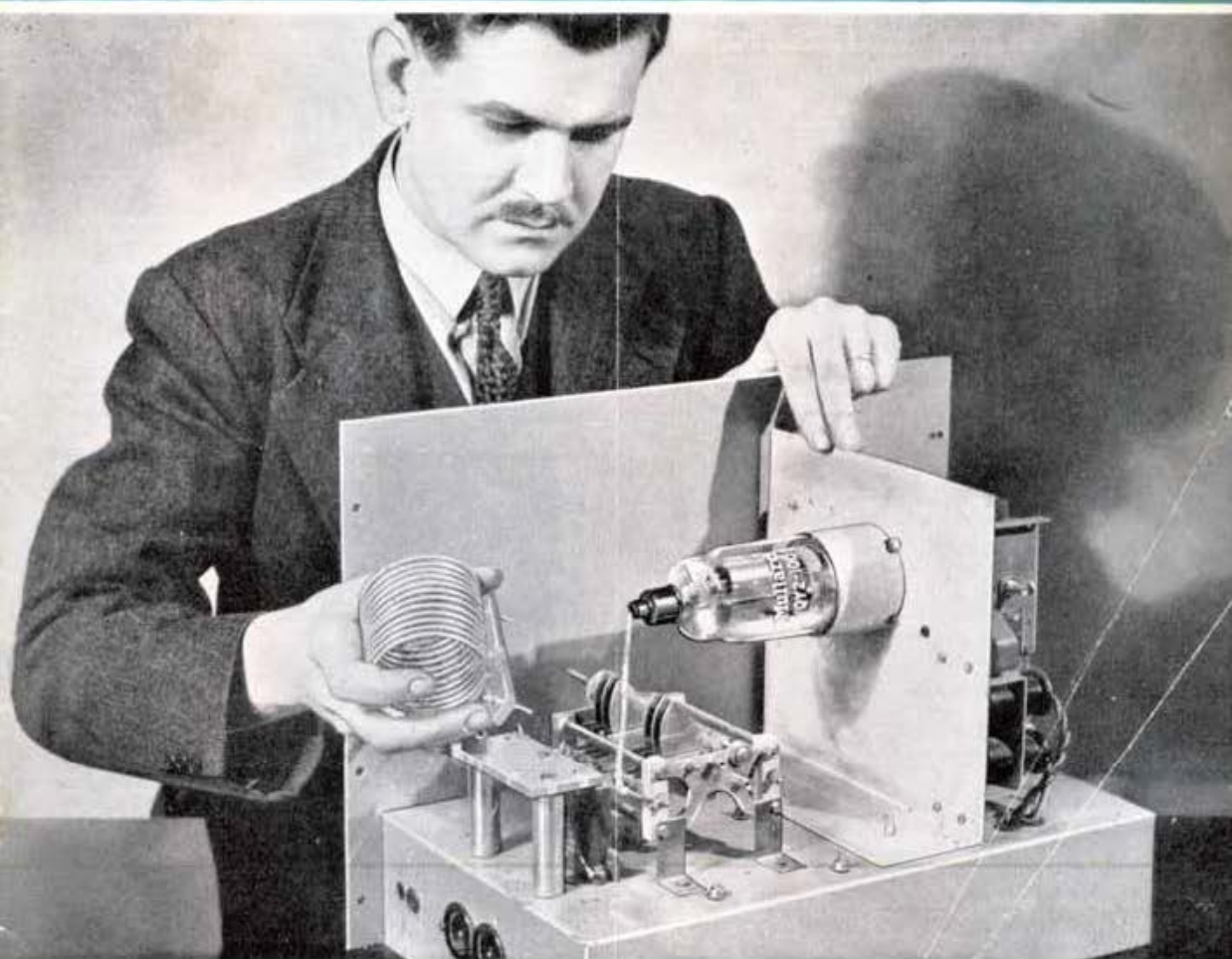


**R·S·G·B**

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# BULLETIN

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN



- BAND PLANNING
- MODIFIED MICROMATCH
- CONVERTING THE 1147B
- FREQUENCY METER FOR 144 Mc/s.
- NATIONAL FIELD DAY—LIST OF STATIONS

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## BAND PLANNING

At last the BULLETIN has published something which has had the effect of stirring quite a goodly proportion of members out of their normal state of apathy towards Society affairs! We refer, of course, to the R.S.G.B. Band Plan published in our February issue. It is perhaps unfortunate that many of those who have now written to protest against the Plan did not make their voices heard a little more forcibly when an earlier editorial on Band Planning was published. That editorial invited *all* transmitting members to vote on the straight issue—are you or are you not in favour of band planning? We waited three months and at the end of that time announced (p. 182, May, 1947, issue) that only 287 members had voted and of this number only 184 were in favour of the proposal. Was it to be wondered at that the Council decided to take no further action until the results of the Atlantic City Conference were known?

Since February last year, when the original editorial appeared, conditions on *all* bands have deteriorated. The number of licenced stations has increased from 4,000 to more than 6,000, more and more cheap ex-Government equipment has become available and many of the 25 watt c.w. operators of yester-year are now making merry on phone with 150 watts. Our contributor, Arthur Milne, pleaded, in a recent "Month on the Air" article, for the 3.5 Mc/s. band to be unofficially divided into two equal sections with c.w. operation restricted to the low frequency portion. With what result? Listen any evening and what do we hear? A conglomeration of over-modulated telephony signals sprawled all over the low frequency half of the band with the operators complaining—if you are lucky enough to possess a "spitch demodulator"—that

their transmissions are being jammed by key-thumpers! The G's are not altogether blameless, although it must be admitted that most of the trouble lies at the door of certain groups of European amateurs.

With knowledge of this condition and of the problems which are likely to arise when the Atlantic City Radio Regulations come into force, the Council decided towards the end of last year to invite the Codes of Practice Committee to consider all aspects of Band Planning, charging them with the duty of producing a plan which could be submitted, in the first place, to the European I.A.R.U. Societies for their comments. The Committee duly went to work and after much argument among themselves finally submitted the plan which every member has now had the opportunity of examining.

The Committee have been criticised for suggesting that sections of certain bands should be shared by both phone and c.w. stations. The critics have argued that such an arrangement, if adopted, will result in the c.w. stations being "frozen out" by the 'phone stations. As against this argument there is the case of a small local group of members who operate a c.w. network on 3.5 Mc/s. and occasionally wish to change-over to 'phone for the benefit of B.R.S. listeners.

Judging by the comments which have come to hand, it would seem that the Codes of Practice Committee should have adhered to their original plan for the 7 Mc/s. band, and should have recommended that it be used exclusively for c.w. work. It is, of course, recognised that 7 Mc/s. is an ideal band for newly-licenced amateurs who are restricted to telegraphy operation only and to an input of either 10 or 25 watts. It is also a fact that when the Atlantic City Radio Regulations come into force next year the band will be reduced in Europe to a width of only 150 kc/s., 50 kc/s. of which (between 7,100 and 7,150 kc/s.) will be shared with broadcasting. On this ground it can be argued that the band will be too small to warrant sub-division.

What then induced the Committee to recommend separate 'phone and c.w. channels? Listen around 7 Mc/s. any lunch hour and you will find dozens of G's enjoying a rag-chew on 'phone under reasonably good conditions. It is true that many of these contacts could just as easily be achieved on 1.7 or 3.5 Mc/s., but the "7 meg. devotees" seem loath to desert a band that can usually be depended upon to give them reliable contacts with pals in other parts of the U.K. Furthermore, some would find it difficult to erect a suitable L.F. band aerial system in their garden. It was because the Committee knew of this particular activity that they recommended that a section of the band should be allotted to 'phone operators.

It seems abundantly clear that many members have no very clear conception of what is happening in other parts of the world otherwise their comments concerning the DX bands would have been more restrained. We wonder whether those who have complained that the R.S.G.B. Plan is unfair to the c.w. fraternity are aware that the A.R.R.L. has proposed that the U.S. 'phone band shall be extended right up to the last kilocycle at the H.F. edge of the 14 Mc/s. band (14,400 kc/s. now, 14,350 kc/s. next year) and that within the last few weeks the Canadian Government has extended the VE 'phone band by a further 50 kc/s., thus providing Canadian amateurs with two exclusive 'phone channels totalling 100 kc/s.?

We sympathise with those G's who use only c.w. but surely they must now realise that if the Committee had recommended that the exclusive c.w. portion be made 150 kc/s. wide—a figure suggested by many correspondents—then all British and foreign 'phone stations would have been compelled to work



within the U.S. and Canadian 'phone bands. The Committee were, of course, aware of what was being proposed abroad and they planned accordingly.

In all matters of a highly controversial nature—and Band Planning is only one—there must be give and take if success is to be achieved, but it would seem that quite a number of members fail to appreciate this fact, neither do they appear to realise how extremely difficult it is to formulate a plan that will prove acceptable to the 6,000 odd amateurs of the U.K. to say nothing of the many hundreds in Europe. It is perhaps worth recording that although the Codes of Practice Committee comprises only five members—all old-timers with many years of practical experience behind them—seldom is it possible for all five of them to agree unanimously on a specific proposal. How much more difficult would it be if the Committee had a membership of 6,000!

One final word seems necessary at this stage—the R.S.G.B. Band Plan as published is only tentative. There is still plenty of time for second thoughts and the Committee are having plenty!

I.D.A.

### Intruders

THE A.R.R.L. announced in the March issue of *QST*, that protests had been made to the *Federal Communications Commission* concerning the intrusion into the exclusive U.S. amateur bands of certain non-amateur stations. Although the frequencies allocated to British amateurs are somewhat different to those allocated to their U.S. colleagues the fact remains that the Cairo Conference assigned certain bands\* to amateurs on a world-wide exclusive basis.

During the recent war, when all amateur activity in Europe ceased, other services took over and made good use of these bands. Unfortunately, many of the war-time users—or their successors—have now become peace-time intruders, with the result that two of our best DX bands are indescribably cluttered up with signals from commercial and broadcast stations operating regular services.

Numerous protests have been lodged with the G.P.O. and on several occasions the interlopers have been persuaded to shift but as fast as one bunch moves out another moves in. The U.K. Government has not been entirely blameless in the past but there is little current evidence to show that British commercial stations are now at fault. The chief offenders appear to be U.S.S.R. commercials who operate with impunity in the 7 and 14 Mc/s. bands to the constant discomfort of those of us who regularly use these bands for communication purposes. We recognise that some of the transmissions may be harmonics or images but there can be little doubt that a great many of the commercial signals heard, particularly at the low frequency ends of the 7 and 14 Mc/s. bands, are genuine fundamentals.

Groups of members would render a service to the amateur movement by reporting to Headquarters all cases of persistent operation in the exclusive amateur bands by commercial and broadcast stations. Details should be given of the time, call-sign, type of traffic and exact frequency of the offending station.

It is vitally important that we should let the powers-that-be know that we are not content to continue to allow trespassers in our bands. It is quite certain that amateurs would be given short shrift if they attempted to operate in bands reserved exclusively for commercial or broadcasting services.

J. C.

### Team Spirit

EACH year as the evenings lengthen and spring blossoms into early summer, the amateur—warned, perhaps, by the rising patter of static in his earphones—emerges from his shack, blinks at

\* The exclusive Amateur Bands are 7,000–7,200 kc/s. and 14,000–14,400 kc/s.

the unaccustomed light, breathes deeply the fresh, warm air, and turns his thoughts towards National Field Day. Already firmly re-established as probably the most popular of all the Society's Contests, N.F.D. occupies a unique place in the amateur calendar.

The reasons why this should be so are not difficult to discover; the call of the open, the spice of competition, and—above all—the knowledge that this is a test not of the individual but of the Group, a contest in which all can contribute something to the common pool. The newest BRS no less than the experienced "old-timer" has an important part to play, whilst the team that does not include at least one or two representatives of the fair sex deserves to suffer from the worst pangs of indigestion as a punishment for failing to seize the opportunity of proving once and for all that Amateur Radio is not the refuge of the misogynist and the misanthrope!

It would be presumptuous at this late stage to give advice on equipment or accessories. Such details will have been the subject of much earnest discussion long before now. But this is, perhaps, a good opportunity of recalling the original purpose of N.F.D. The intention was to prove that British amateurs were capable—should the necessity ever arise—of providing an emergency communication network. Fortunately this country is less subject to natural disasters than many others; but it is right that all amateurs should be ready to accept their special responsibilities to the community. Many will need no reminding how useful the experience gained during pre-war N.F.D.'s proved when it became necessary to man vital Service radio links.

In communication work, reliability of operating and careful attention to record-keeping assume particular importance. For this reason, every Group should take an especial pride in ensuring that call-signs and signal reports are correctly exchanged, accurate times and frequencies noted, and a full and detailed log kept in accordance with G.P.O. regulations.

For this is an event in which the pleasure of participation should vastly outweigh the mere striving for a high position in the final order of merit. Each Group will certainly be on its toes to achieve as many contacts as possible but lasting satisfaction will come from the sense of a job well done, according to the rules and spirit of the contest, no matter how many or how few points are obtained. To each and every competitor we say good luck and good listening, and may the weather be kind!

J.P.H.

### American Publications

We deplore a recent order issued by the Board of Trade which prohibits us from accepting further orders for U.S. technical publications.

With effect from March 17, 1948, the Open General Licence has now been amended to exclude periodicals, magazines and the like unless they are imported as single copies through the post by persons who pay or have paid the overseas suppliers for them either directly or through their own banks.

It is not yet known whether the Board of Trade will even allow the Society to pay for publications ordered prior to the order coming into force.

Let us hope that the day is not far distant when an enlightened Government will give due recognition to the fact that the unencumbered exchange of technical literature between nations is in the best interests of world progress.

In the meantime we can only suggest to members that they endeavour to seek permission through their own bank for the transfer of the few dollars necessary to enable them to keep abreast of current U.S. technical developments.

# A MODIFIED MICROMATCH

By D. N. CORFIELD (G5CD) and C. W. CRAGG (G2H DU)

IN the April, 1947, issue of *QST* a description was published of a standing-wave meter known as the "Micromatch". The author pointed out, however, that in the form described it was unsuitable above 30 Mc/s. The present writers constructed a similar type of instrument, and after making some modifications, found it suitable for use up to 60 Mc/s. Their findings form the basis of this contribution.

## Description of the Instrument

For the benefit of readers who have not the original article available it is proposed briefly to describe the operation of the instrument.

The meter performs two functions, first it measures the standing-wave ratio in feeders which have an impedance of between 75 and 300 ohms; it also measures the power output of a transmitter.

The device basically comprises a bridge circuit for the standing-wave ratio measurements and a crystal rectifier meter used as an indicator for measuring power output.

It will be seen from Fig. 1A that if the line impedance appears as a pure resistance then the bridge will balance and the meter will read a minimum when

$$\frac{C_2}{C_1} = \frac{Z_0}{1}$$

where  $C_2/C_1$  is the capacity ratio in pF. To ensure this balance a non-inductance resistor is used instead of the line and  $C_1$  adjusted to balance. If a line is substituted for the resistor, and it has standing waves on it, the reflected wave will be read on the meter because the bridge is not in balance from an input from this source.

A resistance of 1 ohm is used in one arm because this is in series between the transmitter and the line and must be low in value compared with the lowest line impedance likely to be used. Conversely since  $C_1$  and  $C_2$  are in series across the input their reactance at the highest frequency must be high compared with

the highest line impedance likely to be used. As  $C_2$  is fixed, the range of adjustment of  $C_1$  must be sufficient to cover the ratios between 1 ohm and the highest and lowest line impedances. If these are chosen as 75 and 300 ohms, then  $C_1$  must have a capacity swing of at least 4 to 1.

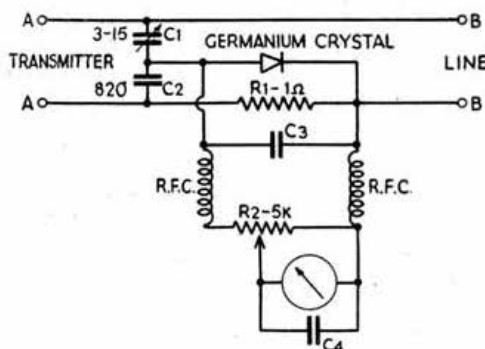


Fig. 2.

Practical QST Circuit.

$C_1$  3-15 pF variable.  
 $C_2$  820 pF fixed mica.

Crystal type 1N34 Germanium.  
 $R_1$  (see text).

Power output is measured by reading on the crystal rectifier meter the voltage drop across the 1 ohm resistor in series with the line, as shown in Fig. 1B. The change of connections is made by reversing the instrument and connecting the transmitter in the position of the line in Fig. 1A and the line in place of the transmitter. Fig. 2 shows the practical circuit with the values used for frequencies up to 30 Mc/s. This circuit, re-drawn, will be recognised as Fig. 1A. The potentiometer across the meter is used to adjust the scale reading whilst the R.F. chokes are essential in order to keep the meter circuit "cold".

The crystal is a germanium diode (type 1N34) as made in the U.S.A. by *Sylvania* and in this country by *B.T.H.* and the *G.E.C.* The maximum voltage across the crystal is the drop obtained across the 1 ohm resistor when maximum power is being dissipated into the lowest value impedance line; e.g. 150 watts into a 75 ohm line = 1.4 volts. The maximum crystal current should never exceed 50 mA.

The original *QST* design utilised a 0.1 mA meter and the power was capable of being read for inputs up to a kilowatt. The writers however advise the use of a more sensitive meter. A 0-100 microamp instrument would read full scale for about 0.2 volts or 3 watts into a 75 ohm line, and 12 watts into a 300 ohms line; higher powers can be read if a shunt is used.

## Method of Use as a Measuring Instrument

For the measurement of power output the transmitter is connected across the points BB in Fig. 2 and the points AA terminated by a non-inductive resistor having a value equal to the line impedance. The meter may be calibrated directly in terms of power, with different ranges set, by recording the various positions of the potentiometer shunt, the standard calibration being obtained by a thermal ammeter, a lamp and photometer or a bolometer.

The standing-wave ratio is obtained by first

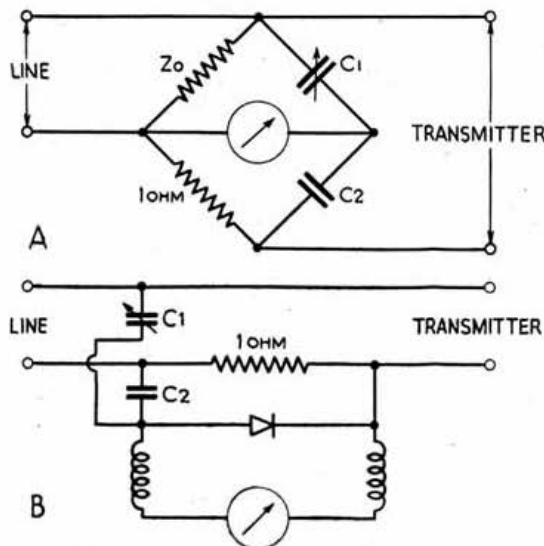


Fig. 1.

- (a) Basic bridge circuit for measuring standing waves.  
 $Z_0$  represents the line impedance.  
(b) Basic power measuring circuit.

connecting the transmitter across the points BB and terminating AA in a non-inductive resistor equal to the line impedance. The potentiometer shunt is then adjusted so that the meter reads full scale. The connections BB and AA are then reversed and the condenser C1 adjusted for minimum reading without moving the potentiometer. If the potentiometer has to be moved to effect an accurate balance, the previous setting, up to full scale, should be repeated. The resistor is then removed from BB and the line connected—any increase in meter reading above the balance point will indicate the magnitude of the standing waves—a reading of full scale indicates 100 per cent. reflection. The standing-wave ratio (if the new meter reading compared with full scale is  $x$ ) is given by

$$\frac{1 + x}{1 - x}$$

For example, if the meter had been set to full scale (1 mA) and balanced and a reading of 0.2 mA obtained when the feeders were connected then the ratio would be  $1.2/0.8$  or 1.5.

If desired, the meter scale can be marked in standing-wave ratio directly, and a scale fitted to C1 calibrated in line impedances to avoid the task of balancing each time the line impedances are changed. It should be borne in mind, however, that it is not strictly correct to assume that the meter scale is linear. For accurate readings the meter and rectifier should be scaled against an A.C. voltmeter or in conjunction with the 1 ohm resistor against an A.C. ammeter.

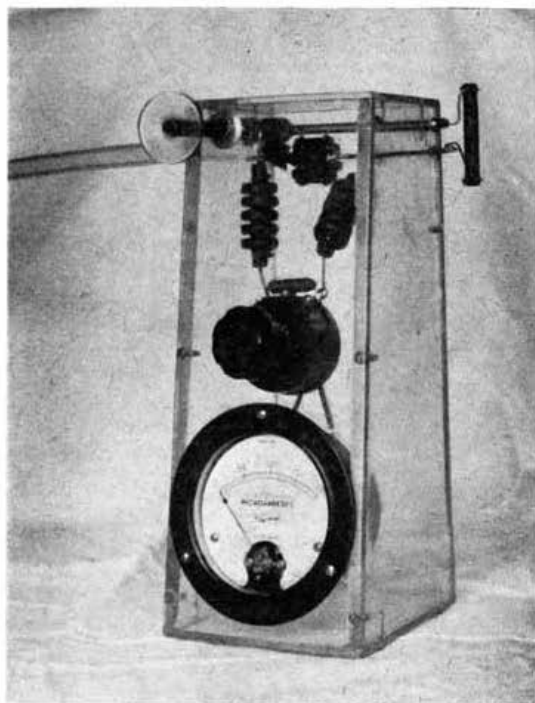


Fig. 3.

A view of the 60 Mc/s. model showing general details of the construction and layout. The circuit as Fig. 2 but components as follows:—

- C1 1–4 pF (see text).
- C2 300 pF mica TCC type M.W. (see text).
- C3 & 4 0.005  $\mu$ F paper tubular TCC type 543.
- R1 10–10 ohms  $\frac{1}{4}$  watt resistors (see text).
- R2 5,000 ohms potentiometer, Colvern type CLR4001.
- R.F.C. Eddystone type 1010.

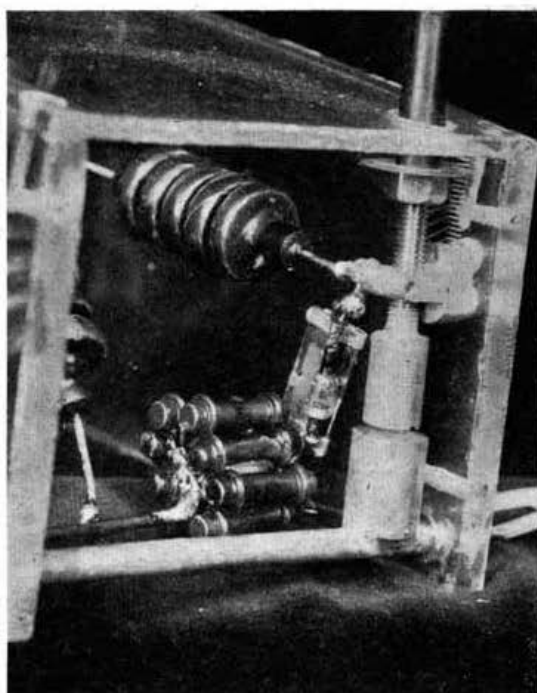


Fig. 4.

Close up view of 1 ohm resistor and associated components. Note the germanium crystal and 300 pF condenser.

### Construction and Modifications for 60 Mc/s.

It was immediately apparent that in order to increase the usable frequency the values of C1 and C2 would have to be reduced, at the same time great care would have to be taken in the length of the leads and in constructing the 1 ohm resistor—the reactance of which had to be kept very low.

To reduce as far as possible the amount of metal in the vicinity of the feeders the instrument case was made of perspex, and the two leads between points AA and BB mounted as parallel wires having an impedance of between 75 and 300 ohms—the value used being the algebraic mean or 150 ohms. The general construction is shown in Fig. 3. The circuit is as Fig. 2 but the value of C1 has been reduced to approximately 1–4 pF and C2 to 300 pF. C1 is formed of a cup-shaped outer electrode having an internal diameter of  $\frac{3}{8}$ " and length  $\frac{1}{4}$ " soldered to one line and a screw adjusted plunger for the other electrode. The latter has a diameter of  $\frac{1}{16}$ " and is  $\frac{1}{4}$ " long and is mounted as shown in Fig. 3. C2 must have as low an inductance as practicable and must possess good power factor. A mica type with brass or copper plates was found superior to a silvered mica for this purpose, the business portion being removed from the moulded case to reduce the size. It was found essential to mount the crystal rectifier and C2 side by side and as close together as possible in order to avoid pick up from the line by forming a loop. The 1 ohm resistor was made up from ten 10 ohm resistors (*Erie* non-insulated  $\frac{1}{4}$  watt type) wired in parallel in squirrel cage formation, as shown in Fig. 4. The crystal rectifier lead is wired to the opposite end from C2 and passes through the centre of the cage of resistors. Such a resistor will dissipate 2.5 watts—which represents 200 watts in a 75 ohm line. Other types, such as the *General Radio* design of non-inductive resistor, were tried with inferior results.

After the above modifications had been effected a balance of better than 10 to 1 was obtained at 60 Mc/s. If such a balance is not obtainable it may be because (a) the terminating resistor is not non-inductive; (b) the 1 ohm resistance is inductive; (c) C2 is inductive or of bad power factor; (d) the range of C1 is not adequate (C1 should balance nearly all-out for a 300 ohm line and nearly all-in for a 75 ohm line); and (e) there are coupling loops in the wiring giving a pick-up from the line.

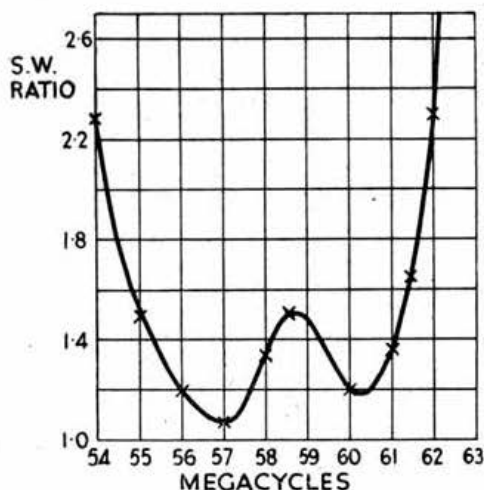


Fig. 5.

Typical standing-wave ratio curve for a three element beam, comprising folded dipole, driven element ratio 9-1, reflector and director 0-2, spacing fed by a 300 ohm flat twin "Telcon" polythene line.

## Results Obtained

Fig. 5 shows a typical curve, plotting readings of standing wave ratio against frequency for a 3 element beam. The double hump indicates that the array is not properly matched, due probably to the fact that at resonance the beam has a lower impedance than the line hence there are two frequencies at which the standing-wave ratio is at minimum. The hump may equally be due to objects in the vicinity of the aerial. If this is the reason the shape of the curve will alter if the aerial is rotated into another position.

## Conclusion

The writers are of the opinion that the meter as described provides a useful device for determining the matching of an aerial but they do not consider that the readings obtained represent any high degree of accuracy. However, since the best adjustment will give the least standing wave ratio, its true magnitude is of lesser importance.

Attempts to make the instrument read up to 90 Mc/s. were unsuccessful as it was found impossible to obtain a balance on the bridge, probably due to the inductance present in the various components and the difficulty of making C1 small enough in value.

mention proposed use by break-down gangs, road repair gangs and even refuse collection vehicles!) the question of interference is likely to be dealt with eventually by legislation, but probably not in the present Parliament, and the RIC hopes that considerable headway will be made in the meantime on a "good neighbour" basis. Radio amateurs could help a great deal not only by suppressing their own cars, but in an educational way.

# SUPPRESSION OF INTERFERENCE \*

THE Post Office has given support to the campaign, launched by the Radio Industry Council, for the voluntary suppression of interference with radio and television. In an answer to a Parliamentary question the Assistant Postmaster General referred to his department's co-operation with the motor-car, electrical and radio industries in preparing a specification for a cheap device which can be easily and quickly fitted to motor car ignition systems. All Post Office motor vehicles and mechanical aids in the service area of the London Television Station are being fitted with suppressors. Many other large users of motor vehicles in the area are making similar arrangements. The Post Office is also making every effort to encourage users of electrical equipment which may cause radio interference to adopt all practicable measures for reducing such interference.

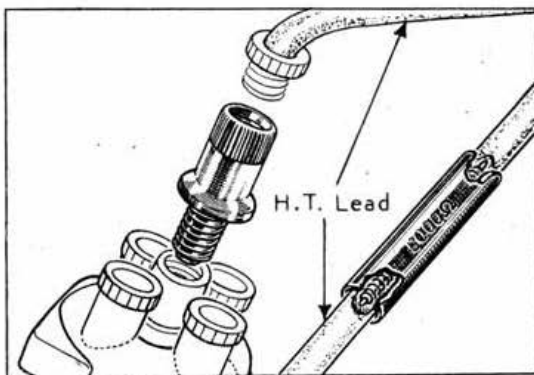
The campaign has also made headway in other directions. For example London Transport Executive confirms that the demonstration of the resistor has proved that the fitment is effective. L.T.E. is, therefore, proceeding with the fitting of this device to its petrol-engined buses, coaches, private cars, miscellaneous vans and lorries. The suppressor units have been ordered, and it is hoped that in the course of a few weeks the whole fleet of vehicles will be so equipped.

The device referred to and recommended by the Radio Industry Council is a 10,000 to 15,000-ohm resistor for connecting in series with the high-tension lead between the coil and distributor. The resistors are available in various forms. Two are illustrated. The resistor on the left screws into the Lucas distributor cover; on the right is a type which involves cutting the high tension lead. A third, suitable for motor-cycles or for use in exposed positions, has a moisture-proof cap at each end. The possibility of the resistor making starting of the engine less easy in damp conditions was raised by the Automobile Association representative at a recent demonstration, but this was very effectively answered by a G.P.O. engineer who stated that in extended tests, under practical conditions, no trouble of that kind had been experienced.

With the extension of short-wave communications to police, fire, medical and bus services (not to

*Continued in previous column.*

\* Contributed by the Radio Industry Council.



IGNITION SUPPRESSION

At left the resistance is shown ready for inclusion in the H.T. lead to the Lucas distributor cover. On the right is shown a type which can be fitted by cutting the H.T. lead.



## CONVERTING THE 1147B FOR 50-250 Mc/s. OPERATION

By B. W. ST. LEGER MONTAGUE, (G2ANR)\*

ONE of the most useful pieces of radio equipment at present available on the surplus market is the R.A.F. receiver R. 1147 B. The information which follows describes the various modifications necessary to make the receiver suitable for amateur band use. It was originally intended to modify the unit especially for the new 144-146 Mc/s. band, but provision has now been made for operation over any band between 50 and 250 Mc/s. by the choice of suitable coils.

### The Original Circuit

The circuit of the original set is shown in Fig. 1, from which it will be seen that the stages up to the detector follow normal V.H.F. practice.

V1 is an EF 54 (RL 7) mixer, tuning from 180 to 220 Mc/s. with grid injection from the local oscillator. The injection is made at the centre tap of the mixer grid coil, partly to reduce oscillator radiation, and partly to minimise grid current damping. Bias for V1 is obtained by grid current in V1 due to the rectified oscillator voltage and fails if oscillations cease. Under these conditions, V1 passes rather more current than is good for the valve and should not be left running like this for long periods. The advantage of the arrangement is that the conversion

efficiency becomes far less dependent upon oscillator voltage than would be the case with cathode biasing.

The oscillator uses a conventional Hartley circuit with an EC 52 (RL 16) link-coupled to the mixer stage. In the earth return of the link circuit there is a network which was apparently used for measuring the grid current of the mixer valve. The 4 pin "W" plug associated with this has a 6.3 volt supply to one of its pins.

The I.F. amplifier comprises two identical EF 50 stages operating at 25 Mc/s. with dust-core I.F. transformers permeability-tuned. There is a Faraday screen between each primary and secondary winding. Bias for the EF 50's is obtained from a variable 500 ohm resistor in the negative H.T. line.

V5 is an EBC 33, one diode of which rectifies the I.F. signal, the diode load being in the grid circuit of V6, an EF 36. The triode section of V5 is used as a tunable oscillator of approximately 10–20 kc/s., the output of which is mixed with the signal modulation (previously amplified by V6), and rectified in the second diode of V5. The resultant beat note is then amplified by V7 (another EF 36), and the output fed to the 'phones.

The whole set is provided with remote control facilities, one of the 6 pin "W" plugs being used for this purpose, whilst the other plug is the power input point.

\*Omega, Chipstead Valley Road, Chipstead, Surrey.

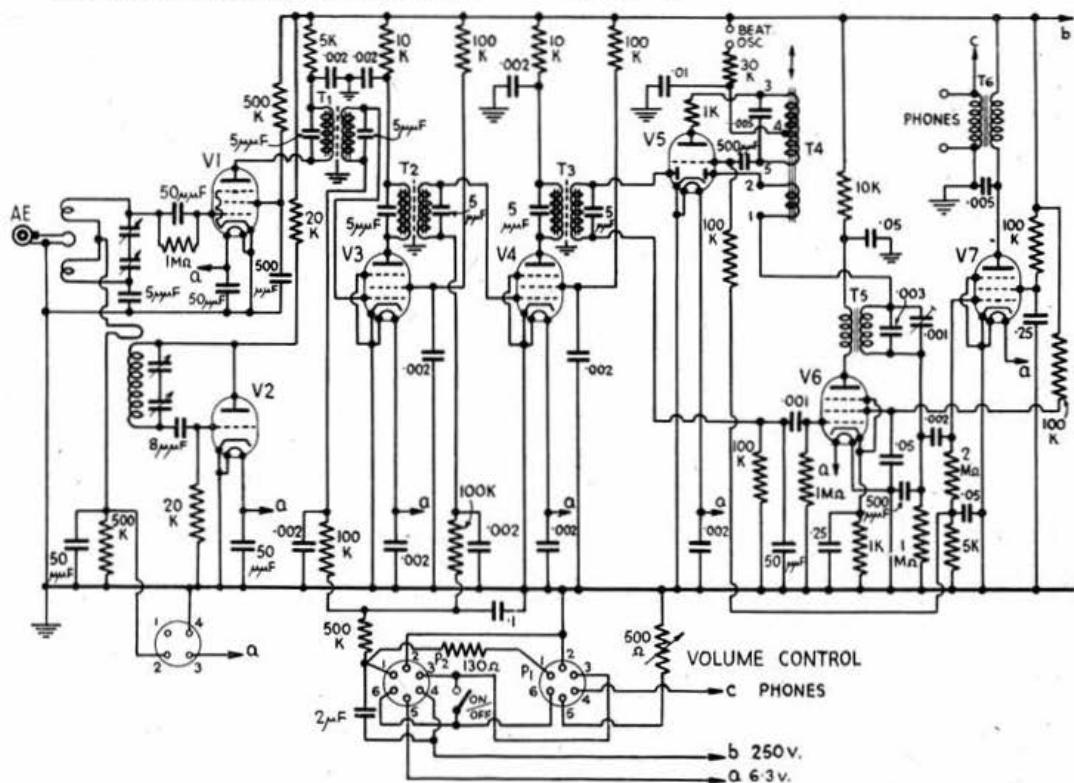


Fig. 1.

The circuit of the original R. 1147B. Valve types are: V1, RL7, V2, RL16, V3, V4, EF50, V5, EBC33, V6, V7, EF36. Plugs P1 and P2 are for Remote Control and Power Input respectively.



### Modifications

It was decided that, in view of the increasing interest shown in frequency modulation, it would be very desirable to provide for both A.M. and F.M. operation, and the modifications described below therefore, allow for the addition of an F.M. discriminator. At the time of writing, the work in this direction has not been completed, but it is hoped to describe in a future article, details of the necessary additions for F.M. operation.

The initial work of conversion consisted in removing all the components and wiring associated with V5, V6, V7 and the two 6 pin "W" plugs. The writer, having no circuit at the time, was obliged to combine this operation with that of tracing out the wiring and the component values, but the circuit in Fig. 1 will spare the reader this laborious task. Most of the wiring in question is located in the underneath compartment to the front of the chassis, which was completely cleared of components, only the heater wiring being retained.

The original intermediate frequency of 25 Mc/s. had, presumably, been chosen in order that no image signals would appear in the tuning range, and, as a result of this, the I.F. amplifier did not give all the gain that might be expected from two high-slope R. F. pentodes. It was therefore decided to reduce the intermediate frequency to a much lower value by rewinding the I.F. transformers. This was not nearly as difficult as it sounds, the units being quite easily removed and dismantled. It is advisable to soften the varnish around the securing screws with a little methylated spirit before attempting to remove them, as they are easily sheared off by a little excess force. When the formers had been removed, the old windings were stripped off and the formers cleaned of varnish. The original windings consisted of  $11\frac{1}{2}$  turns on all except T3 secondary which contained  $13\frac{1}{2}$  turns. All the formers were rewound with  $31\frac{1}{2}$  turns of 36 D.S.C. and lightly brushed with polystyrene lacquer. This number of turns just fills the former if wound in the grooves.

The original 5 pF silvered mica condensers across the I.F. transformers were replaced by condensers of 20 pF in order to lower the intermediate frequency further and improve the performance. The transformers were now found to be resonant at approximately 8 Mc/s., and when replaced provided a very considerable increase in gain. It was desired however to increase the gain even more, and so the anode and the screen decoupling resistors were reduced to the values shown in Fig. 2, to allow increased anode current, and hence higher stage gain, without undue loss of H.T. voltage.

These alterations certainly produced the expected increase in gain; so much so that, combined with the reduction in decoupling, both I.F. stages were violently unstable at about the halfway setting of the gain control. It was at first thought that an increase in the value of the decoupling condensers to the EF 50 grid and screen circuits would be necessary, but a closer examination showed that the original physical layout left much to be desired, the connections to the decoupling components being far too long. This was soon remedied; the condensers were mounted right up close to the valve sockets and the receiver was then as stable as could be desired, even at full gain.

At this stage of the work the varying requirements of individual readers will make themselves known, and it is as well to discuss the points which led the writer to adopt the arrangement described.

The finished receiver was intended primarily for use on the 144-146 Mc/s. band, and since it seems probable that the use of F.M. will become quite extensive at V.H.F., an FM/AM detector was, from the writer's point of view, a definite requirement to be fulfilled. The limited space available on the chassis made it rather difficult to incorporate a limiter, discriminator and C.W. beat oscillator, and in the circuit described no direct provision is made for beat-note reception. Such reception is, in any case, limited to fairly stable transmitters at V.H.F., and, in the writer's opinion, it is a regret-

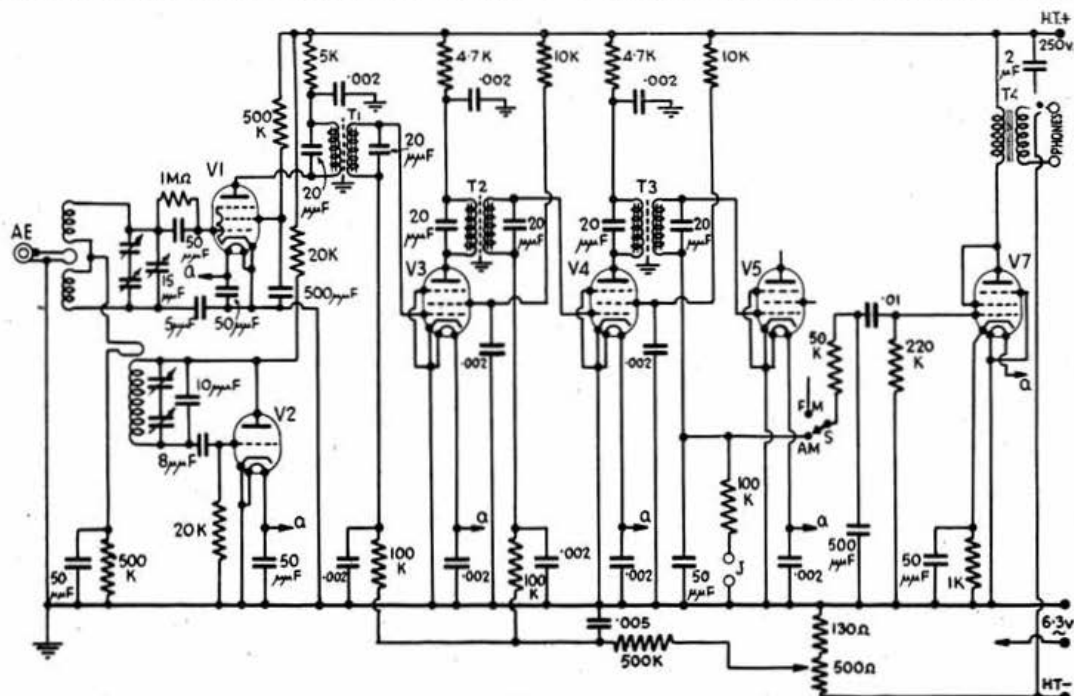


Fig. 2.

Circuit of the modified R.1147B. Valve types are: V1, RL7, V2, RL16, V3, V4, EF50, V5, V7, EF36. V6 and the anode and screen connections to V5 are omitted to provide for the future F.M. section as explained in the text.

table probability that the early occupancy of the band will consist of a large proportion of self-excited transmitters of doubtful stability. Under these conditions the use of M.C.W., either A.M. or F.M. seems likely, and the receiver provides for both of these.

However, if it is desired to allow for C.W. reception it may just be possible to find room for a miniature R.F. pentode on the B7G base (e.g. the Mullard E.F. 91), and the associated beat-oscillator coil. Alternatively, the second EF 50 screen by-pass condenser may be reduced in value so that the stage just oscillates at the maximum setting of the gain control.

To economise in valves and components, V5 (an EF 36) was arranged to function as a limiter on F.M. reception and as a diode detector for A.M. signals. In the latter case the anode circuit plays no part in the operation, demodulation taking place by normal diode action between grid and cathode.

A S.P.C.O. switch is all that is required to change from A.M. to F.M. operation, the input circuit of the audio amplifier (V7) being fed from either the grid circuit of V5 or the diode load of the discriminator circuit to be described at a later date.

The spare two-pin socket (J in Fig. 2), originally marked "Beat Osc." is connected in series with the bottom end of the detector load resistor, and permits

## The R.F. Section

Discussion of the modifications to this section has been left to the last because the design will vary greatly according to individual requirements. The receiver is eminently suitable for use on 144 Mc/s. but as, at the time of writing, there seems little likelihood of British amateurs having that band until 1949, it was decided to make the R.F. section easily convertible to different bands. Plug-in coils of the normal type were ruled out because of their size, and the final arrangement consisted of self-supporting coils of 16 or 18 S.W.G. tinned copper with their ends soldered to tags which could be bolted to 6 B.A. terminals mounted on strips of polystyrene.

In order to obtain a reasonable bandspread, the tuning capacitance was reduced by stripping-off all except one pair of fixed vanes in each section.

In order to do this it is necessary to withdraw the R.F. unit from the main chassis by removing four screws at the front and one at the rear, and unsoldering the three leads into the other compartment, the aerial connections, etc. The unit will then slide out quite easily and the slow-motion drive can be removed, giving access to the condenser assembly.

Whilst the slow-motion drive is off, it is a good plan to remove the worm gear which was used for the remote control drive, as this will free the dial

### Approximate Coil Winding Data

Frequency Band (Mc/s.)	L1			L2		
	Diameter	Length	Turns	Diameter	Length	Turns
58 - 60	$\frac{5}{8}$ "	1 $\frac{1}{8}$ "	8 (18 S.W.G.)	$\frac{5}{8}$ "	$\frac{3}{4}$ "	9 (18 S.W.G.)
143 - 148	$\frac{5}{8}$ "	$\frac{3}{4}$ "	2 (16 S.W.G.)	$\frac{5}{8}$ "	$\frac{3}{8}$ "	2 (16 S.W.G.)

a 0-50 microammeter to be plugged in to measure the grid current of V5 for I.F. alignment and carrier level measurement.

The audio amplifier V7 employs an EF36, triode connected, because it happened to be available, but any medium impedance triode is suitable. The original output transformer is used to feed the 'phones and there is more than sufficient audio output for this purpose, though a small output pentode such as the EL 32 would be necessary to drive a speaker.

In the circuit of Fig. 2 no connections are shown to the anode or screen of V5, nor is there a valve V6. This is merely to provide for the future modifications.

considerably. With the worm removed the slow motion drive is extremely smooth and satisfactory, and there is little point in replacing it with one of more conventional design.

The oscillator coil mounting strip was fitted across the tuning condenser assembly in the position originally occupied by the oscillator coil. The one turn coupling loop was made a fixture and proved suitable for frequencies from 50 to 250 Mc/s.

The mixer grid coil was mounted similarly to the oscillator coil, the supporting strip being bolted to a small stand-off insulator. With this arrangement it is possible to change coils quite rapidly and the compactness of the layout is retained.

The aerial coupling loop is a single turn of 16 S.W.G. wire with a piece of sleeving slipped over it, soldered to the co-axial socket and arranged to encircle the centre of the mixer coil.

Although it is fairly simple to obtain good tracking over the narrow band covered, a small trimmer was connected across the mixer grid circuit to allow for variations in the aerial loading, and as this could not be earthed at either side, it was mounted on a strip of polystyrene next to the aerial socket, the cup-shaped metal-fitting on the front being utilised for this purpose.

The photograph shows the finished R.F. section with the 58.5 Mc/s. coils in place. On this band, the receiver tunes from approximately 58 to 60 Mc/s., and with the 144 Mc/s. coils, from 143 to 148 Mc/s.

The approximate winding data for the R.F. coils is shown in the table. Slight adjustments to the turns spacing will probably be necessary for other receivers.

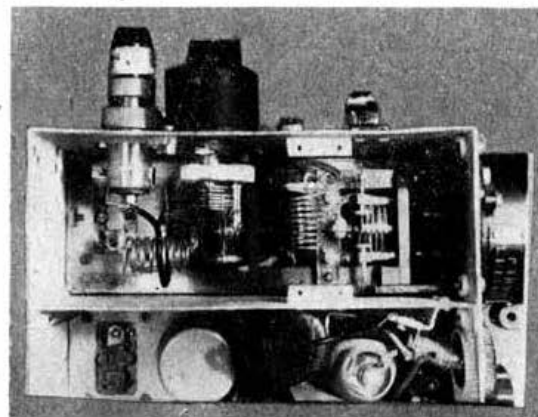


Fig. 3.

Photograph of the R.F. section.

Continued on page 218

# A FREQUENCY METER FOR THE 144 Mc/s. BAND

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

Here is an opportunity to acquire a calibrated absorption frequency meter covering the range 55 to 155 Mc/s. for an outlay of a few shillings only.

V.H.F. enthusiasts all over the country are already preparing for 2 metre activity, and one of the pieces of apparatus they will find well-nigh indispensable is a calibrated frequency meter.

Locating a band for the first time, especially when it is at the V.H.F. end of the spectrum, can be a somewhat tedious business, and unless one has access to frequency measuring gear, together with experience in its use, there is more than a possibility of serious inaccuracies arising.

We are, therefore, pleased to be able to publish a design by Mr. E. A. Dedman, G2NH, for an absorption-type frequency meter covering the range 55 to 155 Mc/s. which will enable the present 58.5 to 60 Mc/s. band to be related to the soon-to-be-released 144 to 146 Mc/s. band. Mr. Dedman has offered to undertake the calibration of duplicate instruments constructed by readers, for an inclusive charge of two shillings. Stress must, however, be laid on the word "duplicate," because on these frequencies a slight change in the components or their disposition in respect to one another may make it impossible to cover the range desired. In view of this fact G2NH asks us to make it clear that in no circumstances can he undertake any rebuilding.

Those who wish to take advantage of this offer should send their meters, securely packed, to Mr.

E. A. Dedman, Quartz Crystal Co., Ltd., 63 and 71 Kingston Road, New Malden, Surrey, accompanied by a remittance for 2s. Meters will be calibrated at 72, 144 and 146 Mc/s., and returned as quickly as possible.

## Construction

The physical construction of the meter is extremely simple, as it consists of nothing more than a panel to support the tuning condenser and dial, and a base on which it stands when not in use. Metal should not be employed, because apart from the possibility of its effect upon the tuned circuit, there is a danger of accidental contact being made with the H.T. supply when working with a transmitter. The panel may be of bakelite or similar insulating material, and the base and mounting bracket of wood, but the exact form and dimensions can be left to the individual constructor. The tuned circuit components must, however, be as specified.

The tuning condenser is a Wingrove and Rogers "Polar" 100 pF air-spaced trimmer with extended spindle. For single hole fixing, type C804 is required, but type C802, which is in all ways identical except that it is secured to the panel by two screws, may be used if desired.

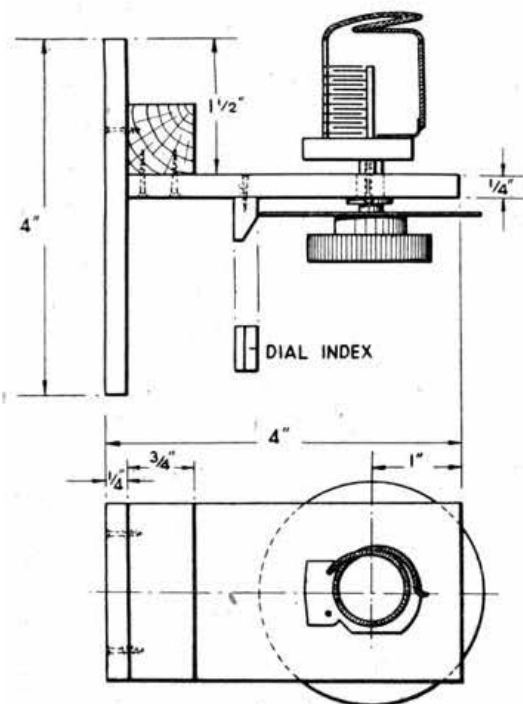
The coil is important, and should approximate closely to the drawing. It consists of  $1\frac{1}{4}$  turns of 16 S.W.G. enamelled wire  $\frac{3}{4}$  inch internal diameter, with a spacing of two wire diameters between turns. Including the connections to the condenser the overall length of wire is  $5\frac{3}{8}$  inches.

Any clearly marked dial may be employed providing it is at least  $2\frac{1}{2}$  inches in diameter.

## Using the Meter

It would be difficult to imagine anything much less complicated than an absorption frequency meter, as it consists of little else besides a coil tuned by a variable condenser. The circuit could, of course, be elaborated to include an indicating device, such as a neon bulb, a lamp, or a rectifier and meter, but although convenient these refinements are not essential and should not be incorporated in the present instrument if advantage is to be taken of the offer referred to above.

In a non-indicating meter, resonance is denoted by an alteration in the feed current of the oscillator or R.F. amplifier under measurement, as the tuning of the frequency meter, loosely coupled to the output tank circuit, coincides with that of the transmitter. When this current "kick" is observed the coupling between the two circuits should be reduced until only the slightest movement occurs in the milliammeter. The chassis should be so constructed, however, that the meter coil may be brought close to another coil for obtaining preliminary indications. Under normal conditions a clear reading can be obtained at 4 to 6 inches from the tank coil of a five metre transmitter. When checking the frequency of the oscillator in a superhet receiver a signal should



Details of the Frequency meter described in text.



be tuned in with the B.F.O. in operation, and the meter coupled loosely to the oscillator tuned circuit. When the meter passes through resonance the signal will vary in pitch, and it should be found possible to detect this point with a separation of at least 6 inches between the two coils.

If a suitable receiver is available an even more sensitive indication of resonance with a transmitter may be obtained by listening to the signal while the frequency meter, loosely coupled to the tank circuit as before, is tuned across the band. As resonance occurs the strength of the signal will vary slightly, even when the coupling is extremely weak.

The object of this instrument is to provide a means of bridging the gap in frequency between the 58.5 Mc/s. band and the new 144 to 146 Mc/s. band, thereby enabling the user to check that frequency multiplying stages are tuned to the correct harmonic. With such a wide range it is not intended to cater for a high standard of accuracy, and the meter described is not suitable as a frequency standard satisfying G.P.O. requirements for the two metre band when crystal control is not used. However, if its limitations are recognised its usefulness will be found more than sufficient to justify the small amount of time and trouble involved in its construction.

### Amateur Radio in Germany and Austria

The official position with regard to D and OE stations is now understood to be as follows:

Stations signing D2 followed by two letters, stations signing D5 and stations in the sequence D4AAA to D4AZZ are genuine and are operated by licenced members of the British, French and American Occupation Forces respectively.

In Austria the prefix used by the Allied Occupation Forces is MB9 followed by two letters.

All other D— and all OE— stations are illicit and the official view is that, unless and until they are licenced, they should not be encouraged by the exchange of radio signals or QSL cards.

### United Nations Amateur Radio Station

General Frank E. Stoner, Chief Communications Engineer, United Nations, announces that the U.N. Amateur Radio Station, K2UN, will begin operations at 2200 GMT on the evening of May 17 next. K2UN is to work in the U.S. 14 and 28 Mc/s. phone bands with a power output of 1 kW, using rotary beam aerials.

### South African Food Parcels

By the time this issue appears, approximately 1,000 members will have received a food parcel from the South African Radio League. The parcels, each containing a tin of marmalade, a tin of corned beef and two packets of jelly powder, were delivered to Headquarters in nine packing cases, but because of the work involved, *Carter Patersons* were asked to make the distribution.

Each parcel carried a label requesting the recipient to refund delivery charges to Headquarters. We regret the necessity for this demand but unless it had been made the Society would have been £50 out of pocket on the deal.

Members who received one of the parcels and who have not yet refunded delivery charges are asked to do so without delay.

It is hoped that recipients will write and express their appreciation to Mr. Ian Jamieson, Secretary of the S.A.R.L. Food Parcels Fund, P.O. Box 1058, Durban.

### Slow Morse Transmissions

Tuesdays 22.00 B.S.T. 1896 kc/s. G8TL(Ilford).

Fridays 20.30 B.S.T. 1835 kc/s. G8LZ(Gravesend).

### Microwave Communication Systems

Evidence of the increasing use of microwaves for commercial communication purposes is provided by a recent announcement from *The Plessey Co. Ltd.*, of a new multi-channel radio system operating on approximately 5,000 Mc/s. (6 cm.). Designed to bridge gaps across marsh land, jungle, desert and other localities where land lines would prove difficult and costly to erect, this radio link provides eight duplex speech channels and multiple telegraph circuits over distances up to 60 miles; while extended ranges are possible where repeater stations are employed. It is claimed that the system is unaffected by the time of day, weather, atmospherics or man-made interference.

The transmitter is of simple construction, incorporating a single oscillator stage of the coaxial line

### BOOK THE DATES . . .

## SECOND AMATEUR RADIO EXHIBITION

to be held at

The Royal Hotel, Woburn Place,  
London, W.C.1. NOVEMBER 17-20, 1948

Enquiries for stand space to:-

Mr. H. Freeman, Parris Advertising  
Ltd., 121 Kingsway, London, W.C.1.

velocity modulation type with a resonant cavity tank circuit. A superhet receiver employs a V.M. local oscillator similar to the transmitter and the first detector is a silicon crystal feeding directly into a 60 Mc/s. head amplifier, with a band-width of 10 Mc/s. The aerial consists of a paraboloid reflector rear fed from the open end of a circular waveguide, and the sharp radiation pattern provides almost complete secrecy, since monitoring can only be effective in the actual path of the beam.

Both in Europe and the U.S.A. commercial microwave systems are in regular operation. Tests of the Plessey system have been carried out between the Grandstand, Epsom, and the Hainault Telephone Exchange, Essex, while a 15 mile 3,000 Mc/s. link between Paris and Montmorency provides 12 speech channels with a transmitter power of 30 watts. The link between New York and Boston on 7.5 cm. has eight repeater stations, the longest span being 35 miles and the shortest 11 miles.

### CONVERTING THE 1147B (Continued from page 216)

#### Other Modifications

The proposed F.M. discriminator will be of conventional design using a double diode in the well-known phase discriminator circuit. Some readers, however, may not require provision for F.M. operation, in which case the spare valve socket (V6) may be used for a beat oscillator, for which an EF 36 is recommended. V5 may then be an EBC 33 using the diode as the A.M. detector and the triode section as an audio stage. A small output pentode can be used for V7.

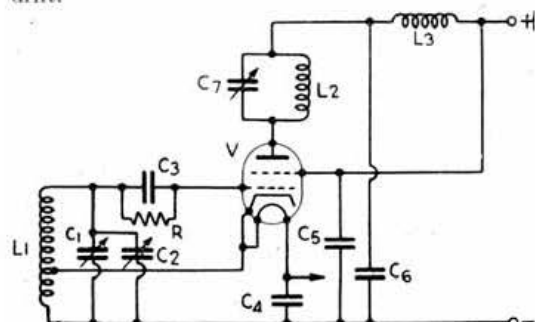
Although individual readers may have different ideas as to the detailed modifications, it is hoped that the foregoing description will be of assistance to those engaged in modifying this most useful little receiver.

# LOW-POWER CONTEST TRANSMITTER

By J. B. ROSCOE, M.A. (Physics) Oxon (G4QK)\*

THE dry battery feature of the 1947 Low-Power Contest appealed to the writer, but not having purchased such a battery since 1935, he had no idea what current could be drawn, or how long it could be expected to last. However, after preliminary work with an S.130 stabiliser had shown that useful results could be obtained, a battery was purchased. Incidentally this was the only outlay involved, as the transmitter was constructed entirely from surplus parts found in the shack.

It seemed obvious that the contest would develop into a "VFO party," a forecast which was fully confirmed later. A Hartley was tried, and gave good results, but as the aerial for the contest was to be moored to a particularly flexible poplar tree, it did not present a constant load to the transmitter: even a moderate breeze producing intolerable frequency drift.



CIRCUIT OF SINGLE-VALVE DRY BATTERY TRANSMITTER.

- L1 17 plus 8 turns, 1½ in. former, 24 S.W.G. enam, spaced two turns.
- L2 31 turns, 2½ in. former, 24 S.W.G. enam, close spaced.
- L3 4 Mc/s. choke.
- C1 .0005 µF.
- C2 100 pF ceramic.
- C3 200 pF mica.
- C4, 5 .001 µF mica, 600 v. working.
- C6 .001 µF mica.
- C7 120 pF, ex-T.1154.
- V 807.
- R1 50,000 ohms, 2 watts.

With this experience in mind it was decided to use an ECO, although it was realised that this would result in some loss in efficiency. The *Amateur Radio Handbook* had been studied and such points as rigidity of construction, output at harmonic, high-C grid circuit, precautions against drift, use of a valve with low grid-anode capacity, carefully noted.

## Design Features

The final design was arranged so that the frequency could be checked in conjunction with a 100 kc/s. crystal oscillator against an HRO with bandspread. During the contest this method proved invaluable, since there was seldom any time to examine the oscillator dial. A slight tendency to microphony was overcome by removing the oscillator from the operating table and placing it on the window sill, where it remained free from vibration. The valve was mounted outside the compartment containing the grid circuit. Drift, due to the warming up of the condensers by valve heating, was thus avoided.

In an ECO the coupling between the input and output circuits—given suitable screening—is represented entirely by the grid-anode capacity of the valve, which must, therefore, be kept low for good stability. Any of the normal receiving type RF valves conform to this requirement, but their impedance is too high, and they do not draw sufficient current when oscillating. On the other hand, the normal AF types, with the possible exception of the 6F6 (metal), have far too high a grid-anode capacity. Of the more common types, the 807 and the 6AG7 are the most suitable, although the latter is not always available in this country. Furthermore, since grid-anode capacity is unimportant in AF work, no close check is kept upon it during manufacture.

Final choice was an 807, which was mounted horizontally in order to obtain the maximum separation of the input and output circuits. With this valve in use it was found possible to take the output at the fundamental, but only with some loss of stability. Accordingly, the anode circuit was tuned to the second harmonic, even though this reduced the output. High-C grid and high-L anode circuits were used. The aerial was link-coupled to the transmitter, for reasons not unconnected with the presence of a television aerial 15 feet away from it!

The grid coil was wound on a ribbed shaving stick holder; this provided a rigid mounting when in place, while the coil could be easily removed for "pruning." A 40 pF. condenser would have been adequate for the coverage required, but the .0005 µF condenser was just too small for the coil, in the form eventually adopted, so the extra trimming capacity was incorporated with the tuning capacity, in a 100 pF condenser.

## Operation

In use, the transmitter proved itself perfectly reliable. Since the practice of calling on the other station's frequency was general, the necessity of manipulating three knobs when retuning was a disadvantage. This will be rectified in the 1948 model! The signal radiated was undoubtedly weak, and always took second place in the queue to G5JP and others. However, QSO's during the contest were with GD (1), GI (1), GM (9), GW (5). In addition, a PA and an OZ were worked, and four reports have been received from Germany.

The minimum current drawn by the oscillator at resonance was 6 mA; it should, however, be possible to design a circuit which will draw less yet drive a PA stage to 10 mA anode current, with greater over-all efficiency.

## Side-Slips

In the Spring issue of *The Proceedings* an error occurred in Fig. 7 of the article "Transmitter Design and Construction." The R.F. choke in the H.T. positive lead should have been shown connected to the anode side of the bypass condenser C5 and not to earth.

An error also occurred in the article "Transmitters for N.F.D." published in the April *BULLETIN*. The paragraph on "Tuning Up" states "... when C8 is rotated to bring the tank circuit into resonance ... etc." For C8 read C12.

\*39 Manor Way, South Croydon, Surrey.

The following is a list of stations for which application has been made to the G.P.O. to operate portable at the sites indicated. As soon as the authority is obtained, the Society will notify the Town and Area Representatives responsible, and entry forms will be forwarded to them.

# NATIONAL FIE

The Rules, as published in the January, 1948, issue of Rule 7 (re power supply), which appears

## REGION 1.

Town or Area	Stn.	Call Sign	Location
<i>Accrington</i> ..	A	G3LR/P	Adjacent to Church and Clayton - le - Moors Cemetery.
<i>Blackpool</i> ..	B	G2PB/P	As for A station.
	A	G5WM/P	Blackpool Water Works, Warbreck Hill Road.
	B	Call to be decided later	Field immediately behind Netherlieu, Higher Hill, Hardhorn, Nr. Poulton-le-Fylde (address of G2CWW).
<i>Bolton</i> ..	A	G2BTO/P	Affetside, Bolton.
	B	G3AOW/P	As for A station.
<i>Burnley</i> ..	A	G8TD/P	Crown Point.
	B	G3SJ/P	Crown Point.
<i>Bury</i> ..	A	G2GA/P	Barlows Field, Holcombe Avenue, Elton.
	B	G3BRS/P	Outwood Gate Farm, off Ringley Road, Whitefield.
<i>Darwen</i> ..	A	G2HW/P	Land adjoining Royal Hotel, Tockholms.
<i>Liverpool</i> ..	A	G8DI/P	Dunlop Sports Field, Speke.
	B	G8AZ/P	A.T.M. Sports Field, Childwall.
<i>Manchester (North-East)</i>	A	G8QS/P	Park View Golf Club, Higher Blackley, Manchester.
<i>Preston</i> ..	B	G3RP/P	As for A station.
	A	G2NY/P	Adjacent to Wyngarth, Bilsborrow Lane, Bilsborrow, Nr. Preston.
	B	G3QP/P	As for A station.
<i>Rochdale</i> ..	A	G3BPZ/P	Thornham.
	B	G2HBJ/P	Thornham.
<i>Stockport</i> ..	A	G2EJT/P	Ridge End, Marple.
	B	G6NM/P	Ridge End, Marple.
<i>West Cumberland</i>	A	G3BMZ/P	Little Clifton, Nr. Workington.
	B	G6WR/P	As for A station.

## REGION 2.

<i>Bradford</i> ..	A	G3APV/P	The Quarries, Baildon, Shipley.
	B	G2UY/P	Grounds of St. Barnabas' Hall, Heaton.
<i>Darlington</i> ..	A	G2GC/P	Brusseton Folly, Nr. Darlington.
	B	G3DT/P	As for A station.
<i>Huddersfield</i> ..	A	G8NF/P	Cop Hill, Slaithwaite.
	B	G2BMC/P	Heaton Moor, Kirkheaton.
<i>Kings-ton-on-Hull</i>	A	G2XA/P	Field adjoining Tranby Croft, Anlaby.
	B	G2KO/P	Field near School House, Garton - on - the - Wolds, Nr. Driffield.
<i>Northumberland</i>	B	G3CYY/P	Kenton Heights, Nr. Newcastle-on-Tyne.
<i>Scarborough</i> ..	A	G2CP/P	Boys' High School Playing Field, Oliver's Mount.
	B	G8KU/P	As for A station.
<i>Sheffield</i> ..	A	G3FN/P	White's Lane, Gleadless.
	B	G5TO/P	Herdin's Farm, Norton.
<i>South Shields</i> ..	A	G3DDI/P	Horsley Hill Farm, South Shields.
<i>Sunderland</i> ..	B	G3CSR/P	Fulwell Mill, Sunderland.
<i>West Hartlepool</i>	A	G3UW/P	Elwick.
	B	G3TO/P	Elwick.
<i>York</i> ..	A	G5WZ/P	Knavesmire, York.
	B	G5KC/P	As for A station.

## REGION 3.

Town or Area	Stn.	Call Sign	Location
<i>Birmingham (South)</i>	A	G3LN/P	Geary's Farm, Rednal Road, Northfield.
	B	G5JU/P	As for A station.
<i>Cannock</i> ..	A	G3CLR/P	White's Hill Farm, Old Hednesford Road, Cannock.
<i>Coventry</i> ..	A	G6TD/P	Home Farm, Eastern Green.
	B	G2LU/P	As for A station.
<i>Oswestry</i> ..	A	G2AUZ/P	Llynelys Hill, Nr. Oswestry.
	B	G2NX/P	Old Racecourse, Oswestry.
<i>Rugby</i> ..	A	G8RL/P	Bilton, Rugby.
	B	G8VN/P	As for A station.
<i>Stourbridge</i> ..	A	G2NW/P	Mucklow Hill, Halesowen.
	B	G8GF/P	King Edward VI School Playing Fields, Stourbridge.
<i>Worcester</i> ..	A	G8JC/P	Newton Grange Farm Newtown.
	B	G3BDS/P	As for A station.

## REGION 4.

<i>Boston</i> ..	A	G6GH/P	Rectory Field, Stickney.
	B	G2BQC/P	Keal Hill, West Keal, Spilsby.
<i>Derby</i> ..	A	G8RB/P	Woodlands Farm, Chelaston.
	B	G5YY/P	Shandlow Hall, Shandlow.
<i>Grimsby and Cleethorpes</i>	A	G8KH/P	Waltham, Nr. Grimsby (junction of Grimsby and Station Roads).
<i>Leicester</i> ..	A	G6VD/P	Wyndham, Granville Road, Wigston.
	B	G3BU/P	Adjacent to Sports Field, Gwendolen Road.
<i>Loughborough</i> ..	A	G4BI/P	Walton-le-Wolds.
	B	G4MM/P	Walton-le-Wolds.
<i>Mansfield</i> ..	A	G3APY/P	Kirby Cow Pastures, Kirby Road, Kirby-in-Ashfield, Notts.
	B	G8HX/P	Codnor Lane, Codnor.
<i>Nottingham</i> ..	A	G6CW/P	Kneeton Old Mill.
	B	G8OZ/P	As for A station.
<i>Oakham</i> ..	A	G2HBU/P	Braunstone Hill, 1 mile S.W. of Oakham.
	B	G3ALC/P	As for A station.

## REGION 5.

<i>Cambridge</i> ..	A	G6UW/P	Quaker Farm, top of the Gogs.
	B	G8PB/P	Bendall's Farm, Bottisham, Cambs.
<i>Chelmsford</i> ..	A	G5RV/P	Meadow adjoining the Running Mare, Galleywood.
	B	G2HFF/P	As for A station.
<i>Gt. Yarmouth</i> ..	A	G3AMK/P	Southtown Common.
	B	G3CFK/P	As for A station.
<i>Ipswich</i> ..	A	G2AN/P	Post Office Farm, Stutton.
	B	G8MU/P	As for A station.
<i>King's Lynn</i> ..	A	G3IP/P	Knight's Hill, King's Lynn.
	B	G2IS/P	As for A station.
<i>Lowestoft</i> ..	A	G2YU/P	Grange Farm, Gisleham.
	B	G2CPL/P	As for A station.
<i>Southend</i> ..	A	G6CH/P	Thundersley Glen, Thundersley.
	B	G5QK/P	As for A station.



# LD DAY, 1948

of the BULLETIN stand, with the exception of amended form in the March BULLETIN.

## REGION 6.

Town or Area	Stn.	Call Sign	Location
Bedford .. ..	A	G5PA/P	Bury End Farm, Stagsden.
	B	G4OL/P	As for A station.
High Wycombe ..	A	G8JK/P	Ernest Turner Sports Ground, Totteridge, High Wycombe.
	B	G4NT/P	As for A station.
Luton .. ..	A	G3QG/P	Bradger's Hill, Stopsley.
	B	G5RZ/P	As for A station.
Oxford .. ..	A	G8PX/P	Watt's Farm, Elsfield.
	B	G5RP/P	As for A station.

## REGION 7.

Barnes, Putney and Richmond ..	A	G6RC/P	Richmond Park (near Sheen Gate).
	B	G5C1/P	As for A station.
Brentwood ..	A	G2C1W/P	Payne's Farm (junction of Weald Road and Honeypot Lane).
	B	G4AK/P	As for A station.
Bromley and Beckenham ..	A	G6HD/P	Sundridge Park Golf Links, Bromley.
	B	G4AU/P	As for A station.
Chingford ..	A	G8JM/P	Bury Farm, Sewardstonebury.
	B	G3YF/P	Pole Hill.
Coulston ..	A	G2DN/P	Field above Hall & Co.'s Lime Works.
	B	G2KU/P	As for A station.
Croydon ..	A	G2FWA/P	Addington Hills (adjacent to junction of Oaks Road and Coombe Road.)
	B	G6LX/P	As for A station.
Dorking and Leatherhead ..	A	G3AEZ/P	Ranmore, Nr. Dorking.
Dulwich and New Cross ..	A	G3CU/P	Rear of Goldsmiths College, New Cross, S.E.14.
	B	G2FKZ/P	Grounds of Crystal Palace, Upper Sydenham, S.E.19.
East Ham ..	A	G2ZZ/P	Fairbairn House Sports Field, Burgess Road, E.6.
East Molesey ..	A	G8SM/P	Broadmoor, Nr. Dorking.
	B	G6NB/P	Chobham Common.
Edgware ..	A	G3HT/P	Weedon's Farm, Highwood Hill, Nr. Mill Hill.
	B	G2IM/P	As for A station.
Finsbury Park ..	A	G2BAE/P	L.C.C. Park, Finsbury Park.
	B	G8PP/P	As for A station.
Hoddeston ..	A	G5HO/P	Beaumont Manor, Wormley.
	B	G4HJ/P	Hertford Heath, Nr. East India College Arms.
Ilford ..	A	G8TL/P	London Mission Field, Lambourn End.
	B	G2Q1/P	As for A station.
North Kent ..	A	G4MB/P	Broomfield Road, Bexleyheath.
	B	G2CXO/P	As for A station.
Slough ..	A	G3EF/P	Taplow Court, Taplow, Bucks.
	B	G6CJ/P	As for A station.
Southgate ..	A	G5FA/P	Trent Park, Oakwood, N.14.
	B	G2DHR/P	South Herts Golf Club, Totteridge.
Sutton and Cheam ..	A	G2CZH/P	Wandsworth Gas Co's Sports Ground, Grafton Road, Worcester Park.
	B	G2JB/P	As for A station.
Welwyn Garden City and St. Albans ..	A	G5UM/P	Nr. Conesdale.
	B	G4GT/P	Field south of Hill End Station.

## REGION 8.

Town or Area	Stn.	Call Sign	Location
Brighton and Hove ..	A	G3WR/P	Patcham, Brighton.
	B	G3YY/P	As for A station.
Eastbourne ..	A	G4OC/P	Chalk Farm, Willingdon Hill.
Farnham and Farnborough ..	A	G5US/P	Tunnel Hill, Nr. Frimley.
	B	G8TS/P	Eyshot, Nr. Farnham.
Guildford ..	A	G8NA/P	Worplesdon Common.
	B	G5RS/P	Old Roman Road, Hogs Back.
Medway Towns ..	A	G6NU/P	Chatham.
	B	G5FN/P	Chatham.
Reading ..	A	G6WO/P	Turnhams Farm, City Road, Tilehurst.
	B	G8RS/P	Leighton Park Playing Fields, Shinfield Road, Reading.
Southampton ..	A	G3KJ/P	Stoney Cross, Nr. Southampton.
	B	G5LR/P	As for A station.
Tonbridge and Tunbridge Wells ..	A	G4FB/P	Great Bounds Estate, Southborough.
	A	G2DZF/P	High Salvington, 3 miles North of Worthing.

## REGION 9.

Bristol ..	A	G5YK/P	Dundry, Bristol.
	B	G6YA/P	Dundry, Bristol.
Cheltenham ..	A	G6ZQ/P	Hartley Farm Leckhampton Hill.
	B	G8LB/P	St. Marks Community Centre Playing Fields, Brooklyn Road, St. Marks.
Chippenham ..	A	G3BTS/P	The Water Tower, Chippenham Golf Links
Exeter ..	A	G5QA/P	Pennsylvania Hill.
Falmouth ..	A	G8AW/P	Ashfield, Falmouth.
	B	G6LV/P	As for A station.
Gloucester ..	A	G3MA/P	Painswick Beacon.
	B	G2RT/P	Painswick Beacon.
North Devon ..	A	G6GM/P	Holsworthy.
Penzance ..	A	G2JL/P	Coach & Horses Hotel, Keneggy.
	B	G2WW/P	As for A station.
Plymouth ..	A	G3TX/P	1 mile N.W. of Wembury Church, Wembury.
	B	G5ZT/P	As for A station.
Stroud ..	A	G5WA/P	Near Lyptatt Park.
	B	G5HC/P	As for A station.
Torquay ..	B	G2GK/P	Little Haldon, Nr. Teignmouth.

## REGION 10.

Aberystwyth ..	A	GW8CT/P	Blackwood.
	B	GW2BG/P	Aberystwyth.
Cardiff ..	A	GW5BI/P	Penarth County School Playing Fields, Penarth.
	B	GW8UH/P	As for A station.
Neath and Port Talbot ..	A	GW2FRB/P	Mount Pleasant, Nr. Maesteg.
	B	GW4NZ/P	Drumau Hill, Nr. Neath.

## REGION 12.

Aberdeen ..	A	GM6LG/P	Banchory Devenick Kincardineshire.
	B	GM8AT/P	As for A station.
North Angus ..	A	GM3KC/P	Rossie Muir, Nr. Montrose.
	B	GM6RI/P	Tannadice, Nr. Forfar.

### REGION 13.

Town or Area	Stn.	Call Sign	Location
<i>Berwick-on-Tweed</i>	A	G3AFL/P	Berwick Hill.
	B	G6UC/P	Berwick Hill.
<i>Dunfermline</i>	A	GM8KR/P	Bowers Hall, by Dunfermline.
<i>Edinburgh</i>	A	GM6JH/P	Zoological Gardens.
	B	GM3HX/P	Union Canal, Craiglockhart.
<i>Kirkcaldy</i>	A	GM4GK/P	Woodlands, by Markinch.
	B	GM4FK/P	Newton Farm, East Wemyss.

### REGION 14.

<i>Dunbartonshire</i>	A	GM2FQG/P	Mill House, Nr. Mugdock.
	B	GM3AHQ/P	As for A station.
<i>Glasgow</i>	A	GM8MJ/P	South Hillhead Farm, Newton Mearns, Renfrews.
	B	GM6IS/P	Lockpriveck Farm, East Kilbride, Lanarks.
<i>Larbert</i>	A	GM6XW/P	Kirklands Farm, Denny, Stirlingshire.
	B	GM6NX/P	As for A station.

### REGION 15.

<i>Northern Ireland</i>	A	G12HLT/P	Lillybank Farm, Gilnahirk, Co. Down.
	B	G15UR/P	As for A station.

### CHANNEL ISLANDS.

<i>Jersey</i>	A	GCSNO/P	Victoria College.
	B	G13GS/P	St. John's.

## FORTHCOMING EVENTS

### REGION 1

- Accrington.**—June 9, 7.30 p.m., Cambridge Street Schools.
- Ashton.**—June 6, 3 p.m., New Jerusalem Schools, Katherine Street, Ashton-under-Lyne.
- Blackpool.**—First Tuesday, 7.30 p.m., Shaw Road Garage, South Shore.
- Bolton.**—June 1, 8 p.m., Y.M.C.A.
- Burnley.**—June 2, 7.30 p.m., Mechanics Institute, Manchester Road.
- Bury.**—June 10, 7.30 p.m., Athenaeum, Market Street.
- Carlisle.**—June 4, 7 p.m., Richmond Hall, Fisher Street.
- Darwen and Blackburn.**—May 28, June 11, 7.30 p.m., Provident Hall (Room 10), Darwen.
- Liverpool.**—Alternate Saturdays, 2.30 p.m., 29 Derbyshire Lane, Old Swan.
- Manchester.**—June 7, 7.30 p.m., Reynolds Hall, College o Technology, Sackville Street.
- Preston.**—Alternate Thursdays, 7.30 p.m., Cyclists' Club, High Street.
- Rochdale.**—May 9, June 6, 7.30 p.m., The Drill Hall.
- Southport.**—Second Wednesday, 8 p.m., Albert Hotel, London Street.

### REGION 2

- Barnsley.**—May 28, June 11, King George Hotel, Peel Street.
- Bradford.**—May 25, 7.30 p.m., Cambridge House, 66 Little Horton Lane.
- Catterick.**—Tuesdays, 7 p.m., S.T.C., H.Q. Block, Vimy Lines.
- Doncaster.**—Tuesdays and Wednesdays, 7.30 p.m., 73 Hexthorpe Road.
- Harrogate.**—Wednesdays, 7.30 p.m., rear of 31 Park Parade.
- Huddersfield.**—May 19, June 2, June 16, 7.30 p.m., Plough Hotel, Westgate.
- Hull.**—May 26, 7.30 p.m., Imperial Hotel, Paragon Street.
- Leeds.**—Fridays, 7 p.m., Swathmore Settlement, Woodhouse Square.

**Middlesbrough.**—May 17, 7.30 p.m., Cleveland Scientific and Technical Institute, Corporation Road.

**Newcastle.**—May 31, 8 p.m., British Legion Rooms, 1 Jesmond Road.

**Sheffield.**—May 26, 7.30 p.m., "Dog and Partridge," Trippit Lane. June 9, 7.30 p.m., Albreda Works, Lydgate Lane.

**South Shields.**—Fridays, 7.30 p.m., Trinity House, Laygate.

**Spennorth.**—May 26, June 9, 7.30 p.m., Temperance Hall, Cleckheaton.

**Sunderland.**—Wednesdays and Fridays, 7 p.m., Prospect House, Prospect Row.

**York.**—Wednesdays, 8 p.m., 29 Victor Street.

### REGION 3

**South Birmingham.**—June 6, 20, 10.30 a.m., Stinchley Institute.

### REGION 5

**Chelmsford.**—June 1, 7.30 p.m., 184 Moulsham Street. June 27, Official Regional Meeting, Cannon's Restaurant.

### REGION 7

**Barnes and Putney.**—June 8, 7.30 p.m., 28 Nassau Road, S.W.13.

**Barnet.**—May 15, June 12, 7.30 p.m., Bunny's Restaurant, Station Road, New Barnet.

**Chingford.**—May 27, 7.45 p.m., G8BV, 5 Sewardstone Road, South. June 10, 7.45 p.m., G3YF, 23 Moreland Way, North.

**Croydon (Surrey R.C.C.).**—June 8, 7.30 p.m., "Blacksmith's Arms," South End.

**Edware and District R.S.**—May 19, 26, June 2, 9, 16, Orchard Cafe, Broadway, Mill Hill.

**Enfield.**—May 16, June 20, 3 p.m., A and B Cafe, Southbury Road (junction with Ladysmith Road).

**Finsbury Park.**—June 1, 7.30 p.m., 164 Albion Road, Stoke Newington, N.16.

**Peckham.**—June 7, 7.30 p.m., "The Kentish Drover," Rye Lane.

**Ruislip.**—May 20, 27, June 3, 10, 17, 7.30 p.m., Oddfellows Hall, Wexwell Lane, Pinner.

**Slough.**—May 20, June 17, 7.30 p.m., Congregational Church Hall, Church Street.

**Welwyn Garden City.**—June 1, 8 p.m., Council Offices.

### REGION 8

**Southampton.**—June 5, 7.30 p.m., 22 Anglesea Road, Shirley.

**Worthing.**—June 3, Oliver's Cafe, Southfarm Road.

### REGION 9

**Bristol.**—May 21, 7.15 p.m., Keen's Cafe, Park Row.

**Exeter.**—June 12, Y.M.C.A., 41 St. David's Hill.

**Plymouth.**—June 19, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Jude's.

### REGION 14

**Glasgow.**—May 26, 7 p.m., Institute of Engineers and Shipbuilders, 39 Elmbank Crescent. Lecture by Mr. John Kyle, D.F.M., A.F.M. (GM6WL). Subject, "Navigational Aids."

**Stirling.**—June 10, 7.30 p.m., Plough Hotel, Stenhousemuir.

## LETTER OF THE MONTH

### SUCCESS

Dear Sir,—Having been asked on many occasions for the reason we maintain successful attendances at our District Meetings, we took a plebiscite at our last meeting, which shows the results given here.

"Why do you attend the East London meetings?"

	Per Cent.
(a) Because of the Raffles	50
(b) Inter-Ham Contacts (Social Intercourse)	100
(c) M.O.S. Scheme	Nil
(d) To hear the Lectures and see the Demonstrations	100
(e) To air their Complaints	12
(f) In support of R.S.G.B.	100
(g) To support the D.R.	1.5
(h) Esprit de Corps—because one should attend	100

Meetings at 3 p.m., Sunday afternoon, once per month at central location with easy transport facilities.

The suggestion that they came to avoid washing up and the O.W. found no supporters.

7 Beddington Road, W. H. MATTHEWS,  
Seven Kings, Essex. D.R. East London.

# JOYS OF ENEFDEE

MUGGLESWADE had insisted that our N.F.D. station should be on top of Cricklehampton moor. It had been easy for him—with the Regional Petroleum Officer as brother-in-law—to enumerate the advantages of a high location miles from any man-made interference. But now, as our convoy of five heavily laden wheelbarrows struggled slowly up the one-in-four incline and along the dusty cart-track, the many attractions of our usual pitch—the cricket field behind the “Rose and Crown”—were vividly recalled.

Nor was our discomfort lessened by the remarks of the ribald group of little boys who had firmly attached themselves to our party as soon as we had emerged from the club rooms. At first they contented themselves to such gibes as “Yah B.B.C.” and “Calling all ears” but, as they warmed to their work, we were subjected to observations of a more personal nature. Hamalight, who is more than a little proud of his R.A.F. “handlebars” moustache, took violent exception to the phrase, “Look, Dick Barton in disguise,” and we found ourselves in complete agreement with those who bemoan the pernicious influence of the cinema on modern youth. Happily, “austerity” prevented their taking advantage of a tempting target and we were grateful for the scarcity of catapult elastic and pea-shooter ammunition.

From time to time the morale of the party was restored by the foresight of Nobby Clarke, whose Army training had taught him that EF50's and 807's were not the only type of bottles required for field operation. The hot sun must have increased our efficiency for we certainly succeeded in putting plenty of “soup up the spout.” In fact as we neared the chosen site the leading wheelbarrow appeared to be demonstrating the waveform expected shortly on our aerial system.

On arrival we found Muggleswade in fine fettle. He soon disposed of some rather vocal criticism of his arrangements by pointing out that it was just as well to have one member of the party unfatigued and capable of careful planning. To prove the point he told young Henshaw exactly where to pitch the tent. Nobby where to lay the aerial and dispatched Simpson—with wheelbarrow—back to the club rooms to pick up some extra batteries which might come in handy.

There was a convenient tree and Muggleswade explained that by tying a mallet to the halyard we should soon be able to heave an aerial over the highest branch. His demonstration of the method was not an entire success. For although he certainly whirled the mallet around his head at high speed and let go of the rope at just the right moment, he had unfortunately failed to notice that the slack wire was looped around his foot. However, only his prestige suffered permanent injury and we soon had him out of the gorse bush which had broken his fall. Somehow the incident succeeded in putting the rest of us in good spirits and, in less time than it takes to tell, Nobby had shinned up the tree and we had an excellent 132 footer swaying gently in the breeze.

But our congratulations were cut-short by young Henshaw's sudden discovery that the site chosen for the tent had previously met with the full approval of a family of wasps who objected violently to this infringement of their “squatters rights.” We now learnt that Henshaw's well-known speed on a “bug” key was as nothing compared to his speed over a 100 yard stretch. His clocked time of 10 seconds was pretty good when you consider the three fences which he took in his stride. After the hurried removal of the tent, we accorded a vote of thanks to Henshaw

for having made his discovery at such an early stage in the proceedings and for so valiantly drawing-off the infuriated tenants of the original site, thus enabling us to rescue the equipment. In fact we determined straight-way that any medical expenses incurred by him should be fully met from club funds.

\* \* \*

Preparations continued apace. Soon the soft buzz of vibrators mingled with the distant lowing of cattle and the birds were forced to sing louder to overcome the competition of crackling Morse. The letter of protest to the *BULLETIN* was torn up when it was found that the station outside the band with a T6 note was actually a woodpigeon in the neighbouring copse.

Happy faces were now the order of the day and even Muggleswade was heard to join in the chorus of “We are Fred Karno's station,” while his solo version of “She'll be coming round the Morse key when she comes”—albeit pitched slightly flat—was received with acclaim. The agreeable scent of wood smoke gradually gave way to the appetising smell of frying sausages as Nobby's throaty tones bade us “Come and get it.”

National Field Day had indeed arrived.

VIC ACK.

## British Wireless Dinner Club

Mr. A. J. Gill, B.Sc., Engineer-in-Chief, G.P.O., presided at the 25th Annual Dinner of the British Wireless Dinner Club, held at the Connaught Rooms, London, W.C.2, on April 16th last. The guest of honour was Sir Vincent de Ferranti, M.C., M.I.E.E.

Group Capt. G. R. Scott Farnie, G5FI, W/C. N. H. Hamilton, D.S.O., S/Ldr. Douglas Walters, G5CV, and the General Secretary were among a number of radio amateurs present at the Dinner.

The new President of the Club is Vice-Admiral J. W. S. Dorling, C.B., R.N., with whom the Society was associated when the R.N.W.A.R. was formed in 1930.

The B.W.D.C. was formed initially to provide an opportunity for officers who had served in wireless units during the First World War to meet together annually. Membership is now open to any officer or ex-officer who has served in a wireless capacity in one of the three Services. Details of membership (Life subscription, one guinea) can be obtained from Capt. M. A. Bulloch, *Standard Telephones & Cables Ltd.*, Connaught House, Aldwych, London, W.C.2.

## Radar Association

Ex-Radar types are cordially invited to join the Radar Association, a go-ahead organisation which recently celebrated the second anniversary of its formation by holding a Grand Reunion at the Seymour Hall, London.

The Hon. Secretary is Mr. C. W. Knight and the address of the Association is 70 High Holborn.

The *Radar Bulletin*, published monthly, contains much of topical and technical interest.

## OUR FRONT COVER

THIS P.A. Stage of Amateur Station G2BQR is a typical example of an output stage using a Mullard QY2-100 Beam Power Tetrode. The valve is rated at 100 watts anode dissipation and, therefore, runs well within its ratings for 150 watts input. Being a beam tetrode, very little drive is required and no neutralisation is necessary in a well-designed circuit. The unit shown employs a bandswitched grid circuit with plug-in tank coils, and covers 80, 40, 20 and 10 metres.





## LETTERS TO THE EDITOR

### European Band Planning

DEAR SIR,—I would hereby set on record my very strong disapproval of, firstly the general attitude of the R.S.G.B. hierarchy in allowing the Codes and Practice Committee to send to the I.A.R.U., to W.I.A. (Australia), N.Z.A.R.T. (New Zealand) and S.A.R.L. (South Africa), their proposals for planning the amateur bands.

Surely a subject of this nature should have been initiated on a nation-wide scale, to dispel the apathy which has surrounded this subject for years, the BULLETIN should have been splashed page by page with individual amateur views to the exclusion of all else (if need be).

As to the proposals themselves (and at this point I must say that I normally use 'phone and C.W. on a 50-50 basis and on most bands), I feel very strongly that the C.W. man has been quite inadequately catered for, and secondly, that the suggestion of having shared portions C.W./phone is quite undesirable, and unnecessary, that in effect it might have been said "We have plenty of space in the bands, let's only plan a portion of them—leave the rest as they are—hopeless, useless, and so give the boys a reason for using top band at weekends."

If it is not too late at this stage (in view of the "take it or leave it" attitude of the R.S.G.B. in this matter) I very humbly offer my own proposals, formulated after discussion with many amateurs.

1.7 Mc/s. . . . .	As at present.
3.5 Mc/s. . . . .	3,500-3,575, C.W. only.
7 Mc/s. . . . .	3,575-3,800, telephony only.
14 Mc/s. . . . .	7,000-7,150, C.W. only.
21 Mc/s. . . . .	14,000-14,150, C.W. only.
28 Mc/s. . . . .	14,150-14,350, telephony only.
	21,000-21,200, C.W. only.
	21,200-21,450, telephony only.
	28,000-28,200, C.W. only.
	28,200-29,700, telephony only.

With the stipulation, that telephony stations in Great Britain (failing international agreement) are not allowed to contact telephony stations outside of their allotted telephony band. The same stipulation to apply to C.W. working C.W. station.

I feel that such a regulation would tend to make any non-operative countries "toe the line" when endeavouring to contact Great Britain.

Yours faithfully,

S. ALLEN (G8TR).

P.S.—Suggest that the A.R.R.L. be approached, to see if input power over there can't be limited to around 100/150 watts.

DEAR SIR,—The announcement in the March issue of the BULLETIN that timely thought is being given to the important matter of European Band Planning will be welcomed by every serious amateur operator.

The plan as outlined in the BULLETIN, is, however, clearly open to criticism and it is fervently hoped that no recommendation will be made to the licensing authority until the whole matter has received very careful consideration by all concerned.

One cannot help having an uncomfortable feeling that this scheme, no doubt submitted in all sincerity, has been hurriedly compiled on a make-shift basis by people, it is suggested, who seem to be strangely out of touch with contemporary practice.

The recommendation that there be no sub-division of frequencies on the 1.7 Mc/s. band or above the 28 Mc/s. band should be acceptable to most operators, and the principle of sub-division on some other bands should also be quite acceptable, but the suggestion that our most important possessions should be carved into three or four divisions is quite untenable. The very idea of a common band for telephony and C.W. sandwiched in between others is thoroughly bad and would appear to be no remedy for the abatement of interference from the point of view of either the 'phone or C.W. operator.

Take as an example, the quite absurd arrangement suggested for use on the 3.5, 7 and 14 Mc/s. bands—a mere 50 kc/s. channel for telephony only! How much more reasonable it would have been to suggest the allocation of a zone of useable size on the low end of each of these bands for the use of C.W. only. It might too, have been a reasonable suggestion that 7 Mc/s. should be reserved for C.W. operation only in view of the disaster which has befallen the higher end of this particular frequency band.

At the present time there should be no recommendations for the sub-division of the new 21 Mc/s. band. We should be allowed time to gain actual operational experience on 21 Mc/s., after which the band may be split in two major divisions, these divisions depending on what experience indicates to be the best arrangement.

Probably this scheme treats 28 Mc/s. worst of all, since this band is primarily used for DX, we would not gain one single domestic advantage by its adoption, which would only benefit, by and large, the American C.W. operator. This is hardly an occasion upon which to hand our American C.W. friends a valuable frequency subsidy, entirely to our own disadvantage.

There is perhaps, another aspect to this matter, which certainly will have been considered. Let us face the bare facts that many amateur operators have neither the technical means nor always the skill necessary to measure frequencies sufficiently accurately, to be able to sub-divide each band into the fractional segments

demanded by the plan. Would it not, in fact, tend to produce a group of "criminals," for which an ever increasing staff of civil servants would be required for other checking?

Let us then, have clear sub-division by all means, and let the licensing authority enforce it, but let us produce a workable, equitable scheme first, fair to all, without bias towards any particular class of operator at home, or needless charity to those abroad.

Yours faithfully,

JOHN R. FENNESSY (G5ZI).

65 Balmoral Drive, Churchtown, Southport.

### Television Interference

DEAR SIR,—I was pleased to see the highly constructive letter written by Mr. N. Anslow (G4GD) on the subject of BCI and I thoroughly endorse the opinions expressed therein.

Could not the remarks made be taken as a preliminary basis on which a R.S.G.B. committee could get to work in an endeavour to clear up the whole problem of BCI as it affects amateurs?

The present—almost farcical (if it was not serious!)—position which exists especially with regard to London amateurs normally operating on 14 or 28 Mc/s. savours of neither sense nor reason as they are granted licences to operate on bands on which, with the exception of a short morning period, they just dare not operate without the almost certain probability of having the very people who grant the licences requesting them to cease! A listen around 28 Mc/s. at say 10 p.m. and again at 10.45 p.m. should convince anyone of the truth of this. The poor amateur then possibly gets into trouble with the family for staying up late!

It is quite obvious that some such action as suggested by G4GD is a necessity, otherwise one is left wondering as to just what good such a letter will accomplish; undoubtedly it will be read by interested parties but that is quite insufficient, what is required is action and it would be encouraging to know that the Council do give such material special consideration.

Amateurs are expected to consider themselves very fortunate in being granted 450 kc/s. at 21 Mc/s. to make up for useful frequencies being taken away on other bands—what happens now? Will they also lose 21 Mc/s. through non-occupancy?

Fortunately it appears from the very fine Editorial published in the February issue dealing with the R.I.C. campaign against interference that everything is "under control"—the major point being that the R.I.C. will, generally speaking, be wasting their money in suggesting to car owners, etc., that they fit suppressors and not till legislation is brought in will appreciable benefit result. Far better to spend such money in lobbying M.P.'s (if that is necessary) to make sure that any Bill mooted will go through promptly.

Since some television sets are apparently much more prone to interference than others—who tells the particular manufacturer that his product, however good it may be from a picture point of view, can yet be a "nuisance" and if told does he first count very carefully the cost of upsetting his chain-gang before putting things right?

Finally, I believe there is a real need for an R.S.G.B. Interference booklet along the lines of your previous excellent brochures, such booklet to cover the whole field of interference from the amateur point of view—BCI—Television—Noise—the data to include the collected details of unusual types and cures in addition to the more orthodox.

It should have a good sale and would help the Post Office engineers who have a very tough assignment as things are at present.

Yours faithfully,

R. L. CASTLE (G6CB) (Life Member).

7 Caxton Road, Wimbledon, S.W.19.

### EDITORIAL COMMENT

*The Society, through the Television Sub-Committee of the Technical Committee is endeavouring to clear up with the G.P.O. the point of responsibility as between transmitting amateur and television viewer.*

*The British Radio and Electrical Manufacturers' Association has recently issued a circular to its members dealing with the problem of interference to television caused by amateur transmitting stations, and has drawn attention to the point made by Mr. Castle that certain television receivers were designed without due regard being paid to the possibility of interference occurring as the result of a second channel image frequency falling within one of the amateur bands.*

*The Society will continue to publish technical information and advice to members on television interference suppression.*

### Ignition Suppression

DEAR SIR,—Following your Editorial in the February issue and a paragraph in "Electronic Engineering," I wrote to the R.I.C. asking for suitable publicity material with which to tackle four garages with which I have dealings in order that they may in turn tackle other S & E users. The reply was a detailed list of manufacturers of resistors.

Surely the R.I.C. has not launched its campaign without adequate publicity preparations?

Many members still have their cars on the road, and stickers as advocated by Mr. James plus a small supply of printed publicity matter with which to canvass garages when collecting petrol or calling for repairs would doubtless be put to good use by members.

Yours faithfully,

H. J. FENN, BR2513.

# THE MONTH ON THE AIR

By A. O. MILNE (G2MI)\*

## FORTHCOMING R.S.G.B. CONTESTS

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.

## B.E.R.U.

In order to make room for the other story appearing on this page, Month on the Air is a little shorter than usual. The big event of the past month was, of course, B.E.R.U., with excellent conditions prevailing, especially during the second week-end. Some really terrific scores seem to have been made. ZS2A with a serial number in the 800's was a strong possibility, but other competitors may be in a better position due to having worked more zones. We shall see.

Our own reactions were that the general level of operating was good. G's who called CQ were wasting their time and causing unnecessary QRM. Apart from one or two old lags, the use of the V.F.O. did not appear to be inconsiderate and there was a welcome sign that V.F.O.'s preferred to call just off the other man's frequency. One or two V.F.O.'s were heard off-frequency but it spoke well for the majority that 3 kc/s. was too far outside the band to gain attention and the wanderers soon realised what was wrong.

## Notes and News

VS9AH is home on leave and will be QRT until October. VU2PB, now G3DOV of Mill House, Scoulton, Norfolk, says he thinks many of his cards went astray, some were lost in a crashed aircraft. Anyone who worked him and still has no Andaman Is. card should write to him, giving details. VS1AF assures us that he will QSL every contact but asks those interested to be patient. GW4CX has worked our old friend PK2RK who now says he has more than 800 QSL's waiting to be sent, "when the Policemen here say O.K.!" He now asks that no cards be sent until his arrive. It all sounds very convincing so we wait and see.

In answer to many enquiries. Yes, VU and AP count as separate countries. We are indebted to G2ANG for the full information on the AP districts which are as follows: AP1—Not allocated; AP2—Sind; AP3—Baluchistan; AP4—N.W. Frontier Province; AP5—West Punjab; AP6—Bhawalpur; AP7—Eastern Bengal; AP8—Dakar.

MC1A is active on 3.5 and 7 at the Cables and Wireless Station, Benghazi, from where he has contacted a number of G stations. W6UZX says C8YR is on every day from 1700-2000 G.M.T., on 14055 QTH. Mr. Yu-Ruey-Chi, Box 73, Lanchow, Kansu, China. GW4CX recommends XE1AC on 14305 around 0800 G.M.T. He and CO2JK team up together so there is a good chance of working them both. They are specially on the look out for G's.

Via BRS11500, SV1RX corrects our statement last month about the SV's. Says there will be several to choose from for some considerable time yet.

Will GC stations please remember to send envelopes to GCSNO the Channel Is. QSL Manager: Mr. R. Postill, Victoria College, Jersey.

ZDSB, our old friend G5BO has quite a bit of trouble with his power supply which comes and goes rather erratically. He uses 6AG7—6V6 into PP807's with 60 watts. Sends 73 to all old friends. QSL via G2MI.

Please note that the D2 QSL Bureau is now c/o Capt. J. S. Howe, E. and E. Branch, 100 H.Q., Badsalzufen, B.A.O.R. Many cards are still being sent to D2TG with consequent delay. For those still trying to get a card from Ecuador, HC1KE-ex OK3XZ is a safe bet. VO1AB has informed G2GC that the Newfoundland amateurs are running their Field Day to coincide with N.F.D. G2BBI gives OX3UC as 7, Sybegersalle, Scoresbysund, Greenland, 14200 at 1400 G.M.T. He is a Dane and will be returning home in July. G2QY recently contacted ST2FT when the latter was using an aerial laying on the floor of his hotel bedroom! The QTH of ZD4AU is c/o Pan-American Airways, Box 1119, Acra, Gold Coast. Jim Hemingway ex GS1D is now VE7PW. Anyone heard him yet?

## Gatti Hallicrafters Expedition

The calls used by the above are as follows: VQ3HGE, VQ4EHG, VQ5GHE and VQ5HEG, and if they ever get their

equipment to within a couple of miles of Kilimanjaro, the VQ gang will eat their collective hats! The Brochure and general Press blurb issued about this "expedition" is an almost musical comedy example of high pressure American salesmanship.

## New Canadian Phone Bands

Ham Whyte, VE3BWY, now regularly to be heard on the air, has worked 37 countries and is WAC after his first month operating in VE. He informs us that the new Canadian 'phone bands will be 3,750-4,000 kc/s. AM of which 3,800-4,000 can be used for NBFM. 14,150-14,350 of which 14,150-14,250 is for NBFM. 28,200-29,700 for AM or NBFM. All frequencies above 50 megs. anything goes.

## Southern Rhodesia

ZE2JV tells us that the ZE's are not allowed to use V.F.O.'s, and he has strong opinion on people who insist on calling him when he makes a directional CQ. He mentions in particular one G who apparently removed all his smoothing in order to try and get him during B.E.R.U.!

## Amateur Radio's own Marshall Plan

It was all because Bill Erich, W6AL, of Lodi, California, had the flu and decided to have it in comfort beside the rig. In Bromley, Kent, sat Brian Herbert, G2WI, convalescing from illness, also beside the rig. What more natural than these two should contact each other on ten metre 'phone? Just another QSO? Well, yes, perhaps so, but invalids tend to gossip! It was the eve of Thanksgiving in the States. "Here's one who won't be bothered with indigestion this Thanksgiving," wheezed Bill with a rueful chuckle. "I think that goes for a great many people over here, but for a different reason," was the reply.

So these two got to talking about conditions in Europe, and Britain in particular. W6AL wanted the real "gen" and G2WI gave it to him.

"Send me the names of two really deserving hard hit families," said Bill, "and I'll send them a Christmas parcel each just to celebrate this excellent QSO."

The conversation ended and the Air Mail took over. Some real American bustle added to a lot of very hard work and organisation brought forth the Amateur Radio International Friendship plan.

Just from those few words spoken over the air, the germ of an idea, has come help and comfort to many people in real distress.

W6AL talked to his friends and neighbours, he talked to his Lodge and the Rotarians, he talked to Amateurs all over America. Willing friends were roped in, local stores gave a 10 per cent. reduction on costs, the local postmaster undertook the job of packing and mailing, local press and broadcast stations have taken up the story with the result that more than 400 families, badly hit by the war or other circumstances, have received one or more parcels from California and other parts of America. On this side G2WI called in G2MI and W6AL sold the idea to other G's, who in turn contacted the WVS, local doctors and clergy, the police and many other organisations for properly authenticated cases of hardship.

The thing has now grown so big that the American end is crying out for more and more names. There are more donors than recipients so we need your help. Will interested members please get cracking? Contact your own local people and send the names along. Genuine cases of poverty, hardship, illness, old age, old folk living alone, etc., these are what are wanted. As much information as possible about each case. Fraternal connections, religious attachments, etc. It often happens that a Catholic family in America want to help a Catholic family here. People choose someone of the same name as themselves, and so on.

You can write to G2WI, B. Herbert, 18 Leamington Close, Bromley, Kent, W6AL, W. Erich, Route 2, Box 501, Lodi, California, or to G2MI.

Finally, please bear in mind W6AL's own words: "This is not a charity. We Americans regard it as something on account for services rendered, given in the true spirit of Amateur Radio." It's up to you fellows to keep this truly splendid plan running. G2MI.

## WA.VE. Certificates.

Mr. H. A. M. Whyte, VE3BWY, informs us that the Canadian Amateur Radio Operators' Association has issued a new proficiency certificate, known as WA.VE. which will be awarded to those who submit 18 cards confirming contacts with the nine Canadian provinces. Each contact with each Province must be on a separate band. Yukon Territories and North-West Territories are grouped with British Columbia.

It is not clear from the above whether claimants are required to work each Province twice but on separate bands.

\*29 Kechill Gardens, Hayes, Bromley, Kent.



# AROUND THE VHF's

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

WE should like to express our appreciation of the increase in the number of reports which are being sent by readers, but we can always do with more, so please send your news, not later than May 22 for inclusion in the June issue.

## 50 Mc/s.

We are indebted to Mr. Denis Heightman, G6DH, for information concerning recent openings of this band. During the latter part of February, and almost daily in March, contacts were of frequent occurrence between most South American countries, and also from them to XE, W4 and W5. CE1AH, PY2QK, LU9AM and CX1AQ had a 4-way QSO on March 6, while LU9EV and KH6PP effected a two-way on three consecutive days—March 12, 13 and 14. It was not until the end of the month that propagation conditions favoured the Eastern Hemisphere, and then only for a very short period when G5BY and Z8IT worked one another for three-quarters of an hour from 13.00 G.M.T. on March 27. MD5KW in the Canal Zone and WIPPH/MM in Alexandria both reported the MUF to be above 50 Mc/s. on that day. According to PAOUN, PA1KWK of Kootwijk transmits daily from 08.00 until 16.00 G.M.T. on 52.59 Mc/s. with 800 watts to a 4-element beam, and welcomes reports. Transmissions are directed north at the hour and successively east, south and west at 15, 30 and 45 minutes past the hour. 6DH has heard this station at 569, but only when the transmitting aerial was pointing west.

## 58.5 Mc/s.

G3WC of Wimborne (see February article) is now getting out much better and hearing more stations than he did. April 15 was the outstanding day last month according to 6XM of Farnborough, Hants, and 2ADZ of Oswestry. The former raised 4LU, 5GX and 608 with an average report of 88, 'phone and C.W., with 4LU roaring in at 20 dB over 89—pretty good for nearly 150 miles—and 5MQ in Liverpool at 88 on the previous day. 2ADZ worked 2ADR, 2XC, 3BLP, 3COJ, 5LO and 6XM, all between 100 and 170 miles. Previously conditions had been so poor that 13 days passed without a QSO, and that's a lot for ADZ! He mentions that local stations 2APW, 2OI, 3BY, 3DA and 4LU are active, all at the L.F. end except 4LU who is on 59 Mc/s., and bemoans the lack of activity from southern stations in the early evening. He is testing a modified R.1481, but still prefers his 0-v-1 both for 'phone and C.W. We welcome 2ADR of York who runs 20 watts on 58.928 Mc/s. to a dipole 60 feet high and radiating NE/SW. He has heard southern and Welsh stations, and hopes to do better when his 4-element beam is in use. Normal times of operation are from 19.00 G.M.T. nightly and most of the weekends. He is looking for contacts over 100 miles, and offers co-operation *ad lib* to any southern or Scottish stations. Here is some good news for those wanting Suffolk for their counties-worked list. 5AM is active in Ipswich with 25 watts to an OQ15/600 on 59 Mc/s. feeding an extended east and west dipole 40 feet high on high ground. Operating times are Saturday and Sunday mornings and most evenings from 20.00 to 21.30 G.M.T. 2HLF (Heathfield), has been carrying out comparative tests with a 66 foot long wire and a dipole and reflector beam, and finds that they both produce good results on their day. 2BMZ and 3AUS in Torquay have been worked four times each and 5ZT in Plymouth once during the month, and he has been heard by 3APY. So far 60 different stations have been heard and 37 contacted.

Two other newcomers are 5KJ of St. John's Wood, N.W.8, using 25 watts to a German RL12P50 driven by a Franklin V.F.O. on the 1.7 band, and 8AL (Chingford). The latter took full advantage of the good conditions on the 15th, working 2RI, 4LU, 5BD, 6MN/A and 608. 3AEX of Bromley has been heard using NBFM on the low-frequency end of the band, and can be quite well received provided the I.F. amplifier is fairly sharply tuned.

## 144 and 420 Mc/s.

The item of particular interest mentioned last month will be found elsewhere in this issue, and takes the form of a simple absorption frequency meter to bridge the gap between the 60 and 144 Mc/s. bands, with which is associated the kind offer by 2NH to provide a 3-point calibration for any replicas which members may construct. We hope that all two-metre workers who are without such a device will take advantage of this offer, as it is of the utmost importance when setting up a transmitter to have on hand a means of ascertaining whether the stages are tuned to the correct harmonic.

We acknowledge with thanks a letter from Mr. D. N. Corfield, G5CD, in answer to our enquiry regarding the advantages to be gained from the employment of linear circuits in place of the normal coil and condenser combination. He mentions an article by Walter C. Hollis of the *Sperry Gyroscope Co.* which appeared in the May, 1947, issue of *Electronics*, entitled "The Design of Transmission Line Tank Circuits" which gave all the necessary design data for linear circuits for transmitters and receivers for both 144 and 420 Mc/s. A well-designed line will give a dynamic resistance of the order of 200,000 ohms at either of these frequencies, which is, of course, vastly greater than can be realised using coils. There is little advantage to be gained from the use of lines in the grid circuit of a transmitter owing to the very low input impedance of valves, including those of the 829 and 832 class, at frequencies above 100 Mc/s., and a series-tuned coil is recommended at this point.

G5PY, Clapham Park, London, is ready, on the receiving side for both these bands, having acquired an R.1359 which covers the range 130 to 520 Mc/s. This receiver employs a type E.1231 oscillator valve and a crystal detector, followed by a wide band I.F. amplifier working on 13.5 Mc/s. It will be more familiar to some readers under the name ABR3.

## 37,500 Mc/s.

No, this is not a new allocation for the amateur service, but visitors to the recent exhibition of the Physical Society in London were able to see a transmitter and receiver actually operating on this frequency: the 8 mm. "Q" band.

The object of the demonstration was to show that in all practical respects radio frequency radiations behave in the same way as light, and experiments taken from first year optics were carried out, which showed this in a most convincing manner. Metal lenses and paraffin wax prisms took the place of their glass counterparts.

The transmitter consisted of a magnetron oscillator supplied with a pulse waveform from a high-voltage pack via a conventional modulator. The average input to the magnetron was given as 10 watts, with a peak pulse power of 15 kW., and this energy was taken by a system of rectangular wave-guides of very small dimensions to horn radiators of approximately 2 in. by 1 in. aperture. Switches were incorporated in the guides for changing from one "aerial" to another.

The receiver was hardly what could be termed a communications model, relying as it did upon a visual indication of the received signals and was even simpler in construction than the transmitter. Special neon bulbs were employed with flat ends, behind which was a sheet of metal pierced by a large number of horizontal slits, evenly spaced in columns. These slits formed a resonant slot aerial array, which, when the radiation fell upon it, showed the characteristic neon glow across the centre of each slot. With such a simple arrangement the sensitivity was, of course, poor by normal standards, range being measured in feet rather than in yards, but the demonstration showed in a convincing manner the possibility of producing a useful amount of power at such extremely high frequencies.

## Business Radio

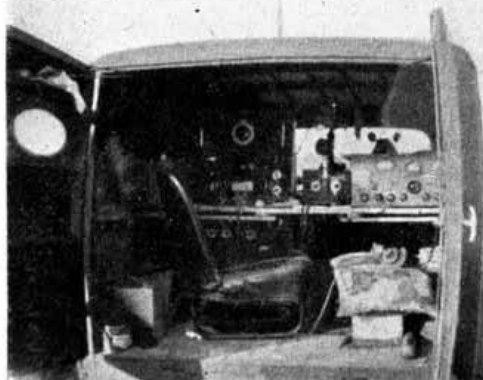
We learn from *Wireless World* that fifteen frequencies between 67 and 87 Mc/s. have been made available for the use of the Press in the new G.P.O. "Business Radio" scheme. The allocations have been made by the Joint Telecommunications Committee of the Newspaper Society and the Newspaper Proprietors' Association. The allocations are to cover the requirements of about 80 provincial papers, eight National dailies and two newscasters.

In addition to the press allocations the G.P.O. is now prepared to issue licences to public utility vehicle and car-hire services, doctors, and other professional men.

Amateurs may gather much new and interesting propagation data by listening to Business Radio transmissions.

## Two-Metre Band Now Open to VK Amateurs

It is understood that the band 144-148 Mc/s., in place of the earlier allocation 166-170 Mc/s., was made available to Australian amateurs as from May 1 last.



Equipment used at G2AJ/P located on Dunstable Downs during the recent R.S.G.B. 5 metre Contest.

# 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

## March 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, March 10, 1948, at 6 p.m.*

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

**Apologies.**—Apologies for absence were submitted on behalf of Messrs. Charman and Watts.

**Amateur Radio Exhibition.**

Resolved to proceed with arrangements for holding an Amateur Radio Exhibition in London during the autumn of 1948.

**Old Timers' Reunion.**

It was reported that the *Short-Wave Magazine* had agreed to co-operate with the Society in arranging a Reunion of Radio Amateurs who have held a radiating licence for the past 20 years.

**Membership.**

Resolved:

- To elect 187 Corporate Members, 36 Associates, and 13 Junior Associates.
- To grant Corporate Membership to 10 Associates and Junior Associates who had applied for transfer.
- To grant Life Membership to Sgt. R. H. Farr, G8IJ, and L. Parfitt, G6PF.

**Applications for Affiliation.**

Resolved:

- To grant affiliation to the Amateur Radio Society, H.M.S. Ganges, and the Ashton-under-Lyne and District Amateur Radio Society.
- To grant Honorary Affiliation to the Northern Rhodesia Amateur Radio Society.

**E.D.R. Invitation.**

Resolved to thank the Danish Society (E.D.R.) for offering to organise a meeting of Representatives of European I.A.R.U. Societies in Copenhagen to discuss band planning and to explain that as insufficient replies have yet been received to the Society's recent circular dealing with this subject no decision can at present be made by the Council.

**Band Planning.**

Matters relating to the R.S.G.B. and A.R.R.L. band plans were discussed.

**South African Radio League.**

It was reported that members of the League had contributed towards the cost of providing 1,000 food parcels for Society members and that the parcels had been despatched to Headquarters for distribution. It was agreed to endeavour to make arrangements for the parcels to be despatched by a firm of carriers.

Resolved to thank the S.A.R.L. for their generosity.

**Finance.**

The Cash Account for the month ended February 29, 1948, presented by the Hon. Treasurer was accepted and adopted.

**G.P.O. Liaison Committee.**

Resolved:

- To strengthen the G.P.O. Liaison Committee by appointing three additional members to serve thereon.
- To appoint Messrs. Evans, Lewer and Scarr to serve with Messrs. Desmond, Watts and Clarricoats as members of the G.P.O. Liaison Committee.

**Log Entries.**

It was reported that the G.P.O. Liaison Committee had reached agreement with the G.P.O. on a number of matters of detail relating to log book entries.

**Station Inspections.**

The G.P.O. have given an undertaking that, in general, routine inspections will only take place in the presence of the licensee. Occasionally it may be necessary to visit a station in the absence of the licensee, but in no case will equipment be operated or private papers, other than the log, inspected.

The G.P.O. are at present revising their instructions to inspectors with a view to achieving a greater degree of uniformity.

**Service Exemptions.**

The G.P.O. in consultation with the British Joint Communications Board, have recently revised the list of Service exemptions.

**Portable Stations.**

The G.P.O. have confirmed that the operator of a portable station must take steps to ensure that the transmitter frequency is checked in accordance with the conditions of the licence.

**Commercial Stations.**

The attention of the G.P.O. has again been drawn to the presence of commercial stations in the exclusive amateur bands. The G.P.O. regret that official protests made to the U.S.S.R. regarding the operation of Russian commercial stations in the amateur bands have been ignored.

**V.H.F. and U.H.F. Bands.**

It was reported that a discussion had taken place with the Engineer-in-Chief of the G.P.O. regarding the early release of new V.H.F. and U.H.F. bands and that certain proposals put forward by the Society are being considered by the G.P.O. and the B.J.C.B.

**Maritime Mobile Operation.**

The Society has suggested to the G.P.O. that certain qualified persons who are employed in the Merchant Service should be permitted to operate in the 28 Mc/s. amateur band aboard ship. The G.P.O. have raised administrative difficulties but have agreed to give further consideration to the suggestion.

**I.S.M. Bands.**

The Society has requested the G.P.O. to consider authorising amateurs to operate in certain of the bands assigned to the users of industrial, scientific and medical equipment.

## London Meeting

Mr. W. A. Scarr, M.A., G2WS (Executive Vice-President), presided at the meeting held on April 9, 1948, at the Institution of Electrical Engineers, London, when Mr. Martin Ryle, G3CY, of the Cavendish Laboratory, Cambridge, lectured on "Radio Signals from the Sun."

A clear indication of the widespread interest in the problem of solar noise was seen during the subsequent discussion, to which upwards of 20 members contributed. A vote of thanks to the lecturer was proposed by Mr. J. Newnham, B.Sc., G6NZ, of Portsmouth.

Mr. Ryle's paper will appear in the Autumn issue of the *Proceedings of the R.S.G.B.*

## Regional Representation

The following are additions to the list of Town Representatives published as a Supplement to the February issue.

Region 5.

*Lowestoft* .. N. J. Brundle, G2CPL, 55 The Avenue.

Region 7.—LONDON EAST.

*Grays* .. C. Mundy, BR515,584, 68 Chestnut Avenue.

*Walthamstow* L. Sutton, G3COF, 8 Cogan Avenue, E.17.

Region 7.—LONDON SOUTH.

*Bromley* and B. A. M. Herbert, G2WI, 18 Leamington Close,

*Beckenham* Bromley.

Region 12.

*Aberdeen* .. L. Hardie, GM2FHH, 530 Holburn Street.

## OLD TIMERS

Have you reserved a place at the  
**SECOND RE-UNION DINNER**  
to be held in the Autumn? If  
not send a post-card without  
delay to Headquarters

# HIC ET UBIQUE

## "Bath Can Make It" Exhibition

Bath members are co-operating with the local authority in an Exhibition to be held in that City from June 3rd-12th. Society publications will be on sale and an amateur station will be operated under the call-sign G8JQ/A. Members resident in or near Bath and who are desirous of co-operating in this project are asked to write to Mr. J. F. S. Carpenter, G8JQ, Towerseate, Mount Beacon.

## EASTERN REGIONAL — MEETING — SUNDAY, JUNE 27th, 1948 Cannon's Restaurant, Chelmsford

(Facing L.N.E.R. Station)

Assemble ...	12.30 p.m.
Lunch ...	1 p.m.
Business Meeting ...	2.30 p.m.
Tea ...	4.30 p.m.

Tickets (price 10/-) from L. J. Fuller, G6LB, 85 High Street, Chelmsford; S. J. Granfield, G5BQ, 47 Warren Road, Cambridge; or G/Capt. H.W. Evans, G6CH, Elm Cott., Underhill Road, South Benfleet, not later than June 19th. No admission at the door. Ladies welcomed but circumstances may prevent organisation of special afternoon programme for them.

## Brentwood and District

Should sufficient support be forthcoming, it is proposed to organise a local society in the Brentwood area. Members interested should communicate with the Town Representative, Mr. J. F. Moseley, G2C1W, 23 Tower Hill, Brentwood, Essex.

## Bristol Social Gathering

Although the support given to the first dance organised by the Bristol Social Committee and held on April 2 at the Star Inn, Rhodyate, was less than anticipated, the 31 members and their wives who attended were far from disappointed and judging by reports now circulating future events of a similar nature promise to be "standing room only."

## Doncaster and District Amateur Radio Society

The Society has started a new session with the following officers: *Chairman*, L. Ketley; *Vice-Chairman*, S. Hobson (G6SH); *Secretary*, H. Flintham (BR5193); *Treasurer*, J. Lawson. Committee members are L. Bennett (G2BOJ), L. Thompson (G2CBS) and F. Robinson. The Society transmitter (G3CBM) is active on 3.5 Mc/s. and will shortly commence tests on 60 Mc/s. Messrs. Bennett and Ketley are giving a series of lectures and demonstrations. Members of R.S.G.B. are assured of a hearty welcome at meetings which are now held twice weekly. (See Forthcoming Events.)

## Gerrards Cross-Beaconsfield

Members resident in the Gerrards Cross-Beaconsfield area are invited to communicate with G3BQF, 8 Burkes Parade, Beaconsfield, with a view to attending a meeting at "The Greyhound," Beaconsfield.

## Leek and District

Formation of the Leek and District Radio Society is announced. Information can be obtained from the Hon. Secretary, Mr. W. L. Woodcroft, 35 The Crescent, Leek.

## Southend and District Radio Society

More than 80 members and their friends attended the annual "Hamfest" held at Westcliff-on-Sea on April 10. As M.C., Mr. Jack Wakeman, G4FN, had no difficulty in persuading everyone present to join in the dances and competitions—especially the ever-popular "swindle" for which many prizes had been generously donated. One of the highlights of the evening was a

display of dancing by a group of young ladies under the direction of Mrs. Barbara Wakeman. Messrs. G. Collop, G3AXN, and S. T. Smith, G3BSI, kept the record turn-tables spinning merrily. Towards the close of this successful evening, short speeches were made by Mr. B. C. Leefe, G5XI (Chairman), and Mr. W. J. B. Fitch (Vice-President).

## Stoke-on-Trent Radio Society

Visits to neighbouring clubs are proving a successful addition to the normal programme of lectures, demonstrations and quiz nights. A pool of lecturers has been formed and many helpful suggestions received from members as the result of a special circular. Plans for a Staffordshire "get-together" have been temporarily abandoned due to lack of support, although activity in the area continues to increase.

## Stourbridge and District Amateur Radio Society

At the April meeting a discussion took place on the merits and demerits of V.F.O.'s and Quartz Crystals for controlling the frequency of transmitters. The debate was lively and controversial and many interesting points were raised.

The secretary is W. A. Higgins, G8GF, 35 John Street, Brierley Hill, Staffs, who will be glad to send details to prospective members. Meetings take place on the first Tuesday in each month.

## Sunderland Radio Society

The excellent progress made by the Sunderland Radio Society during the past year was reviewed by the retiring Chairman, Mr. T. Orr (G3IV), at the Second Annual General Meeting. Membership has increased to more than 50 and the treasurer was able to report a satisfactory financial position. Officers appointed for the forthcoming year included: *Chairman*, T. Gerrard (G6CV); *Treasurer*, H. Booth (G3BDX); *Secretary*, J. Rose (BR55164). Meetings are held every Wednesday and Friday at Prospect House, Prospect Row, Sunderland.

## Surrey Radio Contact Club

The club held its Seventh Annual General Meeting on April 13 last at the Blacksmiths Arms, South End, Croydon, when the following members were elected to serve on the committee for the ensuing year: *President*, H. Bevan-Swift (G2TI); *Chairman*, C. W. Crook (G5BT); *Vice-Chairman*, E. Powell (G2BQR); *Secretary*, L. C. B. Blanchard (BR53003); *Treasurer*, S. E. Jones (G2FWA); *Publicity*, S. E. Morley (BR52780); and Messrs. N. Guy (G2DN), R. M. Herbert (G2KU) and K. W. Drummond.

Meetings are held on the second Tuesday in each month at the Blacksmiths Arms, 1 South End, Croydon, Surrey, at 7.30 p.m. Membership now exceeds 100, the majority of whom are R.S.G.B. members. The club has seven lady members.

## Thames Valley Society

Meetings of the Thames Valley Amateur Radio Transmitters Society held on the first Wednesday of each month at the Carnarvon Castle Hotel, Hampton Court, continue to receive good support and a weekly 1.8 Mc/s. net has been scheduled for Monday evenings at 22.30 B.S.T. A comprehensive programme of events for the coming year includes:—

- July 7. Lecture, *Mullard Educational Series*, No. 2.
- Aug. 4. Informal meeting.
- Sept. 8. Lecture, "V.H.F. Work," by Mr. A. Mears, G8SM.
- Oct. 6. Technical Brains Trust.
- Nov. 3. Lecture, *Mullard Educational Series*, No. 3.
- Jan. 5. Annual General Meeting.

It is also planned to arrange a visit to the coast during the late June and to hold a Club Field Day in August. The Annual Dinner and Social Meeting will take place in December. The Hon. Secretary is Mr. D. R. Sparring, G3JG, 99A High Street, Esher.

## West Middlesex Amateur Radio Club

In order to encourage practical work of all types, four groups have been formed within the Club, specialising in transmitting, receiving, recording and quality reproduction, and U.H.F. techniques. Plans are also well in hand for the construction and operation of a club transmitter. Newcomers interested in any aspect of radio and electronics are cordially invited to attend the regular meetings held on the second and fourth Wednesdays of each month at the Labour Club Rooms, Uxbridge Road, Southall, Middlesex. Details may be obtained from the Hon. Secretary, Mr. C. Alabaster, 34 Lothian Avenue, Hayes, Middlesex.

## 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.

## NORTH WALES REGIONAL — MEETING — SUNDAY, JUNE 20th, 1948

### Morville Hotel, East Parade, RHYL

Assemble ...	12.30 p.m.
Lunch ...	1 p.m.
Business Meeting ...	2 p.m.
High Tea ...	4.30 p.m.
Informal discussions and Station visits	5.30 p.m.

Tickets (price 10/-) from E. G. Foulkes, Crown Hotel, Rhyll, not later than June 12th, 1948.



## Television Society—Midland and Leeds Centres Formed

The Television Society (founded in 1927) have formed a Midland Centre with Headquarters in Birmingham. The inaugural meeting was held in April at the University and further meetings will take place on the first Wednesday in the month at 7 p.m. All interested are invited to write to the Lecturer Secretary, Dr. W. Sumner, F.T.S., M.Inst.E., 169 Maryvale Road, Bournville, Birmingham, 30, or to the Hon. Secretary, Mr. R. Baxendale, 50 Alcester Road, Birmingham, 13. A North-West Centre has been formed in Leeds with Mr. H. J. Isaacs, Bramfield, The Birches, Bramhope, as Secretary.

## Food Parcels from Australia

Mr. R. Campbell, VK4RC, writing on behalf of the "Food for British Hams Committee" of the Wireless Institute of Australia, Queensland Division, advises us that food parcels have been sent to the following British amateurs: G2YV, 3BFB, 3SU, 4HJ, 4JB, 5DF, 5VF, 6LC, 6RC, 6XT, 8QX, 8TH and GM6MD. A further indication of the kindness of our Australian friends and one which is warmly appreciated.

## Wireless Officers for East Africa

Vacancies exist for experienced wireless operators and technicians for Government Service at the main air terminals in the East African Territories. A professional or Service background is required but amateur operating experience will be taken into consideration. The basic salary is £360-£540, plus cost-of-living bonus and housing allowance. A free passage, outfit allowance and a pension fund are offered. Age limits are 25 to 35. Recruitment will be as Wireless Officer Grade 2 with possibility of promotion to Grade 1. Applications or enquiries should be sent to the Crown Agents, 4 Millbank, London, S.W.1, for the attention of Mr. N. Steven Hubbard (VQ4NSH).

## Radio Amateurs' Examination 1947

Mr. Westcott has drawn attention to a slight error which occurred when we published the questions set for the May, 1947, Examination (page 124, December issue). The first question read: "An alternating voltage of 10 volts at a frequency of 100 Mc/s. . . ." It should have read "An alternating voltage of 10 volts at a frequency of  $\frac{100}{2\pi}$  Mc/s."

## Unlicensed Operation

At Leeds last month 36 year old newspaper van driver Thomas Ramsden was fined 5/- for operating a transmitting station without a licence. His transmitter (estimated to have cost £70) was forfeited. It was the first prosecution of its kind in Leeds.

## Members in Palestine

The G.P.O. is now declining all surface mail addressed to Palestine. Last month a number of copies of the BULLETIN addressed to members in that country were returned to H.Q.s bearing an imprint "Service suspended, air-mail service only." We can only suggest that home members who are in contact with friends in Palestine should acquaint them of the new regulations. In the meantime the Society has suspended the despatch of publications to members in that troubled land. (The air-mail service has now been suspended.—Ed.)

## Do you want a Holiday?

The Rev. E. Geddes, G3QF, of Rackheath Rectory, Norwich, would be glad to hear from any member with a sound technical knowledge of aerial systems, willing to give him some assistance in erecting an aerial at his new home. The location is complicated by a large span of corrugated iron adjacent to the "shack" and the systems tried to date have not proved very satisfactory. In exchange Mr. Geddes would be glad to offer a free holiday for a week. Rackheath Rectory is only two miles from Wroxham and the Broads.

## Visit to Holland

Mr. H. Andrews, G5DV, 175 Moorland Road, Weston-super-Mare, is organising a visit to Holland for Somerset members of the Society, between July 24 and August 6. The inclusive charge is £15 10s. 0d. which includes return fare from Liverpool Street, London, via Harwich and Hook of Holland, and 13 nights at a first class hotel (bed and breakfast) in Amsterdam.

The party will travel together in order to obtain the benefit of cheaper rates.

There are a few vacancies for the trip and any member interested is requested to communicate with Mr. Andrews immediately.

## Congrats

To Mr. and Mrs. Norman E. Holden (GM4MF) on the birth of a son.

## Correction

Due to a printer's error Mr. Oliver's call, G3NT, was referred to in the Silent Key announcement published on page 165 of the February issue. The call sign held by the late Mr. Frank Jackson was G3NJ.

## Can You Help?

Mr. D. Blackhurst, 21 Brookside Road, Brooklands, Cheshire, needs information on the TCS-10 receiver and the TCS-5 transmitter, both manufactured by the Collins Radio Corp., U.S.A.

Mr. P. G. Wilson, BR51556, 7 Hanover Street, Swansea, Glam., requires information on Cathode Ray Tube, type VCR 517 A.

Mr. A. W. Green, BR55345, 52 Beresford Avenue, Skegness, Lincs., seeks data on a Canadian Cathode Ray Tube 5GPI/5BPI/XXX.

Mr. W. Grant, G2AGD, 35 Cotswold Road, Westcliff-on-Sea, Essex, would appreciate information on the Admiralty Responder Unit, type W 4790 B, design A, 1944.

Mr. I. Lee-Duncan, BR516932, Royal Bath Hotel, Bournemouth, Hants, is anxious to obtain information on amateur use of the Air Ministry R.F. Unit, type 27, and the V.H.K. Test-set type 72.

Mr. R. G. Hayward, BR514911, 70 Meadvale Road, East Croydon, Surrey, requires information on the Admiralty Radar Indicator, type W4889.

Mr. T. G. Ward, G2FKO, "Tormeen," Marytavy, Tavistock, Devon, requires the circuit or instruction manual for the Admiralty Receiver P.38, or the Service number (if any) of a similar R.A.F. type.

Mr. R. W. Stewart, G3LS, 4 Church Street, Seaton Carew, West Hartlepool, Co. Durham, wishes to use an ex-R.A.F. Unit, type 24, as a 28 Mc/s. converter with an R1155 receiver and seeks information on the subject.

Mr. L. C. Gowers, BR516596, "Greengates," Oxted Green, Milford, Godalming, Surrey, would appreciate suggestions for fitting an "S" meter, crystal filter and push-pull output stage to the R107.

Mr. R. H. Bettinson, BR512269, 87 Morris Avenue, Coventry, requires circuits and details of the R.A.F. receiver, type 1392 A, and American BC 342 N. He can supply information on the R.A.F. Wavemeter W1649.

Mr. W. Jamieson, BR512730, 65 Tweedsmuir Road, Glasgow, S.W.2, seeks circuit and details of the 7BL trans-receiver, in exchange he can offer circuit diagrams of the Hallcrafters S27 or BC348.

Mr. J. J. Platt, G2VO, Purlea, Ferncliffe Drive, Utley, Kesteven, Yorkshire, wants to know the I.F. of the Type 52 Canadian Marconi Receiver.

## Around the Trade

As from last month Mullard Wireless Service Co., Ltd., became known as Mullard Electronic Products, Ltd. This change of name has been made necessary by the expansion of the Company's activities from that of the purely "wireless" field into other branches of electronics—particularly those with applications in industry, science and communications. The Company started life in 1920 and the original Mullard "Ora" valve is still remembered by many amateurs. Some of the more recent Mullard developments in electron tubes are the micro-second flash tube, specially designed silica power valves for R.F. heating and ultrasonics, miniature all-glass techniques, U.H.F., and the new sub-miniatures developed for the "Medresco" hearing aid.

Messrs. Coulophone Radio, 58 Derby Street, Ormskirk, Lancashire, have just issued a 24 page catalogue covering a wide range of short wave components, valves and test equipment. A stamped addressed envelope should accompany all enquiries.

The conversion of surplus equipment for amateur use is now undertaken by the Palace Electrical Co., Ltd., 32 Chiltern Street, London, W.1. Recent examples include the addition of plate modulation to a Canadian C43 transmitter modified for 150 watts input on the 3-5/28 Mc/s. bands; power pack installation in American BC348 receivers; and voltage stabilisation in the Admiralty B28 (CR100) receiver which can also be fitted with a noise silencer and "S" meter. They also repair and re-align all types of communication equipment.

The Automatic Coil Winder and Electrical Equipment Co., Ltd., Winder House, Douglas Street, London, S.W.1, have recently published a new catalogue dealing with their "Macadie" and "Douglas" coil winding machines and accessories. The Company offers to give assistance to members in solving their coil-winding problems.

The Woden Transformer Co., Ltd., Moxley Road, Bilston, Staffs, have considerably extended their range of transformers and chokes suitable for amateur transmitter power units. In particular, the new auto-transformers should prove of great value to owners of 110 volt equipment. Power ratings vary between 60 and 1,000 watts.

The January BULLETIN drew attention to the use of Victor Rowe lubricants for rotating beam aerials. These products can now be obtained in 1 lb. tins from Webb's Radio, 14 Soho Street, London, W.1.

## Stray

Mr. J. R. B. Hibbert, G3BOP, 351 Leasowe Road, Leasowe, Wirral, who teaches Physics at a secondary grammar school wonders whether others, similarly occupied, would care to arrange schedules on 3-5 or 7 Mc/s. telephony for the interchange of ideas.



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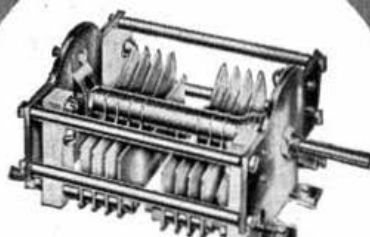


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**"ADVANCE"** Signal Generator, 100 kc/s.-60 Mc/s., and accessories; as new in maker's packing; guaranteed perfect condition. Best offer.—Mr. K. BUNDY, 5 Robson Terrace, Shincliffe Village, Nr. Durham City. [917]

**ALL** guaranteed new, unused, 3 in. CRT's 20s.; 832's 20s.; 1625's 10s.; used but 100 per cent. EF50's 3s.; 955's 4s.; 955's 5s. 6d.; 6AJ5's 7s. 6d.; EF39's 5s.; 211's 10s.; 7F7's 5s.; 7N7's 5s.; RK72's 6s.; 6SN7's 5s. 6d.; 6SL7's 5s. 6d.; RL7's 3s.; RL16's 3s.; EF36's 5s.; 9002's 6s.; 9003's 6s.; 9004's 5s.—Box 9, PARRS, 121 Kingsway, London, W.C.2. [9]

**AMERICAN** Communication Receiver BC348L. 2R.F. 3 I.F. crystal filter. AE Matching. Enclosed power unit. Highest offer over £11.—HAYES (BR89696), 25, Tinwell Road, Stamford, Lincs. [14]

**AMERICAN** LD8 Super Valves, 20s. Cossor-Osram, 110 volt neon stabilisers, 4-pin type, 4s. 6d. Geared 6 v. 5 amp. charging generators (or dynamos) with auto-cut-out, handle, case, instructions, 45s., carriage paid. American Acorn valves, 954, 955, 957, 3 for 20s.—JACK PORTER LTD. (Radio), College Street, Worcester. [949]

**ARMY** 12 set Transmitter, V.F.O. or C.C., 50 watts C.W., 25 watts phone, all bands 160-20 metres, complete with all valves (mostly 807's), key, mike, etc., £25. National NC-44 RX, A.C./D.C., 30 Mc/s.-550 kc/s., crystal, bandspread, with speaker, £20.—INGRAM, 46 Upper Richmond Road, S.W.14. [923]

**AR77** R.C.A. Receiver. Good condition; nearest £38 secures; also valves, power supplies, M/C speakers, test meter, Res. and Cap. bridge, etc. S.A.E. for details. Would consider exchange.—Box 16, PARRS, 121 Kingsway, London, W.C.2. [16]

**BARGAIN**—BC348 brand new with 200/250V A.C. power pack. Two R.F. and three I.F. stages. Nearest offer to £30. secures. Also valves 12A6, 12J5, 12CS, 12SG7, 12SR7, 12AH7GT, 12K8Y, 6G6, 6SH7, 6SS7, at 7s. 6d. each. Box 10, PARRS, 121 Kingsway, London, W.C.2. [121]

**B.C. 342**, re-aligned, overhauled, matched speaker, power transformer, £24 or offers.—GSDT, Redcroft, Eldon Avenue, Cheltenham. [912]

**BRAND** new Eddystone 358X, 90 kc/s. to 31 Mc/s., all coils and power supply. Any trial. £30.—GZDDG, 152 Stoke Poges Lane, Slough, Bucks. [935]

**BC-312N**, brand new with matched speaker, manual, £18. Spare set new BC312N valves in special case, £4 10s. Set new BC-221 valves, £2. BC-221 internal modulation model manual, 7s. 6d. T-17 microphone, 10s. J37 Morse key, 10s. Brand new BC-614E speech amplifier, £7. Automatic Morse sender with tape cutter and tape, £5.—Box 933, PARRS, 121 Kingsway, London, W.C.2. [933]

**BOOKS**—Radio Engineering by Terman; S.W. Wireless Communication by Ladner and Stoner; Television by Reynier; Experimental Radio by Rapson; Radio Laboratory Handbook by Scroggie; Admiralty Handbook, Vols. I and II, April, 1947, Handbook and Antenna Handbook. Excellent condition. £5 the lot.—H. J. SPANSWICK, 98 Dallinger Road, Lee, S.E.12. [930]

**BRIDGE** Megger, as new, £8. BC348, converted, unscratched, £22. Unused valves: VP2, SP2, TH2, 6K7G, 6V6G, 5Z4G, 6X5, 7/6.—WILLETTTS, Bungalow, Bishop Sutton, near Bristol. [922]

**B2** Transmitting Coils. One set only, exchange for useful spare parts. Please write first—Box 1, PARRS, 121 Kingsway, London, W.C.2. [1]

**B2 MINOR** wanted.—Will swap SCR.522 V.H.F. Transmitter, Receiver, complete, just job for 58 of 144 Mc/s. 15 watt phone, 10 tube Receiver. Service books.—Write only: S. GABRIEL, 10 Abbotsford Place, Glasgow, C.5. [939]

**COMPLETE** B2 Transmitter/Receiver with power pack, all accessories, two crystals, perfect, £14. Plug-in crystals 3526, 7001, 7007, 7022 kc/s., 25s. each. New mains transformer 10v. 8 amps, 25s.—New R.C.A. 813 with holder, £3.—G8UA, 406 Higher Brunshaw, Burnley, Lancs. [913]

**COMMUNICATIONS** Receiver Trophy 6 (modified), good condition, built-in speaker and pair Ericsson phones, £15, or best offer. Wanted: B2 power pack and coils. Consider complete B2 part exchange for Trophy.—G4AH, 188 Westdale Lane, Gedling, Nottingham. [932]

**CRYSTALS** 3580 7150 kc/s. in holders 15s. each. 1875 kc/s. 10s. each, all guaranteed.—G2YS, 118 Moor Street, Coventry. [923]

**CR100**, spare valves and handbook for sale, £30 or near offer. Owner going QRT.—McCLUNE, 19 Warwick Gardens, Kensington, W.14. [23]

**DA100's** and PX 25 Marconi valves. 1 pair DA100 valves also PX25, little used, and DA100 used. Best offers or would sell separately.—Apply BR89022, 65 Stanhope Street, Hereford. [15]

**EDDYSTONE** 2-valve preselector and 3-valve 5/10 converter, 23 coils, valves and power pack for same. Offers.—10 Moor Park Road, Northwood, Middlesex. [955]

**EXCHANGE**—Hallcrafters Sky Chief S.14 Pullin Universal Test Meter, B.T.H. Universal motor, 1-30 h.p., PX25, new. Wanted B.C342-S modified or unmodified.—SPENCER, 45 Sipson Way, West Drayton, Middlesex. [960]

**FIELD** Day Rotary Converter 24V 1.74A/480V.04A. Two head sets with throat microphones. 1 key 2X ATP2 2X ATP4 2XARP37 (Dry Cell type) all new. 3X6V vibrators (1 Mallory) 1 x 12V Mallory.—Offers to G6WB, Lyneal Lodge, Ellesmere, Salop. [7]

**FOR SALE**.—Complete 10 watt plus station, 600-0-600, PX25AS, speech, 2-3 band, stored since 1939, view Leeds-Bradford.—Box 959, PARRS, 121 Kingsway, London, W.C.2. [959]

**FOR SALE**.—R.107 8 valve communication receiver. Perfect condition. Offers over £15.—BRS15748, 38 Sandymount Drive, Wallasey, Cheshire. [2]

**FOR SALE**.—Howard 437A Communications Receiver (modified), needs re-aligning, £10. 9ft. rack, £1 10s. T1154N, with valves, good condition, £5.—Box 953, PARRS, 121 Kingsway, London, W.C.2. [953]

**FREQUENCY** Meter BC221.—Crystal controlled, 125-20,000 kc/s. Accuracy better than .01 per cent. including spare set tubes, carrier, technical manual, new and unused, £25 or near offer.—Box 934, PARRS, 121 Kingsway, London, W.C.2. [934]

**G8CD** offers CR100 as new "S" meter and 88 noise silencer fitted, £40. S27, perfect, £22. BC348, all new valves and mains unit fitted, a snip at £20. Also 1481 air tested on 5 metres, fitted with extra H.F. stage and mains unit, £15. All in perfect condition.—6 High Croft Crescent, Almondsbury, Huddersfield. [929]

**HALLICRAFTER** Sky-Buddy £15. Eddystone 5-10 converter £10. Eddystone 2-stage Pre-selector £8. MCRI-Receiver £5. D.C. Avo-minor 30s., all as new complete or offers.—G. D. DAVIES, 35 Kensington Road, Stockton-on-Tees. [3]

**HAM-AID** QSL's.—A fitting climax to good QSO's.—Samples no (BRS) from: G6XT, 47 Watson Street, Morley, Leeds. [954]

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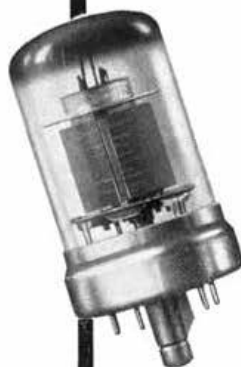
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