P.A. or M.O.–B.A.–P.A. outfit.



Photo, Courtesy QST.

A stable M.O.-P.A. Transmitter of moderate power employing a 6C4 — 6C4 — 815 valve sequence.

* *Tuned Circuit Design for U.H.F.*, by Maurice Apstein, W2QI and Moe Joffe, W2BNY, *QST*, February, 1946.



Photo, Courtesy QST.

A 2-metre converter using a single type 7F8 valve. An under-chassis view appeared in the January "*Bulletin*."

The majority of operators will, in all probability, turn their attention towards crystal control. For this, crystals in either the 6 or 8 Mc/s. range can be used, and at least one well known manufacturer will be in a position to supply such crystals by the time there is a demand for them.

With the crystals mentioned, multiplication of the fundamental frequency of either 24 or 18 times will be necessary, and at present a number of amateurs are experimenting with various valve and circuit arrangements for exciter units. One of the more stable forms of combined crystal oscillator and frequency multiplier is indicated here, and a good output on 24 Mc/s. can be realised using an EF 50 with cathode regeneration when either 6 or 8 Mc/s. crystals are employed. A logical sequence for the following stages would be trebler, doubler and P.A., and still keeping to the *Mullard* range, the QVO4–7 tetrode suggests itself as a very suitable valve for both multiplying positions as well as in push-pull for the P.A. Such a transmitter would have the advantage of requiring no more than 300 volts H.T. in any stage. Mr. Dedman, G2NH, who is actively engaged in experiments with a two-metre exciter, has found the 6V6, both metal and GT/G types, to be a satisfactory trebler from 24 to 72 Mc/s.

To comply with the conditions of our transmitting licence it is necessary to avoid radiating signals other than on the authorised working frequency, and in these days of increasing interest in television reception (at least in the south-eastern part of the country), such stray radiation as does exist may not long remain undiscovered! It behoves us, therefore, when a considerable multiplication of the fundamental frequency is undertaken, to do this at a low power level, where simple screening should prove effective.

On two metres the normal coil and condenser tank circuit, employing either series or parallel tuning, is still practicable, but as so much depends upon the efficiency at this point, linear circuits with small capacity loading for adjustment purposes should well repay the additional work entailed in their construction.

Short R.F. leads are absolutely essential—even more so than at five metres—to avoid inductance and capacity appearing where they are not required, with consequent difficulty in reaching the band or parasitic oscillation. The use of really low-loss by-pass condensers, placed with due regard to the shortness of R.F. return leads is another point which must not be overlooked, and here again we have some information from G2NH, who has found that a value of 1,000 pf gives a noticeable improvement in output as compared with 500 pf. A point of interest arises here inasmuch as the optimum value of by-pass capacity depends, for any given type of condenser, upon the length of lead used to connect it into the circuit. It is advisable, therefore, to try different values, as well as different types of condenser in this position during the development of the circuit.

Receivers

The only type of receiver likely to provide a satisfactory performance on the band is the superhet. This could be in the form of a separate and complete receiver designed for the 144 to 146 Mc/s. band alone, or a converter used in conjunction with the station communication receiver. The latter course need not carry with it any sacrifice in performance when compared with a specialised receiver.

In any V.H.F. receiver, mechanical as well as electrical stability is an important necessity, and as the frequency rises so does the difficulty of building an efficient, stable and drift-free radio frequency oscillator. These requirements suggest the use of crystal control at this point, with the actual tuning over the band carried out in the I.F. amplifier. The signal frequency coverage of 2 Mc/s. represents rather less than 1·4 per cent. of the frequency involved, and provided some attention be given to the coupling between stages, circuits tuned to the middle of the band should not require actual tuning adjustment during reception. The possibility arises, therefore, of making a two-metre converter entirely without tuning controls, which could be pre-set, plugged into the lower frequency receiver, and all tuning done on the latter.

Until quite recently, crystal controlled superhets have been little used, particularly by amateurs, but some readers may have seen a description in the American press of the new *Collins* 75–A, which covers the amateur bands from 3·5 to 30 Mc/s. using this system. One of the best examples of the use of crystal control for this purpose occurred during the war, when the exacting requirements of communication with our fighter and other aircraft were satisfied by using such a system, but with spot-frequency operation, on frequencies only slightly lower than those in which we are now interested.

Let us consider the practical aspects of such a converter. To avoid having to purchase special crystals, those with frequencies falling within the range 7,000 to 7,100 and 7,300 to 7,500 kc/s. could be used, with circuits giving a multiplication of 18 times. Most amateurs will have at least one such crystal, and the circuit, while bearing some resemblance to an exciter unit, would require a smaller number of stages to furnish the modest oscillator voltage for application to the mixer. Some examples of the I.F. tuning range necessary in conjunction with crystals within the range of frequencies mentioned are given in the accompanying table.

Crystal Frequency	Times 18	Signal Frequency	I.F. Tuning Range
kc/s.	Mc/s.	Mc/s.	Mc/s.
7,000	126	144 to 146	18 to 20
7,100	127·8	" "	16·2 to 18·2
7,300	131·4	" "	12·6 to 14·6
7,500	135	" "	9 to 11

Crystals between 7·1 and 7·3 Mc/s. would not be suitable as their harmonics fall within the band to be covered.

A word of warning must be given here, as preliminary experiments have shown that some trouble may be expected from the unwanted beats produced between the crystal oscillator and the following

(*Continued on page* 198)

COMPONENTS EXHIBITION

RECENT British advances in the design of radio, television and electronic components and test equipment were on show at the Fifth Annual Exhibition organised by the *Radio Component Manufacturers' Federation* and held at Grosvenor House, London, during March. The exhibits included many items of considerable interest to amateurs and it is to be regretted that once again it was considered necessary to restrict the right of admission to a favoured few—a relic of war-time R.C.M.F. exhibitions when security guards were posted at all entrances! While emphasis at the show was placed on export targets—in 1947 radio components to the value of £2,095,000 were sent overseas—British manufacturers and engineers were provided with an excellent opportunity to study current trends in this most important branch of the radio industry.

Technical Progress

Features of the new components include further standardisation—largely as a result of the efforts of the *British Standards Institution*—improvement of design to allow easier, quicker production methods; and the increasingly important role played throughout the industry by the "miniature" equipment originally developed for airborne and Service requirements. High precision and durability in all climates continue to attract attention while a large number of exhibitors clearly illustrated their awareness of the demand for high-fidelity reproduction as well as the pleasing decorative effects possible with the colourful materials now available to manufacturers.

Only a brief account can be given in the space available of those stands which featured amateur equipment and even this task is of some magnitude in view of the many firms who are now actively engaged in catering for the short wave enthusiast.

Around the Stands

Antiference, Ltd.—High frequency aerial equipment and interference devices.

Automatic Coil Winder and Electrical Equipment Co., Ltd.—Avo meters including a 49-range electronic testmeter and a valve characteristic meter.

Belling and Lee, Ltd.—Wide range of radio interference suppressors for use at the noise source as well as with receiving installations and mains filters.

Sydney S. Bird and Sons, Ltd.—The "Cyldon" range of beautifully finished split stator capacitors, midget air trimmers and up to 5 gang receiving variables.

British Insulated Callenders Cables, Ltd.—Anti-interference aerials, polyethylene wires, R.F. cables, and capacitors.

A. F. Bulgin and Co., Ltd.—Clips, connectors, fuses, terminals and the hundred and one small items without which any constructor would be lost. A range of midget transformers less than a cubic inch in volume originally developed for the wartime Resistance Movements.

Colvern, Ltd.—Variable resistors including 2 and 3-gang wire-wound potentiometers.

Dubilier Condenser Co. (1925) *Ltd.*—Capacitors of many types for transmitting and receiving equipment. Resistors up to 100,000 Megohms.

Erie Resistor, Ltd.—Ceramion capacitors, composition and wire-wound resistors and interference suppressors including one with moisture-proof caps at both ends suitable for motor-cycles. VHF bypass capacitors designed to resonate with the inductance of the set wiring.

Labgear, Ltd. — High-quality components for amateur transmitters, electronic fault tracers, crystal calibrators and "Lockstrips"—a logical answer to resistor and condenser mounting troubles.

Measuring Instruments (Pullin) Ltd.—Meters and test sets to suit a variety of purposes.

Mullard Wireless Service Co., Ltd.—Features included a concentric air dielectric trimmer manufactured from aluminium with the rotor moving on a ceramic pillar.

Plessey Company, Ltd.—Included an H.T. vibrator unit for operation from a 2-volt accumulator.

Salford Electrical Instruments, Ltd.—A useful range of small meters and high stability quartz crystals with various mountings. A miniature crystal calibrator for receiver alignment.

Taylor Electrical Instruments.—Many additions to their wide range of test instruments and measuring equipment including an electronic meter reading up to 2,500 volts at A.F. and 250 volts at 200 Mc/s.

Telegraph Construction and Maintenance Co., Ltd.—The "Telcon" range of aerial equipment and RF cables.

Wingrove and Rogers, Ltd.—Variable capacitors, drives and trimmers.

Many other stands showed innovations useful to the experimenter. New materials included tungsten sheet not previously produced in Britain and molybdenum wire of finer gauge. There were, indeed few stands on which an amateur could not find some valuable component of sound design—a remarkable transition from the pre-war days when the general attitude of the trade—with a few notable exceptions—seemed to suggest that there was something almost indecent in showing too marked an interest in the interior of radio equipment.

WWV Standard Frequency Transmissions Extended Service

Standard Frequency transmissions are now made by the American National Bureau of Standards through its station WWV as follows :—

Mc/s.	G.M.T.	Power (kW)	Audio Freq. (cycles)
2·5	0000 1400	1·0	440
5·0	0000 1200	10·0	440
5·0	1200 0000	10·0	440 and 4,000
10·0	Continuously	10·0	440 and 4,000
15·0	Continuously	10·0	440 and 4,000
20·0	Continuously	0·1	440 and 4,000
25·0	Continuously	0·1	440 and 4,000
30·0	Continuously	0·1	440
35·0	Continuously	0·1	440

The accuracy of the radio and audio frequencies is better than one part in 50,000,000. A ·005-second pulse may be heard as a faint tick every second, except the 59th second of each minute and provide time signals accurate to ·000001 second.

The audio frequencies are interrupted for one minute every five minutes and the Eastern Standard Time (G.M.T. less 5 hours) is given by telegraphy. A telephonic announcement is made at the hour and half hour.

Ionospheric-disturbance warnings for the North Atlantic radio path are given at 20 and 50 minutes past each hour. If a disturbance is in progress or is anticipated within the next 24 hours, the time announcement is followed by 6 W's; if conditions are quiet or normal the time announcement is followed by 8 N's.

AN AMATEUR-BANDS STRAIGHT RECEIVER

By ALLAN ALSBURY, B.Sc. (BRS12,789)*

THE receiver to be described was built by a comparative newcomer to Amateur Radio. It was felt that the two valve battery-operated receiver in use had seen its day and that although time and finances would not allow a really comprehensive superhet to be embarked upon, something a little more ambitious and reliable was called for.

Circuit Features

The circuit is shown in Fig. 1. A fully tuned R.F. stage (EF39) with a gain control precedes the detector (6J7), which is followed by an A.F. stage (6C5) feeding into headphones *via* the jack. When the phone plug is removed, the output from this stage feeds into an output pentode (KT63).

As no suitable power supply was available, it was decided to build this as a separate unit.

Fig. 2 (a) shows the general panel lay-out of the receiver unit. The R.F. gain is on the extreme left, reaction control in the centre, and the A.F. gain on the right. The ganged tuning condenser is driven by an *Eddystone* Full-Vision dial.

As will be seen from Fig. 1, provision is made for twin or single wire feed from the aerial. With a single wire, the earthed plug, "Ex", is connected to A2 and the aerial to A1; for a twin feeder A1 and A2 are used and "Ex" is left free.

The 6J7 has proved a very efficient detector, and the reaction control (R7) was found to be very smooth. It was anticipated that the reaction feed condenser (C7) would have to be changed to a trimmer mounted inside the coils and pre-set for each band, but the value stated (100pF) places the reaction control nearly in the middle of its travel on all bands.

Comfortable headphone listening is provided for by the A.F. stage (6C5), but when a station is well received removal of the jack brings in the output stage (KT63), and loud-speaker.

*55 *Powell Street, Derby.*

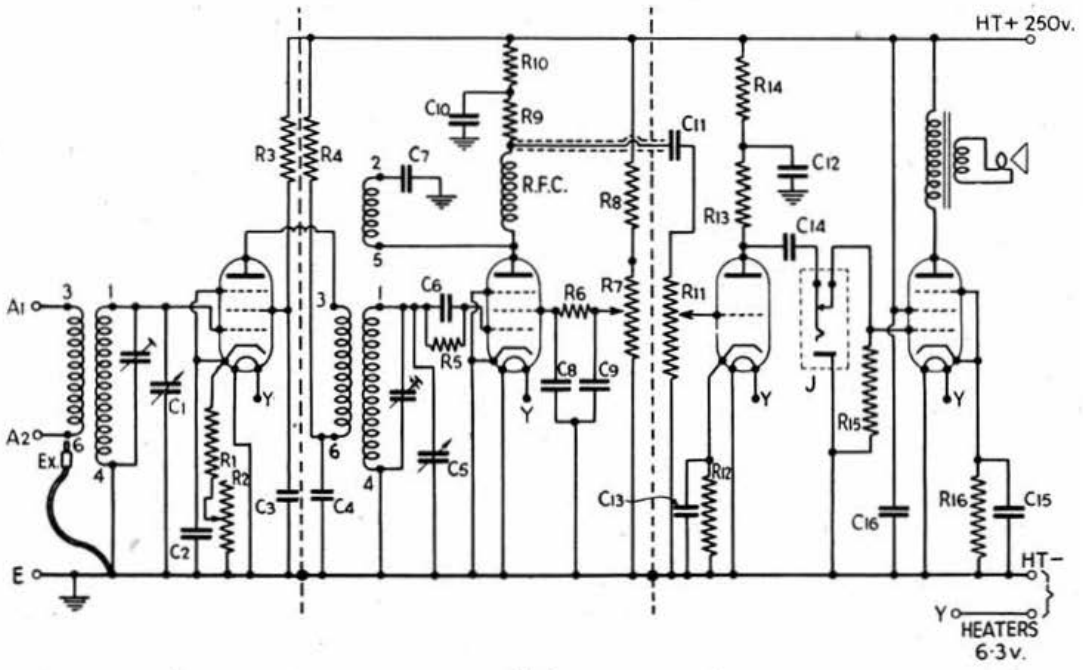


Fig. 1.
Circuit diagram of straight receiver. Broken lines represent earthed screens.

Resistances—	
R1	300 ohms 1 watt.
R2	5,000 ohms potentiometer.
R3	10,000 ohms ½ watt.
R4, 12	1,000 ohms ½ watt.
R5	1·0 megohms ½ watt.
R6, 9	100,000 ohms ½ watt.
R7	50,000 ohms potentiometer.
R8	25,000 ohms 1 watt.
R11	500,000 ohms potentiometer.
R10, 13, 14	50,000 ohms ½ watt.
R15	500,000 ohms ½ watt.
R16	470 ohms 2 watt.
R.F.C	Eddystone 1010.

Condensers—	
C1, 5	Eddystone "580" 15 pF each section, ganged.
C2, 3, 11, 14	0·01 μF.
C4	0·001 μF.
C6, 7	0·0001 μF.
C8, 9, 16	0·1 μF.
C10	2·0 μF.
C12	4·0 μF.
C13, 15	12·0 μF. 50 v. working.
V1	EF39.
V2	6J7.
V3	6C5.
V4	KT63.

Constructional Details

An *Eddystone* die-cast chassis measuring 5¼in. × 8¼in. × 2¼in. is used. The A.F. portion is very compact (some may say very cramped), but with care everything can be fitted in. The panel is ⅛in. aluminium, and measures 9½in. × 8in. high.

In the original model the tuning condenser spindles had to be cut short to ½in., when the condenser just fitted on the chassis. This was mounted centrally, and a screen 4in. high and 3in. from the front separates the R.F. and detector stages. The A.F. and output stages occupy a portion 2in. wide on the right-hand side of the chassis, separated from the R.F. and detector stages by a 4in. high screen. The screens underneath the chassis correspond in position to those on top. Other points of the lay-out are quite conventional and can be seen from Fig. 2 (b).

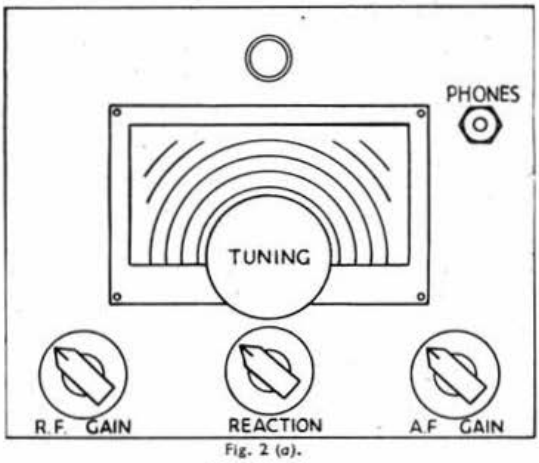


Fig. 2 (a).
Panel lay-out.

Coils and Tuning

Standard six-pin coils, with trimmers mounted inside, are used throughout. *Eddystone* 6BB coils with 75pF trimmers place the 28–30 Mc/s. band between 98°–4° on the tuning dial (scaled 0°–100°). Type 6LB coils with 100pF trimmers place the 14 to 14·4 Mc/s. band between 15°–93°. Unfortunately the other bands have not yet been calibrated but the spread appears to be adequate.

Power Supply

As no suitable power supply was available, it was decided to build a power unit for the set and incorporate a loud-speaker. Since this necessitated a comparatively large panel space, the unit was made 9½in. wide, *i.e.*, the same width as the set, with the idea of mounting the two units in a small rack. As can be seen from Fig. 3, the final arrangement is more of a rack-cum-cabinet.

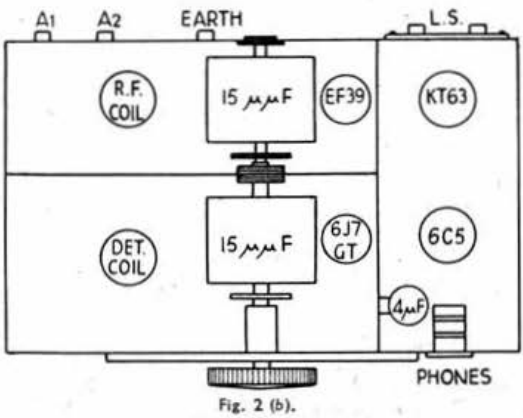


Fig. 2 (b).
Chassis lay-out.

Fig. 3.
The receiver in operation.

The circuit of the power supply is shown in Fig. 4. The transformer delivers 350–0–350 volts to a 5Z4G. A 4μF condenser after the rectifier, followed by a 10 henry choke and a further 16μF condenser, provides the smoothing, whilst a 5,000 ohm. 10-watt. resistor drops the surplus volts and a 32μF condenser following it removes any trace of ripple. A stand-by switch has been incorporated in the H.T. negative line and is located on the right of the loud-speaker.

Fuses are provided in the transformer primary circuit and are mounted in the box on the bottom of the panel. The fuse in the H.T. circuit is one of the single hole mounting type, placed next to the mains fuses.

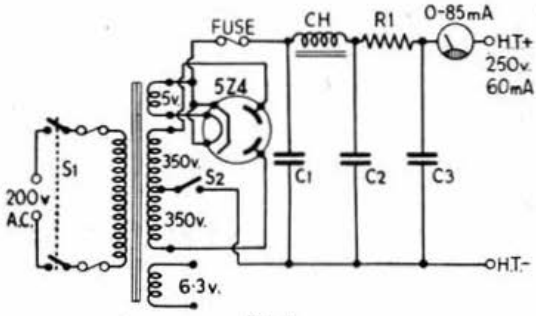


Fig. 4.
Circuit of power supply unit.

C1	4 μF.	R1	5,000 ohms.
C2	16 μF.	CH	10 Henrys.
C3	32 μF.		

The meter reads total H.T. current consumption, which is approximately 50 milliamps. The meter was originally a W.D. 40 ammeter, which, with the shunt removed, provided a 0–85 milliammeter.

The chassis of the unit, built from 16 gauge aluminium and well braced, measures 5½in. × 8½in. × 2½in. The panel is 8in. high and is made of $\frac{3}{16}$in. "Tufnol."

A four-pin valve holder, mounted on the rear of the chassis, provides the power connection to the set by means of a converted valve base and four-way cable. Connection to the loud-speaker is provided by a separate length of flex to the sockets at the rear of the A.F. section.

This receiver has been in use now for several months, and has proved very easy to handle, showing many points which make it a suitable set for a

beginner. Most of the reception has been on 14 Mc/s., and much DX has been logged.

Coil Winding Data

The coils used in the two stages are identical. As stated above the original model uses the *Eddystone* range, but for the benefit of those who wish to wind their own coils, the data given will be of assistance.

For the 7, 14 and 28 Mc/s. bands 18 gauge wire was used and wound 8 T.P.I., the aerial coupling coil was of 30 gauge silk covered and interwound with the grid coil.

For the 1·75 and 3·5 Mc/s. bands 24 gauge wire was used and close wound, the aerial coupling and reaction coils employing 30 gauge silk covered and wound in slots above and below the grid coil respectively.

Coil Data

Band Mc/s.	Aerial Winding	Grid Winding	Reaction Winding
28·0	1½ turns	2½ turns	3 turns
14·0	2 ,,	4 ,,	3 ,,
7·0	4 ,,	8 ,,	4 ,,
3·5	10 ,,	34 ,,	14 ,,
1·75	15 ,,	93 ,,	18 ,,

All coils are wound on 1½in. diameter 6-pin ribbed formers.

Scientific Observations

Further to the Editorial published in this issue a cordial invitation is extended to members to participate in the work which is to be undertaken by the Scientific Observations Committee of the Society.

Members who are willing to co-operate are requested to furnish the Committee with brief details of the equipment they have available for making observations and to indicate the time they will be able to spare for such work.

Groups are being set up to study :

(*a*) Ionosphere Propagation ("skip distance" effects and M.U.F.).
(*b*) Solar, aurora and meteor effects.
(*c*) Tropospheric Propagation.
(*d*) Wave interaction.

Members are requested to state which group, or groups, they wish to join and to forward their application to the General Secretary by not later than May 15 next. Only those who are able to make regular observations should volunteer for groups (*a*) and (c).

It is hoped to begin systematic observations early in June.

Radio Amateurs' Examination

In the article "Hints to Candidates," published in our March issue, reference was made to the use of "a piece of rough paper," in the examination, for jotting down the chief points of an answer prior to writing out the full answer. We now learn that, in accordance with the examination regulations of the City and Guilds of London Institute, candidates are not permitted to take into the examination room any blotting paper or scribbling paper, and only that officially provided may be used. All rough work must be done in the answer book provided, the pen then being drawn through it to show it is not part of the answer. Candidates found in possession of unauthorised paper during the examination may be disqualified.

Society Publications

Town Representatives and others responsible for arranging local meetings as well as the Secretaries of Affiliated Societies are invited to apply to Headquarters for a supply of Society publications which will be forwarded on a sale or return basis.

This arrangement will allow members to purchase books at retail prices, thereby avoiding postage and packing charges.

The following publications are available :

Service Valve Equivalents	..	9d.
The Transmitting Licence	..	9d.
Microwave Technique	.. ..	2/–
Radio Handbook Supplement	..	5/6
(Cloth Covers).		

Valve Technique is due to be published on May 1st, and *V.H.F. Technique* on June 1st.

THE TWO-METRE BAND—(*Continued from page* 194)

stages, and the oscillator in the main receiver, but their suppression or complete removal should result from careful design and screening.

Frequency Modulation

Comparatively little use has been made by amateurs in this country of this system of modulation, and it would be interesting to have some comments from readers on its use on the two-metre band. There are several attractive features; lessened interference from ignition and other man-made disturbances on the receiving side, and a simpler modulator at the transmitter being among them. Opinions as to the type of reception one could expect from a receiver designed for amplitude modulation when dealing with an F.M. signal seem to vary considerably, and some authoritative statement on this point would be welcome. Naturally, to take advantage of the lower noise level inherent with F.M., the receiver must be designed for the job and incorporate a limiter to remove the A.M. component of the signal prior to demodulation. Such a receiver would, however, be well nigh useless for A.M. reception unless a normal detector were substituted for the limiter and discriminator. However, this rearrangement of the circuit would not be insuperable as witness the well-known *Hallicrafters* S27 receiver, where such a circuit change is made by rotating one knob.

General

There must be among our readers those who have converted some of the assorted ex-Government material now available in some quantity into apparatus suitable for V.H.F. operation, and we would appreciate information on this subject for incorporation in a later article, together with any other comments which may be forthcoming.

THE STATION BEHIND THE CALL

THE BULLETIN invites members to submit photographs and descriptions of their stations. Not only elaborate installations but rigs that show ingenuity and a fresh approach to operating techniques will be featured.

All material published will be paid for at the rate of £2 2s. per 1,000 words.

Contributions should be addressed to the Editor, R.S.G.B. Bulletin, New Ruskin House, Little Russell Street, London, W.C.1.

THE MONTH ON THE AIR

By A. O. MILNE (G2MI)*

GOOD news for those of you who worked VR6AA. The cards are in and have been distributed through the bureau. Grateful thanks also to all who so kindly and generously came forward to help with the freightage bill. This has already been oversubscribed and surplus donations have been returned to the senders. Nelson Dyett left Pitcairn early in March and will shortly be on with his home call ZL2FR. He has asked us to extend his thanks to all British amateurs who subscribed towards the gift of fuel oil and to say that the remainder has been left for VR6AB and VR6AC to use. VR6AB has been heard by G2PL on 14 Mc/s. c.w.

An article on VR6AA has been promised for an early issue of the BULLETIN together with some photos.

Phone W.A.S. on 3·5 Mc/s.

Congrats to G8VB who has worked all 48 United States on 3·5 Mc/s. phone. A really remarkable and praiseworthy achievement with a maximum input of 100 watts to a single TZ40. Since November, 1947, 272 W stations have been worked on this band on phone besides XE, TA, VP6CDI, CO7CX and HH2CW. Well done, o.m.!

Congrats also to G8IG European winner of the VK/ZL DX contest. His score of 5,082 points has pipped that doughty old warrior G6CJ who got 4,875 in the open c.w event. A very fine effort Bert against some really tough opposition. G8IG has also just made the first G–ZM6 phone QSO with ZM6AF on 14 Mc/s.

MELF

Here is the latest official information from this changeling area. Civilian amateurs MC1 Cyrenaica, MT2 Tripolitania, MI3 Eritrea, MS4 Somalia. Authorised military amateurs stay as MD1–7. QSL via G2MI.

Notes and News

G5GK has been taking a look at 14 after his sojourn on 7 and has worked C7TY amongst some nice DX. G3DJD comments on the latest pest—people who play gramophone records to each other in the C.W. portion of 3·5. GI6TK made a truly terrific score of 110,000 points in the CW section of the A.R.R.L. DX contest and included a fourfold W.A.S. Goodness knows what he would have done if there had not been a fade out!

A number of correspondents have come forward with information about the Gatti-Hallicrafters expedition. G6HD worked him as VQ3HGE; G6KS has heard him sign VQ4EHG and VQ3HGE and says he will not be in VQ5 for some months yet. W6PBV the operator told 'HD that his father visits HZ1AB, he talks to his mother over some of the New York stations and his sister is working his own home station. Quite a "ham" hook-up.

Pakistan now has its new prefix AP. AP2 is Karachi, AP3 Lahore, AP4 Peshawar so we hear. AP2J is ex-G5ZJ, AP4A is ex-VU2GH and AP5B ex-VU2HS/G3HS.

MP2BH is a new country. His station is at Dukhan on the Qatar Peninsular about 60 miles east of Bahrain. QSL via G2MI.

Hurry up if you want SV as the British operators are leaving shortly. Will ex SV0 stations please send some envelopes to G2MI for their cards?

G2PT tells us the new SM three letter calls are being issued A–F, thus AAA–AAF, ABA–ABF, etc. So far they are up to AOF. SM6AMA of Nygatan 18, Alingsas is a dentist and would like to correspond in English with a British amateur with similar professional interests.

The only genuine VS9's are now AF, AH and AN. VS9ET is O.K. but is in Trucial Oman. HB9CE says VP7NG asks for cards to go to ARRL, and gives AR8BC and AR8BM as Box 1119, Beyrouth.

BRS 16304 wants to know if anyone has any information on XF1A heard on 28? Says EA8EOZ Villa Cisxeros Rio de Oro is very active. Eric Trebilcock gives W0OZW/KS6 as U.S. Naval Station, Pago Pago, 14 Mc/s. C.W.

G6RH's card to YA3B has been returned "unknown." He offers FQ3AT/FE on 28050 and 14105, YU7LX on 14025 and KH6AF, 14150 phone.

EP3H who QSL's is under cover in Southern Persia using 15 watts on 14149 c.c., and also 14010 c.w. He is also active on 56/60 and would appreciate reports.

ZC6JP will probably be the last active ZC6 military licence. He uses an 813 with 150w. Aerials are 3 element rotary, and folded dipole and a long wire.

GW4CZ says KH6AW QSL's 100 per cent. V.E.R.O.N. slow morse practices transmitted by PA0AA (see March M.O.T.A.) now includes an English announcement in his transmission.

G5RF has worked CP1AP Box 346 La Paz.

BRS11494 has excelled himself this month by hearing among others TI4RS, TG9AD, HP2D, HR1AA and HR1AR, ET3AD, AE and AF between 1200 and 2000 GMT. He gives PK2RK as Box 222 Sourabaya. This chap used to say QSL via Post Office Solo, but all cards have been returned "unknown."

The various DA, D7, D6, etc., stations continue to operate and QSL. Their bureau even now offers to QSP cards to British and American army personnel! They are completely unlicenced but the authorities don't seem very interested. Incoming and outgoing cards are being held at present but unless we get some directive from the authorities we intend to handle them.

ZSIKH is ex G2KH and is now busy on 28 and 14. He recently organised a very successful DF contest in Cape Town on approved Southend-on-Sea lines. GM6LS has worked W2EJV/PK3 Box 222, Surabava, Java, who signs as "Hank" on 28400. He suggests a few CQ 11 metres calls. Says it works.

Many DX amateurs throughout the world will be sorry to hear of the death of VK5WR after a long illness. He was particularly well-known in Britain and will be missed by many old timers.

Channel Islands

Will all GC members please contact GC3GC at 6 Greve d'Azette Gdns., Jersey, giving name, QRA and call/BRS number. An inter-island hook up takes place at 12 noon each Sunday on 7190 kc/s. phone or c.w.

QSL's waiting

Will all ex-XA operators and all who have returned from India or Burma please send envelopes to G2MI? The same appeal is made to others who have operated abroad and are now back at home. Mr. J. S. Nicholson, VU2JP, of Munnar, Travancore, forwards all cards for India and Pakistan. Will amateurs leaving for England please see that he is supplied with stamped addressed envelopes? Cards are in file for the following. Please write to him direct and quote period of operation as in some cases the same call has been held by several different people: VU2AU, AW, AY, BB, BL, BO, BU, BX, BZ, CF, CJ, CK, CM, CN, CO, CR, CV, CX, DC, DG, DM, DQ, EK, EO, EP, EQ, FA, FB, FD, FJ, FK, FN, FV, FX, FZ, GG, GH, GP, GR, HB, HO, HQ, HR, HS, IR, JA, JG, JM, JS, JW, JY, KD, KK, KM, KQ, KT, KV, KW, LC, LP, LQ, LU, LX, MB, MR, MX, NC, NR, NW, NX, OC, OM, OR, PA, PD, PH, PL, PM, PS, PT, PU, QB, QS, QM, QW, QY, RM, RW, RX, RZ, SB, SD, TN, TP, VA, VC, VM, WC, WD, WF, WT, WU, XT, XX, XY, XZ, YL and ZZ. Cards not claimed by July 1st next will be destroyed.

*29 Kechill Gardens, Hayes, Bromley, Kent.

Eddystone S640 Receiver Essay Competition (Home Section)

In the opinion of the judges the most meritorious essay was that submitted by Mr. R. C. Jennison, 28 Park Road, Grimsby, who chose as his subject *Applications of the new Microwave Amateur Radio Channels.*

The undermentioned competitors were also singled out for special recognition:

Mr. K. Parvin, 33 Thayer Street, London, W.1. *Band Planning.*

Mr. H. Turner, 7 Laurence Road, Eastlands, Rugby, Warwicks. *Band Planning.*

Mr. D. H. Johnson, Beech Hurst, Old Avenue, West Byfleet, Surrey. *The Relative Merits of British and American Communications Equipment.*

Mr. W. D. Old, 83 Trevenson Road, Carb Brea, Redruth, Cornwall. *How I visualise the application of the new Microwave Channels that are shortly being allocated to Radio Amateurs.*

The general standard of entries was high, but in the opinion of the judges (Mr. John Clarricoats, General Secretary, R.S.G.B., Mr. A. J. E. Forsyth, O.B.E., Editor *Short Wave Magazine* and Mr. G. Parr, Editor *Electronic Engineering*), those listed were outstanding as technical contributions on their respective subjects.

By arrangement with *Messrs. Stratton & Co., Ltd.*, the winning essay is to appear in the *Short Wave Magazine*, whilst certain of the other essays will be published either in the BULLETIN or *Electronic Engineering.*

B.E.R.U. Contest Flash

Excellent conditions prevailed during the first leg of the Contest and activity appeared to be higher than ever before. ZS2A, ZS6BV, VQ3HJP, VS9AN, MD5KW and MI3ZY should all be in the vanguard at the finish. G2AJ, 5WP and 6CJ were among a number of G's to pass the 100 contacts mark before midnight on April 4. VQ8AB and VP9E were in great demand.

Bright Idea

Mr. G. P. Marley, G3CPI, has discovered that the following idea allows more accurate calibration of the B2 receiver: The slow motion tuning knob is replaced by a larger knob marked in degrees and a small dab of white paint is made on the black face of the receiver level with the top of this knob. The amateur bands are then found to be spread over almost 360 degrees of this dial.

THE 1948 FIVE METRE CONTEST

FIRST SECTION

THE good conditions which prevailed during the weekend February 28th-29th enabled many of those who took part in this Contest to work numerous distant stations. The band was at all times alive with activity, although the London area was not so well represented as in the December contest.

Amongst the 140 stations in 28 counties known to have been active, it was pleasing to find several newcomers and a number of others who have been absent from the band for some time. It is regretted however that certain stations who, undoubtedly, would have obtained high scores did not send in a log. Although the logs were in most cases carefully and accurately completed, there were again instances of over-optimistic calculations of distance—a few entrants had obviously guessed distances to the nearest 20 miles or so. One station in the London area lost points for a contact (reported by an RSGB monitoring station) which took place after the close of the contest.

Leading Stations

Mr. R. Joss (G2AJ), who obtained the highest score in the five metre field day held last September, again takes top place as regards points but as a member of the Contests Committee, is ineligible for an award. It says much for his enthusiasm that undaunted by this knowledge, he put up such a splendid effort and incidentally, by putting Bedfordshire on the map, gave many contestants an extra 10 points.

Mr. Joss operated under his portable callsign, G2AJ/P, from a point on the Dunstable Downs, one mile SSW of Dunstable and 750 ft. above sea level. Ably assisted in the transport and erection of the gear by G2AHC and G6SB, he worked 76 stations in 23 counties, resulting in a score of 552 points. His best contact was with G5BY (176 miles).

Mr. E. J. Williams (G2XC) of Portsmouth, the actual winner, obtained 535 points by working 59 stations in 23 counties. G2XC is too well-known to need any introduction, and his score should satisfy the critics who consider that the scoring system always favours entrants in the London area. His contact with G5GX (205 miles) was the only contact over 200 miles recorded during the event. In addition, he worked G2OI (190 miles) and G5BD (180 miles.)

Mr. W. James (G6XM) of Farnborough, Hants., placed second, worked 67 stations in 24 counties for 529 points. His best contacts were with G5GX and G6OS, both 175 miles.

Mr. G. W. J. Haydon (G3BLP) of Selsdon, Surrey, placed third, obtained 485 points, working 64 stations in 24 counties. Seven stations over 150 miles were contacted, including G2OI (177 miles).

Stations in Yorkshire have often bitterly complained that due to lack of activity they are hard-pressed to obtain high scores. All credit should therefore go to G5GX of North Ferriby, Hull, who was placed fourth with 477 points. He worked no less than 24 stations over 100 miles, half of them over 150 miles, including his contact with G2XC, already mentioned.

Equipment Used

G2AJ/P employed a 4-stage transmitter, using 6N7 CO, 6V6 FD, RK34 FD and 829 PA on 58650 kc/s. The modulator comprised 6L6's in AB1. The receiver line-up was 2-956 RF stages, 954 mixer, 955 oscillator and 3 stages of IF using 6SG7's. The aerial was a 3-element wide-spaced rotary beam, 30ft. high.

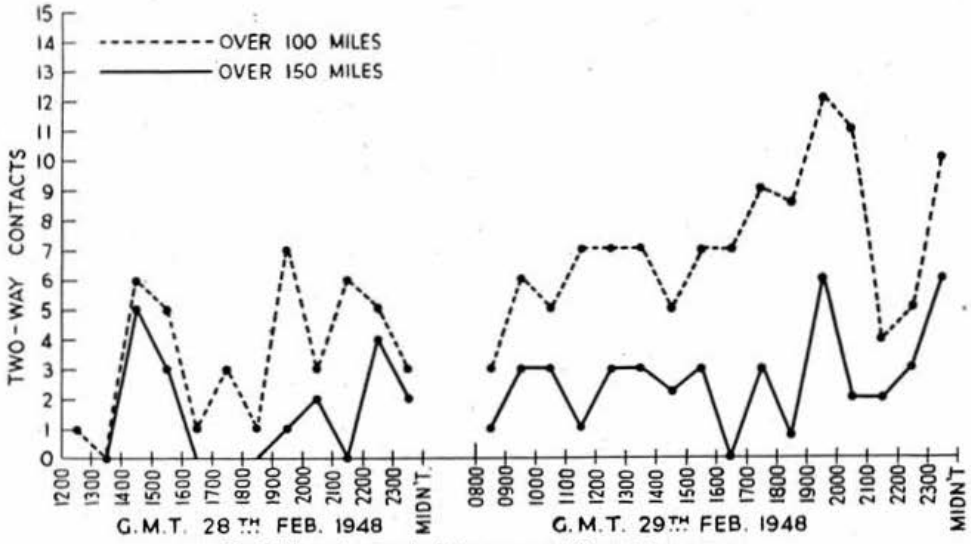
G2XC, with a QVO4-7 CO/FD, QVO4-7 FD and 815 PA, modulated by KT66's in class AB1, employed a 3-element close-spaced rotary beam. An *Eddystone* receiver was used in conjunction with a convertor employing 6AG5 RF, 954 mixer and 9002 oscillator.

G6XM's transmitter consisted of a 9·7 Mc/s. crystal oscillator/tripler, push-push doubler and push-pull final on 58640 kc/s. The aerial was a 4-element semi-wide-spaced beam, 38 ft. high, and the receiver a modified CR. 100 with convertor using EF54 RF and RL18's as mixer and oscillator.

G3BLP, with a V.F.O., tripler, BA, FD and 829B PA, used a 2-element close-spaced beam and a German naval receiver type E53b, with pre-amplifier.

Conditions

The accompanying graph may serve to give some idea of the general trend of conditions during the weekend, although it is realised that the peak towards the end of the Contest is probably somewhat exaggerated by the usual "last minute rush." The number of recorded two-way contacts over 100 miles, together with those over 150 miles, are plotted hour-by-hour throughout the weekend period. A glance at the graph will show that conditions were fair on the Saturday, becoming good at about 15.00 and again later in the evening. On Sunday they were good throughout the day. There is no reason to suspect that conditions fell-off during the night of the 28th-29th—indeed, it is evident that they were quite fair at midnight on Saturday and good at 08.00 on Sunday. This is borne out by the contacts made by G2BMZ (Torquay) with G2AJ/P (161 miles) and G5MR (130 miles), and by G2FKZ (Dulwich) with G5GX (155 miles), all between 23.00 and midnight on the 28th, and by G2ADZ with G2AJ/P (123 miles) and G6VX (170 miles), and by G2AJ/P with G5GX (132 miles), all between 08.30 and 09.00 on the 29th. Between midnight and 08.00 the graph is incomplete simply because of a general "QRT for bed." It is reasonable to suppose that had the participants made "a night of it" they would have found that conditions remained good. On the Saturday no contacts appear to have been made over 170 miles, but during Sunday there were 12 known two-way contacts above this figure. Peak periods appear to have occurred between 17.00 and 18.00, when there were contacts between 2XC and 2OI (190 miles), 3BLP and 2OI (177 miles) and 6XM and 6OS (175 miles), and again between 23.00 and the end of the contest when there were contacts between 2CIW and 2BMZ (190 miles), 2HLF and 2BMZ (175 miles), 2HLF and 3AUS (Torquay, 175 miles), and 2NH and 6OS (170 miles).



Graph illustrating trend of five metre conditions during contest.

Points from the Logs

G2AJ/P reported that G5GX and G3APY were the best signals from the North, adding that 5GX could have been worked

at any time of the day or night. G2IN of Southport was a good signal all day on Sunday. 2AJ/P worked 4 stations in Yorkshire and 4 in Lancashire. G2XC found Sunday afternoon the peak period. He heard, but did not work, G2IQ, 2AUA, 5LJ and 5BM. G3APY's aerial consisted of a 3-element beam in the roof. G2ADZ worked 11 stations over 150 miles using a O-V-1 receiver, with HL2K as detector. G5DF (Tilehurst) a newcomer to the band, had previously only worked 5 local stations. His 50 contacts included two with stations over 130 miles away. He reported G2OI, 6OS, 5GX, 2RI, 5BY, 2BMZ and 5BM as consistent signals. G5BM, admitting his 50 Mc/s. beam was very poor on the 60 Mc/s. band, found best results by rotating it so that the reflector was in the direction of the station being worked. G3BY reported G2AJ/P as the most consistent signal. From his QRA in the shadow of the Pennines he worked G6OS—his first contact with a station on the East side of the Pennines. G4MR, 2LC and 6NK used long-wire aerials.

Check Logs

The following members are thanked for sending in useful check logs: G2YL, 4AP, 6UH and 6VX. A list of entrants in order of merit follows :

Psn.	Call-Sign	Points	Location
*	G2AJ/P	552	Dunstable Downs, Bedfordshire.
1	G2XC	535	Portsmouth, Hants.
2	G6XM	529	Farnborough, Hants.
3	G3BLP	485	Selsdon, Surrey.
4	G5GX	477	Hull, Yorks.
5	G2MR	463	Surbiton, Surrey.
6	G3APY	443	Kirkby-in-Ashfield, Notts.
7	G5MA	431	Ashtead, Surrey.
8	G2ADZ	414	Oswestry, Salop.
9	G8WV	385	Hansiope, Bucks.
10	G2NH	369	New Malden, Surrey.
	G5RP	369	Abingdon, Berks.
12	G2CIW	316	Brentwood, Essex.
13	G6OS	312	Hull, Yorks.
14	G8UZ	311	Sutton-in-Ashfield, Notts.
15	G2OI	308	Eccles, Lancs.
16	G5DF	303	Reading, Berks.
17	G4IG	296	Beckenham, Kent.
18	G5PY	290	Clapham Park, London.
19	G5BD	287	Mablethorpe, Lincs.
20	G3BK	253	March, Cambs.
21	G5IG	232	Cambridge.
	G5JU	232	Birmingham, Warks.
23	G6MN/A	214	Worksop, Notts.
24	G4MR	211	Slough, Bucks.
25	G5BM	204	Cheltenham, Glos.
26	G4RO	202	Welwyn Garden City, Herts.
27	G5MR	200	Felpham, Sussex.
28	G2HLF	198	Heathfield, Sussex.
	G3BY	198	Ashton-U-Lyne, Lancs.
†30	G6UW	178	Cambridge.
31	G3CWW	164	Hendon, Middlesex.
32	G6NB	155	Chertsey, Surrey.
33	G6JJ	153	Hillingdon, Middlesex.
34	G8PX	147	Oxford.
35	G3ZK	146	Halifax, Yorks.
36	G6HX	144	Banstead, Surrey.
37	G8TS	136	Farnham, Surrey.
38	G2FFY	116	Westerham, Kent.
39	G2LC	113	South Ruislip, Middlesex.
40	G6NK	101	Weybridge, Surrey.
41	G3BGW	93	Chevely, Cambs.
42	G3BTC	88	Welling, Kent.
43	G3YH	81	Bristol, Glos.
44	G6ZQ	75	Cheltenham, Glos.
45	GW6OK	65	Colwyn Bay, Denbighshire.
46	G2UJ	63	Tunbridge Wells, Kent.

* *Ineligible for award—Contests Committee member.*
† *Operator—G3COJ.*

AROUND THE VHF's—*continued.*

U.H.F. bands to be allocated for amateur use would be of considerable value in the future. Information is sought as to the availability of the actual material, and the possibility of producing such apparatus in the home workshop with its fairly limited facilities. Metal working such as this might be more in the province of the skilled model-engineering enthusiast; do we number any such among our membership? If so we should be very glad to hear their views. It is our recollection that at least one radio club held a joint exhibition with their local model engineers not so long ago, and it is more than a possibility that the problem of "plumbing" will lead to helpful co-operation between those near relations—Model Engineering and Amateur Radio.

Closing date for these notes will be April 22nd, and 2UJ will be on 58·54 Mc/s. looking for reports from 1800 to1930 B.S.T. on Sunday, April 18th, and from 2200 to 2330 B.S.T. on Monday, April 19th.

AROUND THE VHF's

By W. H. ALLEN, M.B.E., G2UJ.

WE are pleased to say that the decision to extend this feature to include all V.H.F. activity, both on the air and in the workshop, seems to have met with all-round approval, but we would remind readers that this is *their* article, and any suggestions or criticisms which will lead to it being more generally appreciated will always be welcome.

58·5 Mc/s.

Mr. J. F. Squires, M.B.E. (G2DBF), of Bournemouth, regrets the lack of information regarding 5 metre transmitters. This is fair criticism, and we shall do our best to remedy the deficiency. Although "five" is under sentence of death—or at best, "transportation"—that fact is not preventing many new call signs from appearing on the band. This is all to the good, for lack of activity is certainly one of the main difficulties with which we have to contend.

The warm, summer-like weather brought about some excellent periods of conditions during March, and one of the most remarkable was the evening of the 24th. At least four French stations, F8AA, GH, NW and ZF were coming in at strengths every bit as good as during the peak summer conditions which prevailed last year, with very little fading, and there was a terrific scramble on the part of the many G's active that evening to work them. We formed the impression that propagation favoured signals coming from the south, and it is interesting to learn from G2ADZ of Oswestry that he heard F8NW at 559 but did not make contact.

G2HLF, who, by the way, used to be BRS1173, and not 1073 as stated last month, sends a very interesting report of QSO's effected from Heathfield, Sussex, using a 66 foot Windom aerial. Between February 23rd and March 21st he worked the two Torquay stations, 2BMZ and 3AUS 11 and 8 times respectively, 5ZT in Plymouth on 6 occasions, and 5BY, Bolt Tail, Devon, once. Signal strengths both ways to Torquay were high, and both stations were audible practically every evening. Northwards, 3CUA, 5IG and 6UW, all in Cambridge, have been contacted, and he finds that activity, rather than conditions determines his results on the band. HLF asks us to say that he will be on every evening between 1900 and 2300 B.S.T., or at any other time by arrangement. His frequency (V.F.O.) is usually near the low-frequency end of the band.

G2ADZ and 2XC (Portsmouth) have a daily sked at 1900 and since March 2nd have been able to keep it nearly every evening. The outstanding day for ADZ was March 8th. 2AJ, BB, XC, 3BLP, 5RP, US, 6VX and XM were coming in at extraordinary strength; 3BLP's phone at S9 plus being louder even than 6VX.

G3COJ, who hails from Hull but is at present at St. John's College, Cambridge, has been operating his station from 6UW, and sends an impressive log with 3ZK at 135 miles as best DX worked, while 2IN (165 miles) and 2OI (140 miles) are among those heard. G4MR, Slough, Bucks (another "MR" to join numbers 2 and 5 on the band!) sends details of stations heard, but not worked, during the recent 5 metre contest. He is licenced for 6 metres but has not heard a signal in five weeks, a state of affairs apparently general at the present time.

144 Mc/s.

Following our reference to G2NH's experiments with a transmitter for this band, we are informed that so many readers wrote asking him for details that he has had the circuit and information duplicated and will be pleased to supply a copy to anyone who sends him a stamped and addressed envelope for the purpose. He is now starting work on a receiver for this band. Mr. Peter Matthews, G3BPM, has built a receiver covering the 100 to 130 Mc/s. band and, with a long-wire aerial, has been hearing a number of interesting commercial transmissions at distances of over 50 miles, and is getting some idea of the sort of conditions to be expected in this part of the spectrum. So far, there seems to be a definite relationship between the signal strength of a given station and the time of day, and it is hoped to publish further details when more extensive observations have been made.

We hope, in the next issue of the BULLETIN to make an announcement of practical interest to all intending users of the 2 metre band.

420 Mc/s. and above.

Nothing of interest has reached us this month, but we trust that something will be forthcoming for inclusion in our next issue.

General

We should be pleased to hear from anyone in a position to give authoritative information on the comparative merits of tuning systems employing parallel and series tuned coils, lines and troughs as applied to both transmitters and receivers for the 144 and 420 Mc/s. bands. In addition we feel that there must be some of our members who, during the war, were engaged in the actual manufacture of wave-guides and other radio "plumbing" for use on the centimetre wavelengths. This is a field to which few of us have as yet turned our thoughts, but some indication of the practical requirements of equipment suitable for the

Continued in previous column.

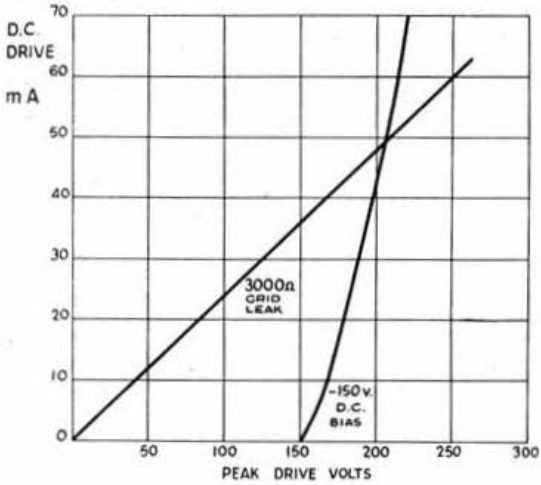
LETTERS TO THE EDITOR

Grid Driving Power for Valves

DEAR SIR,—At a recent meeting of the Society held at the I.E.E., London, a discussion arose concerning the power required to drive a valve circuit under Class B or Class C conditions. As there appeared to be some misconception on this subject, and because similar arguments have arisen before, a little "clearing of the air" seems desirable.

First let us consider how and where the driving power is dissipated in the various parts of a circuit.

(1) Dissipation occurs in the grid tuned circuit or transformer (this loss is due to the shunting effect of "Q" and is dissipated in the coil and condenser).
(2) R.F. power dissipated in the valve input impedance (this appears as loss within the valve but does not include that due to the grid current).
(3) R.F. power dissipated in the grid leak (if fitted).
(4) Dissipation caused by the actual grid driving power which appears as D.C. grid current (this occurs mainly in the leak or bias source and only a small amount in the valve itself.)



Valve manufacturers' quote data for (4) only which explains why power in excess of this figure is always required in practice in order to cover (1), (2) and (3). The valve-maker cannot include data on these points as they depend upon the frequency and circuit constants. The loss due to valve input impedance depends upon the valve design and operating conditions and increases rapidly with increasing frequency. The loss referred to in (3) does not exist if the grid leak is not across the tuned circuit as a shunt. It may be reduced by the employment of an R.F. choke in series, although this will produce some loss.

When anode (and screen) voltage is applied to a Class B or C amplifier the grid current will fall assuming no regeneration (lack of neutralisation). This fall which will require increased driving power is caused by a modification of the positive grid characteristics due to (*a*) the presence of anode voltage, and (*b*) degeneration of the input in common leads (*e.g.* those to cathodes and screens). Degeneration is affected by the output load in the anode circuit and by such operations as tuning, since this process affects the value of the load.

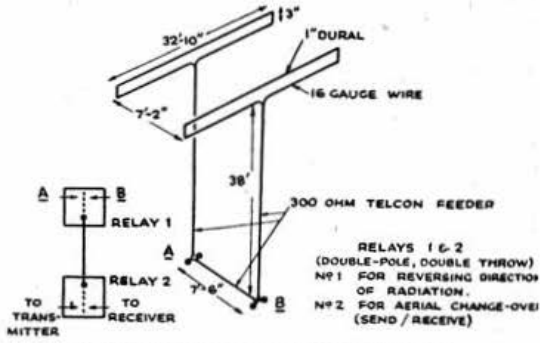
The amount of driving power to a valve is not affected in any way by the method of obtaining bias (*i.e.* grid leak, battery, or cathode bias or combinations of these methods), providing points (1), (2) or (3) are unaffected. However, when battery bias is used it appears that less power is required because a small increase in drive produces a greater increase in grid current. It is thus easier to overdrive a valve with battery bias, because the bias is not self compensating. The curve reproduced here shows the effect of plotting the D.C. grid drive of a valve against the peak driving volts for −150 volts fixed and 3,000 ohms grid leak bias. It will be observed that at 50 mA. the curves cross one another indicating that for this value of current the driving voltage is equal. In each case the bias was −150 volts and the measured driving power 9 watts; 7·5 watts being dissipated in the bias source and 1·5 watts within the valve.

Yours faithfully,
D. N. CORFIELD, G5CD.

More about the G8PO Aerial

DEAR SIR,—With reference to the article and recent letters appearing in the BULLETIN concerning the G8PO aerial, it is felt that a few words in favour of the system are warranted.

The 8PO has been in use at this station for approximately six months and has given every satisfaction. The ratio of back-to-front discrimination is remarkable for a two element beam and S9+ signals can be made either unreadable or entirely inaudible by switching the array in the manner described. As often demonstrated to many amateurs at this station, an S9+ signal from a given direction will disappear and another S9+ signal from the opposite direction will take its place with no QRM from the eliminated signal. To quote one case in particular, an S9+20db. signal from G6UL was practically inaudible and completely unreadable when received on the back of the aerial and my signal to him was completely inaudible when firing-away from him although S9+ when firing towards him.



The G8NY version of the G8PO Aerial System.

The version in use differs slightly from the original inasmuch that the radiators are folded dipoles constructed of 1 inch dural tubing with 16 gauge wire returns for the folds into which 300 ohms Telcon feeder is connected. The lengths of feeder and delay section are very critical and it is believed that the necessary dimensions can only be found by trial and error methods requiring a tremendous amount of patience (and feeder cable).

Details of the system have been passed, on request, to many other amateurs and it would appear that in most cases experiments have been abandoned after a week or two, but it is still maintained that it is only a case of perseverance to obtain the required results.

Recently 80 ohms twisted pair screened feeder was replaced by identical lengths of 300 ohms and it was surprising to find that the back-to-front ratio was unaltered despite the difference in the velocity of propagation figures of the two types of feeder.

The rotary system in use has 360° movement, and during experiments the delay section was coupled directly between the two radiators and a single feeder brought down to the transmitter with the result that the system became purely bi-directional with no sign of any back-to-front discrimination.

A rotary dipole was in use before the erection of the 8PO and stations are now heard and worked which were inaudible on the dipole. Consistent contacts on 14 Mc/s. 'phone are made with VK, ZL, North and South America, etc., and the "out-of-the ordinary" DX worked is sufficient to appease the average amateur's appetite. Recently W.A.C. on 'phone was made in 4¼ hours.

Finally, those who have heard the beam in operation have nothing but the highest praise for its performance, and thanks are expressed to G8PO for its introduction.

Yours faithfully,
LESLIE H. LUSCOMBE (G8NY).

New Books

THE BASIC SUPERHET DATA BOOKLET, SERIES NO. 1. Amalgamated Short Wave Press, 57 Maida Vale, Paddington, London, W.9. 16 pp. Price 1s.

Describes the construction of a simple superhet for use on A.C. mains and indicates how R.F., B.F.O. and Preselector stages can be added to make the basic superhet into an efficient communications receiver.

The photographs and line drawings are excellent. The presentation is clear and concise.

TELEVISION EXPLAINED. By W. E. Miller. Iliffe & Sons, Ltd. Price 3/6.

Within this 52 page booklet is contained a revised edition of a series of articles originally published in *The Wireless and Electrical Trader*, which, although primarily intended for dealers and service engineers, will be found useful to all interested in learning how a television receiver works. The book is essentially practical, non-mathematical and illustrated by numerous circuits and other diagrams.

A MODERN HOME BUILT TELEVISOR. *Electronic Engineering.* Price 2/6.

A complete description of a television receiver suitable for home construction, with all necessary circuits and constructional drawings. A full list of components is given together with practical operating instructions. A method of aligning the receiver using only the B.B.C. test transmissions is described for use in cases where a signal generator is not available. Altogether a valuable little book for the home constructor.

NEWS FROM HEADQUARTERS

COUNCIL, 1948

President:
VICTOR M. DESMOND, G5VM.

Executive Vice-President: W. A. Scarr, M.A., G2WS.
Hon. Secretary: K. Morton Evans, O.B.E., G5KJ.
Hon. Treasurer: A. J. H. Watson, F.S.A.A., G2YD.
Hon. Editor: Arthur O. Milne, G2MI.
Immediate Past President: S. K. Lewer, B.Sc., G6LJ.

Members: I. D. Auchterlonie, G6OM, G. F. Bloomfield, Ph.D., A.R.I.C., G2NR, F. Charman, B.E.M., G6CJ, D. N. Corfield, D.L.C.(Hons.), A.M.I.E.E., G5CD, C. H. L. Edwards, A.M.I.E.E., G8TL, R. H. Hammans, G2IG, J. W. Mathews, G6LL.

General Secretary: John Clarricoats, G6CL.

G.P.O. Liaison Officer: Arthur E. Watts, G6UN

February Council Meeting

Resume of the Minutes of a Meeting of the Council of the Incorporated Radio Society of Great Britain held at New Ruskin House, Little Russell Street, London, W.C.1, on Tuesday, February 17, 1948, at 6 p.m., and adjourned until Wednesday, February 25, 1948.

Present.—February 17: The President (Mr. V. M. Desmond in the Chair), Messrs. Auchterlonie, Bloomfield, Charman, Corfield, Edwards, Evans, Hammans, Lewer, Mathews, Milne, Scarr, Watson, Watts and John Clarricoats (General Secretary).

Present.—February 25: The President (Mr. V. M. Desmond in the Chair), Messrs. Bloomfield, Charman, Corfield, Edwards, Evans, Hammans, Lewer, Mathews, Milne, Watson, Watts and John Clarricoats (General Secretary).

I.A.R.U. Calendar.
Resolved to cast an "Aye" vote in favour of the election to membership in the Union of the Iceland Amateur Radio Society (I.R.A.).

Band Planning.
It was reported that an advance copy of an article on Band Planning which appeared in the February issue of QST had been passed to the Codes of Practice Committee. The A.R.R.L. Planning Committee proposes that the following channels be assigned in the U.S. to telephony:—

3,800– 4,000	kc/s.	(Canada—3,750–4000 kc/s.)
14,200–14,400	,,	(14,200–14,350 kc/s. later)
21,300–21,450	,,	(Canada—21,250–21,450 kc/s.)
28,500–29,700	,,	(as at present).

Midlands Amateur Radio Exhibition.
In connection with an enquiry received from Mr. D. A. G. Edwards the Council decided that although the Society cannot agree to sponsor an Amateur Radio Exhibition in Birmingham, no objection would be raised to local members or interested sections of the radio industry undertaking such organisation.

Membership.
Resolved:
(*a*) To elect 232 Corporate members, 62 Associates and 10 Junior Associates.
(*b*) To grant Life Membership to Mr. H. S. King (G3ASE).
(*c*) To grant Corporate membership to five Associates who had applied for transfer.
(*d*) To grant affiliation to the Britannia Radio Club, the Derby and District Amateur Radio Society and the Sheffield University Radio Society.
(*e*) To grant Honorary Affiliation to the Hong Kong Amateur Radio Transmitters' Society.

N.F.D. Films.
Resolved not to proceed with the production of a 1948 N.F.D film but to make enquiries in regard to the possibility of producing a film of modern amateur stations. The view was expressed that such a film would eventually attain historic value as had pre-war films of a similar character.

Attendance of Non-Council Members at Meetings of the Council.
Mr. Edwards suggested that a small number (two to four) of non-members of the Council be permitted to attend meetings as spectators with no power to enter into discussions. Mr. Edwards felt that this arrangement would enable members to appreciate the amount of work carried out and the care with which the Society is run.
Resolved to reject the suggestion on the ground that the Board Room is not large enough to accommodate spectators.

G.P.O. Liaison Officer.
Resolved to re-appoint Mr. A. E. Watts (Past President) to the office of G.P.O. Liaison Officer and to invite him to continue to attend meetings of the Council.

Proposed Increase in Subscription Rates.
Letters were submitted from several members protesting against the proposal to increase subscription rates. The Secretary was instructed to write to the members concerned pointing out that no change in the subscription rates can take place until a motion has been adopted at an Annual or Special General Meeting, due notice of which will previously have been given to all Corporate Members.
Mr. Watson agreed to prepare an Editorial dealing with current financial matters.

United Nations.
It was agreed to inform the I.A.R.U. that the terms of the G.P.O. Amateur Licence do not allow U.K. amateurs to handle messages originated by the United Nations. In view of this fact, the Council agreed to abstain from voting on I.A.R.U. Calendar Proposal No. 52, which asked the I.A.R.U. Societies to support an agreement to handle United Nations messages which had been drawn up by the President of the I.A.R.U. and the United Nations.

C.C.I.R. Stockholm.
It was reported that preparatory work had commenced in connection with the forthcoming International Radio Consultative Committee (C.C.I.R.) Conference to be held in Stockholm.
Resolved to appoint three members to serve on Study Groups set up by the U.K. General Purpose (C.C.I.R.) Committee (see March BULLETIN).

Finance.
Resolved to accept and adopt the Balance Sheet for the quarter ended December 31, 1947, and Cash Accounts for the months of December, 1947, and January,.1948.

Six Metre Licences.
Mr. Watts reported that only 83 persons had applied for a six metre permit in accordance with the notice published in the January BULLETIN.

Amateur Licence.
Considerable discussion took place in regard to the wording of the new Amateur Licence and certain recommendations made by the G.P.O. Liaison Committee were adopted either with or without modification.

Band Planning.
Resolved:
(*a*) To accept and adopt for circulation to the European I.A.R.U. Societies a draft band plan for Europe and to request the Societies concerned to give the plan earnest and early consideration (see March BULLETIN).
(*b*) To send a copy of the plan to I.A.R.U. Headquarters and to W.I.A. (Australia), N.Z.A.R.T. (New Zealand) and S.A.R.L. (South Africa).
(*c*) To send a copy of the plan to "Short Wave Magazine," "Short Wave News" and "Wireless World" with a request that publicity be given to the proposals contained therein.

N.F.D. Rules.
Resolved to amend Rule 7 (see March BULLETIN).

Contests
Resolved to award the Somerset Trophy to Mr. J. Hunt, G2FSR, winner of the 1947 Top Band Contest, and to award miniature cups to Messrs. Hunt and Mason, winners of the Second Section 1947 Top Band Contest and Five Metre Field Day respectively.
The meeting was adjourned at 10.20 p.m.

The meeting was resumed at 6 p.m. on February 25, 1948.

Amateur Licence.
A further discussion took place on the draft of the new Amateur Licence.

Station Inspections and Logs.
It was reported that the G.P.O. Liaison Committee were negotiating with the G.P.O. on matters relating to station inspections and the preparation of logs.

Telecommunication Conferences.
It was reported that Conferences which may have some bearing on amateur frequency allocations had been scheduled to take place in Copenhagen, Geneva and Oslo.

BULLETIN.
It was reported that the Technical Committee had given careful consideration to a suggestion that the BULLETIN be printed on thinner paper in order to produce more pages but after receiving a report from the Society's printers the suggestion had been rejected on the ground that printing processes would be rendered more difficult. Furthermore the gain (amounting to only four pages) would not justify the risk which would have to be taken in placing orders for a different make of paper.
A new design of front cover was submitted and approved for use as from the July issue.

Booklets.
It was reported that *V.H.F. Technique and Valve Technique* were being printed and that three further booklets were scheduled to appear during 1948.

O.R.M's.

It was announced that Region 3 were willing to waive their right to hold an O.R.M. during 1948 provided the Council would agree to a meeting being held in Coventry during 1949. Council gave the necessary assurance and agreed to invite the Region 2 Representative to arrange an O.R.M. in his Region during the current year.

Delegates Conference.

Resolved by five votes to two not to hold a Delegates Meeting during 1948.

It was estimated that the cost of holding such a meeting would be in the order of £200.

Type 145 Oscillators.

Mr. Edwards was requested to reply to a further letter received from Mr. K. Peattie regarding the distribution of a small quantity of 145 oscillators which took place some months ago (see Resume of December, 1947, Council Meeting Minutes).

Representatives Expenses.

Resolved not to pay printing charges incurred by representatives nor to pay for the cost of refreshments provided at meetings of T.R's. and C.R's.

In this connection it was pointed out that the Council has agreed to pay certain personal out-of-pocket expenses incurred by Representatives and that full details of the arrangements had been communicated to all representatives.

The meeting terminated at 9.40 p.m.

London Lecture Meeting

Mr. W. A. Scarr, M.A., G2WS (Executive Vice-President), officiated at the London Lecture Meeting held on Friday, March 12 last, at the Institution of Electrical Engineers, when Mr. D. N. Corfield, D.L.C.(Hons.), A.M.I.E.E., G5CD, read a paper entitled "The Practical Use of Frequency Modulation on the Amateur Bands." A vote of thanks to the lecturer was proposed by Mr. E. A. Dedman, G2NH.

Mr. Corfield's paper will appear in a future issue of the *Proceedings of the R.S.G.B.*

South London District

The Council has agreed that, for the years 1948–9 the portion of the London Region lying south of the River Thames shall be divided into three Districts each under a District Representative. The three Districts will be known as South London, North Kent and North Surrey.

South London will embrace all South London postal districts lying south of the Thames.

North Kent will embrace that part of Kent which lies within 25 miles of Charing Cross.

North Surrey will embrace that part of Surrey which lies within 25 miles of Charing Cross.

Corporate Members living in the three Districts are invited to submit nominations for the office of District Representative.

Nominations must be submitted in the form prescribed in the Members' Circular included in the September, 1947, issue of the BULLETIN and must reach Headquarters by April 30, 1948.

Official Regional Meetings

O.R.M.'s will be held in Regions 1, 2, 5, 7, 9, 11, 13 and 15 during 1948 and in Regions 3, 4, 6, 8, 10, 12 and 14 during 1949.

The following dates and venues for 1948 meetings have been approved by the Council.

Region.	*Venue.*	*Date.*
1 ..	Manchester	Sept. 19
2 ..	Newcastle	Sept. 5
5 ..	Chelmsford	June 27
7 ..	Ilford	May 23
9 ..	Bristol	July 18
11 ..	Rhyl	June 20
13 ..	Edinburgh	Oct. 24
15 ..	Belfast	May 8

Representatives of the Council will attend all meetings.

Details of O.R.M.'s will appear in future issues of the BULLETIN.

Representation

Mr. H. Swift, G3ADG, having resigned as Town Representative for Bournemouth a vacancy now exists for that office. Corporate members resident in the town are invited to submit names in the form prescribed in the Supplement to the September, 1947, issue of the BULLETIN, and to submit same to the General Secretary by not later than April 30, 1948. In the event of more than one member being nominated a ballot will be announced in the May issue.

* * *

For the past four months Region 12 (North Scotland) has been without a regional representative. Mr. John Douglas, GM2CAS, 223 Abbotswell Road, Bridge of Dee, Aberdeen, has offered to convene a meeting of R.S.G.B. members in the Region, with a view to nominating a member for the vacant office. Those who are willing to support such a meeting are invited to communicate with Mr. Douglas at the above address.

* * *

The following are additions to the list of T.R.'s published as a Supplement to the February issue.

Region 1.—WEST LANCS.
Preston .. .. J. Brindle, G3PQ, Marlow Cottage. Preston Junction, near Preston.
Liverpool .. H. Hipple, G3BNO, 4 Portelet Road, Stoneycroft, Liverpool, 13.

Region 4.—LEICESTERSHIRE.
Loughborough .. L. Philpott, G4BI, Rectory Cottage, Walton-le-Wolds.

Region 6.—BUCKINGHAMSHIRE.
Area of North Bucks .. B. Hayes, BRS9600, 8 Althorpe Crescent, New Bradwell, Bletchley.

Region 7.—LONDON NORTH.
Finsbury Park .. R. C. Harris, G2BAB, 9 Queens Drive, Finsbury Park, N.4.
Potters Bar .. J. Goddard, G2GO, 33 Park Avenue.

Region 7.—LONDON SOUTH.
Dorking .. .. J. Greenwell, G3AEZ, 7 Sondes Place Drive.

Region 9.—NORTH DEVON.
Bideford .. D. H. Jones, G3BO, Westover, Windmill Lane, Northam.

* * *

Mr. D. Buddery, BRS2999, of 57 Southdown Road, Great Yarmouth, has been appointed County Representative for Norfolk.

Canadian Amateur Radio Operators' Association

Old friends of Mr. H. A. Maxwell Whyte, will be glad to hear that he has been appointed Executive Secretary of the above Association. The address of the C.A.R.O.A. is 46 St. George Street, Toronto 5.

"Ham" Whyte has recently purchased a 500 watt c.w. transmitter and is already making contacts with the old country under the call VE3BWY.

Slow Morse Practice Transmissions

The response to the appeal made last month for names of members who are making regular practice transmissions has been most disappointing—only one reply so far having been received.

The importance attached by some members to slow Morse practices is shown by the fact that at least 50 in the London Region copy the transmissions made by G8TL on Tuesdays at 2200 B.S.T. (1,896 kc./s). It is hoped that many other stations will co-operate in order to ensure complete coverage of the British Isles. Members willing to assist should write to Mr. C. H. L. Edwards, G8TL, 10 Chepstow Crescent, Newbury Park, Ilford, Essex.

The slow Morse transmissions made from PA0AA on Wednesdays at 2000 B.S.T. (3,620 kc/s.) now include English announcements.

OUR FRONT COVER

THIS month's front cover illustration shows a Model 7 Universal AvoMeter being used to check bearings by visual indication of audio output from a "Coastray" Marine Direction Finder. The makers of the Direction Finder, Messrs. Coastal Radio, Ltd., of Edinburgh, have some 15 AvoMeters in daily use for checking stages in the manufacture of marine radio telephones, direction finders, and receivers. Photograph submitted by Mr. James B. Inglis of Edinburgh.

HIC ET UBIQUE

Burnham and Highbridge Amateur Radio Society

Meetings are held on the first and third Monday of each month at the Ring O'Bells Hotel, Burnham-on-Sea, and include Morse classes and lectures intended to cover the Radio Amateurs' Examination. The President is Mr. P. H. Green, BRS4820 and the Treasurer, Mr. A. D. Taylor, G8PG. Interested members are invited to contact the Secretary, Mr. T. Carter, G3BPV, c/o Post Office Radio Station, Highbridge, Somerset.

Coventry Amateur Radio Society Dinner

In an atmosphere of good comradeship the Annual Dinner of the Coventry Amateur Radio Society took place at the Hare and Squirrel, Coventry, on Saturday, March 20, last. The President (Councillor W. H. Malcolm, J.P., G6WX) had the support of Mr. V. M. Desmond, G5VM, and Mr. John Clarricoats, G6CL (President and General Secretary respectively of the R.S.G.B., and both Vice-Presidents of C.A.R.S.). The R.S.G.B. was further represented by Mr. D. A. G. Edwards, G3DO, Region 3 Representative, whilst visitors from Birmingham included Mr. C. Young, G2AK, and Mr. W. J. Vincent, G4OI (President and Hon. Secretary respectively of the Midland Amateur Radio Society).

NORTHERN IRELAND OFFICIAL
— REGIONAL MEETING —

PRESBYTERIAN WAR MEMORIAL HOSTEL, HOWARD ST., BELFAST

SATURDAY, MAY 8th, 1948

Assemble	2.30 p.m.
Business Meeting	3 p.m.
High Tea	5.15 p.m.
Lecture	6.45 p.m.

Tickets (price 7/6) from Northern Ireland Regional Representative by not later than May 1st, 1948.

Following an excellent meal Mr. J. Tuck, G6TD (T. R. for Coventry) proposed a toast to the R.S.G.B. to which Mr. Desmond responded. Mr. Edwards toasted the C.A.R.S. and the President replied. Mr. John Swinnerton, G2YS, hard-working Hon. Secretary of C.A.R.S., welcomed the visitors, and Mr. Young replied.

The toasts were followed by the presentation of trophies after which the General Secretary was persuaded to open his "little black book."

The arrangements for the dinner were in the capable hands of a small committee who received the warm congratulations of their colleagues.

Channel Islands

Meetings are held on the first Tuesday of each month at 7.30 p.m., at "Monaco," St. Saviours Road, Jersey. Details may be obtained from Mr. A. G. Cole, GC3GS, 6 Greve d'Azette Gardens, St. Clement, Jersey, C.I.

East London District

The March meeting held in the Town Hall, Ilford, brought together about 100 members and their ladies. Three B.C.L.'s—one of whom acted as chairman—put the motion: "The Radio Amateur is a menace to mankind." The views expressed certainly stirred the ladies, for the debate nearly degenerated into "The Ham is a menace to womankind." Most who were present will agree that the voting, although overwhelmingly in favour of the amateur, was completely against the merits of the case as expounded by the B.C.L.'s!

The Brentwood Group having now declared its intention to operate two N.F.D. stations will receive £4 from the funds, bringing the total dispensed on that account to £14.

"I.R.T.S. News"

The first issue of *I.R.T.S. News*—official Journal of the Irish Radio Transmitters Society—appeared in January last. This new project will prove of great interest and value to all EI amateurs as it will keep them fully informed on topical and technical matters.

The February issue announces that I.R.T.S. will, as in past years, participate in N.F.D. This same issue contains an excellent article on Beams and Towers by EI3J and a comprehensive V.H.F. Notes and News column.

The Hon. Editor is Howard Coombes, EI6J, 39 Highfield Park, Dundrum, Dublin.

"Merseyside Amateur Radio Review"

Under the above title the Merseyside Radio Society and Short Wave Club are publishing a monthly review of activities. Already the *Review* is proving a valuable link between members. The subscription is 2/- per annum post free and the General Manager is Mr. C. M. Johnstone, BRS16037, 6 Flawn Road, West Derby, Liverpool. The Editors are Mr. A. Garnock Jones, G8TJ, and Mr. V. G. Meaden, G3BHT.

N-W.R.F. Club 5-Metre Field Day

The North-West Radio Frequency Club intends to hold a 5-Metre Field Day on Saturday, May 29. Battery-operated portable receivers will be used and it is hoped that a number of amateurs in the London Region will co-operate. Full details may be obtained from the Secretary, Mr. F. Wells, 8 Evangelist Road, Kentish Town, London, N.W.5.

South Shields Amateur Radio Club

Meetings are now held on Friday evenings at 7.30 p.m. in Trinity House, Laygate. The call G3DDI has been issued to the Club.

Stoke-on-Trent Amateur Exhibition

"Amateur Radio Through the Years" was a feature of the recent three-day exhibition organised by the Stoke-on-Trent Radio Society. Early receivers and components aroused great interest and showed the tremendous progress made in radio design—although one member of the public, recalling the days of the bright-emitter, complained bitterly that he could no longer read his newspaper from "these modern valves"! G3UD and G3ALP operated during the exhibition and many contacts were effected. Local Territorial units co-operated and the police staged a striking demonstration of the use of radio to enforce the law. The County Representative, Mr. John M. Foggo, G2COP, was among the many visitors.

Stourbridge and District Amateur Radio Society

At the A.G.M. of the above Society, held recently at King Edward VI School, the reports of the Secretary and Treasurer were unanimously adopted. The President, G6OI, in his address, referred to the happy atmosphere prevailing in the Society, and gave some information about the R.S.G.B. BULLETIN and proposals on band planning. It was announced that G8PR would not be able to continue his duties as Treasurer, and in view of his sterling work as a Founder Member of the Society he was unanimously elected an Honorary Vice-President.

The officers and committee for 1948 are: *President*, J. Timbrell, G6OI; *Vice-President*, B. Whitehouse, G6WF; *Secretary*, W. A. Higgins, G8GF; *Treasurer*, C. E. D. McLean, G2CIS *Committee*, N. Harper, G4MI, N. C. Heathcock, F. Bills, G3CLG and J. Smith, G3CPP.

The Society will welcome any radio enthusiast and applications for particulars of membership should be addressed to the Secretary, Mr. W. A. Higgins, 35 John Street, Brierley Hill.

National Field Day

The following are quotations from two typical letters received by the Contests Committee after recommending an amendment to Rule 7:—

"I would like to protest most strongly . . . against the revised N.F.D. Rules. . . . Could the N.F.D. Rules be altered to allow normal receivers . . . having filament consumption above six watts, together with the use of wet accumulators for both receiver and transmitter L.T. supply?"

* * *

"The (local) Committee does not recognise the necessity for any alteration. . . . The original rules were eminently fair. . . ."

* * *

Rule 7 was amended after numerous protests had been received from Regional, County and Town representatives.

LONDON REGIONAL MEETING

SUNDAY, MAY 23rd, 1948

ILFORD TOWN HALL

Assemble	2.30 p.m.
Business Meeting	3 p.m.
Tea	5.30 p.m.
Lecture	7 p.m.

Following the lecture a sale of surplus equipment will take place. Proceeds towards Regional Fund.

Two hundred tickets available at 5/- each (tea and raffle) and fifty at 2/- each (raffle only). Application for tickets should be made to London Regional, District, Town and Area Representatives.

FORTHCOMING EVENTS

REGION 1

Accrington.—May 12, 7.30 p.m., Cambridge Street Schools.
Ashton-under-Lyne.—May 2, 2.30 p.m., New Jerusalem Schools, Katherine Street.
Birkenhead.—April 21, 7.30 p.m., Y.M.C.A.
Blackpool.—First Tuesday, 7.30 p.m., Shaw Road Garage, South Shore.
Bolton.—May 4, 8 p.m., Y.M.C.A.
Burnley.—May 5, 7.30 p.m., Mechanics Institute, Manchester Road.
Bury.—May 13, 7.30 p.m., Atheneum, Market Street.
Carlisle.—May 7, 7 p.m., Richmond Hall, Fisher Street.
Darwen and Blackburn.—April 23, May 7, 7.30 p.m., Provident Hall (Room 10), Darwen.
Liverpool.—Alternate Saturdays, 2.30 p.m., 29 Derbyshire Lane, Old Swan.
Manchester.—May 3, 7.30 p.m., Reynold's Hall, College of Technology, Sackville Street, Manchester, 1.
Preston.—Alternate Fridays, 7.30 p.m., 3 Tuns Hotel, North Road.
Rochdale.—April 22, May 6, 7.30 p.m., Milton Street Sunday School, Rochdale.
Southport.—Second Wednesday, 8 p.m., Albert Hotel, London Street.

REGION 2

Barnsley.—April 23, May 14, King George Hotel, Peel Street.
Bradford.—April 20, May 4, 7.30 p.m., Cambridge House, 66 Little Horton Lane.
Catterick.—Tuesdays, 7 p.m., S.T.C., H.Q. Block, Vimy Lines.
Doncaster.—Wednesdays, 7.30 p.m., 73 Hexthorpe Road.
Halifax.—April 19, May 3, 17, 7.30 p.m., Toc H Rooms, 32 Clare Road.
Harrogate.—Wednesdays, 7.30 p.m., rear of 31 Park Parade.
Huddersfield.—April 21, May 5, 19, 7.30 p.m., Plough Hotel, Westgate.
Hull.—April 28, 7.30 p.m., Imperial Hotel, Paragon Street.
Leeds.—Fridays, 7 p.m., Swathmore Settlement, Woodhouse Square.
Middlesbrough.—April 19, 7.30 p.m., Cleveland Scientific and Technical Institute, Corporation Road.
Newcastle-on-Tyne.—April 26, 8 p.m., British Legion Rooms, 1 Jesmond Road.
Sheffield.—April 28, 8 p.m., "Dog and Partridge," Trippet Lane; May 12, 8 p.m., Albreda Works, Lydgate Lane.
South Shields.—Fridays, 7 p.m., St. Paul's School, Westoe.
Spenborough.—April 28, May 12, 7.30 p.m., Temperance Hall, Cleckheaton.
Sunderland.—Wednesdays and Fridays, 7 p.m., Prospect House, Prospect Road.
York.—Wednesdays, 8 p.m., 29 Victor Street.

REGION 3

South Birmingham.—May 2, 16, 10.30 a.m., at Stirchley Institute.

REGION 5

Cambridge.—April 16, 7.30 p.m., "Jolly Waterman," and "V.H.F." Night.
Chelmsford.—May 4, 7.30 p.m., 184 Moulsham Street.
Southend.—April 23, May 7, 7.45 p.m., The Art School, Victoria Circus. Morse Class at 7.15 p.m.

REGION 7

Barnes and Putney.—May 11, 7.30 p.m., 28 Nassau Road, S.W.13.
Barnet.—April 17, May 15, 7.30 p.m., Bunny's Restaurant, Station Road, New Barnet.
Croydon (Surrey R.C.C.).—May 11, 7.30 p.m., Blacksmith's Arms, South End, Croydon.
East London.—April 18, 2.30 p.m., Ilford Town Hall (Lambourne Room)—"Impedance Matching"—G6OT.
Edgware and District R.S.—April 21, 28, May 5, 12, Orchard Cafe, Broadway, Mill Hill.
Enfield.—April 18, May 16, 3 p.m., A. & B. Cafe, Southbury Road (junction with Ladysmith Road).
North West Kent A.R. Society.—May 7, 7.30 p.m., at Aylesbury Road School, Bromley.
Peckham.—May 3, 7.30 p.m., "The Kentish Drover," Rye Lane.
Ruislip.—April 15, 22, 29, May 6, 13, 7.30 p.m., Oddfellows Hall, Waxwell Lane, Pinner.
Slough.—April 15, May 20, 7.30 p.m., Congregational Church Hall, Church Street.
Southgate.—May 7, 7.30 p.m., Merryhills Hotel, Oakwood.
Welwyn Garden City.—May 4, 8 p.m., Council Offices.
Woking and Weybridge.—April 25, 3 p.m., Old Studio Restaurant, Balfour Road, Weybridge.
London.—May 14, 6.30 p.m., Institution of Electrical Engineers. "Aspects of High Quality Sound Recording," by W. S. Barrell (E.M.I.).

REGION 8

Portsmouth.—April 27, 7.30 p.m., Cosham Civic Centre.
Southampton.—May 1, at 22 Anglesea Road, Shirley.

REGION 9

Bristol.—April 16, 7.15 p.m., Keen's Cafe, Park Row.
Plymouth.—Third Saturday, 7 p.m., at Tothill Community Centre, Tothill Park, Knighton Road, St. Judes.

REGION 14

Glasgow.—April 28, 7 p.m., Institute of Engineers and Shipbuilders, 39 Elmbank Crescent. Sale of surplus equipment.
Stirling (including Falkirk, Alloa and Larbert).—May 13, 7.30 p.m., Plough Hotel, Stenhousemuir, Larbert.

Can you help—

Mr. H. Percy, G5DU, 77 Blackwell Avenue, Walker, Newcastle-on-Tyne, seeks information on the RCA 1188A receiver.

Mr. S. A. Brown, BRS5935, 114 Babbacombe Road, Bromley, Kent, requires a manual for the Admiralty B28 receiver.

Mr. A. B. Kirk, BRS7033, 87 Elmcroft Avenue, Wanstead, London, E.11, seeks details of the Aircraft Radar Receiver R3170A.

Mr. J. V. Webley, G6JW, Widdicombe, Redhill Avenue, Bournemouth N., would welcome information on the A.M. Test Set No. 74.

Mr. N. C. Nicholls, G3AYX, 20 Ennismore Avenue, Chiswick, London, W.4, is anxious to obtain a circuit of the American radar altimeter unit RT-3A/ARN-1.

Mr. A. W. J. Marsh, BRS13053, 16 Lugley Street, Newport, Isle of Wight, requires information on the 7BL Transmitter-Receiver, the 160A Signal Generator and the "Snooperscop" black light telescope.

Mr. J. Hunter, GM6ZV, 20 Mansefield Crescent, Clarkston, Renfrewshire, would appreciate the loan of instruction books for Wireless Set 36 and A.M. Transmitter T1136A, and information on the Admiralty Receiver P.37.

Congrats

To Mr. A. Herring, GM3PB and his wife on the birth of a son, Douglas Alexander. Mr. Herring is T.R. for the City of Glasgow Postal Districts.

FORTHCOMING R.S.G.B. CONTESTS

Apr. 17–18	B.E.R.U. Contest (Second Section).
June 5– 6	National Field Day.
July 3– 4	Five Metre Field Day.
Sept. 4– 5	Five Metre Contest (Second Section).
Sept. 20–25	Low Power Contest.
Nov. 27–28	Top Band Contest.

Coventry Digs Deep

Twelve pounds was raised in ten minutes at the Coventry Amateur Radio Society Annual Dinner when the General Secretary (G6CL) Dutch-auctioned an envelope bearing three Pitcairn Island stamps sent to the President of C.A.R.S. (Coun. W. H. Malcolm, J.P., G6WX) by VR6AA. The proceeds of the auction have been handed to Mr. A. O. Milne, G2MI, to help meet the freightage charge on the oil sent to VR6AA and to which reference was made in our last issue.

Strays

● David Mitchell, GW6AA, is leaving this country at the end of April for New Zealand, where he is settling, and intending to commence a radio business. Upon arrival he will be getting a ZL call, with which he hopes to contact many of his old friends in this country. In the meanwhile, 6AA would like to hear from any British amateurs who have definitely decided to settle in New Zealand. His address until late April is: G.P.O. Box 4, Colwyn Bay, N. Wales, and after then, BM/GAA, London, W.C.1.

* * *

● VK2US, Box 1734, G.P.O., Sydney, is anxious to contact stations in Birkenhead or Liverpool. He operates around 14,150 kc/s. between 0730 and 0830 G.M.T.

Silent Keys

Old Timers everywhere will learn with sorrow of the passing of Frank L. Stollery, G5QV, and W. G. Goult, G2WG. Although inactive during recent years, their calls were well-known two decades ago, Frank Stollery in particular being a pioneer Trans-Atlantic worker. His call-sign was a magnet which drew many amateurs to Clacton-on-Sea, and both he and his contemporary were amateurs of the finest type—men of wise counsel, always ready to help the newcomer. By those of us who knew them well, they will be sadly missed, and our thoughts are with those who mourn their passing. VALETE.

L.J.F.

EXCHANGE AND MART SECTION

Due to paper restrictions advertisements are only accepted "for insertion when space is available." No advertisement must exceed 50 words. Rates: Members Private Advertisements 2d. per word, minimum charge 3/-. Trade, 6d. per word, minimum charge 9/-. Use of Box number 1/6 extra. Send copy and payment to Parrs Advertising Ltd., 121 Kingsway, London, W.C.2.

AMATEURS. Coil Inductance Tables. Now only 5s. 3d. postage free. Full details in display advertisement in February BULLETIN. Technical Inspection.—14 Silverston Way, Stanmore, Middlesex. [845

AMATEUR disposing of surplus gear, offers parcels of coils, condensers, fixed and variable, transformer A.F. and I.F., etc., at £1 and 10s. Send list of your needs and parcels will be made up as near as possible. Enquiries, S.A.E. please.—BRS13614, 47 Turreff Avenue, Donnington, Salop. [841

AMERICAN BC610 tuning units, with 3 variable ¼" shaft condensers, D.P.D.T. switch, coils, crystal holder, plated case, etc., 8s. New ID8 Octal 1·4 Volt Multi-valves, 20s. New 954, 955 Acorns, 10s. New 957 Acorn, 1·4 volts, 10s. All post paid.—JACK PORTER LTD., 22/31 College Street, Worcester. [755

ARMY 19 Set. 807. Phone, CW power supply. Control panel, variometer M/C mic. phones, all cables, feeders, instruction and service manuals; perfect. First £12 10s.—G3AWT, Bage House, Madley, Hereford. [896

AR77 or Hallicrafters Sky Champion for sale. Both perfect. What offers? Also set of 9 bandspread HRO coils, 30s. each.—Box 820, PARRS, 121 Kingsway, London, W.C.2. [820

AR88D Perfect. Recently realigned, handbook, £55 or offers. Pair 803's, £6. Rack panel cascade four doublers good components, £5. W.39 wavemeter, 50s. Wanted.—Bug, 1250–1500 v. transformer. Exchanges considered.—G5ND, 133A Penrose Avenue, Blackpool. [877

AR88 Receiver, fitted 'S' meter, complete with matching speaker and instruction manual. Excellent condition, £70. Valves, new, boxed and unused, 3C24 (HK24G) (6), each 35s. 813 (2), each 70s.; 807 (6), each 12s. 6d. Valves, used but O.K., 35T (6), each 25s.; 9002, 9006 (8), each 7s. 6d.—Box 887, PARRS, 121 Kingsway, London, W.C.2. [887

A pair of PX45, Woden CT output transformer for 3 ohm speaker, Woden mains transformer, 375–0–375 4v. CT 5A. 4v. 6A. All new and unused, £5.—G3AQA, P.O. Box 2, Oswestry, Salop. [884

BARGAIN.—To clear. Brand new output and drive units for T.1154, plus its complete power unit, £4 10s. 0d. the lot.—A. R. KERR, BRS9936, 73 Lynwood Road, Ealing, London, W.5. [871

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CRYSTALS (American) complete with holders 7073, 7106, 7140, 7173, 7206, 7273, 7340, and 7406, kc/s., 10s. each.—BRS5139, ALLAN, 7 Newlandsfield Road, Glasgow, S.3. [805

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EXCHANGE.—Cossor Twin beam scope, new, unused, for A.R.88, in same or similiar condition.—G3AZD, 60 Lewisham Park, London, S.E.13. [842

EXCHANGE.—H.R.O. coil B, 7–14·4 Mc/s. bandspread, for coil D. 1·7–4 Mc/s. bandspread.—BROWN, Skerryvore, Bridge of Weir, Renfrewshire. [836

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FOR SALE.—*Terman's Radio Engineering*, 25s.; *Terman's Fundamentals of Radio*, 18s.; *Hoag's Basic Radio*, 15s.; *Puckle's Time Bases*, 10s. All perfect condition.—BRS6550, 9 Merryhills Drive, Enfield, Middlesex. [817

FOR SALE or Exchange.—H.R.O. coils type H and J, good condition. £2 10s. 0d. each. Wanted.—Types B and D bandspread 14 and 3·5 Mc/s.—BRS12469, 162 Franklin Road, Birmingham, 30. [824

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FOR SALE.—Matched pair Philco high fidelity, 10 in. Elliptical cone speakers, with output transformer, mains energised. Little used. Condition as new, £3 10s. 0d.—ALLAN, Winton Lodge, Park Road, Winchester. [873

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WANTED.—Valves 808, 12A6, 1625, TH41, VP41, UU6, FC4, MX40, VHT4, VPT4, HRO with bandspread 80, 40, 20, 10 M.—Box 882, PARRS, 121 Kingsway, London, W.C.2. [882

WANTED.—By Invalid: 2 volt battery short wave receiver adaptable to 5-ohm speaker. Range to 28 Mc/s. Reasonable price or exchange Dinghy Hand Generator with voltage regulator.—ELCOX, Branscombe, Devon. [804

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