

# R S G B

MAY, 1958

BULLETIN

2/6 Monthly

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

VOL. 33, NO. 11

## HOW LONG SHOULD A TRANSMITTER LAST?

*Well, it all depends on what the question means. Physically, a well-engineered transmitter will last many, many years, if the few odd expendable items, such as valves, are replaced when necessary.*

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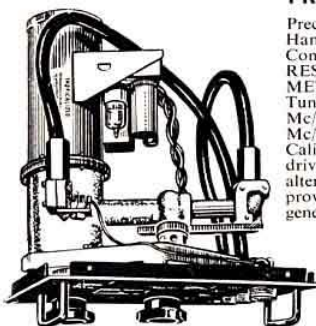
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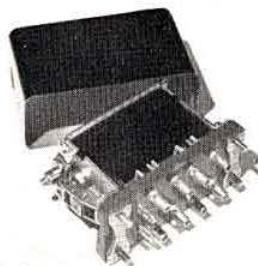
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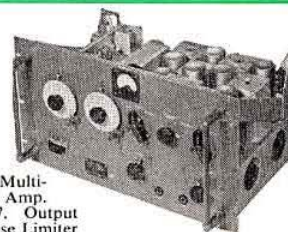
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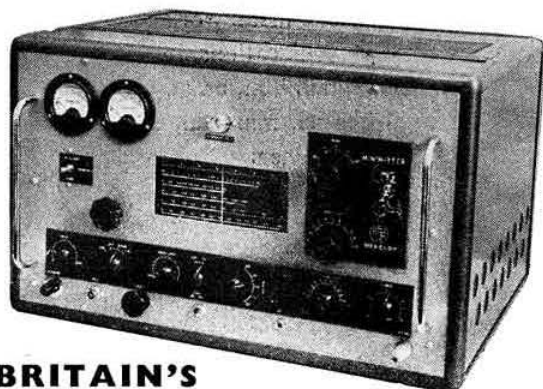
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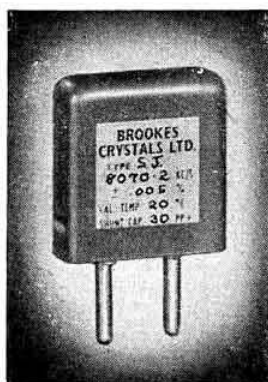
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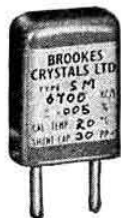


● Illustrated above is a Type SJ  
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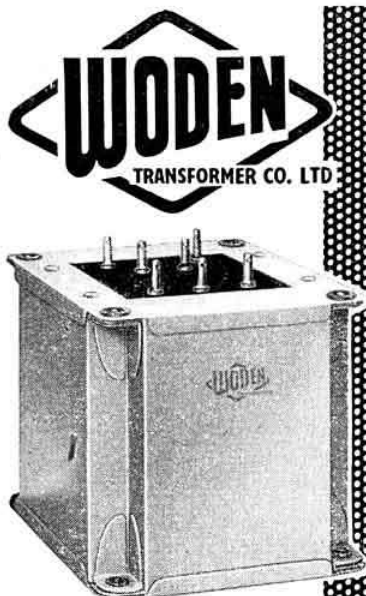
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# Current Comment

## Six Weeks to Go

WHICH was the most important item in last month's BULLETIN? Each individual reader probably had his own ideas. How many of them rated the first two news stories on page 475 as the most important can only be conjectured, but when members are reminded that those two items dealt with preparations for "Geneva 1959" few will deny them anything but first place.

For July of next year, as the date of the next International Telecommunication Conference, may very well be a crucial period in the history of Amateur Radio. Only those with their heads firmly buried within the immediate preoccupation of constructing and communicating will be blind to the existence of pressures from outside which could quite easily push them out of the Amateur Radio hobby altogether, simply because the hobby ceased to exist.

"Is the situation really as grim as this?" The question may be fairly asked. And the answer, fairly given, is No. But it *could* have become so in the past, if there had not been a strong organization to represent Amateur Radio interests, and it could become so in the future if the organization did not remain strong. It is a matter of historical fact that the two R.S.G.B. delegates to the Atlantic City Conference in 1947 found themselves to be almost the sole standard bearers for the International Amateur Radio Union, and that without their presence then, our facilities now would undoubtedly be far fewer than they are.

The importance of having a strong national Society has been dwelt upon sufficiently frequently in these pages to leave members in no doubt of its primacy; what might usefully be done is for members to make this home truth emphatically known to any non-members who happen to cherish illusions to the contrary.

A good deal of Society money inevitably will be expended in dispatching strong delegations abroad when the time comes. Already, in six weeks from now, the first of them will be on their way to the I.A.R.U. Region I Conference in Bad Godesburg, Germany, whose chief business will be to consider how Amateur Radio can best present its case at the Geneva Conference a year later. What is heartening to observe is the realization that not only are strong national societies important to represent the Amateur Radio movement, but that international co-operation, too, as at the Bad Godesburg Conference, is a "must" if the movement is to speak with one voice, though in many tongues.

The Region I Conference will be held none too soon, for Administrations are now in the process of advancing

proposals for the I.T.U. Conference in Geneva next year. The Post Office will bear a large part of the load of preparing the United Kingdom proposals. The amateur case has already been stated to them. Broadly, it is to preserve the *status quo*, frequency-wise, but to ask for modest additions here and there where such seem reasonable.

Those of us in the Amateur Radio movement will hope that the Bad Godesburg deliberations will have a successful outcome that will engender confidence for the big testing time a year later.—J. H.

## A Word of Three Letters

WISE words appeared in the gossip column of the *Radio Constructor* a few issues ago on the use and misuse of the word "ham." The point was made that a friendly colloquialism by which radio amateurs are proud to be known takes on a very different complexion when used by others. "Ham-fisted" is the last thing a skilled telegraphy operator would ever expect to be called!

The article in the *Constructor* appeared at about the same time as a Home Service broadcast made by Mr. Angus Maude, M.P., with the title "Cloaking the Dagger" on the subject of the different shades of meaning which words and phrases in current use can easily take on. "Democracy" and "Freedom" mean different things to different men. Definitions sometimes become so hard to pin down precisely that even the familiar is in danger of shading off into the indefinite.

Even the word "amateur," of which "ham" is the colloquial reduction, is not universally used in its correct sense of deriving from the verb "to love," and the Oxford Dictionary while defining it as "one who cultivates a thing as a pastime" rather spoils the noble ring of the phrase by adding "hence amateurishness, amateurishness."

No matter: the true sense in which the expression "Radio Amateur" is used was pinpointed by Mr. Newnham in his Presidential address, when the esteem in which the Amateur Service is held by the professionals was referred to.

In international frequency allocation charts the words "Amateur Service" appear on equal terms with the various professional users that hem them in on all sides. Probably because our activities *are* amateur and *are* a service the words will remain there for all time; certainly at the forthcoming crucial International Telecommunication Conference strenuous efforts will be bent towards keeping them there as prominently as ever. But "ham service?" Hardly!—J.H.

# Getting Started on 10,000 Mc/s

THE purpose of this article is to elaborate on various points which have arisen since the publication of the author's original articles on microwave work.<sup>†</sup> Up-to-date techniques used by amateurs operating in the 10,000 Mc/s band are also discussed.

Generally the position regarding surplus equipment has improved, and in the last year or so, several useful items such as paraboloids, mixer blocks, waveguide bends and twists and even flexible waveguide have appeared in reasonable quantities, and at the prices the amateur can afford to pay.

## Standardization of Modern Equipment

Waveguide for use in the region of 3cm is now normally known as Inter-Service types WG15 and WG16. These correspond to the BTL type 1-25 by 0-625 in. o.d. and 1 by 0-5 in. o.d. types respectively. British 1 by 0-5 in. i.d. waveguide is now restricted to use with equipment designed during World War II.

British and American waveguide flanges, which are tending to become interchangeable, are now of the square bolted or screwed ring circular type (also available with choke coupling), while the tendency in really precision equipment is to use lapped finish plain/plain joints.

Several commercial microwave equipment manufacturers now make a whole range of equipment suitable for measurement in the region of 3cm and literature on performance is easily obtainable. The price as far as the amateur is concerned, unfortunately, is prohibitive.

Klystrons still in use are the American types 723A/B and 2K25, and the British high voltage type CV129. Newer English Electric low voltage klystrons appear to be far superior to the older types, but of course the price makes them beyond the reach of the amateur. E.M.I. produce the RS222, a type different from all the above in that the purchaser provides his own cavity to suit his frequency requirements.

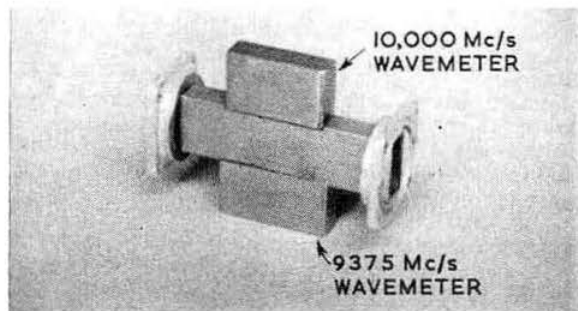


Fig. 1. A spot frequency wavemeter for 9375 Mc/s and 10,000 Mc/s.

## Frequency Measurement

One of the main queries arising from the publication of the earlier series relates to the question of frequency measurement, since wavemeters of the type described in April 1953 have not appeared on the surplus market since then. However, it is possible to make an accurate frequency marker from standard waveguide (WG16 in the case to be described).

\* 3 Balmoral Drive, High Lane, Stockport.

† Amateur Microwave Experiments, R.S.G.B. BULLETIN, March, April and May 1953.

# Some Further Amateur Microwave Experiments

By D. CLIFT (G3BAK)\*

Figs. 1, 2 and 3 show completed and exploded views of this device, which gives two spot frequency indications at 9375 and 10,000 Mc/s, as required for setting up surplus equipment on its original frequency and subsequently modifying it for use in the amateur band. The two-hole couplers sample a small fraction of the energy in the waveguide and feed side arms whose lengths are one waveguide wavelength long. There are no moving parts to the system and the accuracy obtainable is about  $\pm 10$  Mc/s.

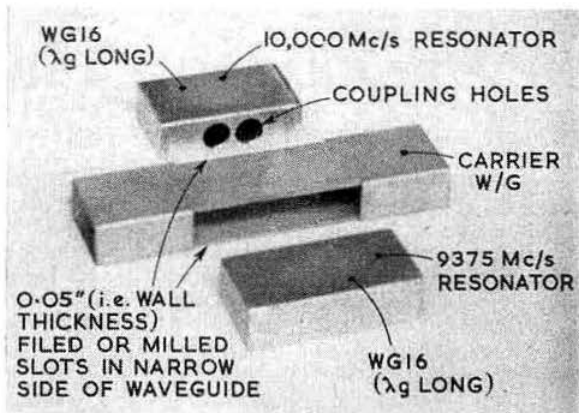


Fig. 2. Exploded view of the spot frequency wavemeter illustrated in Fig. 1.

## Construction

Prepare three pieces of WG16 as shown in Figs. 2 and 4. The length of the "carrier" is unimportant. Cut the resonators as close as possible to the correct lengths, which, it will be noticed, are just less than 1 per cent shorter than the theoretical value, possibly due to the effect of the holes. Drill out the  $\frac{1}{16}$  in. holes and carefully clean off the burr both inside and out with a needle file. Cut the  $\frac{1}{16}$  in. end plates to size and check that they are flat.

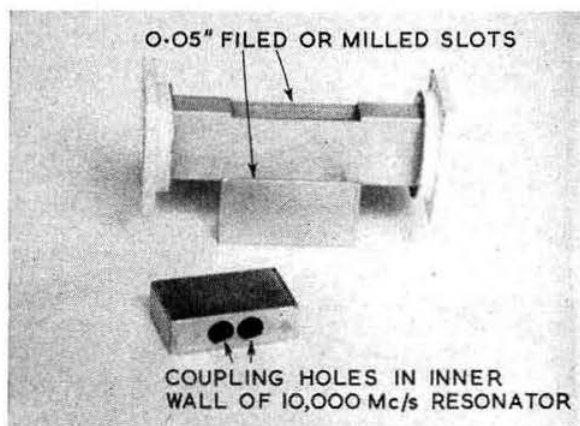
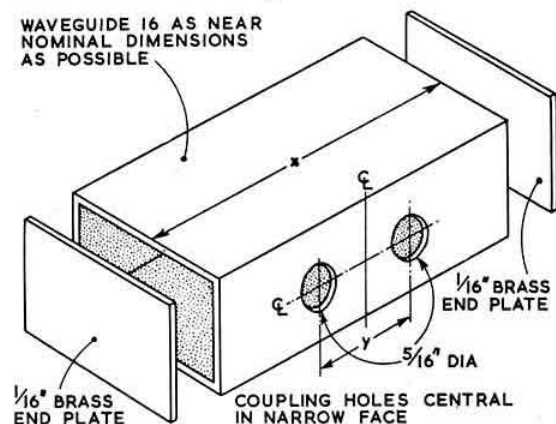


Fig. 3. Assembly of the spot frequency wavemeter showing the coupling holes to the 10,000 Mc/s section.



Two methods of assembly are possible. The first, using only soft solder consists of fitting the two end plates to the resonators (the hotplate of an electric cooker is useful in this operation). The job, of course, should be thoroughly cleaned before assembly, and the use of a mild flux is quite permissible and prevents the build-up of solder inside the resonator by restricting the quantity of solder used to a minimum. Wash in boiling water afterwards. On cooling,



FREQ. Mc/s	x	y	CUT OUT IN MAIN RUN
9375	1.752"	0.438"	1.877"
10,000	1.555"	0.388"	1.680"

TOLERANCES: DIMN. 'x'  $\pm 0.003$ " DIMN. 'y'  $\pm 0.006$ "

Fig. 4. Isometric sketch of the resonator for the spot frequency wavemeter.

the resonators must be examined by inspecting the end plates through the coupling hole. Should a build-up of solder have occurred, remove, clean and re-solder. When this has been done satisfactorily, the two resonators are soldered to the carrier at several spots using a large iron

or a pocket blowlamp. Insufficient heat will reach the end plates to affect them if care is taken. The method described allows easy removal of the resonators should this ever be required.

In the second method of assembly the end plates are silver soldered or brazed to the two resonators which are then soft soldered on to the carrier, the same care being taken in the fixing on of the end plates as in the first method.

### Versatile Wavemeter

A rather more complicated, but more versatile wavemeter, with which it is possible to measure any frequency within the waveguide band uses a "cross-coupler" to extract a small amount of power from the main waveguide at the resonant frequency of the integral cavity. It is based on a commercial instrument, the Sanders type WM16, which has a cavity one half waveguide wavelength long at resonance. The writer's version differs from the WM16 in that the cavity is considerably longer. Indication is given by moving half waveguide wavelength intervals and measuring these movements with a depth gauge. With the aid of Fig. 5 the frequency can then be determined.

Fig. 6 shows the constructional details of the wavemeter. The cavity arm should be the one containing the coupling cross in order to keep the "Q" as high as possible. Optimum coupling appears to be in the region of 25db. The accuracy is of the order of 0.1 per cent.

### Power Unit

The power unit supplying a klystron such as a 723A/B or 2K25 can consist of a simple rectifier/smoothing arrangement, followed by a VR150/30 and VR105/30 in series across it. Alternatively a stabilized variable supply as described in May 1953 can be used. Either of these will suffice for the cavity supply.

Regarding the method of supplying reflector voltage, that described in May 1953 has several undesirable features. It requires the use of a considerable number of components, and the reflector is fed from a high impedance source. This latter problem, which can give trouble due to pick-up and in making accurate voltage measurements, can be overcome (a) by the use of a cathode follower stage, with its own numerous components, or (b) by the use of battery

reflector supplies. The latter the writer considers to be the best system after using various types both fixed and portable. A virtual necessity has been found to be a current meter to monitor the klystron cavity current. If the reflector voltage is derived from a battery or a cathode follower a low resistance voltmeter is all that is required for measuring reflector voltage.

### The Klystron Mount

Very little was said about this quite important component in earlier articles, and since the mount has a large effect on power output and mode shape, a suitable component will be described.

The one illustrated in Fig. 7 is a simplified version of the type used for tests on 723A/B and 2K25 klystrons. The parent version is described on page 39 of Vol. 11 (M.I.T. Radiation Lab. Series) and a discussion of valves and mounts may be found in Chapter 4 of Vol. 16 of the same

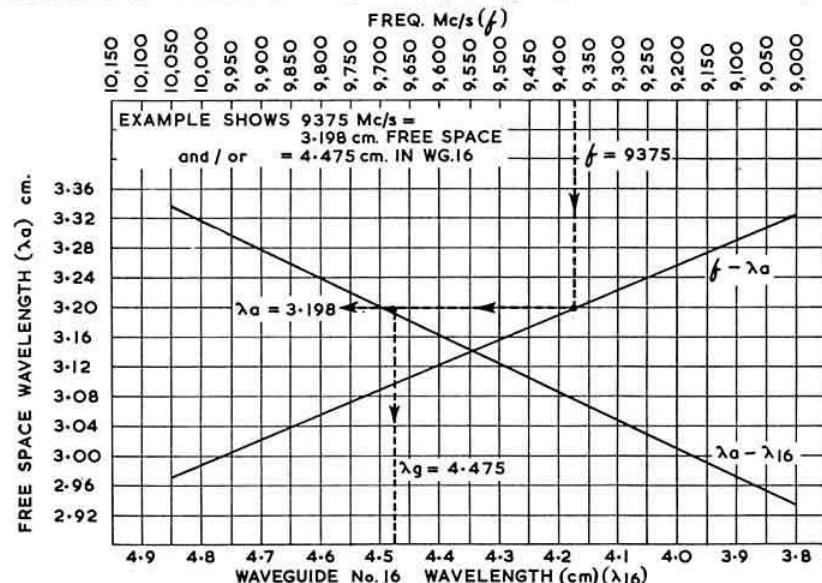


Fig. 5. Graphs showing the conversion of frequency to free-space wavelength and Waveguide No. 16 wavelength.

series. The rather complicated choking system has been omitted but the important positioning of the probe has been retained. The mount has been found satisfactory at both the design centre frequency of 9375 Mc/s and the lower edge of the amateur band, i.e. 10,000 Mc/s. The klystron probe is positioned and controlled in depth to give good output over a wide band with freedom from dead spots, a fault which often occurs with these valves when they are overcoupled or simply placed in the centre of the waveguide with a short circuit set behind to provide maximum output. Adequate decoupling of the klystron from a highly reactive load is also most important, and the latest trends in this field use what are known as "isolators." Devices of this nature produce high attenuations looking "back" towards the klystron, but negligible attenuation looking towards the load, hence most of the small output available from these valves can be utilized. The construction of the simplified mount can be seen from the diagram, an insulated sleeve being placed over

the klystron probe. This is necessary since some methods of connection leave the probe "live."

### Waveguide Pieces

Leaving the klystron mount, the next item needed is some sort of a waveguide attenuator. This may take the form of a directional coupler (i.e. a fixed attenuator), the side arm feeding the load, the major portion of the klystron output being dissipated in a dummy load in the main arm. On the other hand it may take the form of a variable attenuator. A reasonable home-made one can be produced by replacing the dielectric vane of a surplus phase shifter (type 10AB/8474) by a similarly shaped vane made from resistive strip (Morgan Crucible Co.). Using 200 ohm card arranged to fit in the same position as the original vane, the attenuation (for a single card and two cards cemented back to back with Durafix) plotted as a function of insertion at 9375 and 10,000 Mc/s is shown in the graph (Fig. 8). Repeatability of results

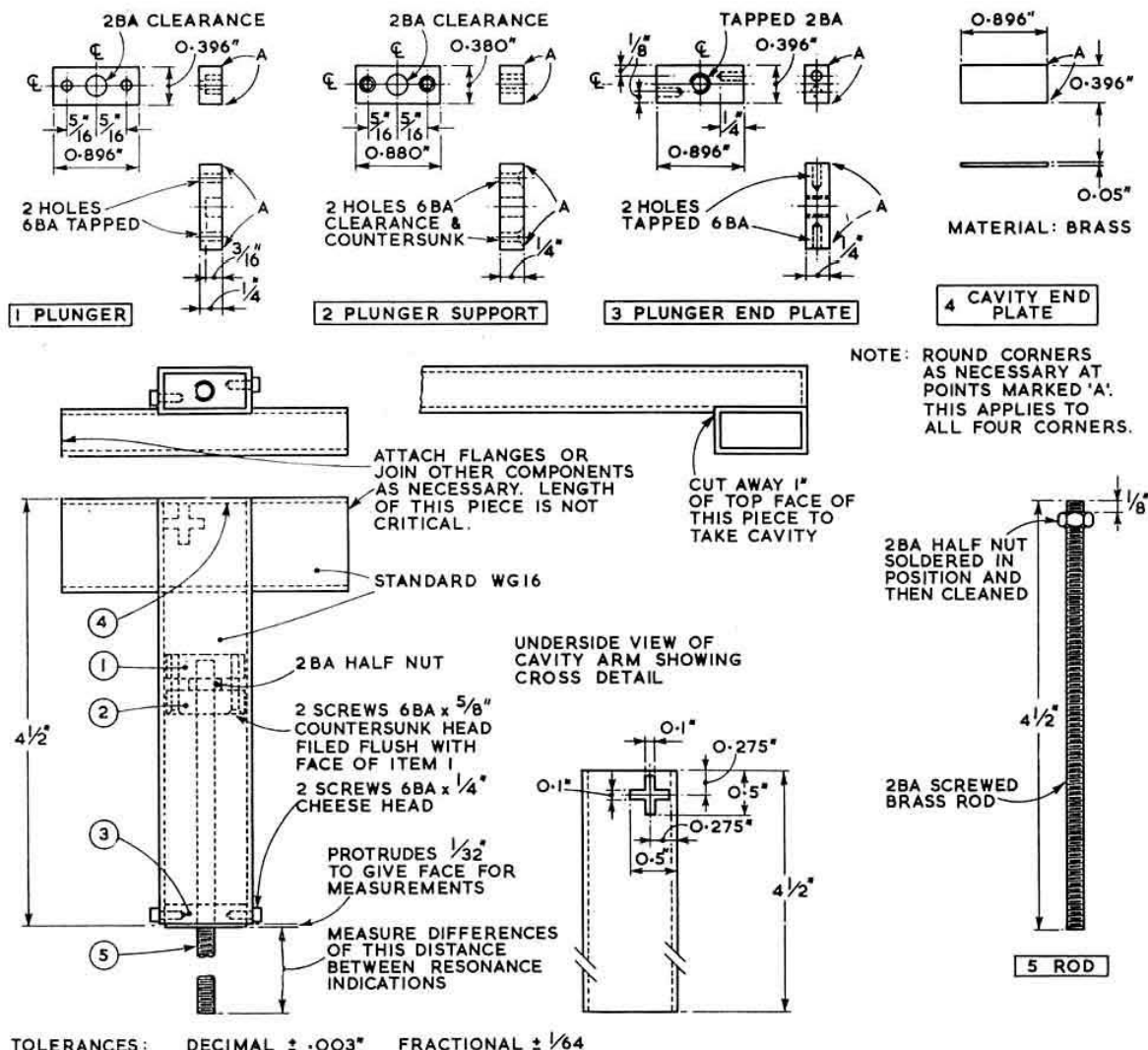


Fig. 6. Waveguide Wavemeter for 10,000 Mc/s. Constructional notes: (1) Cut out the cross by drilling holes and using a needle file. (2) Make sure the cross is cut from the cavity piece. (3) The plunger should be a "tightish" sliding fit into the cavity.

is excellent, even at 30db. The resulting attenuator, costing under 10/-, compares very favourably with commercial equivalents costing £30 or more! A composite view of the attenuator with two forms of adaptor is shown in Fig. 9. Since the phase shifter is in 1 by 0.5 in. i.d. guide the adaptors are necessary to use the attenuator with WG16. The use of such a device was described in April 1953.

The graph (Fig. 8) shows the calibration curve. If the resistance card is made the same overall size as the original ceramic one, and is fitted so that it rests against the four 4 B.A. screws in the support arm, the calibration curve will hold. Check that, on moving in the vane (i.e. rotating the knurled worm) the reading on a succeeding crystal current meter starts to fall off as the pointer approaches the third tooth. (If necessary, alter the position of the vane to obtain this condition.) If it does, continue insertion of the vane, and notice that the meter reading has dropped to half of its original value at the seventh tooth. Experiments on a few attenuators have shown that if this condition is fulfilled, the calibration will be within 1db throughout the range of the graph. The crystal current should be kept at a minimum during the tests by means of a further attenuator. The more sensitive the meter used the better; 50 microamps is admirable.

The wavemeter assembly previously described comes next in the line, the remaining piece being the detector. This can conveniently be the surplus circular type 10DB/6492 described in May 1953. This can simply be butted up against the end of the wavemeter assembly if a transition is not available.

#### Wavemeter Indication in Klystron Modification

Two methods are possible, by far the best requiring the use of a simple oscilloscope, as this displays the actual

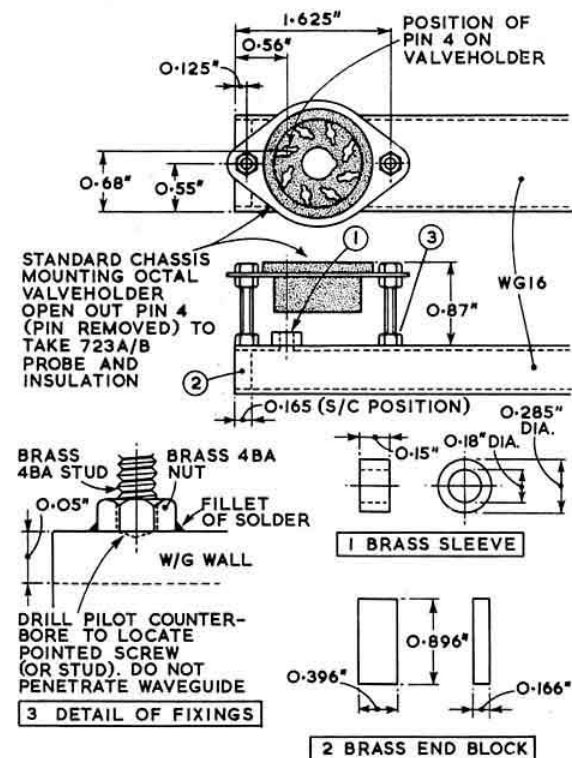


Fig. 7. Construction of a mount for the 723A/B-2K25 klystron. The dimensions should be as close as possible to those specified.

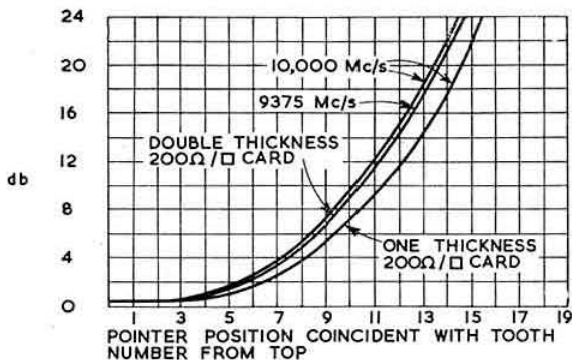


Fig. 8. Calibration curve for a modified 10AB/8474 phase shifter converted to a variable attenuator.

klystron mode shape. Fig. 10 shows the components and connections necessary to illustrate klystron performance.

Assuming that a klystron is first to be checked, and then later modified to operate in the amateur band, the procedure to be adopted is as follows:

If the sweep voltage is not brought out to a terminal, the oscilloscope should be modified to make the sweep available. The klystron reflector circuit is arranged so that the oscilloscope sweep is superimposed on the reflector voltage, thus the valve is passed through most of its possible cases of oscillation every sweep.

A nominal setting of reflector voltage is all that is required, the actual value being determined by the positive or negative going nature of the sweep voltage. A good quality capacitor of about 500 volts working should be used to couple the sweep to the reflector! The output of the detector needed will depend upon the signal channel amplifier in the oscilloscope. The detector is connected to this amplifier, the waveguide attenuator being adjusted so that a suitable picture is obtained with the amplifier in its maximum gain position.

After switching on the power supply and checking that the voltages are present on the cavity and reflector, measure the cavity current with no sweep applied. For an unmodified klystron with 250 volts on the cavity, the current should be 18 or 20 mA. If it is lower than this value, increase the cavity voltage until this figure is reached. Possibly 275 or 300 volts may be required if the klystron has had considerable use. Set the waveguide attenuator to obtain a trace when the sweep is connected. Two, three or possibly four modes will be seen, the top one being either 210 or 170 volts of greater amplitude than the lower ones.

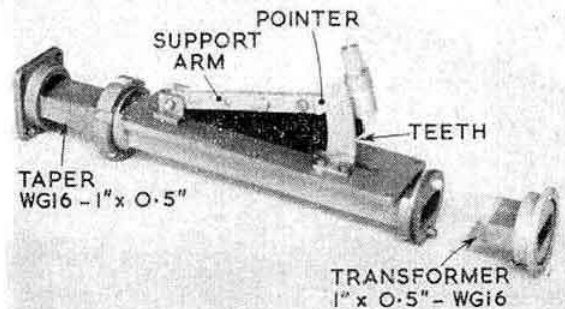


Fig. 9. Attenuator constructed from a phase shifter showing the original pointer and teeth referred to in the calibration chart (Fig. 8). Two types of transitions show the method of connecting the attenuator to WG16.



If the tunable wavemeter is being used, move the plunger outwards until a "kink" appears on the top of the modes. Note the indicator reading as accurately as possible, and then continue the outward movement until a further "kink" appears. This reading is noted, and the difference between the two readings calculated. This difference is then doubled, and gives the waveguide wavelength, which may be translated into free-space wavelength or frequency by means of

formula:  $\lambda_g = \frac{\lambda}{\sqrt{1 - (\lambda/2b)^2}}$  or the graph (Fig. 5). The

picture on the screen at this juncture should be free from defects. Tune the klystron to 9375 Mc/s ( $\lambda_g = 4.475\text{cm}$ ).

If all is satisfactory at this stage, switch off the power, remove the klystron from its holder, and carefully file down the weld on the tuning struts. Replace the valve in the holder, switch on the supplies and without moving the two nuts, secure the original conditions on the oscilloscope. With the power still switched on, and remembering that the reflector and/or cavity are live, undo the top nut half a turn and run the lower nut up to it. The klystron mode pattern will probably be the same. Turn the tuning control nearly fully anti-clockwise, at the same time noting the mode picture. It is possible the top mode will now begin to disappear or will have disappeared already or have become very distorted. Measure the frequency as before: it may be in the region of 9800 Mc/s or even higher. Unscrew the nuts a further half turn and measure the frequency again. Remove the sweep and again check the cavity current which may have now dropped. If so, increase the cavity voltage to secure 20 mA, reconnect the sweep and again examine the picture. The mode shape will probably be better than before and the top mode may even have reappeared. If 10,000 Mc/s has been reached, lock the nuts; if not, carry out a further half turn movement. By this time the amateur band will either have been reached or the valve will have stopped oscillating! Again, remove the sweep, connect a d.c. meter of say 200  $\mu\text{A}$  deflection in place of the signal amplifier (i.e. measure the c.w. crystal current) and vary the reflector

voltage from about 25 volts upwards. The meter will indicate at various reflector voltages and the attenuator should be adjusted to secure a reasonable reading on the meter. It will probably be found that a voltage in the region of 120 is the highest at which output is obtainable. The valve is now fully modified for use in the amateur band. A relative indication of the drop in output can be seen by noting the amount of attenuation that has had to be added during the various steps described above in order to keep a constant picture height on the oscilloscope. (Assume the normal output to be 30mW.)

If the untunable wavemeter (the spot frequency one) is being used, a similar procedure is necessary. With the unmodified valve operating and producing a picture, adjust the tuning control until the "kink" appears at about the centre of the travel. This will be 9375 Mc/s. Modification is then performed but at every step after the first it is advisable to tune the valve over quite a range to make sure 10,000 Mc/s has not been passed. A recent check has shown that 723 type valves can also be modified to a lower frequency, 7500 Mc/s being obtainable in some cases.

The second method, which uses only the meter instead of the oscilloscope, requires careful plotting of the reflector characteristics if anything like the information gained from the first method is to be acquired. The reflector voltage requires constant variation, and the wavemeter indication (which is a dip in the meter reading), is not as noticeable. The use of the oscilloscope method is definitely to be recommended, even though it requires the use of the extra equipment.

#### Use of Standard Frequency Transmissions

For the really serious experimenter who is interested in highly accurate spot frequency checks, a 2m or 70cm transmitter will supply harmonics sufficient in amplitude to be detected by a reasonably sensitive microwave receiver. The writer has also successfully used a 10 Mc/s crystal oscillator beating with the Standard Frequency Transmissions from MSF or WWV, followed by a quintupler and

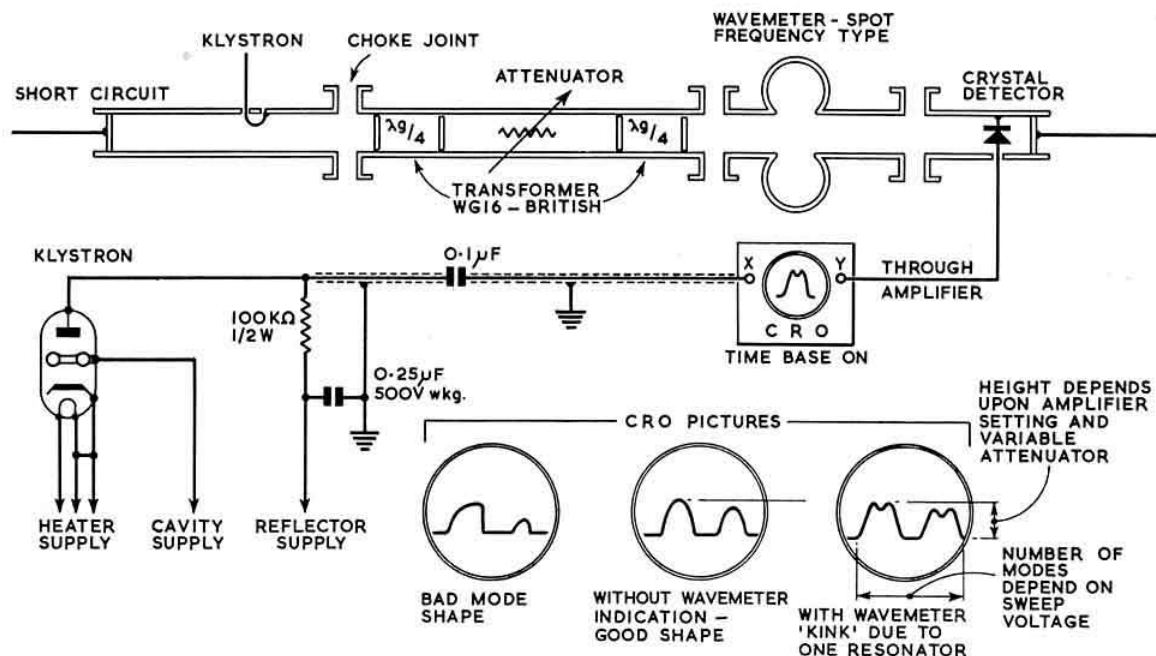


Fig. 10. Arrangement of waveguide components for klystron testing and modification. The procedure necessary is discussed in the text.

a doubler. This chain was fed into a waveguide crystal detector (into the crystal side) with the crystal driven to 25mA. The range of harmonics generated (by virtue of the non-linear crystal) falling within the range of the waveguide propagate down it, and the predominant ones, which were found to be those at 9000 and 10,000 Mc/s, were selected after passing the output of the waveguide through a "transmission" type wavemeter. This method of very accurate frequency measurement is used commercially, and is described in Vol. 11 of the Radiation Laboratory Series.

#### General Notes

Present trends at G3BAK are aimed at simplifying the field equipment. The original equipment as described in May 1953 had several serious troubles, and most of these have been overcome in an entirely new set recently produced. A twin paraboloid system, using a cross coupler as has been described in the tunable wavemeter, is used, but with 15db of coupling. A more rigid mount for the aerials has been produced, and a wavemeter fitted as a permanent feature. The 723A/B is to be preferred for local work since its power requirements are easily satisfied.

The bulkiness of the original set and the large number of interconnecting cables made it very inconvenient, and the intending enthusiast should bear in mind the necessity for simplicity, both electrically and mechanically when portable gear is being designed. A recent development in i.f. amplifier design is a help in this direction. Broad band amplifiers using "feed back" pairs were described in the *Wireless World* (February and December 1954), and have been found to be superior to the stagger tuned surplus amplifier in the original equipment. A grid dip meter is all that is really necessary for alignment. Battery reflector supplies also are to be desired.

Should the use of CV129 klystrons be contemplated, and an unserviceable one be available, the waveguide system can be reduced to the absolute minimum by the following ingenious modification which the writer has successfully performed. Remove the cavity from both a good and a bad valve, and produce a new valve with two co-axial outputs, drilling the necessary 6 B.A. holes as required in the half of the cavity removed from the old valve. The tuning assembly will now not fit, but the valve can be set to the required frequency by gentle pressure on the circular ring. In use, one output, the most tightly coupled, is used as the transmitter, and the other, more loosely coupled, is fed to the mixer. Thus no directional coupler is required; the two outputs have been found to be more or less independent. No waveguide connection takes place between the two dishes, with a very great simplification of the mechanics of the system.

For those not in possession of paraboloids, or in a position to make the feeds, a 3cm horn can easily be made. The performance will not be much below that of the APS3 type aerial. Full details of waveguide horns for a frequency range that includes all the amateur allocations above 70cm are given in *Electronics* for July 1955. Two such horns merely replace the paraboloids in the twin paraboloid system.

The home-produced cross couplers provide a very valuable tool in the setting up of such items as the aerial feed and the mixer. They make passable "reflectometers," a device which has been much used in the amateur v.h.f. region. In the case of the aerial feed, the set-up consisted of a 723A/B klystron and modulator (square wave), a monitor coupler and detector, the pad attenuator described, a 15db cross coupler and detector arranged to monitor the reflected power, and the aerial under test. The dipole and reflector assembly was not soldered to the waveguide, but made a tight fit. The feed was placed at the correct position so that the dipole was at the focal point, and the dish pointed into free space, and the penetration of the plate adjusted until minimum indication of the reverse power indicator resulted.

For measurements of v.s.w.r. up to about 0.9, the reflectometer is the answer to the amateurs' prayer for some cheap method of indication. Attempts at better matches with a simple coupler should be treated with very great reserve, due to interference between the leakage round the "wrong direction" and the low reflected power at good matches. This error due to the "directivity" of the couplers is of course the limiting factor in a reflectometer system.

It is hoped that this article will help other enthusiasts to "get started" on the microwave bands. If so, the amateur will again be proving that it does not require a laboratory of complicated and expensive equipment to delve into this most fascinating region of the spectrum, the only one in which the dimensions of the gear and the wavelength are the same!

#### British Wireless Dinner Club

THE Amateur Radio movement was again well represented at the Thirty-fifth Annual Dinner of the British Wireless Dinner Club held on Friday, April 25, 1958, at the United Service Club, London. Among those present were W. B. Brown (G6QY), John Clarricoats (G6CL), Douglas Johnson (G6DW), Jim Kirk (G6ZO), Rowley Scott-Farnie (G5FI), H. E. F. Taylor (G6HT), Douglas Walters (G5CV) and J. N. Walker (G5JU). Also present were many old timers including Peter Eckersley, Philip Coursey and Air Vice-Marshal Nutting, who were closely connected with the R.S.G.B. in the early days.

The Chair was taken by the President, Air Vice-Marshal E. B. Addison and the guest speaker was Marshal of the Royal Air Force Sir William Dickson (Chairman, Chiefs of Staff Committee).

Mr. R. D. Bangay, author of a famous early book on Wireless Telegraphy was elected the first Honorary Member of the Club.

Membership of the Club is open to those who have held commissioned rank in, or been closely connected with, Service signals. Details from Captain F. J. Wylie, R.N., Shipowners' Radio Advisory Service, 12-20 Camomile Street, London, E.C.3.

#### More Television DX—British Pictures seen in Cyprus

FROM Nicosia, ZC4MH reports that on March 2 pictures of a church service transmitted by the B.B.C. on 45 Mc/s was received. On March 14, the dealers' test transmissions were seen. At the time of writing, the sound from Crystal Palace on 41.5 Mc/s was being received almost daily but the vision only about once a week. The French television sound on 41.25 Mc/s was also frequently heard.

ZC4MH uses the r.f. stages of an Eddystone 770R Receiver feeding into a converted 625 line Pye "TV1000" 17-in. receiver.

The Cyprus Broadcasting Service is now transmitting television programmes using C.C.I.R. standards. There has been some interference to the (f.m.) sound channel on 53.75 Mc/s from Rhodesian amateurs operating in the 50 Mc/s band!

#### QSL Cards Supplied by Mullard Limited

MULLARD LIMITED announce that they are unable to issue further supplies of QSL cards until June this year. Many thousands have been supplied gratis in the past, but in future the following nominal charges will be made: 250 cards £1; 500 cards £1 10s.; 1,000 cards £2.

Orders for Mullard QSL cards should be sent to Mr. R. Webb, Sales Promotion, Mullard Limited, Mullard House, Torrington Place, London, W.C.1.

#### Congratulations

● To Harold and Ann Crane (G2AVC and G3GOX) on the birth of a son, on Sunday, April 20, 1958.

# A Low Noise Crystal Controlled Converter for 144 Mc/s

By GEORGE R. JESSOP, A.M.Brit.I.R.E., Assoc.I.E.E. (G6JP)\*

OF the many 2m converters built by the writer, including one which used the popular neutralized 6J6 r.f. stage, the design to be described has proved the most satisfactory. The performance is superior to all earlier types and has been consistently good for many months. No claims are made for any originality in the basic circuit (Fig. 1), an arrangement which is already well known. It is however felt that there are still many 2m operators who are using relatively noisy converters of low sensitivity and it is hoped that the present article will encourage them to build something rather better. There is nothing tricky about the construction and the only adjustment which requires some patience is the neutralizing of V1. Even this is fairly straightforward.

A number of different valves have been tested in the r.f. stage, including some experimental types, and no instability has been encountered using the neutralizing coil specified. Care is required however to ensure that the various stray capacities are similar to those of the prototype, otherwise the dimensions of the neutralizing coil may have to be changed slightly.

In operation, phone signals of about 3db above the noise level can be easily copied provided they are fully modulated.

## Circuit Description

Basically, the r.f. section is a modified cascode amplifier employing a British low noise r.f. triode, the A1714/CV408

(V1), operating as the inductively neutralized first half, followed by one section of a B719/ECC85 double triode (V2) operating as the grounded grid second half. It will be seen from Fig. 1 that the feed point for the grounded grid stage is tapped down the anode coil (L3) of the neutralized stage. This gives appreciably higher gain to that obtained when the feed point is at the anode end of this coil. Care should be taken to ensure that the tapping point is not too far down as instability or excessive noise may result.

The second section of V2 operates as a leaky grid mixer. The output circuit, which is tuned to 25 Mc/s, provides a convenient tuning range on the main receiver of 24 to 26 Mc/s to cover the 144 to 146 Mc/s band.

V3 is a crystal controlled local oscillator-multiplier, using a B719/ECC85 twin triode. The first section operates as a modified Pierce crystal oscillator with its anode circuit tuned to the third harmonic of the 10 Mc/s crystal. The output is fed to the second section which acts as a multiplier to 120 Mc/s. The writer prefers this arrangement to the Squier circuit, and has found it perfectly satisfactory in spite of its lower fundamental frequency.

The power supplies required for the converter are approximately 30 mA at 150 volts and 1.4 amps at 6.3 volts. The h.t. supply need not be stabilized.

## Construction

The converter is built into an Eddystone diecast box measuring 7½ in. by 4½ in. by 2½ in., all the components being mounted on the top plate.

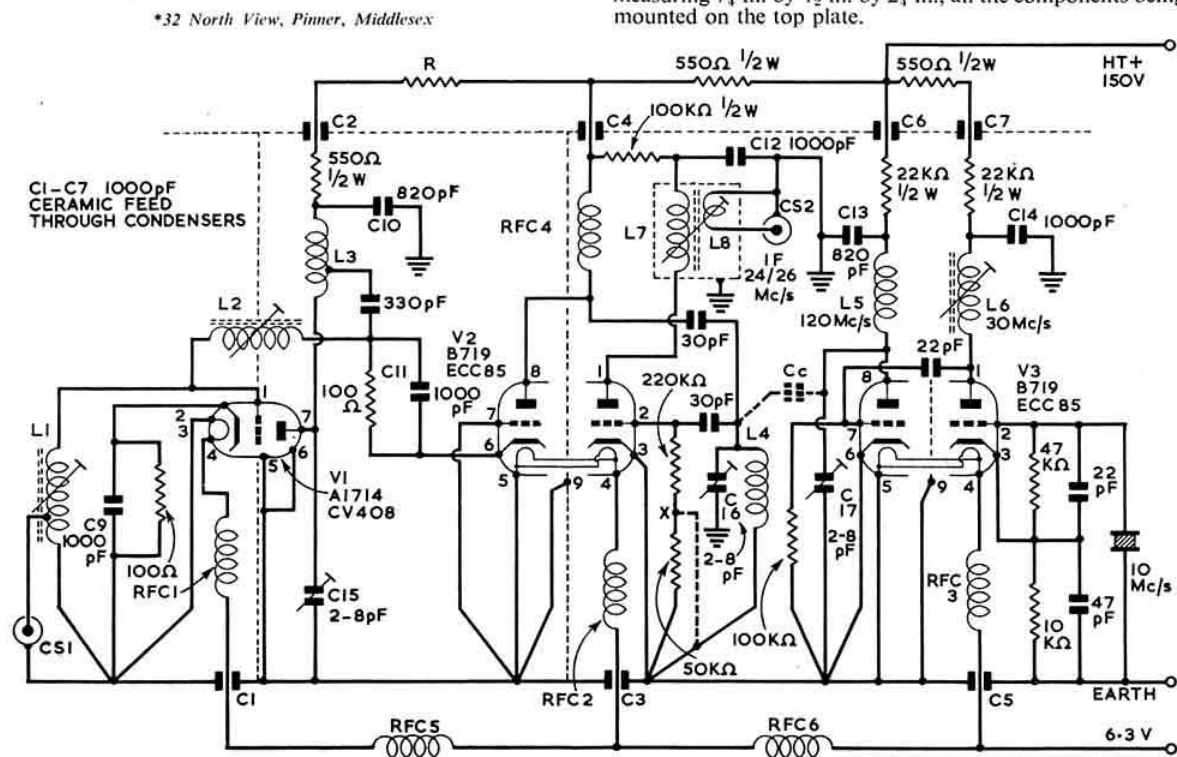


Fig. 1. Circuit diagram of the crystal controlled 144 Mc/s converter described in the text. C9, 11, 12, 14, are 1000pF ceramic tubular or disc; C10, 13, are 820pF ceramic stand-off type; C15, 16, 17, are 2.8pF Erie co-axial trimmers. The value of Cc depends on the local oscillator injection required (2pF or less). The value of R is chosen so that the anode current of V1 is 10mA. The dotted line from test point X to earth indicates that the 50 K ohm resistor may be removed from the circuit after alignment is complete. The converter is intended to be fed with 70 ohm co-axial cable.



The layout is most important and care in laying out the various parts is necessary, together with correct positioning of the under-chassis screening. The arrangement of the main components is shown in Fig. 2. As may be seen, there is a screen running the whole length of the chassis close to one side to form the power lead filtering compartment, with short cross screens fitted to the valveholders for V1 and V2 to separate the input and output circuits of V1 and the two stages of V2. It should be noted that the feed-through condensers C1, 2, 3, 4, 5, 6 and 7 must be installed before proceeding to fit any of the other components.

The wiring of the r.f. circuits should closely follow that shown in Fig. 2. All the connections may be made per-

of turns for this neutralizing coil may vary for individual layouts.

L3: 5 turns  $\frac{3}{8}$  in. diameter 16 s.w.g., length  $\frac{3}{8}$  in., approx. turns spacing 1.5 wire diameters.

L4:  $3\frac{1}{2}$  turns  $\frac{3}{8}$  in. diameter 16 s.w.g., length  $\frac{3}{8}$  in., approx. turns spacing 2 wire diameters.

L5:  $5\frac{1}{2}$  turns  $\frac{3}{8}$  in. diameter 16 s.w.g., length  $\frac{11}{16}$  in., approx. turns spacing 2 wire diameters.

L6: 15 turns 20 s.w.g. enamelled, close wound on a  $\frac{7}{16}$  in. diameter Aladdin former.

L7: 25 turns 26 s.w.g. enamelled, close wound on a  $\frac{5}{16}$  in. diameter former with dust iron core.

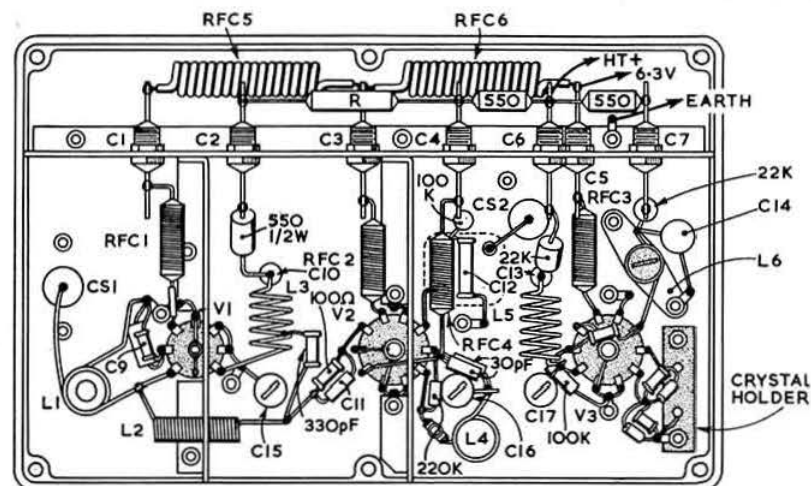


Fig. 2. The layout of the principal components in the converter. V1 is on the left, the second half of the cascade section in the middle, and the mixer and crystal oscillator/multiplier stages at the right. Note the arrangement of the long screen carrying the feed-through condensers connecting the converter proper to the power lead filtering compartment. Care should be taken in the placement of the inter-stage screens in order to prevent instability.

manently except the tapping points on L1 and L3. The neutralizing coil L2 will also have to be adjusted later. The four soldering points concerned are readily accessible and should not cause any trouble when changes are being made.

The coils and r.f. chokes should be wound as follows:

L1:  $5\frac{1}{2}$  turns  $\frac{3}{8}$  in. diameter 16 s.w.g., spaced to approximately one wire diameter. Inductance variation by means of a silver plated brass slug.

L2:  $10\frac{1}{2}$  turns 24 s.w.g. enamelled wire wound in the thread of a  $\frac{1}{4}$  in. diameter dust iron core. The actual number

L8: 2 turns 20 s.w.g., p.v.c. covered, close wound round earthy end of L7.

RFC1, 2, 3, 4: 24 turns 26 s.w.g. enamelled wound on a 220 K ohms  $\frac{1}{2}$  watt insulated resistor.

RFC5, 6: 15 turns  $\frac{1}{4}$  in. inside diameter, 20 s.w.g., p.v.c. covered wire.

### Testing and Adjustments

After checking all connections, h.t. and l.t. voltages may be applied.

The first circuits to be adjusted are those associated with V3. No difficulty should be experienced in tuning L6 to the third harmonic (30 Mc/s) of the crystal and the frequency can be checked on a communications receiver. Tuning the multiplier requires a little more care and is preferably carried out with the aid of a grid dip oscillator. With the coil specified, it is however unlikely that any but the fourth harmonic (120 Mc/s) will be found. With V2 in position, it is convenient to connect a low reading micro-ammeter between test point X and earth and to tune L5 and L6 for maximum reading. During these initial adjustments it will be an advantage to use a 2pF condenser in place of Cc.

When the oscillator-multiplier circuits are operating correctly, V1 should be plugged in and L7 adjusted for maximum noise output. With an aerial connected to CS1, L1 should be tuned for maximum noise or signal and L3 and L4 resonated by adjusting their associated trimmers (C15 and C16 respectively). The use of a "magic wand" with a dust iron core at one end and a brass one at the other is a considerable help in tuning the signal frequency circuits.

If the best noise figure is to be obtained, a noise generator should be used for the final adjustments to the neutralizing coil L2, the tapping points on L1 and L3 and the amount of

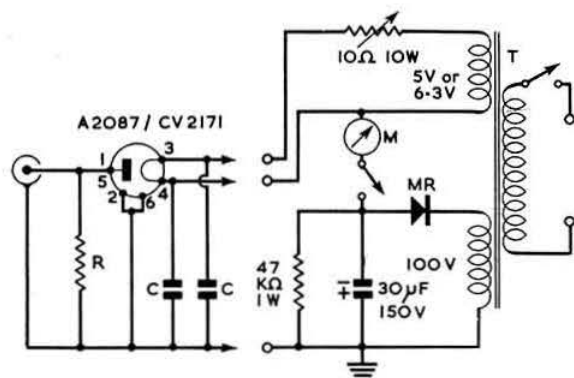


Fig. 3. Noise generator circuit designed by G. R. Woodville, using the miniature diode type A2087/CV2171. The 1000pF condensers are the feed-through type. The meter M should be a three range type to read 0.5, 0.10 and 0.20mA. R should be made equal to the converter input impedance. The mains transformer may be the small type used for television and f.m. converters but must have separate heater and h.t. windings.

local oscillator injection. It is worth noting here that the best noise figure does not occur at the same point as maximum noise. The circuit of a suitable noise generator head designed by G. R. Woodville of the M-O Valve Co. Ltd. and intended to plug directly into CSI is shown in Fig. 3. The layout using a miniature diode type A2087/CV2171 is illustrated in Fig. 4.

When adjusting the tapping point on L1, a series of noise

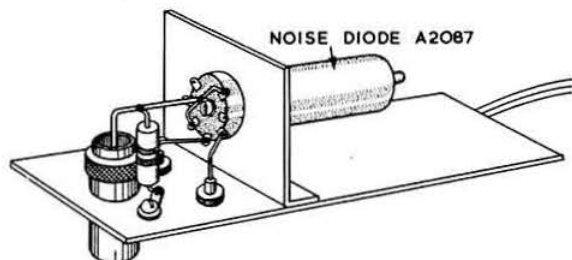
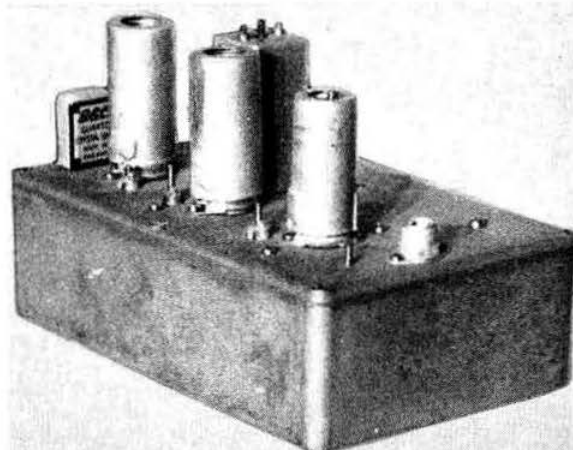


Fig. 4. Layout of the noise generator intended to be plugged into the input socket of the converter.

tests should be made using terminating resistances ( $R$  in Fig. 3) such as 50, 75, 100, 150, etc. up to about 500 ohms. The results will indicate the correct input resistance for the best noise factor. The tapping point is adjusted until the lowest noise results with a terminating resistance equal to the impedance of the input cable.

It is important that the anode current to V1 should be adjusted to 10 mA. This may be done by selecting a suitable value for the feed resistance  $R$  in Fig. 1: between 5000 and 10,000 ohms will be needed for an h.t. supply of about 150 volts. It is also necessary to ensure that the cathode resistance for V1 is close to the specified value. The writer found that a change from 150 to 100 ohms gave about 0.25db improvement in noise factor. The actual value of this resistance may vary from valve to valve but 100 ohms is typical. The reason some variation of the value of the cathode resistor may be required to obtain the best noise factor is that the noise factor gets better the nearer the contact potential is approached; in other words, the point at which grid current begins to flow. If, however, this point is passed, the noise factor will deteriorate rapidly.



The low noise converter for 144 Mc/s described by G6JP. The 10 Mc/s crystal is at the extreme left of the picture, with V3 next to it. V2 and V1 are to the right of V3 with L7, L8 in the screening can behind them. The co-axial input socket is at the right hand end of the diecast chassis.

## Single Sideband

By ALAN FAWCETT (G2HQ)\*

THERE seems to have been a remarkable lack of information in the BULLETIN recently on single sideband activity, which is unfortunate, as in fact there is plenty, at least on the 14 Mc/s band. For those who may not know where to locate s.s.b. transmissions, in that particular band they are to be found between 14300 and 14350 kc/s, with U.S. stations between 14250 and 14300 kc/s. On 21 Mc/s, s.s.b. working is carried on between 21.4 and 21.45 Mc/s—jammers permitting. Recently the writer counted no less than 11 of these accursed things in the part of the 21 Mc/s band used by amateur stations.

There does not appear to be any great activity outside the U.S.A. between 21.4 and 21.45 Mc/s, with a few exceptions. Why this is so is not clear, because when contacted they are usually good. ZL1AU puts in a fine signal in the mornings but often seems to call unheeded. American stations can be heard most evenings but disappear as the night goes on.

In this country the number of s.s.b. stations is slowly increasing as more people build transmitters. Unfortunately many others are kept back by lack of components, which manufacturers seem reluctant to put on the market. One of the many interesting features of s.s.b. transmission is that it is usually possible to speak to any G station when in contact with a DX station, even when the G stations are various distances apart.

Much argument seems to have been expended by the amateur fraternity on the virtues and vices of s.s.b. The writer, in common with all other amateurs who have taken up the system, is quite convinced that it is by far the most interesting mode of transmission: it is more reliable, easier to read (given a stable receiver) and enables more stations to work in a limited and crowded band. One special feature is the ability to follow a particular station, and reject others by virtue of the fact that unless one is accurately tuned to a station it is impossible to understand what is being said. Thus stations a few cycles off tune are unintelligible.

The U.S. services have long realized the various advantages of s.s.b., and most of their equipment would appear to be of this type. The Antarctic stations which the Americans operate all use s.s.b. equipment. The result has been that all of them have been worked at various times.

### DXpeditions

It seems the fashion to go on expeditions these days with radio equipment and one of the most interesting of these, and which has still to be concluded, is that undertaken by Paul Stein (VQ4EO/P). Paul left Kenya many weeks ago and, using a jeep, has travelled many thousands of miles through Kenya, Belgian Congo, French Equatorial Africa, Nigeria and Ghana to Freetown. He was worked as /MM off Tenerife on April 16. ZS6AJH was portable in Swaziland and Basutoland, and was contacted at good strength in both countries. YAIAP was in Nicaragua for a few days.

Stations worked during recent months include CE7AY, UA1DZ, VQ4EO/ZD1, 9GIBF and 'CF, VK6MK, OD5BZ, HZ1TA, ZK1BS, 4X4DK, YAIAP and SV0WA, who is again active after a visit to his home in America.

The transmitter in use at the writer's QTH is a home-made 20a exciter driving two 811As in push-pull. The aerial is a three-element beam, and the receiver a crystal controlled converter feeding into a receiver which has a couple of half lattice filters, a product detector, a "Q" multiplier and automatic audio gain control. In all 88 countries have been worked, which though short of the 120 worked by that well known Australian station VK3AEE, is still slowly mounting. Many extremely interesting QSOs have been made, particularly with the Antarctic.

\* 4 Woodfin Avenue, Sheffield 11

# A Simple Test Set for the Beginner\*

## Part 2—The Grid Dip Oscillator

By S. J. LLOYD (VK3AST)†

THE g.d.o. unit is merely a variable frequency oscillator with its tuning coil mounted on one end for easy coupling to the circuit under test; grid current indication is provided by the valve voltmeter described last month. The g.d.o. is most useful for measuring the frequency of tuned circuits without applying power to them. Additional components are incorporated to allow the unit to serve also as a monitor, modulation meter and modulated test oscillator.

### Circuit

A reaction coil oscillator circuit (Fig. 1) is used, being easier to adjust than one requiring tapped inductances. Plug-in coils cover a frequency range of 450 kc/s to 18 Mc/s, with a gap in the medium wave broadcast band; the range can be extended by providing extra coils. The tuning condenser C1 was chosen to effect a compromise between the conflicting requirements of easy tuning and wide range. The frequency ratio is 1.8 to 1 for the h.f. coils, but progressively less for the l.f. coils, owing to their greater self-capacity.

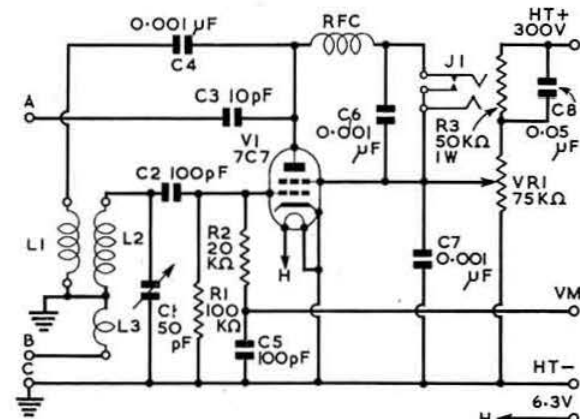


Fig. 1. Circuit diagram of the grid dip oscillator.

The valve is a 7C7, a Loctal type which has the advantages of an all-glass tube, yet obtainable cheaply as "surplus." The grid is connected through the r.f. filter R2C5 to the valve voltmeter. The latter indicates the d.c. potential developed across R1 by the flow of grid current.

Feedback is taken from the anode, through C4, and controlled by the potentiometer VR1, which varies the anode voltage. This voltage is limited to a maximum of 100 by R3. C8 is an a.f. by-pass condenser required when the h.t. supply is modulated to provide a test signal. A closed circuit headphone jack is included in the anode lead so that the unit can serve as a monitor. The test signal is available at high impedance at the terminal A from the anode via C3; or at low impedance at terminal B from the link winding L3. The latter also provides the coupling for the search coil used for resonance determination in inaccessible places.

### Construction

The chassis is built up of 1½ in. wide strips of ½ in. plywood, and measures 3½ in. by 5½ in. overall. The reduction

in length allows for the thickness of the coil socket, so that the total length is kept to 6 in., as in the other units. The layout is shown in Fig. 2.

An L shaped aluminium screen is fitted under the chassis to eliminate hand-capacity effects when the controls are operated, the horizontal portion being flush against the underside of the deck. The tuning condenser, a midget Eddystone type because no suitable surplus component was available at the time, is fitted with an edge-driven slow motion dial. The coil socket is mounted on the outside of the chassis end wall, with its pins protruding inwards through a square opening cut with a fretsaw. The valve is mounted through the chassis, its socket spaced as far below as possible, and does not have to be taken out for stowage (frequent removal of a Loctal valve is inadvisable because the pins are moulded into the glass base and easily damaged). The other r.f. components are grouped around the valveholder, tuning condenser and coil socket. The headphone jack is mounted through the end wall opposite the coil socket and flush with the outside face. The feedback potentiometer is mounted through the deck alongside the jack. The power supply cable has four conductors, carrying l.t., h.t., common negative, and the grid voltage; it is terminated with a four pin miniature plug. The latter is plugged into the socket on the valve voltmeter for grid dip measurements, into the a.f. oscillator when modulation is required, or otherwise directly into the power pack.

The coils are wound on 4 pin valve bases or standard 4 pin coil formers cut down to the same length. The inductance of L2 required for each range is given in Table 1, as well as particulars of the winding data used in the prototype. These should be regarded only as a guide, however, and a good deal of "cut and try" will be needed to achieve a satisfactory overlap. L1 and L3 have to be wound entirely by trial and error, as they are dependent on so many variables. The method of adjusting them is given below.

The search coil consists of three turns, 1 in. diameter, of heavy gauge wire, seized together with thread and well varnished. The coil is attached to a thin wooden handle,

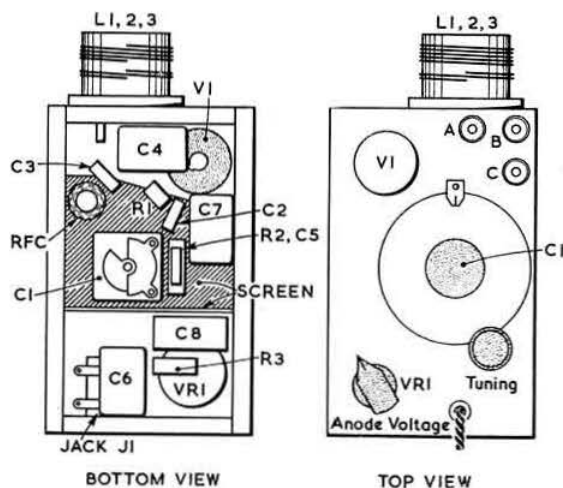


Fig. 2. Layout of components in the g.d.o.

\* Part 1 appeared in the April 1958 issue of the R.S.G.B. Bulletin.

† Surgeon Lt. Cdr., R.A.N., H.M.A.S. Sydney, c/o G.P.O., Australia.



6 in. long, and its ends soldered to a length of twin flex: it is connected to terminals B and C when required for use.

### Adjustment and Calibration

As each coil is wound, it is necessary to adjust first L1 for feedback, second L2 for frequency range and overlap, and finally L3 for optimum coupling. Wind L2 to the inductance shown in Table I, either by using the specifications given, or if the specified wire and former sizes are not available, by using a published coil table. Then wind L1 at the cold (earthly) end of L2, starting with about 20 per cent of the number of turns used for L2. Plug in the coil and apply maximum feedback: if the valve does not oscillate (i.e. no grid current is shown on the meter) reverse the connections to L1. If it still fails to oscillate, add more turns to L1. When oscillation is obtained, the number of turns on L1 should be adjusted until the meter reads full scale with VR1 set to half or three-quarters of maximum.

The exact number of turns on L2 are then adjusted to give the desired frequency coverage: each coil should be set to overlap the adjacent ranges by about 5 to 10 per cent. The easiest way to detect the overlap is to listen for the oscillator signal on a calibrated receiver: if, however, none is available to cover the whole range, a suitable coil and variable condenser combination can be used to give points of comparison between ranges. Its resonant frequency is set to the h.f. end of one range, and should then appear at the l.f. end of the next range, or vice versa. Finally, wind sufficient turns on L3, again at the cold end of the coil, to give optimum coupling to the search coil: this should be just enough to cause a recognisable dip when the latter is coupled to a resonant tuned circuit.

When the various coils have been wound to provide continuous coverage over the required range, each one is calibrated in terms of actual frequency; for this it is necessary to borrow a frequency meter or accurately calibrated receiver. A grid dip oscillator can never be very accurate, owing to the effect of the circuit under test; accuracy of the order of 5 to 10 per cent is the best that can be expected. However, when used as a test oscillator, and provided it is kept away from metal objects and human hands, the error can be reduced to 1 to 2 per cent. Calibration points should be determined at every tenth division of the oscillator dial, and a graph drawn on squared paper for each coil. The

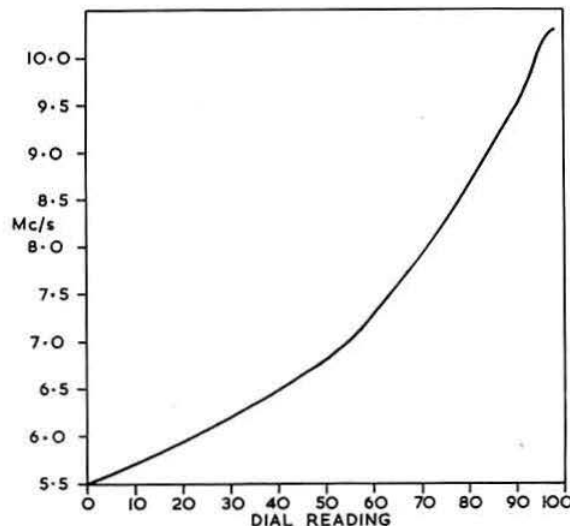


Fig. 3. A typical calibration curve.

TABLE I

Winding details for L2 (see text)

Range	Inductance	Turns
450-600 kc/s	1.3 mH	4 layers each of 50 turns, 34 s.w.g. enamelled wire.
1.0-1.6 Mc/s	370 $\mu$ H	2 layers each of 50 turns, 34 s.w.g. enamelled wire.
1.6-3.0 Mc/s	165 $\mu$ H	2 layers each of 35 turns, 34 s.w.g. enamelled wire.
3.0-5.5 Mc/s	47 $\mu$ H	35 turns, 34 s.w.g. enamelled wire.
5.5-10 Mc/s	14 $\mu$ H	17 turns, 24 s.w.g. enamelled wire.
10-18 Mc/s	4.4 $\mu$ H	9 turns, 22 s.w.g. enamelled wire.

All coils are wound on  $1\frac{3}{8}$  in. diameter formers.

finished charts are pasted on to thin cardboard and varnished with shellac for permanence. A specimen calibration curve is shown in Fig. 3.

### Operation

For resonant frequency measurements, the grid dip oscillator is plugged into the valve voltmeter, and the latter into the power pack. The voltage selector plug is inserted in the socket marked g.d.o., S2 set to d.c. negative, and the oscillator feedback adjusted to give a convenient grid current reading near the upper end of the scale. The oscillator coil is at first coupled fairly tightly to the coil under test. When a marked dip has been found, the coupling is loosened until resonance can just be detected by a flicker of the needle, and the frequency read off from the appropriate chart. If the test circuit is variable, it is better to set the oscillator to a known frequency and tune the former; the resulting dip is easier to locate than when the oscillator itself is tuned.

To use the unit as an absorption wavemeter or field strength meter, reduce the feedback to zero. The valve then acts as a rectifier, and the meter reads only when r.f. energy is introduced from an oscillator or transmitter. If necessary, sensitivity can be increased by advancing the regeneration control to the critical point just short of oscillation.

To measure modulation percentage, set the valve voltmeter to read 6 volts d.c. negative, and connect the socket

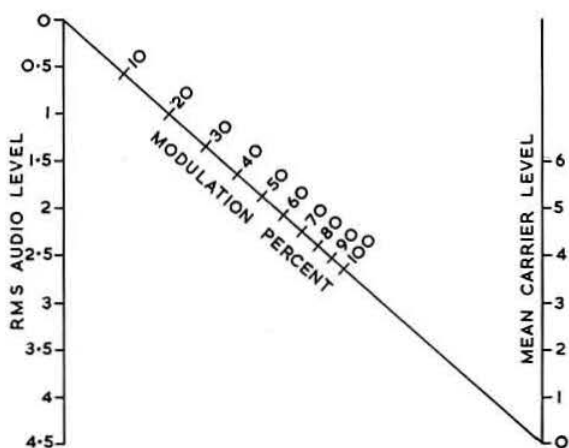


Fig. 4. Abac for determining modulation percentage. The preparation of such a chart for use with other valve voltmeter ranges is described in the Appendix.

marked g.d.o. to the input terminal A by a short jumper lead. Tune the oscillator unit to the transmitter frequency, and increase the coupling, or the regeneration control, until the meter reads exactly 6 volts: then switch the voltmeter to a.c. and take a second reading. The first figure is the mean carrier level, and the second the r.m.s. value of the modulating voltage which must be multiplied by 1.4 to bring it to the peak value. The modulation percentage is then 100 times the peak audio voltage, divided by the mean carrier voltage. Note that the absolute values of these figures are quite immaterial; it is only the ratio of one voltage to the other that we are concerned with in this instance. To save mental arithmetic, a conversion table or chart can be drawn up or, better still, an abac such as that shown in Fig. 4. With this, there is no need to set the meter deflection exactly at 6 volts when taking the first reading: place a straight edge between the carrier level on the right hand scale, and the audio level (as read directly off the meter) on the left hand scale, and read the modulation percentage where it cuts the diagonal line. If the meter is scaled differently to the one described, an abac to suit it can be drawn according to the instructions given in the appendix to this article.

The instrument can be used as a modulated signal source for receiver testing if it is plugged into the a.f. oscillator instead of the valve voltmeter. The regeneration control and the a.f. attenuator are both turned up to maximum, when the modulation level will be in the region of 40 per cent.

For use as a monitor, the unit is plugged directly into the power pack, and a headphone plug inserted into the jack.

## Downward Modulation in Beam Tetrode Amplifiers

FOR the last few years the principal interest at G8ON has been telephony on the 1.8 Mc/s band. During this time almost every possible fault has been encountered, and by trial, error, and the help of others, overcome. The first efforts were greeted by requests from earnest but truthful friends to (a) take "it" off the air, and (b), jump on "it."

A period devoted to the study of distortionless audio amplification was successful in reducing the principal faults to one which endured with amazing persistence—downward modulation. This at last yielded to treatment, but not until many suggestions had been tried and found wanting. Because the writer has not found the cause of his troubles mentioned in any textbook (and many were consulted) these notes are offered for the use of the many amateurs who can regularly be heard complaining of this trouble.

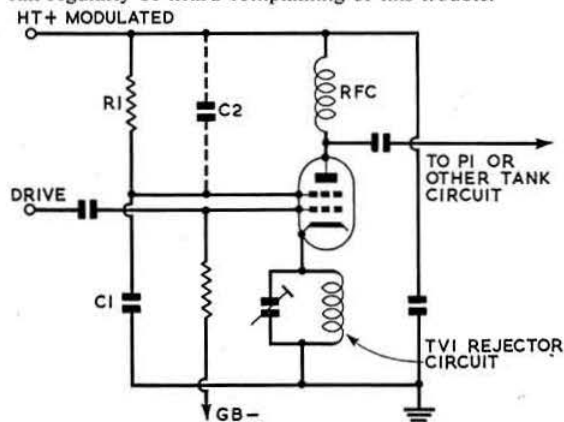


Fig. 1. Basic circuit of a tetrode or pentode p.a.

Telephony signals are checked with the regeneration control reduced just below the oscillation point, adjusting the coupling to the transmitter to give enough audio volume. Lighter coupling is needed for c.w. monitoring for which the unit must be oscillating and it may be necessary to remove it some distance from the transmitter for optimum results.

### Appendix

To construct an abac to suit a meter scaled 0 to X volts, proceed as follows. Draw, on a sheet of graph paper, a rectangle and its diagonal similar to that of Fig. 4, and of a size appropriate to the proposed scale. Graduate the right hand edge from 0 to X volts, starting from the bottom. Graduate the left hand edge in the opposite direction at twice the scale (i.e. so that one division on the left is equal to two divisions on the right) up to a point equal to 0.707 of X volts; call the latter value Y. Place a ruler or straight edge across the diagram, from X to Y: the point where it cuts the diagonal represents 100 per cent modulation. Keeping the ruler on X at the right hand end, move it to cut the left hand scale at a point equal to 90 per cent of Y; mark its intersection with the diagonal as 90 per cent modulation. In the same way, the diagonal line can be calibrated at intervals of 10 per cent as far as the top left hand corner, which represents zero modulation. Inspection of Fig. 4 should make this process clear.

If the valve voltmeter should be calibrated to read peak voltage instead of r.m.s. voltage, the abac could be constructed in the same way, taking Y as equal to X instead of 0.707 X.

By H. S. CHADWICK (G8ON)\*

One often hears the remark "I've got downward modulation, but it doesn't seem to matter," sometimes followed by the wistful comment "I always have had downward mod. on the Top Band rig." It is true that so long as no more is required than an "S9 plus" cross-town signal, it does not matter. In fact, neighbouring amateurs may well prefer it. But over a longer distance the loss of power which it betokens may well make all the difference.

The first suggestion of a cure to be offered will almost certainly be that there is not enough r.f. drive to the p.a. In the writer's case this was prima-facie unlikely, as a 6AG7 buffer was obviously underworked in driving a 6L6G p.a. This indeed proved to be the case. A search for parasitics was equally unrewarding, while the regulation of the power supply was not bad enough to account for the fact that with the modulator gain control fully advanced there was deep downward modulation. With the gain reduced, there was practically no modulation at all in spite of the fact that the modulator valve (a 6L6G) was giving an output of 6 watts, surely enough to modulate fully a 10 watt p.a.

From the foregoing it will appear obvious that the writer was using anode-and-screen modulation. The whole trouble lay in the fact that he was not—merely thought he was. The sole reason for modulating both anode and screen of a tetrode or pentode lies in the fact that a variation in anode voltage alone produces very little change in anode current. For satisfactory modulation, it is necessary also to vary the screen grid voltage, in the same phase and to the correct extent. Failure to obtain this condition seems to be due to the technique of building a good c.w. rig and then modulating it. With the screen grid voltage unvarying, as with c.w., during the periods of transmitting, i.e., "mark," the feeding of voltage to the screen grid is a simple matter (R1, C1 in Fig. 1) but when it comes to "swinging" this voltage with modulating power, things become more complex.

\* 25 Raines Avenue, Worksop, Notts.

## Operating Conditions

The "family" of  $I_a/V_a$  curves relating to this type of valve are well known. A "family" of very similarly shaped curves are obtained when, instead of taking  $V_{sg}$  as fixed and plotting a curve for each value of  $V_g$ , the value of  $V_g$  is fixed and a curve plotted for each value of  $V_{sg}$ . Such a

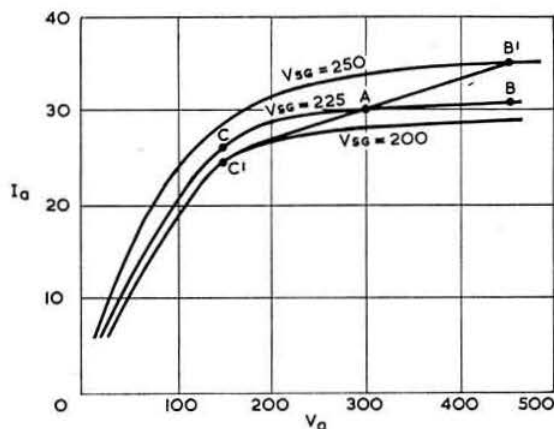


Fig. 2. Family of  $I_a/V_a$  curves for a tetrode or pentode.

set of curves is shown in Fig. 2. If we assume that the working point is initially at A and that the screen grid voltage does not vary with modulation, then a change of anode voltage from 150 to 450 will raise the current but little at the higher voltage, but will lower it measurably at the lower voltage, i.e., there is downward modulation. By permitting the anode characteristic to follow the line  $B^1AC^1$ , however, it can be seen that this swing of both anode and screen voltage together causes a symmetrical rise and fall of anode current, and moreover, a much greater one.

It is clear therefore that what is needed to cure downward modulation in this case is more audio drive to the screen grid. In some designs this is achieved by inserting an a.f. choke between the screen feed resistor and the r.f. bypass capacitor (and bypassing the choke terminal remote from the valve to earth via a capacitor of several microfarads) so that the varying screen grid current will develop an audio voltage across it. Having tried this system the writer is not in favour of it, because the screen grid voltage does not vary in phase with the anode voltage, since one current is passing through a resistive load and the other through an inductive load, so far as its a.f. component is concerned.

## Bypassing the Screen Resistor

A more effective method is to bypass the screen dropping resistor, using a capacitor of say  $0.005\mu F$  to  $0.01\mu F$ , the most suitable value in any individual design being easily found by experiment. This capacitor ( $C_2$  in Fig. 1) being connected in parallel with the screen dropping resistor, reduces the a.f. impedance in the screen grid circuit, and not only eliminates this cause of downward modulation, but renders the modulating voltage much more effective, so much so that the modulator gain control can be backed off appreciably.

In the writer's case it was decided that the excess of available audio power could be used to the best advantage in the form of negative feedback. Two feedback loops are used, the first from the anode of the second speech amplifier valve (a 6C5) to the cathode of the first speech amplifier (an SP61 operating as a "starved" voltage amplifier), and the second loop from the anode of the modulator (6L6G) to the cathode of the 6C5. The upper

frequency limit has been restricted somewhat by 100pF capacitors connected in parallel with the anode load resistors of the first two valves, the "narrower" signal being more effective in a crowded band. It must be remembered when correcting audio response in this way that the anode r.f. bypass capacitor, and perhaps other capacitors between the modulated h.t. line and earth will be contributing to the "top-cutting" effect, perhaps so much that their values may have to be reduced.

The method described has been used with valves of the 6L6, 807 and KT8 class and has proved entirely satisfactory. It may not apply to all r.f. pentodes and tetrodes used as p.a. valves but it is well worth trying.

## B.B.C.-TV Sound Heard in India

FROM D. R. Clamp of Madras comes news that the sound accompaniment to the B.B.C. Band I Television transmission was being regularly heard in India early this year. On February 9, the signal faded only occasionally between 11.00 and 12.00 G.M.T. Mr. Clamp is using a converter comprising a 6AK5 r.f. stage and a 6J6 mixer with tunable oscillator feeding into a BC348 receiver. The aerial is a 14 Mc/s Windom about 40ft. high.

## Don't Fool Around With H.T.

*In the little old town of Electron,  
In the County of Anode Bend,  
There's a grave of a radio technician,  
Who lies earthed at his positive end.  
We'll give in all fairness he was good at his job,  
He had brains,  
But he was once a little too careless,  
When fixing the plug to the mains.  
There's a moral to this little story,  
A moral an infant could see,  
If you don't want a short circuit to glory  
Don't fool around with h.t.*

—J. Hatch (B.R.S. 21236).

## SECOND ANNUAL— RADIO HOBBIES EXHIBITION

ROYAL HORTICULTURAL SOCIETY'S OLD  
HALL, VINCENT SQUARE, LONDON, S.W.1

November 26-29, 1958

★ ★ ★

The Exhibition Committee invites members all over the country to offer for display equipment of every type from gadgets to complete transmitters and receivers. Offers only in the first instance should reach R.S.G.B. Headquarters by September 30, 1958. A Silver Plaque will again be presented in connection with the Constructors' Competition.

★ ★ ★

Enquiries regarding stand space should be addressed to the Exhibition Organizer, P. A. Thorogood (G4KD), 35 Gibbs Green, Edgware, Middlesex.



# Technical Topics

BY PAT HAWKER (G3VA)

"If you can't hear them you can't work them" is a phrase that has been handed down from the earliest days of Amateur Radio. Over the years the radio magazines have reflected the efforts of innumerable amateurs to lower the noise factors, improve the signal-to-noise ratios and shape the response curves of receivers from two-valves upwards. In fact receivers are always *NEWS*.

It was interesting to see in an American journal (*QST*, March 1958) a detailed account of the clever tuning principle of the British built Rascal RA-17 communications receiver with its 5 ft. long scale (directly calibrated 0-1000 kc/s) used in conjunction with a non-critical 1-30 Mc/s band-set dial. By means of a triple mixing system (see Fig. 1) the variable oscillator provides continuous reception over 0.5-30 Mc/s whilst tuning 40.5-69.5 Mc/s without switching and with automatic correction of drift. The 1 Mc/s tuning range is provided by tuning over 2-3 Mc/s. To tune, say the 14 Mc/s band, all that is necessary is to set the "Megacycles" dial to about "14" and then the "Kilocycles" dial can be set to within some 200 c/s of the desired frequency.

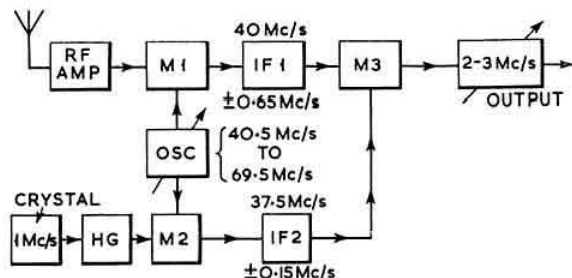


Fig. 1. Block diagram of the Rascal RA-17 communications receiver.

## Spurious Responses

One of the most serious problems in multiple conversion tuning systems is the elimination of spurious responses (achieved, we understand, in the RA-17 by elaborate screening and filtering) but even in much simpler single or double superhet receivers it can sometimes prove very difficult to track down and eliminate spurious signals. A typical example of the difficulties into which one can run when designing amateur converters came our way recently. This was with a normal type of 21 Mc/s converter feeding into an amateur-bands-only receiver switched to 7 Mc/s. Results on 21 Mc/s were most satisfactory but it was soon noticed that there appeared to be an unusually large number of commercial stations operating in the c.w. band around 21 to 21.15 Mc/s. With the high first i.f. of 7 Mc/s and a fairly high gain regenerative r.f. stage it seemed unlikely that these could be due to the usual "image" signals which would have to be on about  $21 \pm (2 \times 7)$  Mc/s, i.e., 7 or 35 Mc/s. The answer, which could apply to almost any converter with the oscillator tuned to the low side of the signal frequency, proved to be as follows: to tune 21 Mc/s c.w. the oscillator was set to approximately 14 Mc/s and the tuning was by means of the main receiver 7-7.15 Mc/s. But the oscillator was also producing and injecting its second harmonic of 28 Mc/s and this was producing a response on 21-20.85 Mc/s. The r.f. circuits could provide relatively little protection to commercial signals so close to the desired tuning range, with the result that every time the c.w. end of 21 Mc/s

was tuned all strong signals between 20.85-21 Mc/s were also being heard.

A useful formula when investigating most spurious responses in superhet receivers is  $m f_p \approx n f_n \approx f_i$  where  $m$  and  $n$  are integers,  $f_p$  is the frequency of the unwanted signal,  $f_n$  is the local oscillator frequency, and  $f_i$  is the intermediate frequency. In the above example,  $m$  was 1,  $n$  was 2 and a spurious response to 20.9 Mc/s would be as follows:  $20.9 \approx 2 \times 14 = 7.1$ . One answer to the problem would be to run the oscillator on the high side of the signal frequency, although this has the drawback of increasing oscillator drift.

## Squelch

A system which mutes the signal in the absence of the required carrier can be very useful for those who like listening on the amateur bands while pottering around the shack. One of the simplest methods is to use the control voltage from the a.g.c. line to remove muting bias from an a.f. amplifier stage. In *QST* (March 1958) W3LJV described a simple circuit, primarily intended for the NC300 but equally applicable to most receivers. The basic circuit is shown in Fig. 2. An alternative circuit, not needing a relay, appeared in *CQ* (April 1958).

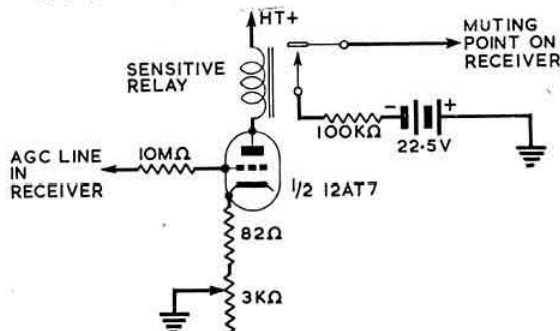


Fig. 2. Simple squelch circuit.

Both the BC455 and the BC453 surplus receivers in good supply and *CQ* (February 1958) shows how these two sets can be combined to form a low-cost s.s.b. receiver.

In the February 1958 issue of *Radio REF*, F9VR draws attention to the ease with which the r.f. input coil on the AR88 can be burnt out by r.f. from the transmitter, even where an aerial change-over relay is used (this point also formed the basis of a *BULLETIN* article some years ago). His method of safeguarding the coil is to mount a miniature double-pole relay so that the two wires between the aerial sockets and the coil are each short-circuited to chassis during transmission.

Even the best receiver can usually be improved by a general overhaul and re-alignment and some useful notes on servicing communications receivers are given in an article in *Radio and Television News* (March 1958).

## Valve Equivalents

One of the difficulties experienced when following designs in American journals is that of translating U.S. valve types into British type numbers where these differ from the U.S. designations. The list given below covers some of the more popular types for receivers (British commercial and service type numbers in brackets):

6AB4 (EC92); 6AK5 (CV850, EF95); 6AL5 (CV140, EB91, D77, D152, 6D2); 6AM6 (EF91, SP6, Z77, 6F12); 6AQ5 (CV1862, EL90, N727); 6AV6 (EBC91); 6BA6 (CV454, EF93, W727); 6BE6 (CV453, EK90, X727); 6C4 (CV133, EC90, L77); 6CA7 (EL34); 6J6 (CV858, ECC91); 6U8 (ECF82); 12AT7 (CV455, ECC81, B309); 12AU7 (B329, CV491, ECC82); 12AX7 (B339, CV492, ECC83).

## Here and There

A simple method of reducing the overall length of dipoles by winding part of the elements on to formers and dropping the ends down to increase bandwidth is given in *CQ* (February 1958).

But the prize for miniature aeriels must surely go to WOMBH's "The Little Giant" now in commercial production in the United States. For 14 Mc/s this aerial is only 27 in. high by 22 in. wide and can be mounted on the television rotating masts in common use in the U.S.A.; yet the maker's claim it can do the work of a standard 32 ft. dipole over an adjustable 100 kc/s bandwidth. Has any British station worked a W or K using one yet?

A short-duty-cycle power supply for s.s.b. using the radar method of a large reservoir condenser to reduce transformer costs appears in *CQ* (February 1958).

A neat fully-transistorised electronic key using two junction transistors (one of them an OC16 power type) is described by OH2ZE in the Finnish *Radio-amattööri*, No. 1, 1958.

Automatic senders for CQ calls have always appealed to amateurs with a mechanical bent (was it 1936 or 1937 when G2MI's auto-sender enlivened the R.S.G.B. Radiolympia stand?) but it is some years since any fundamentally new ideas have been seen. However, PA0KON breaks new ground with his "Semi-electronische Seinmaschine (SES)" in the Dutch *Electron* for February 1958. An English translation would be needed to grasp fully this most novel device but it is based on two phototransistors, a "flip-flop" switching circuit and a simple code wheel.

## R.S.G.B. Recorded Lecture Library

APPLICATIONS to borrow recorded tape lectures should be addressed to the new Honorary Librarian, Mr. F. H. Lawrence (G2LW), 78 Venner Road, Sydenham, London, S.E.26, who has taken over from Mr. E. Fish (G2HCZ). A list of lectures available may be obtained from Mr. Lawrence on receipt of a stamped addressed envelope. Mr. Lawrence will be on holiday from June 14 to 28, but requests already received will be dealt with.

## Rare County on Top Band

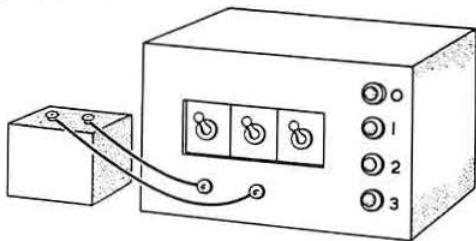
G3WW of Wimlington, near March, offers to make skeds with stations requiring contacts with Cambridge-shire on Top Band.



At the Isle of Thanet Radio Society Dinner held at the San Clu Hotel, Ramsgate, on March 15, 1958, the founder of the Ham Hop Club, George Partridge (G3CED), had the pleasure of entertaining several other members of the Club, including representatives from Western Germany and Belgium. In this picture, from left to right, can be seen DJ2SY, ON4ZX, G3LQI, G3CED and G3LHI. The Chair at the dinner was taken by the President (G. A. Chapman, G2IC) who had the support of R.S.G.B. Past President Arthur Milne (G2MI) and General Secretary, John Clarricoats (G6CL). The Chairman of the Society (Norman Cramp, B.R.S. 16756) was in charge of the arrangements.

## A Circuitry Brain Teaser

A MYSTERIOUS "little black box" is shown connected to a 6 volt battery. On the front panel are four 6 volt bulbs (labelled respectively 0, 1, 2 and 3) and three toggle switches.



The battery is connected up. There are no other external connections.

When all three switches are up, "0" alone lights.

When any one switch is down, "1" alone lights.

When any two switches are down, "2" alone lights.

When all three switches are down, "3" alone lights.

Each of the switches is of the two-pole, double-throw variety. The only other component in the box is a 6 volt relay possessing a single pair of contacts.

Problem: Draw the circuit.

—GM3BDA.

## Technical Query

MR. K. F. MOSS (G3LPH), 42 Acresfield Road, Timperley, Altrincham, Cheshire, would like to know whether beams with driven elements, such as the 8JK and ZL Special, height for height, offer better low angle radiation characteristics than those with parasitic elements, and if so, why?

## Photocopying Service

MEMBERS who require copies of technical articles which have appeared in periodicals may obtain details of the Science Museum Library Photocopying Service on application to the Director, Science Museum, South Kensington, London, S.W.7. The charges are very moderate and the service provides a means of obtaining copies of articles which have appeared in journals published throughout the world.

## More Pirates Caught

PETER Leslie Allen of Whitehall Close, Chigwell Row, Essex and Stanley Momose of Meath Road, Ilford, Essex, were recently fined £10 each for operating unlicensed radio stations. Confiscation was not asked for.

At Epping Police Court it was stated in evidence that Allen, using an Army surplus transmitter, had operated on a frequency likely to cause interference with distress signals sent out from small vessels, such as fishing boats. Allen was communicating with Momose when G.P.O. engineers called at his house. The case against Momose was heard at Stratford Police Court.

These two unlicensed operators were brought to justice as the result of vigilance on the part of several public-spirited members of the Society resident in the Essex and East London areas.

## C.I.A. Certificate

MR. E. D. WILLS (ZB21) has been informed by the Spanish National Society (U.R.E.) that the C.I.A. certificate offered by that Society can be claimed only by Spanish and Portuguese radio amateurs. The C.I.A. is mentioned in the R.S.G.B. publication *Amateur Radio Certificates and Awards*.

# Modulation and the Clamp Valve

## A Cure for Non-linearity in P.A. Stages

By E. H. TROWELL (G2HKU)\*

THERE appears to be increasing use of the clamp valve method of reducing the p.a. screen potential under no-drive conditions in transmitters. The method has been proved to be a safe and economical means of safeguarding the output valve under c.w. conditions but when full anode and screen modulation is applied the position is a different matter. With full modulation the screen voltage rises and the clamp valve increases its conduction to an extent that clips the positive peaks of modulation and damps the modulation to the screen thus creating non-linearity.

In order to avoid the resultant distortion it is necessary to reduce the amount of audio applied which, of course, results in a significant loss in modulation capability.

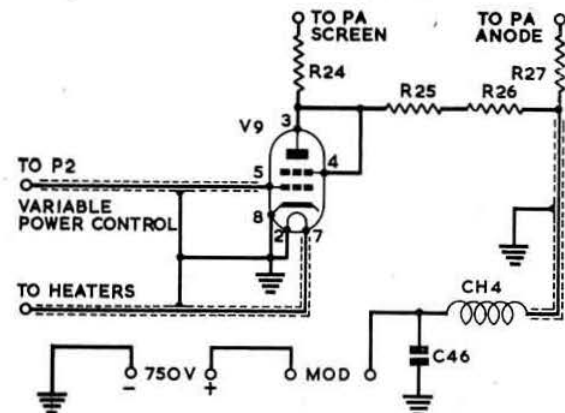


Fig. 1. Original clamp valve circuit.

### The Elizabethan

The writer's first experience of this effect was in an Elizabethan [1] transmitter with a single 807 in the p.a. stage, running 50 watts input modulated by a pair of KT66s. The clamp valve was a triode connected 6L6. With full modulation applied, the p.a. anode current meter jumped backwards on voice peaks until the modulation percentage was reduced to 60 to 70 per cent. On-the-air tests confirmed the low percentage but upon increasing the amount of audio power available, reports varied from "flat tone" to "not enough modulation but my S meter is jumping."

### Circuit

Fig. 1 shows the original Elizabethan clamp valve circuit, while the simple modification to allow full anode and screen modulation is shown in Fig. 2. It will be seen that an a.f. choke is inserted in the p.a. screen supply between the clamp valve and the dropping resistor. The screen voltage is derived from the anode voltage via the normal screen dropping resistor R25, R26, as in Fig. 1, but the addition of the a.f. choke isolates the clamp valve anode (for audio frequencies) from the modulated screen line. This allows V9 to perform its function as a clamp valve without damping or clipping the a.f. component appearing on the screen of the p.a. S1 enables the choke to be cut out of circuit for

c.w. operation and can be fitted on the front panel. The a.f. choke is mounted inside the chassis under the p.a. stage.

### Results

With the modified circuit it is possible to maintain a steady p.a. anode current reading under full modulation with no distortion. On-the-air tests confirm this with an incremental rather than decremental r.f. meter reading. A further point noted was that without the a.f. choke in circuit there was some interference on an adjacent television receiver when full modulation was applied. This is no longer apparent with the choke in circuit.

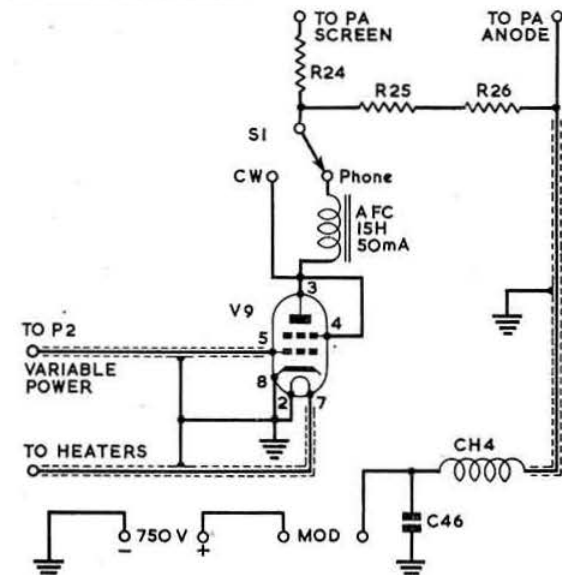


Fig. 2. Modified circuit arrangement. The a.f. choke should have an inductance of 15H at 50 mA.

### Conclusion

The modification has been applied to transmitters using 6L6 and 813 valves and has resulted in a more effective level of modulation being maintained with the added facility of variable power control as in the Elizabethan.

### Reference

- (1) "The Elizabethan," R. L. Varney, R.S.G.B. BULLETIN, July 1953.

### Successful Regional Meeting in Nottingham

ABOUT 84 members attended the East Midlands Regional Meeting in the Mechanics' Institute, Nottingham, on April 20. During the afternoon, there was a lively business session during which a wide variety of questions were answered by Messrs. C. H. L. Edwards (G8TL), W. R. Metcalfe (G3DQ), A. O. Milne (G2MI) and J. A. Rouse (G2AHL). The Chairman was the Regional Representative, Dr. E. S. G. K. Vance (G8SA), who had the support of the C.R., Mr. A. Walmsley (G2HIO) and the T.R. for Nottingham, Mr. B. Shortland (G3DJL).

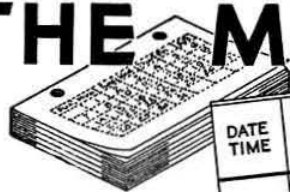
After an excellent high tea, there was a free draw for gifts donated by the radio trade. To conclude the meeting, J. N. Walker (G5JU) of Stratton & Co. Ltd., gave a lecture on communications receivers.

An exhibition of radio equipment for the amateur was arranged by KW Electronics Ltd., Panda Radio Co. Ltd., Stratton & Co. Ltd. (Eddystone), Norman Birkett Ltd. and Philpott's Metalworks Ltd.

\*4a Clyde Avenue, Clyde Street, Sheerness, Kent.



# THE MONTH



DATE TIME	FREQ.	STATION CALLED	CALLED BY	STATION HEARD OR WORKED			IF QSO RESULTED			REMARKS
				R	S	T	MY SIGS.	R	S	TIME OF ENDING QSO

# ON THE AIR

BY S. A. HERBERT (G3ATU)\*

IN the past few weeks, conditions generally seem to have taken a distinct turn for the better. True, the ten metre band is beginning to show signs of taking its annual summer holiday—even in a good year such as 1958, it can be expected to “fold” for all but an occasional opening to DX until Autumn is upon us—but on the other bands and notably on fifteen and twenty, a lively state of affairs has prevailed for much of the time. Forty, too, has had its moments, despite V6T and all the other pests thereabouts. All in all, April was a worthwhile month on the air.

## From Far and Wide

**Mauritius:** Derek Wilson (VQ8AQ) sends news which finally settles his whereabouts. Derek has left Rodrigues Is., where he signed VQ8AQ and, later, VQ8AQR (see April M.O.T.A.) and he is now on Mauritius itself and not on the Seychelles, despite the April note. A VQ9 crept in from somewhere and we apologise to anyone whose hopes of working that rare spot were falsely raised. As far as he knows, the only VQ8 stations outside Mauritius at present are VQ8AJC (Chagos) and VQ8ASR (Rodrigues). The latter is now using a v.f.o. but is not very active. Derek acquired the “ASR” crystals—namely, 7006.6, 7025, 7050 kc/s—and has loaned them to VQ8AG, who already has crystals for 7008 and 7040 kc/s. ‘8AG is active about 16.00 to 18.00 G.M.T. and sometimes around 04.00. VQ8AM is also on the air. ‘8AQ hopes to be active soon with 50 watts or so and he expects to be on 14013, ‘050 and ‘100 kc/s. Gs, particularly in his home county of Durham, will be high on his list.

**Central Africa:** Mal Geddes (ZE3JO) intends going on a photographic and radio safari through Nyasaland, Uganda, Kenya and Tanganyika, staying in Game Reserves for some days at a time. Mal expects to use the B2 rig running at 20 watts input on c.w. and phone and his aerial will be as much wire as he can erect. Dates to watch for ZE3JO/P (Nyasaland), VQ5JO, VQ4JO and VQ3JO are from June 7 to July 14, 1958. QSLs—as usual—will be 100 per cent. Joe Galeski (W4IMP) sends news of special interest to those who worked Paul Stein (VQ4EO) during his memorable crossing of the African Continent in his Land Rover vehicle, when he was on the air with the calls VQ4EO/P, VQ5EO/P, VQ3EO/P, VQ4EO/QO5, VQ4EO/FQ8, VQ4EO/ZD2, FF8DZ/P, FD8DZ/P, 9G1BF (while staying with ‘1BF), VQ4EO/ZD1 and ZD3F/P. The Richmond Amateur Radio Club has kindly undertaken the QSL side of the trip and cards may be had by sending QSLs together with a self-addressed envelope and postage to P.O. Box 1985, Richmond, Virginia, U.S.A.

**Singapore:** VSIHU (R.N. W/T Station, Kranji) says that DX remains the main interest at the Kranji Radio Club and so it may, with recent 14 Mc/s c.w. contacts made with HE9LAC, FB8YY, JZ0HA, KC6JC (E. Carolines), KP6AL, KW6CM, VS4BA, VS5JL, W3PZW/KB6 (Canton Is.), ZS3B, 3A2CD and 9K2AN. Unsuccessful calls were made to KG4AO, VP3AD, FG7XC, KC4AF, ZD9AF, VO2AN, ET2US (always working Ws), PJ2ME, OY7ML, VK9AD (Norfolk Is.) and ZB1HKO, so it seems that DX is there all right in Malaya. VR5AZ has been observed, but the VS gang hear that he is 100 per cent ignorable! During the

month, VSIHU was visited by Doug Bowie (VK3DU) and his XYL and by VR2AP who was expected to leave Singapore at the end of April, bound for Fiji via ZC5, CR10, VR4, FU8 and VR1. Operation will be mainly on 14340 phone, with VK5OW controlling around 12.00 G.M.T. but VSIHU has given VR2AP crystals for 14020 and 14080 kc/s for c.w. use. VR2AP/MM will be used while at sea. VSIHQ left for home on May 2 and is now G3LCS once more. Missing VSIHQ cards may be obtained from 101, Church Green Road, Bletchley.

VK3DU and his XYL are to tour Europe and the U.K., where they are due in May. They can be reached through G6CL or G2MI.

**Maldives Is.:** A flash from VSIHU has it that VS1BB/VS9 was active from the Maldives for three weeks from April 18, on 14050 and 21075 kc/s. Only calls 15 kc/s low were answered. Other activity is lined up for the future.

**Cyprus:** ZC4IP hastens to correct the report that he was in the Low Power section of B.E.R.U. With 150 watts, George has always been far from a junior! His guess as to placings is ZS6DL, VE3KE and ZC4IP (third, as usual!). (What do they say about a good guesser, George? You were nearly, but not quite, correct. See page 522.—Editor.) ZC4IP finds OR4VN's phone on 21 Mc/s good (16.00 to 17.00 G.M.T. but he speaks French, Flemish or Dutch, which rather baffles non-linguists). ZC4IP is now equipped for 160m and though UB5FJ (24.00Z) is the only amateur he hears at the moment, next winter will tell a different tale. George adds the first Cyprus E.DX.C. to his W.A.Z. and c.w. W.A.C., while Wyo., Nev., Ariz., New Mex., Miss., would complete the trick on phone. All excellent work.

**Antarctica:** GM3CDL (St. Andrews) passes news that VP8BT, ‘8BS and ‘8CJ are on their way home. QSLs for VP8CJ should go to J. Wynne-Edwards, Ditton Park, Slough, Bucks.

**Monaco:** Jack Tweedy (G3ZY) expects to be on the air as 3A2CF from August 5 to 17 on 28, 14 and 21 Mc/s and perhaps i.f. also, mostly between 20.00 and 24.00. He thanks G3FPK for lots of help with the details. From G3ZY, he was pleased to work JT1YL and UA00M, both on 21 Mc/s.

## Twenty Metres Again

Twenty has been the consistent band for DX once more and so we start with the happenings thereon. B.R.S. 21279 (Prestwich) heard KC4USB on A3a, while A.1399 in a first report mentions HZ1TA (s.s.b., 21.30) and 3A2BF, HE9LAC and MP4KAA on A3. B.R.S. 2292 (Hounslow) found the band well up to standard and around 06.30-07.00 (when he is usually around), W6, KH6, VK and ZL were consistently strong. A folded dipole collapsed, but Charles found his loft aerial adequate for masses of DX, with W6, CX and HK on phone and VP3AD, KG4AO, LU9ZI, PZ1AM, ZLs and VKs as his best.

B.R.S. 20104 (South Harrow) used his favourite c.w. and emerged from the fray with KC4AF (Navassa Is.), VR3A (‘060, 10.00 to 10.45), KC6CJ (Truk, ‘025, 20.00), VK9JF (Cocos, ‘025, 15.50), ZK2AD (‘090, 08.00), VS4BA (14.30) and KP6AL (‘030, 16.30), while KM6EVR (20.00), FD8DZ, ZK1AK (‘035, 06.30), ZC3AC (‘110, 12.00 to 15.00),

\*Roker House, St. George's Terrace, Roker, Sunderland.

AC5PN ('010, 19.30) and ZD8JP ('020, 19.30) were all being called. And any one of that bunch would cause a pile-up! Goff has it that mail to C9XF's Mukden QTH has been returned. CR10AC is rumoured to be on 28 Mc/s phone and a VR4 on 14116 kc/s about 08.30. VQ4AQ said Maldiv activity was due from April 15 on 28, 21 and 14 Mc/s, A1 and A3. Finally Goff asks listeners for their latest "heard" scores. His own now tally a respectable 40/252.

**B.R.S. 20317** (Bromley) added KC4AF (QSL via W8TJM) to his impressive score and also logged such c.w. DX as FB8BD, '8ZZ, FE8AH ('045, 19.00), FL8AC (20.00), HS1C (15.20), KM6EVK (18.40 to 20.00), KP6AL (07.00 and 16.00 to 17.00), KX6BP ('077, 14.30), ST2AR, UA1KAE, VK9XK, XZ2TH, XW8AI, ZC5AL ('016, 15.20) and ZK1BS (05.00), with HS1A ('300-17.40) and XV5A ('300, 16.45) on s.s.b. **B.R.S. 20135** (Newport, I.O.W.) still digs VKs from the phone QRM and also heard CT2AH, while **B.R.S. 20106** (Petts Wood) continued his researches which this time resulted in OH0NC (A3a), OA4HI and XE2DO (07.20) on A3 and, on A1, such choice ones as KX6BG, KX6BP (14.00 to 16.00), VQ8AJC ('006, 16.20, chirpy), KC4AF, LU2ZS, '9ZI (21.20, but where?), HSIJN (19.00), FK8AS (19.00), '8AT, XE1RY, UPOL7 and PK4LB, while PK4AN is also active. With things as they are in that area, these PK4s could be perfectly genuine. Other news from Norman is that VR3P (Christmas Is.) uses 100 watts to a dipole; KM6EVK on 14 Mc/s phone is often in QSO with KL7AFR; an HK0 was due on 28, 21 and 14, A1 and A3 and another PY0 is due on soon; Danny Weil may be DX bound again; ZS9P and ZS9G are on 21 phone. Norman is one of the many who wonder why ZC6—a single city—is counted separate, yet Kashmir—where 4UAJ was active some years ago—still has no country status.

**B.R.S. 21762** (Loughton, Essex) who reports for the first time, is equipped with an S680X receiver, a doublet aerial and a Grundig tape recorder, which is used on all calls for checking purposes. Vernon concentrates on phone, which to date has yielded 37Z/165C. The latest DX includes BV1US (19.00), KH6OR, SV0WB (Rhodes), HK0AI, PYOCK/0 and VK0RR (Mawson), all new ones for him. **B.R.S. 18017** (Warwick) was rightly pleased to log YJ1DL ('032, 10.30) for a rare new one and he also logged ZD3G, FB8BD and 4S7DT, with 9K2AM on phone.

**G3KGV** (Sunderland) heard ZM6AS (07.30) with a

"CQ G" on c.w. and promptly worked him. Ken now needs but four cards for his DXCC. **G3IFB** (Kenton, Mddx.) worked a new one—KC4AF—thanks to a helpful W4, then he QSO'd FY7YF (yes, he QSLs), 3A2CE, JA3IS, ZL, VK, VS6, 9K2, UA0 and PJ5CB (ex-G3EIX) on c.w. and worked VE2YQ/VE8, CT2AH, GC and VK on phone. **G3FPK** (London, E.10) now proudly brandishes JT1AA's QSL—which came via OK1JX (which heartens G3ATU; three QSOs but no card—yet!) and three new ones make Norman 39Z/133C. The additions were FB8BD (Box 1310, Tananarive), 9K2AQ, UO5KPM and UA1KAE/6 (Antarctica), who was a fine signal at 18.30 and easily worked, as everybody was calling KC4USB a few kc/s lower. Others were VQ3CF and SM8AQT/LA/P, whose call is too big for the log-book!

**GM3ITN** (Clydebank) worked KP6AL, PY8YP and W7MWF (Nevada) on the key. Les now has his E.DX.C. and needs just six countries for the 200. **K6JAJ** heard C1A ('060, 06.07 G.M.T.), but does not know if he is genuine. (G3ATU heard an O.K. calling him at 15.00, but missed the C1.) **G2MI** (Bromley) passes news via G8IG that Stan of VK9AD (Norfolk Is.) is on 14120 kc/s phone most mornings and he particularly wants QSOs with the Isle of Wight.

**G8KS** (Petts Wood) heard a KM6 on c.w. at the l.f. end one night and he knows that Christmas Is. and Kermadec are on the band. **G2DHV** (London, S.E. 13) reports DJ0AH still active in Stuttgart, while DL2DE is G3JVQ/DL/A. George has QSLs from CR8AC and FK8AS (14 Mc/s), VP5BL, VK9DB, JA6CS (21 Mc/s) and from SM8YF/MM (7 Mc/s).

#### Fifteen Metres News

After weeks of patchy conditions, the band has brightened noticeably. **G5LR** (Southampton) found a long period when U.S. signals were not very obvious and DX was consequently easier to come by and he worked JT1AA, JT1YL, OY2H, EL1S, DU7SV, VE8UB, VE8PB (both at the same QTH), OR4VN (70S-24E, QSL in 1959!), UL7, UD6, UC2 and UF6, all on the key. **G5LR** runs a 300 ft. wire on all bands, his input being but 40 watts.

**G8KS** reports that VP8BY, 'BM, 'BS, 'BR, 'BT, 'CE and 'CJ have closed down. VP8DA is in South Orkney and 'CZ will be active from South Georgia this year. On South Shetland are VP8CT, 'CQ and 'DB, while VP8CF, 'CN, 'CO, 'DG, 'DH, 'DI and 'DK are in Grahamland. VP8CC

## Frequency Predictions for June 1958

PREPARED BY J. DOUGLAS KAY (G3AAE)

BAND	NORTH AMERICA East Coast	NORTH AMERICA West Coast	CENTRAL AMERICA	SOUTH AMERICA	SOUTH AFRICA	NEAR EAST	MIDDLE EAST	FAR EAST	AUSTRALIA	ANT-ARCTICA
M.U.F.	23 Mc/s 2130	19.5 Mc/s 1900	27 Mc/s 2000	28.5 Mc/s 1900	30 Mc/s 1400	27 Mc/s 0630	26.5 Mc/s 0800	24 Mc/s 0800	25 Mc/s 0800 SP 2200 LP	28.5 Mc/s 1900
28 Mc/s	2130	1900	2000	1800/2000	0800/1800	0630	0800	0800	0800 SP 2200 LP	1400/2000
21 Mc/s	1700/2300	1900	0600/0200	1030/1200 1800/2000	1330/0000	All Day	0400/0730 0900/0000	1100/2200	0600/1200 SP 0600/0900 LP 2130/0300 LP	1700/2130
14 Mc/s	2100/1130	0630/0900	2200/0830	2300/0900	1700/0500	1500/1000	1630/0200	1700/2330	0000/0830 LP 1230/2300 SP	2130/0000
7 Mc/s	0500	0800	0500	0400	0000	2030/0400	0000	0000	2000	0400
3.5 Mc/s	0500	0800	0500	0400	0000	2300/0100	0000	0000	2000	0400

These predictions are based on information provided by the Engineer-in-Chief of the Post Office. All times are G.M.T.

(South Shetlands) passed this news and said that Europe can normally be worked on 21 Mc/s between 19.00-21.00 G.M.T., but from June to August there is a blackout. 14 Mc/s, however, remains open. G8KS worked KC4USB (Marie Byrd Land, 20.00), who uses c.w. and s.s.b. QSL via W3GHS.

G6GH (Boston) netted VP6AG, JT1AA (14.30), KC4AF and YV5HL, all new ones on c.w., while VR2AS (08.45), ZP5JP and JT1YL escaped. GM3ITN pounced upon JT1AA (QSL to hand), KW6CB, XE1PJ, KC4AF and VK5DS (ex-GM3GUS, who sends 73 to old pals). Les was his first GM, too.

G3FPK raised five new ones in CO3YP, F2CA/FC, HP1LO (RST599 at 00.00), KG1CK (who complained of electric razor QRM as the boys got up) and a PY. W6KUY/MM was off Okinawa (c.w.).

B.R.S. 18017 heard FE8AK (270,17.30) on A3 and found KA2BE as loud as a DL4 at mid-day. LX2GH is rough, but genuine. B.R.S. 21762 heard OA4IGY, VR2BC, ZS8I and ZS3AJ with other phone DX. B.R.S. 20106 mentions KW6CB (10.45), CR9AH, JT1YL (11.30 and very strong), OR4VN, KR6, KH6, FQ8 and UL7HB (08.00) on c.w. He also pulled in VP3HAG, 4TAM, VS5JL (16.45; QSL via the VS2 Bureau) and JT1AA (09.30). B.R.S. 20135 logged VK0KT (Macquarie), FS7RT (s.s.b.), VU2CQ, VS2, 6, VK and ZL. B.R.S. 20317 found FE8AH, KC4AF, KG6AGW, UJ8 and XE2FA (18.20) on c.w., while B.R.S. 20104 got good ones in VR3C (200, 08.30) and KB6BH (240, 08.30), both on phone.

B.R.S. 21279 heard SM5KG/YU6M! Genuine and near the Albanian border when heard. G3IFB raised HA5AM/ZL—in Albania!

#### Ten Metre DX

Even ten has picked up somewhat. G3IFB worked KR6SS, VQ6LQ, VE5, 8 and JA on c.w. and VP5BL, UN1AB, ZS8I (17.00), HK and VE8 on A3. G3KGV QSO'd ZD7SA on c.w. and he does seem to be genuine. B.R.S. 2292 heard masses of DX, from which come CR4AP, XE1IQ, TG9AD, ZD3E and CR6 (A3) and CR7LU, 7DQ, XE2FA and PZ1AQ (A1).

B.R.S. 21279 says CN8MM has worked ZD7SA on c.w. (T6). The operator, Bob, will listen for phone. A.1399 logged EL1G, 1H, KR6 and VS6BJ on A3, while B.R.S. 20317 had new ones on c.w. in CT2BO, EA9AP, VE3BQL/SU and ZD7SA (050, 16.00). A.1513 (Leeds) heard VQ2RD, and mentions a musical tuning signal in the middle of the band at 17.00.

For B.R.S. 20135, ten phone produced signals from VK9DB, 4S7YL, FE8AH, VU2, KC4USB, VP8CV, FY7YE, XQ8AG (Chile), VS9AD, VP2LB, 9DL, KA, VK, ZL and lots more. B.R.S. 21762 recorded VP5KJ, YS3IF, VK9LE (Cocos-Keeling), ZD6RM and the 477th contact in the VP6FO/G5DJ marathon. G3ATU heard FB8ZZ on phone at fair strength at 14.00 one day.

G6CL back again on ten after a long spell on 20, was pleasantly surprised to receive a QSL from VS9AP (Sgt. Corlett, Sgts. Mess, R.A.F., Ksar, Aden Colony) only 72 hours after working him on phone. Other contacts have been with Kuwait, Cyprus, Africa (North, South and Central), with plenty of North and South Americans thrown in for good measure.

#### News of the Other Bands

On Top Band, B.R.S. 20106 heard YU1IJK at 20.00 and on March 23, W2EQS and W1BB (1807 kc/s, again) were there from 05.30 to 05.45. Norman logged KC4AF on forty, while eighty c.w. gave him W6VDC and YV5BJ—rare ones indeed on that band. B.R.S. 20317 got XE2FA (06.30) on 3510 kc/s, while on 7 Mc/s he logged CR4AH (015-00.45), KZ5BB, LU and HK5XBX!

GM2HB (Leverburgh, Outer Hebrides) is active again on 7 Mc/s. On the same band, GM3ITN worked UG6AC, PY,

W and VP8CC (23.45)—a catch indeed. G3FPK hears PYs *ad lib*—rock steady and S7 to 8. He works them easily, but nobody else seems to bother. Strange, or are they not considered as DX? Norman gave UA1CA an RST551 report and the UA seemed quite happy! OQ5GU was called at 23.00 (008), but apparently he was hearing only Ws. Apart from which the only rude comment is about a "thing" sending "777 VVV" from 06.00 to 23.00. "This fiend," says Norman, "has stolen the limelight from V6T, who is still there, but weaker." Ah well, one day they may both blow up.

#### DXpedition to Alderney

From May 16 to 30, 1958, G3AAE, G3BQR, G3IFB and G3JUL will be operating GC3AAE in Alderney, Channel Islands, on 14, 21 and 28 Mc/s c.w. and s.s.b. The station will be on the air continuously, 24 hours a day, throughout the whole period. The main equipment will be a Collins KWM-1 running 150 watts input. QSL cards should be sent via the R.S.G.B. QSL Bureau; all received will be acknowledged the same way.

#### Tyrone and Fermanagh on Top Band

GI2DZG/A and GI3FJA/A will be active from Co. Tyrone on May 16 and from Fermanagh on May 17. All QSOs will be confirmed.

So to the next time. Reports should reach the address given in the footnote to arrive please by May 18 for our next issue and by June 18 for inclusion in the July M.O.T.A. Continued good hunting and good luck. 73 to all.

#### "U" or "Non-U"

AFTER making a brief appearance on 28007 kc/s the persistent intruder "U" which operated for many months at the low frequency end of the 14 Mc/s amateur band, has moved to frequencies in the 10 and 15 Mc/s bands. Long may he do his job there in peace if, as we hope, his intentions are peaceful!

Evidently those responsible for the activities of "U" read the R.S.G.B. BULLETIN or their "private ear" has told them that U.K. amateurs are alive to intruders!

### B.E.R.U. CONTEST 1958

Checking of the entries received for the 1958 B.E.R.U. Contest is now almost complete, and the following are the leaders in each section:

#### High Power

1. R. G. Henwick (ZS6DL) ...	4,669 points
2. G. F. Barrett (ZC4IP) ...	4,145 points
3. Victor Williams (VE3KE) ...	3,977 points
4. Don McVicar (VE2WV) ...	3,339 points
5. F. J. U. Ritson (G5RI) ...	3,165 points
6. D. L. Courtier-Dutton (G3FPQ) ...	3,104 points

#### Low Power

1. J. C. van Wyk (ZS6R) ...	2,538 points
2. D. C. Piccirillo (ZD2DCP) ...	1,994 points
3. Edwin D. Wills (ZB2I) ...	1,946 points
4. T. Higginson (GW3AHN) ...	1,735 points
5. E. F. Lawden (VQ3SS) ...	1,690 points
6. F. Johnstone (VS1FJ) ...	1,603 points

#### Receiving

1. W. E. Wilkinson (B.R.S.20317) ...	3,181 points
2. B. R. Dare (G3JFT/HN) ...	3,119 points
3. J. L. Hall (B.R.S.19107) ...	2,819 points

All subject to re-scrutiny.



# Society News and Proceedings

## Region 6 Representative Resigns

THE Council has accepted with regret the resignation of Mr. N. F. O'Brien (G3LP) from the office of Region 6 Representative with effect from July 1, 1958.

## Region 6 to be Split

THE Council has accepted a recommendation of the Membership and Representation Committee that for better administration the present Region 6 should be split.

As from July 1, 1958, Region 6 will comprise the counties of Buckinghamshire, Gloucestershire and Oxfordshire. As from the same date a new Region (No. 17) will be formed comprising the counties of Berkshire, Hampshire and Wiltshire.

Nominations are invited for the offices of Region 6 and Region 17 Representatives in accordance with the procedure set out on page 142, September 1957 issue of the R.S.G.B. BULLETIN, except that the closing date for the receipt of nominations will be June 30, 1958. In the event of more than one person being nominated for either office, a Ballot will be conducted, details of which will be published in the July 1958 issue of the R.S.G.B. BULLETIN.

## Maitland Trophy

THE Council has awarded the Maitland Trophy to J. W. H. Mathieson (GM3EH) who was the Scottish contestant making the highest aggregate score in the Second 1.8 Mc/s Contest 1957 and the First 1.8 Mc/s Contest 1958.

## Eastern Regional Meeting and Mobile Rally

SUNDAY, JUNE 29, 1958

THE SHIRE HALL  
CASTLE HILL, CAMBRIDGE

### Programme

Assemble	-	-	-	-	11.00 a.m.
Lunch	-	-	-	-	12.30 p.m.
Business Meeting	-	-	-	-	2.30 p.m.
Tea	-	-	-	-	4.30 p.m.
Raffle etc.	-	-	-	-	5.00 p.m.

There will be an organized tour of the Colleges for all who are interested. Ample parking space will be available for cars and it is hoped to award a prize for the best mobile rig. Demonstration of Amateur Television.

Rally stations will operate on Top Band and 2m with the call-signs G2ALL/A and G3GGJ/A respectively.

Tickets, price 12/6d. inclusive, may be obtained from the R.R., Mr. T. A. T. Davies (G2ALL), Meadow Side, Comberton, Cambridge or from the Cambridge T.R., Mr. H. Waton (G3GGJ), Arkengarthdale, New Road, Barton, Cambridge. Council will be represented by Messrs. J. H. Hum, G5UM, A. O. Milne, G2MI, and John Clarricoats, G6CL (General Secretary).

The use of The Shire Hall Grounds is by the courtesy of the Cambridgeshire County Council and the use of the inside accommodation is by the courtesy of The Staff Canteen Committee of the County Council.

## TVI/BCI Committee

THE terms of reference of the TVI/BCI Committee, recently set up by the Council, are as follows:

- (i) To examine the non-interference Clause 4 and Note G of the Amateur Sound and Television licences.
- (ii) To contrast and compare the non-interference regulations as applied to the Amateur and other services.
- (iii) To obtain more practical definitions of interference and of technical standards currently accepted by the G.P.O. Engineering Dept.
- To examine the causes and cures of TVI and to consider ways and means of preventing TVI with particular reference to amateur transmitters.
- To prepare for publication information on the prevention of interference.
- To give general advice to members on individual interference problems.
- To consider an approach to the G.P.O. with a view to their formulating acceptable standards for television and sound broadcast receivers.
- (i) To advise the Council on all aspects of interference to or by Amateur Radio from or to sound and vision broadcasting and to protect the interests of members individually.
- (ii) To take all measures deemed necessary to make such advice authoritative and effective.

The members of the Committee are Messrs. D. A. Findlay, G3BZG (Chairman), E. W. Yeomanson (G3IIR) and D. Deacon (G3IIR). The President, Mr. L. E. Newnham (G6NZ), is an ex-officio member.

## West of England Regional Meeting

SUNDAY, JUNE 29, 1958

COLSON'S RESTAURANT,  
HIGH STREET, EXETER

### Programme

Assemble	-	-	-	-	11.30 a.m.
Lunch	-	-	-	-	1.0 p.m.
Photograph	-	-	-	-	2.30 p.m.
Business Meeting	-	-	-	-	2.45 p.m.
Ladies' and Children's Special	-	-	-	-	
Feature	-	-	-	-	2.45 p.m.
Draw for prizes	-	-	-	-	4.15 p.m.
Buffet Tea	-	-	-	-	4.45 p.m.

Tickets, price 15/6 for adults and 7/6 for Juniors (12 and under) are available from the Organizer, Mr. B. Munro, G3FLK, C.R. for Devon, 43 Prospect Park, Exeter, or from Mr. W. J. Green, G3FBA, Region 9 Representative, 82 Bloomfield Avenue, Bath (Telephone: Bath 3861). Council will be represented by Messrs. C. H. L. Edwards, G8TL, E. W. Yeomanson, G3IIR, and John A. Rouse, G2AHL (Deputy General Secretary).

**Present:** The President (Mr. L. E. Newham in the Chair), Messrs. W. H. Allen, H. A. Bartlett, N. Caws, C. H. L. Edwards, D. A. Findlay, W. J. Green, J. H. Hum, E. G. Ingram, W. R. Metcalfe, A. O. Milne, W. A. Scarr, A. C. Williams, W. E. Yeomanson, John Clarricoats (General Secretary) and John A. Rouse (Deputy General Secretary).

**Apology for Absence**

An apology for absence was submitted on behalf of Mr. F. Hicks-Arnold.

**Absent:** Messrs. R. H. Hamman and H. W. Mitchell.

**TVI-BCI Committee**

It was reported that Mr. D. Deacon (G3BCM) had accepted the Council's invitation to serve on the TVI-BCI Committee. Mr. G. C. Fox (G3AEX) had declined the invitation.

**Resolved** to invite Mr. D. A. Findlay to serve on the Committee. (Mr. Findlay has accepted the invitation.—EDITOR).

**Tape Recorded Lectures**

It was reported that Mr. F. H. Lawrence (G2LW), had accepted the Council's invitation to undertake the duties connected with the organisation of the Society's Recorded Lecture Library.

**Finance**

**Resolved** (i) to receive and adopt the Cash Account for February 1958 as prepared and submitted by the Secretary. (ii) to receive the Financial Statement for the eight months ended February 28, 1958, as prepared and submitted by the Honorary Treasurer.

**Reports of Committees**

**Resolved** to receive as Reports the unconfirmed Minutes of Meetings of the Technical, V.H.F., R.A.E.N., Finance and Staff, and Publications Committees.

**Resolved** (i) to accept a recommendation of the Technical Committee to increase the size of one issue of the BULLETIN to 56 pages in order to give additional publicity to R.S.G.B. I.G.Y. activities. (ii) to receive a Progress Report prepared by the Editor of *The Amateur Radio Handbook* (Mr. S. K. Lewer). (iii) to receive a Progress Report prepared by the I.G.Y. Co-ordinator (Mr. G. M. C. Stone).

The Council took note that it is the view of the Finance and Staff Committee that the Society should make every endeavour to maintain subscription rates at their present levels.

The Council accepted other recommendations of the various Committees.

**Membership**

**Resolved** (i) to elect 50 Corporate members and 18 Associates. (ii) to grant Corporate membership to 8 Associates who had applied for transfer. The Secretary reported that 82 of the 691 members whose subscription became due on December 1, 1957, became three months overdue on February 28, 1958, and that 15 of the members concerned had written to resign.

**Applications for Affiliation**

**Resolved** to grant affiliation to the No. 1 Special Communication Regiment (City of London) Royal Signals, T.A. Amateur Radio Club; Ainsdale Radio Club; and Marconi Apprentices Amateur Radio Club.

**National Convention**

Mr. Metcalfe reported that after consulting local members and representatives of the Bridlington Corporation he had decided to ask the Council to agree to cancel the proposed National Convention in Bridlington.

**Resolved** (i) to rescind an earlier resolution that a National Convention

be held in Bridlington during September 1958. (ii) to invite the Region 2 Representative to organize an O.R.M. in Bridlington on September 21, 1958.

The President thanked Mr. Metcalfe for his efforts to organize a National Convention in Bridlington.

**V.H.F. Manager's Conference**

**Resolved** to invite Mr. F. G. Lambeth to represent the Society at the Region I V.H.F. Manager's Conference to be held in Bad Godesburg from July 21 to 26, 1958.

**V.H.F. and QSL Managers**

**Resolved** (i) that the offices of V.H.F. Manager and QSL Manager shall in future be confirmed annually at the January meeting of the Council. (ii) that Messrs. F. G. Lambeth and A. O. Milne be confirmed in their offices as V.H.F. Manager and QSL Manager respectively for the current year.

**Technical Library**

**Resolved** (i) to accept a proposal that a Technical Reference Library be established at Headquarters. (ii) that the Finance and Staff Committee be requested to examine the financial aspects of the proposal.

**National Radio Show, Earls Court**

**Resolved** to take space in the gallery at the 1958 National Radio Show.

**Income Tax Repayments**

It was reported that the Inland Revenue had made a repayment to the Society of £166 13s. 6d. under Section 377 (2) of the 1952 Income Tax Act.

**O.R.M.s.**

(a) **Resolved** to authorize the Devon C.R. to organize a raffle in connection with the Region 9 O.R.M. to be held in Exeter on June 29, 1958.

(b) **Resolved** (i) to authorize the Representative for Region 5 to organize an O.R.M. in Cambridge on June 29, 1958. (ii) to authorize the Representatives for Regions 12 and 13 to organize O.R.M.s during the autumn of 1958 in Aberdeen and Edinburgh respectively on dates to be mutually agreed.

**Region 14**

**Resolved** (i) to confirm the appointment of Mr. D. R. Macadie (GM6MD) as Representative for Region 14. (ii) to enquire from Mr. Macadie whether he would like to put forward a proposal for holding an O.R.M. in his Region during 1958.

**I.A.R.U. Calendar No. 55**

**Resolved** (i) to vote in favour of the admission to membership in the International Amateur Radio Union of the Amateur Radio Society of India and Polski Związek Krótkofalowców (Poland). (ii) to vote in favour of a proposal that in future the W.A.C. certificate (issued by the I.A.R.U.) shall be awarded only to members of Member-Societies in the Union. (At the moment amateurs in countries where there is no Member Society may claim the W.A.C. certificate on payment of 50 cents.—EDITOR).

**Insurance**

A member of the Council enquired whether the Society's insurance policies cover local groups against accident and third party risks incurred during N.F.D. and other communal functions. It was stated that no such cover is provided by the Society's policies.

The suggestion was made that groups should take out a policy to cover accident and third party risks. It was stated that the premium for such a policy would be quite small.

*The meeting closed at 9.10 p.m.*

**Can You Help?**

● E. D. Collins, Advertising Assistant to the A.R.R.L., who is anxious to obtain a copy of a small booklet or pamphlet which he believes was published shortly after the Flying Enterprise adventure (December 23, 1951-January 9, 1952)?

Mr. Collins understands the booklet contains all the messages which passed between Capt. Kurt Carlsen and the stand-by rescue vessels and similar communications.

Information should be sent direct to Mr. Collins, c/o A.R.R.L., 38 LaSalle Road, West Hartford 7, Conn., U.S.A.

● A blind, semi-invalid amateur who wishes to borrow a small band-switched top band transmitter for a few months? Offers to Mr. H. L. Clarke (G3DWA), "Westaway," School Lane, Newton, Kirkham, Lancs.

● Brian M. Silverman (A.1238), Students' Union, The University, University Road, Leicester, who requires information regarding the addition of an "S" meter to the RCA Receiver type AVR20?

**LONDON MEMBERS' LUNCHEON CLUB  
SOCIAL EVENING**

**JUNE 12, 1958**

**BEDFORD CORNER HOTEL,  
BAYLEY STREET, TOTTENHAM COURT ROAD,  
LONDON, W.C.1.**

**DANCING — ENTERTAINMENT  
SPECIAL PRIZES**

*Tickets, price 10/- each including buffet, may be  
obtained from Frank Fletcher (G2FUX),  
11a Ickenham Road, Ruislip, Middlesex.  
(Ruislip 2763)*

# FOUR METRES



# AND DOWN

By F. G. LAMBETH (G2AIW)\*

WELL, it has happened! Ever since the advent of transistors, v.h.f. enthusiasts been waiting for types suitable for use in their bands. At the Fourth International V.H.F./U.H.F. Convention on May 17 it is hoped that the results of F3SK's extremely successful experiments with transistorized v.h.f. gear will be on show. There are two pieces of equipment, one a 145 Mc/s transmitter/receiver which contains (at the moment, as the experiments never seem to cease), 8 valves, 22 transistors and 9 diodes. The receiver has what F3SK calls "all modern comforts" such as double conversion, crystal control, b.f.o., a.v.c., noise limiter, S meter, etc. The second is an entirely transistorized 145 Mc/s converter with overtone crystal control. Both are the result of more than six months work. F3SK's technical ability is already very well known to us.

All the transistors used are available in France, not development or experimental ones. Next year it is hoped to build 435 Mc/s variants of the above. As far as 2m is concerned, we can foresee a great expansion of portable/mobile working now that v.h.f. transistors are becoming available.

The transistors are RCA "drift" type 2N247 and 2N384. Their performance is quite remarkable on h.f. and v.h.f., the unity amplification frequency being 132 Mc/s for the 2N247 and 250 Mc/s approximately for the 2N384. Their characteristics are within very narrow tolerances. After measuring 16 2N247s (not of the same production) F3SK found the shift of some essential data like input resistance, bias and current gain was 15 per cent only. The pattern is broader for the 2N384 but not at all prohibitive. The power dissipation is 35 mW at 71° centigrade for the 2N247 and 120 mW for the 2N384. Complete data for the 2N247 may be found in the *RCA Handbook*, but the 2N384 is not yet in print.

F8OL (Pierre Revirieux) is now a General in French Army Signals. This information, via F9CQ is of great interest. French amateurs must be very happy about a situation which can only redound to their advantage and credit.

By the way, Paris stations are always looking for Gs, but especially at 22.00 on Wednesdays. Skeds are wanted, will anyone oblige? F8MX and F9CQ extend cordial thanks to all those who co-operate by working them in the Contests.

## Two Metre Band Conditions

The grand re-opening which we are all awaiting is still showing no real signs. Conditions during the last period seem generally to have followed the previous pattern. Stations are workable at 100 miles or so and skeds are being kept, but apparently we still have to wait for a sustained improvement. Perhaps by the time you read this Spring will really have arrived!

## Station Reports

G3GRA (Plymouth) gave a rather belated report which showed that even in "dead" periods, stations in Wales and as far as Surrey (G5MA) could be heard. G3GRA informs us that G3KHU is temporarily QRT from his /A location whilst setting up a new shack. G3JGJ is still awaiting a suitable site, but hopes to go portable soon.

He now has a new QTH near Paignton, Devon at about 450 ft. a.s.l. and will be on 2m and 70cm soon. The frequencies are 145.5 and 436.5 Mc/s. G3JGJ informs us that G5ZT is active on 2m and also hopes to do a lot of portable work this summer.

G8VZ (Princes Risboro') found the period March 17 to April 16 to be more or less the same pattern as the previous one. Signals were quite good at times, but fading was still very noticeable on those from over 50 miles away. Skeds with G3JWQ, G3ENY and G3KHA are still being maintained very successfully. On March 17 signals from the north west were at good peak strength with deep fading, falling off again towards the end of the month. Activity over Easter was less than expected. On Good Friday evening G3IKV (Barrow-in-Furness) was heard weakly on 'phone but not contacted. However, G3JWQ was advised and worked G3IKV S9 both ways. On Easter Sunday GW5MA/P (Brecknock) was raised by G8VZ at S9, with deep fading to S5, but a very good QSO. On the same evening conditions to the north and west were quite good, but then returned to their normal winter state until April 14 when signals from the north and the west were again showing better promise. The three skeds gave reasonable signals. G3FKO/M (South Gloucester) was raised. Mobile operation seems to have started again, a few stations being worked from Easter weekend onwards.

G5MR (Hythe, Kent) is modifying his older converter to make it similar to the cascode one now used on 4m. Like G3FKO, G5MR believes that many good contacts are missed owing to the failure to make use of c.w. From a rather poor location G5MR often finds that c.w. calls go unanswered at a time when several phone stations, just too weak to copy, can be heard. This is a great change from a few years ago, and the need for c.w. cannot be too strongly emphasized.

G3JR (Barnes), also in a poor location with an indoor aerial, was very pleased to work GW5MA/P near Brynmawr (Brecknock) on c.w. but was grieved to hear him calling CQ later on a silent band. At 23.00 that evening (April 6) G3IOO (Oswestry) was worked S59 both ways, the first QSO for two months; the rest of the period was "pretty flat." G2KI (Walton-on-Thames) says that GW8MQ (Carmarthen) is on the band with a modified 5 watt transmitter into a five-element Yagi. The receiving equipment is

## Fourth International V.H.F.-U.H.F. Convention

Saturday, May 17, 1958

Prince of Wales Hotel, De Vere  
Gardens, Kensington, London W.8.

Organized jointly by the R.S.G.B. V.H.F. Com-  
mittee and the London U.H.F. Group.

\* 21 Bridge Way, Whitton, Twickenham, Middlesex.



a Labgear converter into an SX17. G2KI hopes to be on two again soon.

**B.R.S. 19162** (Dewsbury) is ill in hospital and we all send our wishes for a speedy recovery and return to the band. **B.R.S. 20133** (Melton Mowbray) finds it increasingly difficult to assess the reasons why, every month, there seems nothing spectacular to report—for instance activity this month has not been too bad on the whole and has sometimes erupted into something worthwhile; whilst it is generally accepted now that a 100 mile path is usually workable. G6XM continues to rock the shack when beaming south and is frequently on the band, whilst the locals (the Notts and Derby boys) are usually around. B.R.S. 20133 is hoping for the formation of a local net and offers the idea to G8CZ, G3FDF, G5HB, G3KHZ and G3FXP in the hope that more activity may result. B.R.S. 20133 is pressing on manfully with I.G.Y. reports, and now listens for GB3IGY three times a day after meals. (Sounds a good prescription.—EDITOR.)

From the *Lea Valley Reflector* we learn that **G3GOZ** (working from B.R.S. 20533's QTH) worked G3LCK/A, G6WU and G4DC using only 1 watt to a 6AK5 (all on c.w.). Although under-modulation and a crude aerial system had to be contended with, G3FP (Thornton Heath) and G8SK were worked on phone. Congratulations. This reminds us that we are always looking for v.h.f. QRP news. We know it is going on, so how about some reports please?

**G3FKO** (Bristol 6) finds the points scoring system proposed by DL3FM an advantage, as it gives some incentive by an increased bonus for really working several distant stations. He thinks this method should apply to R.S.G.B. contests too. Any comments? **G3FKO** is moving to Longwell Green, Glos., seven miles east of Bristol. This QTH is on a ridge 250 ft. a.s.l. with good views from east to west through to the north. There is some high ground (750 ft.) four miles to the eastward, but the location is still infinitely better than Bristol 6. Since his last report, a transmitter has been built for 2m Field Day use in Cardigan. The line-up is EL91 (c.o. 24 Mc/s), EL91 (Tripler to 72 Mc/s), EL91 (Doubler to 144 Mc/s), QV03/20A. Modulation is provided by two 12AU7s and a pair of 6AQ5s in push-pull. **G3FKO** informs us that the Longleat House Mobile Rally station on June 15 will be signposted clearly on the way in to the site. It will be operated by G3FIH, G5DW, GW8UH and other West Country 2m operators in turn.

**G3LCK** (London, N.13) should soon have some gear working for the Southgate Group's Monthly Mobile Rallies at Colney Heath—a 2m talk-in station for those "heroic and enlightened" types with 2m mobile equipment.

#### News from Scotland

**GM2FHH** (Aberdeen) kept a close watch on 2m and 70cm during March, but heard no auroral signals at all. A new aerial now being built may lead to better reports soon. **GM3GUI** (Frickheim, Angus) is now active on 2m and looking for QSOs.

**GM6WL** (Glasgow) says there has been moderate activity lately and conditions have improved slightly with the warmer weather. The first sign of this was during the sked with G15AJ on April 10, when, after many weeks of c.w. only, phone signals of RS55/6 with very little fading were received. On April 12 things improved a lot and G15AJ worked GM3DDE right across Scotland at S9 phone with very little variation. **GM6ZY** was also receiving G15AJ at S9+ and had a first QSO with him. **GM3DIQ** had his first QSO for a long time. The path to **GM6KH** is a difficult one, but G15AJ was heard with deep fades. **GM3GUO** and **GM4HX** were others who heard G15AJ.

**G15AJ**, reporting increased activity in Northern Ireland, mentions G13GQB, '2FHN, '3AXD, '3HMO, '3GXP and '3IJM. The G15AJ sked with G2NY is very consistent.

#### Six Metres

**B.R.S. 20133** is equipped for the band but several checks have not yet produced any signals.

**G5MR** is licensed for 52.5 Mc/s; the converter is working and the transmitter will soon be ready.

**G3IUD** (Wilmslow, Cheshire) has held a licence for the band since March 7, and has been listening and transmitting "CQ" since that date between 08.00 and 09.15 almost daily without hearing one G station. Accordingly he asks us to say that he is on the frequency every day between those times looking for contacts. It would be interesting to know of other Gs who are only able to operate between the hours of 01.00 and 09.30, or is G3IUD paddling a lone canoe? **G3IUD** is running 40 watts to a two-element beam and a crystal controlled converter with one stage of grounded grid r.f. amplification (CV53). The main receiver is an AR77E.

**G4LX** (Newcastle-on-Tyne) reports that the M.U.F. rose on March 22 and a Canadian phone station was heard at 14.24 G.M.T. calling CQ. It is believed to have been VE1OD but only the VE1 part was really identified. On March 23 at 15.00 G.M.T. HB9CZ was heard calling VU. Although this would appear far too late in the day for a QSO between these two, HB9CZ was quite readable but there was no sign of any VU replying!

**VU2CQ** (Bombay) has been hearing B.B.C. television sound on 41.5 Mc/s and the vision signal on 45 Mc/s since December last. The Paris station is also heard regularly. **VU2CQ** is on 50.03 Mc/s from 10.00 to 12.00 G.M.T. daily, transmitting a single dance music record, repeated and interspersed with the call-sign announced as "Victor Uncle Two Canada Quebec." Reports on reception will be welcomed. So far, no contacts have been made. He is also equipped for 144 Mc/s.

#### 70cm Scotland

**GM3GUO**, '6KH and '6WL are always active and had a very interesting three way on phone on April 13.

#### First 144 Mc/s Field Day, 1958

Fine weather and good conditions brought out the portables and mobiles in force for the first 144 Mc/s Field Day on May 4. Signals were to be heard from one end of the band to the other. Countries audible in the Home Counties included F, GC, GW, ON4 and PA0. Full report next month. In the meantime good luck and don't forget the deadline—May 17—for the June issue.

#### R.S.G.B. News Bulletin Service Southern V.H.F. Transmissions

THE Council is endeavouring to obtain the services of one or two additional members in the south of England willing to transmit the Sunday News Bulletins under the call-sign GB2RS in the 2m band. Owing to business and other commitments, Ken Ellis (G5KW) is sometimes unable to maintain the service. As members are aware, Mr. Ellis also operates the Society's v.h.f. beacon station GB3IGY.

#### Fourth International V.H.F./U.H.F. Convention

THE following are additions to the list of gifts for the Convention published last month:

Adcola Protective Shield and 230/250 volt Adcola Detachable Bit model & in. (Adcola Products Ltd.). Radio Frequency Cable (British Insulated Callender's Cables Ltd.). "Solon" Electric Soldering Iron (Henley's Telegraph Works Company Ltd.). KT88 and DA428 valves (M/O. Valve Co. Ltd.). Transformer (Partridge Transformers Ltd.). Polystyrene Capacitors (Suflex Ltd.). Cellular Telcothene Coaxial Cable (Telegraph Construction and Maintenance Co. Ltd.). V.H.F. Transmitter (Relda Radio Ltd.). Four vouchers value 2 gns. each (Proops Bros. Ltd.).

Cash prizes in connection with the exhibition of v.h.f. and u.h.f. gear at the Convention will be made from a generous donation by Marconi Instruments Ltd.

# Mobile Column

By JOHN A. ROUSE (G2AHL/M)\*

THE mobile season for rallies opened on April 13 with two highly successful events: the Northern Mobile Rally at Harewood House, near Harrogate, home of the Princess Royal, and a somewhat less ambitious effort at Colney Heath near St. Albans, which nevertheless exceeded its organizers' expectations.

## Northern Rally

The Northern Rally was without doubt a great success, and by late afternoon 110 mobiles had arrived as well as about the same number of other cars not fitted with radio. G3ESP has sent in an excellent report on the event in which he says that equipment for all bands from 1.8 to 144 Mc/s was to be seen, several cars being equipped for multiband operation. Aerials for the l.f. bands were all of the loaded whip variety, a few operators having acquired American variable loading coils, the sort which every mobileer dreams about. A large proportion of the gear was home-built, some neatly, some purely functional. Of the others, two cars were equipped with American rigs, while ex-service gear included seven ZCIs and a couple of 19 sets.

G3GJV/M attracted much attention with his horizontal dipole and three-element beam for 2m. G2AUC/M had built all his gear including the vibrator power unit. G6DN/M's transmitter running 5 watts input on 20, 40 and 160m feeds interchangeable plug in aerials, the Top Band one being calibrated for easy frequency changing. G3MGA/P was the only station with a "different" aerial; a wooden pole about 8 ft. high was mounted on the rear bumper. The aerial wire ran up this to a loading coil, whence a further wire sloped downwards to the front of the bonnet, the overall length being 20 ft. G3ATM was not strictly mobile (he works /P) but his motor-cycle combination contained a 2m station worked from a 100 volt vibrator pack and running 50 mW input to a vertical dipole.

G2BDQ/M (not to be confused with G3BDQ/M) was equipped for 10 to 80m, operation being mainly on 10 and 15, with W.A.C. on the latter band. Both phone and c.w. are used. G3GWR/M had a very neat all-band crystal controlled converter feeding into the car radio and for transmission used Command transmitters at 75 watts input. Push-button control is to be installed to tune the aerial at the rear of the car.

The prize in the Concours d'Elegance was presented by Jack Petty (G4JW) Region 2 Representative, to G8SB/M, who has worked 89 countries on phone while mobile. A rubber-cased torch (to see his way home) was presented to G3FXG/M who with his XYL had come the longest distance (from South-West London to the rally site is about 200 miles).

While the fine weather doubtless helped, congratulations must be offered to the indefatigable Norman Pride, Honorary Secretary of the Spen Valley Radio Society, for his very efficient organization of what is hoped will become an annual event.

## North London Rally

At the same time as the Northern Rally, the first mobile meeting, organized by David Bootman (B.R.S. 19469) on behalf of the Southgate, Finchley and District Group, was taking place at Colney Heath. This was the first of an informal series of *monthly* events for mobile operators and although intended to be a Sunday morning "get together" support was so encouraging that it was decided to make it a whole day affair. G3MBL/P was on the air from 10.00 with a miniature rig running 4 watts input and a 150 ft. long wire aerial about 21 ft. high. G3KDF/P followed shortly

afterwards using a modified ZCI and a kite aerial. During the afternoon several mobiles were "talked in" by G3LXP/P.

While most of those present were operating on Top Band, G3IUQ/P was on 40 and 80m with a loaded whip and a kite aerial. His petrol generator proved useful for charging other people's batteries! G2DUS/M with a dipole on the roof of his car was the only station equipped for 2m but it is hoped to have the Group's own 2m station ready for future meetings.

Equipment was of a very high standard, G3HRH/P and G3CIM/M being specially noteworthy.

Details of future meetings may be obtained by sending a stamped addressed envelope to David E. Bootman, 18 Worcester Crescent, Mill Hill, London, N.W.7, who supplied this report. The next meeting will be at Wheathampstead Common on June 15, commencing at 10 a.m.

## Midlands Rally

The North Midlands Mobile Rally at Trentham Gardens near Stoke-on-Trent on April 20 was also a great success, attracting mobiles from a wide area.

The publicity for this event, organized jointly by the Midland Amateur Radio Society and the Stoke-on-Trent Amateur Radio Society, was particularly well done. Two paragraphs of the circular sent out answered the questions "Why operate mobile?" and "Why a rally?" and seem to be worth quoting. "The whole art, purpose and being of radio is to provide a means of communicating over a considerable distance without any material connecting link. This operation reaches its most justifiable use when one or both of the communicating parties is on the move, for it is at such times that radio, and only radio, can provide the link. For this reason, the operation of a mobile station can be radio at its best and most rewarding." On the subject of rallies, the anonymous writer was equally to the point in his explanation when he wrote, "In radio we cannot operate alone but each must rely on the co-operation of the rest for replies to our calls and for frequency space to operate in. Much can be done by lone-wolf experimenting in some quiet shack, but there comes a time when there is need for an



(Photo by the Holloway Studio, Birmingham).

A mobile with a difference! The B.A.T.C. mobile television station at the North Midlands Rally at Trentham Gardens on April 20, 1958. Operating the camera is G3KBA/T.

\* Assistant Editor, R.S.G.B. Bulletin

interchange of thoughts and the sprouting of new ideas that will follow from meeting the other man and looking at his gear. This is what we hope to achieve at Trentham."

A fuller report on the Midlands Rally will appear next month.

#### **Forthcoming Rallies**

The Stamford and District R.S.G.B. Group is to hold a mobile rally at Burghley House on September 28, 1958. Full details later.

September 15, 1958, is the date tentatively fixed for the second Woburn Abbey Rally.

#### **Mobile Notes**

G3AOS of Hale Barns, Cheshire, suggests that both mobile and fixed station operators should try to be on the bands, particularly 144 Mc/s, from 12 noon to 3 p.m. and in the evenings during the summer.

G3JMT/A, c/o 29 Donnington Square, Newbury, expects to be mobile soon but needs advice on using the power supply for his Ekco car radio (as fitted to his Ford Consul) for an amateur band receiver. Anyone with knowledge of this particular unit is asked to write to G3JMT direct.

S/Sgt. Charles F. Albrecht Jr., U.S.A.F. (F.R.S.289) of Winterbourne, near Newbury, must be one of the few listener members with mobile gear. He has a Top Band receiver in his car.

G2PT reports that during the early afternoon of March 29 all VE signals on 28 Mc/s faded out with the exception of two mobiles outside Toronto. G2PT also reports working W3IM/M who uses c.w. whilst travelling at 65-70 m.p.h. His key is a side-swiper. In Philadelphia, 29-493 Mc/s is continuously monitored for visiting mobiles who are sure of a contact at almost any time. Incidentally, it seems surprising 10m is not more popular in this country for mobile work.

#### **The "Halo" Aerial**

Several members have asked for details of the "halo" aerial popular with many 2m operators. This is merely a horizontal dipole bent into a circle and fed with a gamma match. The aerial itself is made of 38 in. of brass rod, the matching tap being about 4 in. from the centre. A small compression type is suitable for the variable condenser. The gap between the outer ends of the rod is about 6 in. The feeder can be good quality 72 ohm television coax. The halo should be mounted about 18 to 19 in. above the roof of the car. In the case of G2AHL/M it is supported on a short length of tubing fixed to a small and inexpensive roof rack. All round coverage is provided with practically no detectable directional properties.

#### **Modulation Transformers**

Suitable small modulation transformers for mobile work have not been easy to come by in the past. G8TL, however, has supplied details of the type GB1574 (measuring 3 in. by 2½ in. by 2 in.) which should prove very suitable. Primary impedances are 10,000 ohms and 7500 ohms, the secondary being tapped for 5000, 6000, 7500 and 10,000 ohms. Both windings will carry 80mA and the transformer is conservatively rated at 12 watts. The price is 45/- from G.B. Electrical Services Ltd, Combine Works, 1 Goodmayes Road, Ilford, Essex.

G8TL is using one of these transformers in the modulator for a new all-band (1.8 to 28 Mc/s) mobile transmitter, the line-up of which is 6CH6 Tesla oscillator, 5763 wideband coupler (buffer), 5B257M p.a. The speech line-up uses a 12AX7 (speech amplifier), 12AT6 phase splitter and two 6BW6s in class A.

Contributions to *Mobile Column* are invited and should be sent to R.S.G.B. Headquarters whilst topical. As always, ideas and suggestions for improving equipment and aerials will be particularly welcome.

### **BOURNEMOUTH MOBILE RALLY**

**Kings Park, Boscombe, Bournemouth**

**Sunday, May 18, 1958**

This rally is not intended to be anything more than a social get-together and there will be no competitions or other programme items. All interested are invited to attend and bring picnic lunch and/or tea. There are several first-class restaurants within one mile of the site.

#### **RALLY STATIONS**

G2HIF/P—145 Mc/s G3HLW/P—1880 kc/s

will be on the air from 10.30 B.S.T.

Mobiles are asked to contact the talk-in stations as soon as possible on their way to the Rally and to report progress periodically.

Organized by the Bournemouth Amateur Radio Society.

### **LINCOLNSHIRE MOBILE RALLY**

**George Hotel, Spilsby**

**Sunday, May 18, 1958**

The programme will include a Junk Sale and High Tea. A licensed bar will be provided. Tickets, price 7s. 6d. each, may be obtained from the Organizer, N. T. Hodgson (G2ABK), Main Road, Hundleby, Spilsby, Lincolnshire, not later than Wednesday, May 14. Lunches will be available if booked when applying for tickets.

#### **RALLY STATION**

G2FT/M or G8GI/M will be on Top Band from 10.30 B.S.T.

### **LONGLEAT MOBILE RALLY**

**Longleat House, near Warminster, Wiltshire**

(Entrance 2 miles west of Warminster on the A362 Warminster-Franchise main road)

**Sunday, June 15, 1958**

Grounds open from 10.00 to 18.00 B.S.T. Entrance fee 1/- per person.

Reserved Rally car park. Adequate catering attached to the house for those not wishing to bring their own picnic lunch and/or tea.

Prizes will be awarded (a) to the mobile travelling the greatest distance to and from home on the day of the Rally; (b) for the longest distance mobile-to-control contacts on 2m and Top Band before 15.00 B.S.T. (prizes for each band).

#### **RALLY STATIONS**

G3CHW/A on 1980 kc/s (tuning 1850 to 1900 kc/s for replies). G3FKO/A on 145.3 Mc/s.

Organized by the City and County of Bristol R.S.G.B. Group.

### **HARLOW MOBILE RALLY**

**Magdalen Laver Village Hall, near Harlow**

**Sunday, June 22, 1958**

Refreshments available. Car Park.

#### **RALLY STATIONS**

G3ERN/P—1980 kc/s G3JMA/P—144.8 Mc/s

Organized by Harlow and District Radio Society.

### **STOCKPORT AND SOUTH MANCHESTER RALLY**

**Capesthorpe, near Wilmslow, Cheshire**

**Sunday, July 13, 1958**

Full details next month



# R.A.E.N. Notes and News

By E. ARNOLD MATTHEWS (G3FZW)\*

## Demonstration to The Association of Chief Officers of Police

At the invitation of the above mentioned Association, Lt.-Col. A. C. Dunn (G2ACD), Chairman, and Mr. E. Arnold Matthews (G3FZW), Hon. Secretary, R.A.E.N. Committee, as well as many members of the Leicestershire and Birmingham R.A.E.N. Groups attended a conference at Ryton-on-Dunsmore Police College on March 26. The object was formally to introduce the Network to the Chief Constables of the country and to demonstrate some Amateur Radio capabilities to them. The proceedings were opened by G2ACD who lectured on Amateur Radio, the history of R.A.E.N. and the methods of operation. His talk was well received—as were his answers to some knotty questions in the subsequent discussion. A demonstration of mobile operation was then given by G3ATL/M, G3FQY, G3AWM/M, G3HAN, G3JPN/M, G3GLQ/M, G3JZF, G3ICX/M, G3LNN, assisted by Messrs. Pledge, Goodwin, Tranmer and Hartley. This led to a message passing from one of the cars (G5BD in Mablethorpe) through a net which included G3BA (control), G3UD, G3HRK, G3JFH and G2AO. This net worked on 80m and the Ryton end was operated by G3CNV. A "service" link on 2m was operated by G3HBE and G3HAZ. Time limitations required a considerable departure from the planned programme but letters subsequently received by G2ACD from Chief Constables show that the Police are very interested in R.A.E.N.

## Trunk Routes

The East Coast route is now working well. Earlier difficulties in routing through Suffolk have been overcome by enrolling G2CPL, of Felixstowe—whose potent signal seems to be well heard over the greater part of the route! Further reinforcement is now available in this area from Ipswich, where the Group has changed to 160m and has built equipment specially for R.A.E.N. work. The East Coast route stations are well heard in the Midlands, where G3FZW/M received the messages during the March and April high tide danger periods.

The Western route is now developing well. G2AO, of Malvern, who has undertaken the duties of route manager, proposes to divide the route into three sections, each having its own section manager. It is hoped to extend the area of operation slightly so as to include links to Northern Ireland and Devon. A route exercise was held on April 5 immediately after the East Coast "alert" period. Although the notice was rather short, a good turn-out of members ensured that several valuable lessons were learned. Methods of "alerting" this net in emergency have been outlined with the object of securing a rapid turn-out. County Controllers along the route should find the final product of considerable service to them in their inter-county contacts, and parts of the route are already being used by them in exercises. Most of the stations assigned to the route have facilities for operation from emergency power supplies, and all the operators have traffic handling experience.

## Around the Groups

Kent officers met S.J.A.B. H.Q. staff officers at Maidstone on April 13 to exchange information about their respective organizations. It was agreed to equip the S.J.A.B. H.Q. with a suitable amateur station and to hold an initial joint exercise on June 15. Ipswich have held two exercises and A.C. G3DPH reports that training is coming along well. It is hoped to carry out tests with the Lowestoft, Norwich and Clacton Groups in the near future. Middlesbrough, whose area of activity extends well into Co. Durham, gave a well

balanced demonstration at the North Riding S.J.A.B. Annual Conference. It was preceded by a talk by the A.C., G3GUV. Afterwards much interest was aroused by G3ISV's tape recordings of a QSO with Shackleton Base. G3GUV reports that group discipline was excellent. Requests from the County Police for information about the Network have been received by members in Dorset and Monmouth. Leicestershire C.C., G3GXZ, reports that he has a station permanently installed in Police H.Q. there. Gloucestershire stations will be assisting Worcestershire in their joint B.R.C.S./R.A.E.N. demonstration mentioned last month.

## Net Schedules

Nottinghamshire and Derbyshire: first Sunday in each calendar month, 11.00 B.S.T., 1985-1995 kc/s. Ipswich: each Sunday, 11.00 B.S.T., 160m band. Worcestershire: each Wednesday, 19.30 B.S.T., 160m band.

The following are amendments to the list of officers published last month:

**Resignations and relinquishments.** Shropshire: G. E. Herringshaw. Co. Durham: E. Smith (G3JMT).

**Appointments.** Area Controllers. J. Kirby (G3JYG), Hall Cottage, Holt, Norfolk. L. H. Noden (G3JPB), Brownhills Manor, Market Drayton, Salop.

**Flash.** The G.P.O. announced on May 2, 1958 that as from May 9, 1958 U.K. amateurs may co-operate with the Police Forces on similar lines to those which apply to co-operation with the British Red Cross Society and St. John Ambulance Brigade. Licences have now been amended by means of an announcement published in the *London Gazette* and other official Gazettes.

## Uncle Tom's Ham Party

SUNDAY, August 31, 1958, has been fixed as the date for the Annual Ham Party arranged by R.S.G.B. Vice-President T. A. St. Johnston (G6UT) at his home in Little Hallingbury, near Bishop's Stortford. Further details will be published later.

## Silent Keys

### KEN CUSTERSON (G8SY)

It is with deep regret we record that the voice of G8SY will no longer be heard. Ken Custeron of Cherryhinton, Cambridge died suddenly on March 28, 1958. A lone wolf in local Amateur Radio affairs, Ken had many friends all over the world, and was active on the 10m and 15m bands until a few days before his death.—B.A., J.F.M.

### S. KEMBER (G6KM)

The death occurred on March 23, 1958, of Mr. S. Kember, G6KM, of Sutton, Surrey. A member of the Society since 1927, Mr. Kember's call was familiar to many old timers.

Sympathies are extended to Mr. Kempton, Senior, and to his family in the loss they have sustained.

### ARTHUR SIMONS (G5BD)

With deep regret we record the death, suddenly, on May 2, 1958, of old-timer Arthur Simons (G5BD), of Mablethorpe, Lincolnshire. Licensed in 1926 Arthur maintained a keen interest in all phases of Amateur Radio right up to the time of his death. A fuller tribute to his memory will appear next month.—J. C.

### HORACE PEEL SINGLETON (G4IL)

It is with deep regret that we record the death, suddenly, of Horace P. Singleton (G4IL) of Auburn Grove, Blackpool. Horace, mainly active on Top Band was first licensed in 1939. A keen member of the Blackpool and Fylde Amateur Radio Society, he will be sadly missed by a host of friends. Representatives from the local Police Force (Mobile Section) and the Radio Society attended his funeral, those present including G3GEE, G3JLF, G5VN and Mr. Jack Smith. To his widow and son we extend our sympathy in their great loss.—C. J. C. H.

\* 1 Shortbatts Lane, Lichfield, Staffs.

# Tests and Contests

## 1957 R.S.G.B. TELEPHONY CONTEST

THE second R.S.G.B. Telephony Contest which took place on November 23-24, 1957, attracted 122 entries and check-logs compared with 102 last year. It is gratifying to note that 47 logs were received from British stations against 34 in 1956.

From a study of the comments enclosed with the logs it would seem that the only serious grouse concerned the shortage of British Isles operators in the contest. Several competitors expressed the opinion that overseas participation will fall off unless there is an increase in the number of home stations taking part. The Contests Committee made considerable efforts to give world wide publicity to this event and members may be interested to know that in addition to advising all the overseas National Societies a copy of the results for 1956 together with the rules for 1957 were sent to every overseas entrant to the 1956 event. This service will be repeated this year.

The winner, as in 1956, was D. A. G. Edwards (G3DO) with a considerably increased score of 4,140 points made from over 300 contacts—130 of them qualifying for bonus points. His equipment was similar to that used last year—a Labgear LG300 transmitter modulated by 807s in class AB2, Eddystone 888 and R.C.A. AR88 receivers. The aerials were a Minibeam and a 375 ft. end-fed long wire. Second this time is G. A. Bird (G4ZU) with a score of 4,060 points gathered from over 350 contacts (114 with bonus). He used a home-built transmitter, a double superhet receiver and a Minibeam. VQ4RF jumps from third place in 1956 to lead the 1957 overseas contingent with a score of 2,120 points amassed from 205 contests (22 with bonus). His equipment included a home constructed transmitter, AR88 receiver and a Minibeam.



(Photo by courtesy of the Croydon Times)  
G4ZU's neat living room installation at his home in Shirley, Croydon. The table top transmitter is on the left with the Radio-Vison Commander receiver to the right.

Several logs had to be rescored. In the case of overseas entrants, this was in most cases due to ignorance of the rules, while several Gs appeared to be unable to read them. More than one log was scored with the overseas bonus of 50 points, and several only claimed 20 points for a bonus contact instead of 25.

Check logs are gratefully acknowledged from the following: A.1399, A.1426, B.R.S. 18989, B.R.S. 20249, G2YL, G3BHF, G3FBA, G3KZR, G6XA, DL4AAE, OK1KKA, OZ7DX/OZ-DR-1042, PY4AKT, SM5AJR, SM5BXP, VE3MK, W3VTH, YO3WL, YO3/1567 and ZP5JP.

Call-sign	Points	PLACINGS		Call-sign	Points	PLACINGS		Call-sign	Points	PLACINGS	
		Home Position	Over-seas Position			Home Position	Over-seas Position			Home Position	Over-seas Position
G3DO	4140	1		I1ZCT	1500		8	VK2AKV	615		29
G4ZU	4060	2		VE2YU	1405		9	OH2KK/0	615		
G2CDI	3765	3		G3BQG	1350	28		VE3API	595		31
G5HZ	3560	4		5A5TP	1295		10	OH2GC	585		32
G3FXB	3510	5		GM3EOJ	1275	29		G2FUU	565	40	
G3FPQ	3390	6		G6UT	1275			LA4GF	560		
G3HCL	3380	7		G3HBR	1260	31		K2TCD/2	560		33
G3HCU	3375	8		OH5QY	1250		11	KL7RZ	540		35
G3KGY	2950	9		OE8KS	1225		12	JA1BFJ	530		36
G3CQE	2840	10		G3DBJ	1225	32		VQ2AC	515		
G2QT	2840			KL7PIV	1180		13	K0ITF	515		37
G3KFT	2820	12		YU2CF	1135		14	ZSSOA	515		
GM3WVO	2370	13		SM6ID	1115		15	KL7CDH	490		40
G2DYV	2335	14		G3DVQ	1105	33		F8XP	465		41
VQ4RF	2120		1	G2HPF	1095	34		W6AED	445		42
G3HFD	2085	15		VE3AIU	1095		16	I1MAB	420		43
G3ABG	2045	16		SP7HX	1065		17	VE2AFC	390		44
G3YF	1980	17		G2AJB	1065	35		W3HQO	385		45
G3GYH	1975	18		ZL3RB	1045		18	LA4VF	370		46
ZD4BV	1960		2	CT1PK	1000		19	W8KC	365		47
G6XN	1960	19		CX3BH	960		20	H89DB	355		48
OH5PE	1940		3	G2HFC	955	36		VE3DYB	345		49
G3FFH	1765	20		VE2PZ	930		21	ZB2I	330		50
G3IVJ	1725	21		G3AJP	855	37		CT1ST	325		51
G3IYB	1685	22		G3DNR	810	38		G6PR	330	41	
OH5RH	1660		4	EA2CR	800		22	DL1YA	285		52
G5TO	1590	23		GW2DHM	780	39		DL9PF	275		53
OE1FF	1590		5	SM3BCZ	740		23	H89QO	270		54
G2DC	1575	24		W1FZ	710		24	DL3TF	265		55
G3AGN	1570	25		LA1K	700		25	OH2VZ	255		56
ZC4PW	1565		6	EA7CQ	695		26	W1WVF	250		57
W8NWO	1540		7	W2ZRX/VOI	680		27	W8IBX	225		58
G3JZK	1540	26		EA3LA	665		28	G3WFP	225	42	
G3HTE	1525	27						OK2KBE	170		59

## Awards

**Whitworth Trophy:** Leading British Isles station and highest-scoring station in the Contest—D. A. G. Edwards (G3DO).

**Metcalf Trophy:** Best check log from a non-licensed British Isles member—M. Harrington (B.R.S. 20249).

## Certificates

Leading GM station: J. S. Bell (GM3WO).

Leading GI station: C. J. Rourke (GI3IVJ).

Leading GW station: W. D. Andrews (GW2DHM).

Runner-up, G. Zone: G. A. Bird (G4ZU).

## What You Thought About It

Comments were again very much in favour of the contest and included: "An enjoyable contest though could not operate during TV hours."—G5TO. "I enjoyed the contest... standard of operating was good."—G3JYB. "Thoroughly enjoyed contest—Have been 'bedfast' with laryngitis since."—G3ABG. "Thanks for fine contest."—OEIFF. "Wonder whether it is as enjoyable for DX stations but have received a QSL from W saying 'Glad the R.S.G.B. has contest as it gives low power Ws a chance to work Gs.'"—G3HBR. "Lost my rotaries in the gale two weeks earlier so had to improvise with two Sterbas on 28 Mc/s."—G2QT. "A very friendly affair and for my first

phone contest was most enjoyable."—VQ2AC. "Nicest thing is that one can go to bed on Saturday night happy in the thought that 10 and 15 will stay dead as a doornail all night."—G4ZU. "Would be interesting during the Summer when 21 Mc/s stays open most of the night!"—G3CQE. "Many stations were heard on 28 Mc/s at 13.00 G.M.T. on 24th but



G3FXB, who came fifth with 3,510 points, operating his station in Southwick, Sussex. The receiver is a Hallicrafters SX24 with a modified RF26 unit as a converter for 10, 15 and 20m. The transmitter, using push-pull 807s, is in the rack at the extreme right of the picture.

## DX CONTACTS FROM GREAT BRITAIN

NOVEMBER 23, 1957	
07.00	(21) VQ4, ZD4, ZL3, ZC4.
08.00	(21) ZL, KL7, VK, JA, PY, ZB1.
09.00	(21) ZL, KL7; (28) VQ4, KL7, MP4, ZL, KG6, 5A5, UC2, 4X4.
10.00	(21) ZL, VP6, VS6, VK, MP4; (28) UC2, ZC4, 5A5, KA7, VQ3, VQ4, ZL, KR6.
11.00	(21) ZL, KL7, KP4, W2, 3, 8; (28) VO, KP4, VP6, ZC4, LU, KR6, ZD6, MP4, W1.
12.00	(21) VP5, W1, 3, 4, VK; (28) KR6, VQ4, VS6, W1, 2, 3, 4, 9, VE2, HK, VE1, CR9.
13.00	(21) W1, 2, 3, 4, 8, 9, VE3; (28) VP6, ZD4, FE8, ZD6, VP5, W1, 2, 4, 8.
14.00	(21) W1, 2, 4, 8, 9; (28) VE8, VE1, 2, 3, XE, W5, 8, 1, 4, 3, 9, ZD4, CX.
15.00	(21) W1, 2, 3, 8, VE3, VQ4; (28) VE4, VE3, W1, 2, 3, 4, 5, 6, 7, 8, 0, 9, VP6, CX, OA.
16.00	(21) ZD6, VE3, ZS1, KP4, CO2; (28) VE3, TI, W1, 2, 5, 6, 7, 8, 0, ZP, ZS.
17.00	(21) ZD6, VP6, PX, ZC4, ZS; (28) W1, 2, 3, 4, 6, 7, 8, 9, TI, VE4, VE3, VE2.
18.00	(21) PY, VP6, ZS, FB8, OQ, VQ4; (28) VE3, VE7, VE6, VP5, CE, L4, CX, VE5, W1, 3, 4, 8, 9.
19.00	(21) W2, 3, 8, YU, CX, PY, VP6, PJ, KP4, VE2, 3.
20.00	(21) ZP, OQ, ZS, FQ, VQ4, VQ3, VE7, 2, 3, W3, 9, 6, 2, 8, PY, VP6.
21.00	(21) FQ, PY, ZP, CE, OA, YV, VE6, W6, VP6, LU, CO.
22.00	(21) TI, CO, LU, ZP, VP5, HR, W1, 4.
23.00	(21) VP5, LU, ZL, CE, VP6.
NOVEMBER 24, 1957	
07.00	(21) ZD4, KA2, VK, ZL.
08.00	(21) MP4, VQ4, ZB2, VK, ZL, KR6, ZD4, JA; (28) VK, ZL, JA, KW.
09.00	(21) W4, 8, 0, ZL, VS2, VK, PY, ZB1; (28) ZL, PY, VK, JA.
10.00	(21) ZC4, VK, W4; (28) ZL, KG6, VK, SV, ZC4, VQ4, JA.
11.00	(28) ZL, ZC4, ZD3, CX, ZD6, VO1, W1, VQ4.
12.00	(21) VK, ZL, W5, 1, 2, KR6, VE2; (28) KG6, ZD4, VO1, VP6, W3, 1, 4.
13.00	(21) VK, CE, KR6, W1, 2, 3, 0, VE3; (28) ZS, VE2, 3, W8, 9, 1, 2, 5, PY.
14.00	(21) W2, 4, 1, 8, 0, VE1, VK, VE8, W5, VQ4, ZB1, VQ3; (28) VE1, 3, W4, 8, 1, 2, 3, 9, 0.
15.00	(21) W9, ZC4, YV, VQ4; (28) W1, 3, 4, 8, 2, 0, 9, VE3, 2, 4, YV, ZP.
16.00	(21) W1, 2, 8, 6, VE3, 4, 2; (28) W1, 2, 3, 4, 5, 6, 8, 9, 0, VE3, 4, 6, 8, 2, VQ2.
17.00	(21) VE4, 5, 2, 3, ZS, VQ2, W8, ZB1, VE7, W1, 6, 2; (28) W1, 2, 3, 4, 5, 8, 9, 0, TG, W6, VE3.
18.00	(21) ZB1, VE6, 7, 3, 5, W6, 9, 0; (28) W1, 2, 3, 4, 8, 9, 0, 6, 7, 5.
19.00	(21) VE6, W2, 7, 8, 9, VE3; (28) W4, 5, 9, 0, 1, 3, 8, LU.

(A useful guide to future as well as past conditions, based on a selection of contest logs. Times are shown to the nearest hour, e.g. 08.40 would be shown as 09.00.)

found it hard to get through European QRM."—VK2AKV. "Enjoyed working in contest—will try to be on next year from W."—KL7CDH. "For really hard work try with crystal control and 25 watts."—G6PR. "Contest seems to have caught on and it is a great pity that it will have such a short run before propagation conditions put it out of the picture."—G3AAE.

## First 1.8 Mc/s Contest, 1958

TOP Band Contests have always been amongst the most popular events of the year, and the first 1958 Contest was no exception. Activity on the band was good, and considerable interest was provided by the number of Scottish, Czech and Yugoslav stations on for the occasion, but it was disappointing that ZC4BL was only able to raise YU and OK and heard no British stations whatsoever.

I. T. Cashmore (G3BMY) with 126 points, heads the list of 80 entrants followed by W. R. Steverson (G3JEQ), only one point behind, and F. K. Parker (G3FUR) with 120 points. GM3EHI, the Scottish entrant with the highest combined score in this contest and the second 1957 event wins the Maitland Trophy with a lead of 1 point over GM6IZ.

There were many comments on the high standard of operating but almost as many on the failure of some stations to synchronize their clocks with Greenwich, some stations being heard to exchange serials before 22.00, whilst others continued QSOs after the contest closed. Next time, check your clock against a time signal, and make sure that you are not an offender. Even with good operating errors were frequent, only seven of the first 20 stations submitting faultless logs. Some of these errors could be attributed to stations commencing fresh contacts without first receiving acknowledgment for the previous one, while others were due to the incorrect use of break in, but there were many obvious inaccuracies in transcribing logs when making out the entries.

It has, with some justification, been said that competitors in the less densely populated areas are handicapped, but G3CHN and G2DC have shown that, with an efficient station, this handicap can be largely overcome.

The duration and starting times of contests are fixed to meet popular demand as expressed in comments accompanying entries, and the trial combination of one short and one



long contest each year appears to have met with general approval. The starting time, too, has not come in for undue criticism, only two suggestions being made—one for bringing it forward, the other for retarding it until midnight.

The Contests Committee thanks GM3DVX, G3BGP, G3DXJ, G8PW and ZC4BL for submitting check logs, OK1AEH, OK1YG, OK2OP and YU4UE for providing numerous DX contacts and the host of non competing stations who helped to make this event such a success.

#### Results—First 1-8 Mc/s Contest 1958

Position	Call	Score	Position	Call	Score
1	G3BMY	126	40	G2XP	63
2	G3JEQ	125		G2HDR	63
3	G3FUR	120		G3YF	63
4	G6BQ	116		G6UT	63
5	G2JF	112		G3JII	62
6	G3JUV	110	44	G3JY	62
7	G3HVX	108		G3EUE	62
8	G3GZI	107	47	G2HOX	60
9	G5HB	106	48	G5MP	59
10	G3COJ	103	49	G3LJR	58
11	G5LR	100		G3ILO	57
12	G3ERN	98	50	G3KGX	57
	G6QB	98		G3KOR	57
14	G3JJG	97	53	G3KPS	56
	G3KLH	97	54	G3KLS	55
16	G3CHN	95		G3WVC	55
17	G3ZY	92	56	G8JM	54
18	G2DC	84		G3EHI	53
	G3CSG	84	57	G3HQT	53
20	G2MJ	81		G3IKL	53
	G2HPF	81	60	G3EDU	52
22	G2AOL	78		G3GCD	52
	G3LHJ	78	62	G2FHF	48
24	G3KRC/A	77		G3JLH	48
	G3KGT	75	64	G2ZR	47
25	G3LCI	75		G3JWB	47
	G6UR	75		G4BD	47
28	G3BZG	74	67	G4CM	45
29	G3JIS	73		GW3GHC	44
30	G3CSZ	72	68	G8DA	44
31	G3JNJ	71	70	G3FRV	40
32	G3JNE	68	71	G2DSF	39
	G6JJ	68	72	G3KTF	38
34	G3JGW	67	73	G2CPL	36
35	G6MIZ	66	74	G3DQV	35
	G3LCH	65	75	GM3JNW	28
36	G8WVF	65	76	G6QM	27
	GM3KHH	64	77	G3GDW	25
38	G2ZZ	64	78	G5YN	22
			79	G2FWA	14
			80	G2CZU	13

#### 144 Mc/s Open Contest, 1958

ACTIVITY during this Contest appears to have been at a satisfactory high level, and although there were one or two adverse comments, the majority of entrants seemed to have enjoyed themselves. A report on conditions during the event appeared in *Four Metres and Down* last month. The results are as follows:

Position	Call-sign	Points	Position	Call-sign	Points
1	G4DC	1,735	15	G3JMA	1,000
2	G5MA	1,710	16	G3CGQ	940
3	G3JWQ	1,535	17	G5DS	935
4	G2MV	1,525	18	G3FIH	890
5	G3JGY	1,305	19	G3FD	760
6	G3JZG	1,295	20	GW3BOC/P	745
7	G2XV	1,265	21	G3CNF	625
8	G3EUV	1,235	22	G3IBI	620
9	G3KEQ	1,205	23	GW8UH	585
10	G2FNW	1,085	24	G3KLI	560
11	G2AUD	1,075	25	G2WS	465
12	G3EEU	1,065	26	GW3FKO/P	405
13	G5DW	1,025	27	G5MR	345
14	G3KKL/P	1,005	28	G3COJ	320

Check logs are gratefully acknowledged from G2HDR, G3EYV and G8DA.

#### 420 Mc/s Open Contest, 1958—Scoring

IN the details for this contest published in the April issue, the line regarding scoring should have read as follows: Scoring: Points will be scored on the basis of one point per mile.

#### D/F Qualifying Events

DETAILS of the High Wycombe and Rugby qualifying events are as follows:

##### High Wycombe—Sunday, June 1

Organizer: G. T. Peck, Dell Cottage, Horsleys Green, Stokenchurch, Bucks.

Frequency: 1874 kc/s

Call-sign: G3FAS/P

Map: Ordnance Survey, New Popular Edition, Sheet 159.

Assembly Point: 2 miles south east of Thame, at the junction of the B4445 and the road to Towersley (N.G.R. 730036).

Assembly Time: 13.30 B.S.T.

Entries and Tea: Intending competitors should notify the Organizer at least seven days in advance, stating the number in their party requiring tea, which will be held at The Little Abbey Hotel on the main Amersham Road, one mile east of Great Missenden.

\* \* \*

##### Rugby—Sunday, June 22 (Entries by June 10).

Organizer: Honorary Secretary, Radios and Television Section, B.T.H. Recreation Club, Recreation Club Office, B.T.H., Rugby.

Frequency: 1875 kc/s.

Call-sign: G3BXF/P.

Map: Ordnance Survey, New Popular Edition, Sheet 132 (Rugby and district).

Assembly Point: Old loop road at Cawston (A427), N.G.R. 473733, two miles south-west of Rugby and 1½ miles north-east of the Blue Boar Garage on the A45.

Assembly Time: 13.30 B.S.T.

Entries and Tea: Intending competitors should notify the Organizer by June 10 stating the number in their party requiring tea.

#### First 70 Mc/s Contest, 1958

When: From 17.00 to 23.59 G.M.T. on June 21 and from 07.00 to 19.00 G.M.T. on June 22, 1958.

Locations: Stations, fixed and portable, must be operated from the same site throughout the contest.

Eligible Entrants: All fully paid-up Corporate Members of the R.S.G.B. resident in Europe. Multiple-operator entries will be accepted provided only one call-sign is used.

Contacts: May be made on A1 or A3 with stations operating in any band between 50 and 150 Mc/s.

Scoring: Will be on the basis of one point per mile.

Contest Exchanges: RST (RS) reports followed by the contact number (starting with 001) followed by the location (e.g., RST 579001 SNE, Oxford).

Entries: (a) The cover sheet must be made out in accordance with R.S.G.B. Contests Rule 5 and the declaration signed.

(b) Logs must be tabulated in columns headed (in this order) "Date/Time (G.M.T.)," "Call-sign of Station Worked," "His Band (Mc/s)," "My report on his signals and serial number sent," "His report on my signals and serial number received," "Location of station contacted," "Points Claimed."

(c) Entries must be postmarked not later than Monday, July 7, 1958.

Awards: At the discretion of the Council, a certificate of merit will be awarded to the winner.

The General Rules for R.S.G.B. Contests published on page 437 of the March 1958 Bulletin apply to this contest. A copy of the General Rules may be obtained by sending a stamped addressed envelope to R.S.G.B. Headquarters.

#### Contests Diary

1958	
May 18	- 420 Mc/s Open Contest <sup>1</sup>
June 1	- D/F Qualifying Event
June 7-8	- National Field Day <sup>3</sup>
June 21-22	- First 70 Mc/s Contest <sup>2</sup>
June 22	- D/F Qualifying Event
July 6	- Second 144 Mc/s Field Day
July 13	- D/F Qualifying Event (South Manchester)
September 6-7	- European V.H.F. Contest and National V.H.F. Contest (both under Region I I.A.R.U. Rules)
September 6-7	- 420 Mc/s Contest
September 6-7	- 1250 Mc/s Tests
September 7	- D/F National Final (organised by Slade Radio Society)
September 14	- Low Power Field Day
September 28	- R.A.E.N. Rally
October 4-5	- Low Power Contest
November 8-9	- Second 1-8 Mc/s Contest
November 15-16	- Second 70 Mc/s Contest
November 22-23	- 21-28 Mc/s Telephony Contest

<sup>1</sup>See page 480, R.S.G.B. Bulletin, April 1958.

<sup>2</sup>Details in this issue.

<sup>3</sup>See page 287, R.S.G.B. Bulletin, December 1957.

## Regional and Club News

**Acton, Brentford and Chiswick Radio Club.**—Recent events have included a lecture on the Antennamatch and TVI by G4LS and planning for N.F.D. Morse practice classes are held every Tuesday evening at 7.30 p.m. in the club room at 66 High Road, Chiswick. *Hon. Secretary:* W. G. Dyer (G3GEH), 188 Gunnersbury Avenue, Acton, London, W.3.

**Aldershot and District Amateur Radio Society.**—At the A.G.M. a vote of thanks was recorded to the anonymous donor of a gift of £5 p.a. for three years to be used as a prize for the best piece of equipment built by a member. The prize is to be known as the "Frost Award." A blind member, F. Halfacre, has passed his tests for a licence and is awaiting his call-sign. *Hon. Secretary:* S. E. Hume, 25 Kingsway, Aldershot.

**City of Belfast Y.M.C.A. Radio Club.**—The club will be operating under the call-sign G16YM from the Model Engineers' Society (N.I.) Exhibition in the Wellington Hall from May 29 to 31. All bands from 3.5 to 28 Mc/s will be in use and contacts will be appreciated and confirmed. *Hon. Secretary:* R. J. Boal, 98 Breda Road, Belfast.

**Blackpool and Fylde Amateur Radio Society.**—A sub-committee comprising G8GG (Chairman), G5ND, G3MEQ, G3IZG and Ron Lambert has been formed in an effort to increase the score in N.F.D. next month. A recorded lecture by C. H. L. Edwards (G8TL) on "Mobile Operation" was very well attended.

**Bristol.**—About 60 members were present at the April meeting to hear the C.R., D. V. Newport (G3CHW), discuss the grid dip oscillator and its applications. A practical demonstration was given showing some of the uses to which the g.d.o. can be put. Local members willing to act as stewards at the Longleaf Mobile Rally on June 15 are asked to notify G3FKO or G2FYT. Any local member, not on the group's mailing list already, may obtain details of future activities and meetings from the *Hon. Secretary:* D. F. Davies (G3RQ), 51 Theresa Avenue, Bishopston, Bristol 7.

**British Two-Call Club.**—Capt. V. H. Thomas (G2CUR) has been elected President of the club for 1958, with Major C. Collins (G8SC) as Vice-President. The London chairman is B. A. M. Herbert (G2WI). Details of the club's activities may be obtained from the *Hon. Secretary:* G. V. Haylock (G2DHV), 63 Lewisham Hill, London, S.E.13.

**Cambridge and District Amateur Radio Club.**—At the A.G.M. the following were elected: *President*—P. A. Tremaine (G8PB); *Chairman*—F. A. E. Porter; *Hon. Treasurer*—P. J. Broom (G5DQ); *Hon. Secretary*—A. H. G. Waton (G3GGJ), "Arken-garthdale," New Road, Barton, Cambridge. The club operated under the call-sign G3CME from the Cambridge Model Engineering Society's Exhibition from March 24 to 29. Despite a high noise level locally, many interesting contacts were made. Meetings are held every fourth Friday, the next being on May 16.

**Cornish Radio and Television Club.**—There was a large attendance of members from all over the county at the A.G.M. when the following were elected: *President*—Ron Penrose; *Chairman*—J. Watson (G3AET); *Vice-Chairman*—Bill Locke; *Hon. Treasurer*—Norman Elliott; *Hon. Secretary*—J. Brown (G3LPB), Marlborough Farm, Falmouth; *Committee Members*—T. Bowden (G2AYQ), Richard Cocks (G3BHC) and Alan Olds (G3KFP). Ron Harris (G3GGX) gave a talk on his s.s.b. transmitter. Aerials, licence conditions and regulations, and an introduction to s.s.b. are subjects for future lectures. Meetings are held on the first Wednesday in each month at the Y.M.C.A., Falmouth. Former Cornish amateurs no longer resident in the county may obtain the club's *New Link* for a year by sending 6/- to the *Hon. Secretary*.

**Edgware and District Radio Society.**—A strong revival of interest in 2m work is evident and future Wednesday evening meetings will be given over to this subject, except the last Wednesday in each month which is reserved for a junk sale. Meetings commence at 8 p.m. and are held at the Community Centre, Merion Avenue, Stanmore. *Hon. Secretary:* E. W. Taylor (G3GRT), 99 Portland Crescent, Stanmore, Middlesex.

**Flintshire Radio Society.**—At the March meeting Bob Thompson (GW3ELM) gave a most interesting talk on the principles and practice of s.s.b. operation. *Hon. Secretary:* J. Thornton Lawrence (GW3JGA), "Perranporth," East Avenue, Prestatyn.

**Grafton Radio Society.**—On March 28 Fred Lambert (G2AIW) lectured on v.h.f. Preparations are now being made for the club's annual Field Day at Tumulus Field, Hampstead Heath, on June 14 and 15. It is hoped to have G3AFT/P on the h.f. bands and G2CJN/P on the i.f. bands. *Hon. Secretary:* A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

**London Members' Luncheon Club.**—Visitors to the April meeting included R.S.G.B. President, Leon Newnham (G6NZ), VQ4FB (ex-G3CAT), VQ2AT and his wife, and VQ5GF. A Social Evening is to be held on June 12 at the Bedford Corner Hotel, commencing at 7 p.m. Tickets, price 10/- each inclusive of buffet, may be obtained from Frank Fletcher (G2FUX), 11a Ickenham Road, Ruislip, Middlesex. The next ordinary meeting of the club will be on May 16 at 12.30 p.m. for 1 o'clock at the Bedford Corner Hotel. Overseas visitors will be particularly welcome.

**Newbury and District Amateur Radio Society.**—At the A.G.M. the following were elected: *Chairman*—H. B. Fox (G3JNQ); *Vice-Chairman*—A. B. Willsher (G3IG); *Hon. Treasurer*—G. F. Ball; *Hon. Secretary*—J. A. Gale (G3LLK), "Wild Hedges," Crookham Common, near Newbury; *Committee Members*—F. W. Lloyd (G3IPR), B. Folds (G3LIL), G. T. Allen (G3JTK), H. R. Morey (G3GUA), S/Sgt. C. F. Albrecht, U.S.A.F. (F.R.S. 289). The lecturer at the February meeting was John Heywood, F.R.A.S., whose subject was "Radio Astronomy and Cosmology." Plans for N.F.D. were discussed at the April meeting.

**R.A.F. Amateur Radio Society.**—Slow Morse transmissions and items of interest to members are broadcast weekly from R.A.F. Locking using the call-sign MRM at the following times: Wednesdays, 14.15 G.M.T. on 5105 and 18090 kc/s simultaneously; Thursdays, 19.15 G.M.T. on 5105 kc/s only. A Vee beam has recently been erected for the 18 Mc/s transmission and reception reports will be appreciated. Wednesdays are in future to be regarded as R.A.F.-A.R.S. Activity days between 12.00 and 23.59 G.M.T. It is hoped that both club and individual member stations will participate whenever possible. The Headquarters station G8FC will be active on all bands, phone and c.w., from 3.5 to 28 Mc/s.

**Slade Radio Society.**—Instructional Morse classes are held on Tuesdays and Thursdays at 7.45 p.m. The club station G3JBN is open every day of the week. The Slade Net will be on the air on May 30 and June 27. Details of future meetings are given in *Forthcoming Events*. *Hon. Secretary:* C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.

**Stockport Radio Society.**—The following were elected at the A.G.M.: *Chairman*—E. Wigzell; *Vice-Chairman*—W. P. Green; *Hon. Treasurer*—W. H. Banks (G2ARX); *Hon. Auditor*—F. E. Wood (G4JN); *Hon. Secretary*—G. R. Phillips (G3FYE), 7 Germans Buildings, Buxton Road, Stockport; *Committee Members*—J. Cropper (G3BY), R. Hobson (G3JRQ), A. Smith (G3AYT, A.S.R.), A. Evans. The society is organizing a Rally in conjunction with the South Manchester Radio Club on July 13.

**Stourbridge and District Amateur Radio Society.**—At the recent A.G.M. the following were elected: *President*—J. Timbrell (G6OI); *Chairman*—F. A. Bills (G3CLG); *Vice-Chairman*—D. Barlow (G3HGI); *Hon. Treasurer*—J. Hogg (G2OG); *Hon. Secretary*—A. K. Davies, 48 Church Avenue, Vicarage Road, Amblecote, near Stourbridge.

**Surrey Radio Contact Club.**—At the A.G.M. held recently, the following were elected: *Chairman*—B. W. Wynn (G8TB); *Vice-Chairman*—G. A. Bird (G4ZU); *Hon. Treasurer*—J. W. North (B.R.S. 18032); *Hon. Secretary*—S. A. Morley (G3FWR), 22 Old Farleigh Road, Selsdon, South Croydon; *Committee Members*—R. Dabbs (G2RD), D. Deacon (G3BCM), N. Guy (G2DN), A. R. Morrison (G3KGA). The Constructional Contest for the Dave Deacon Coronation Year Committee Cup and cash prizes was due to be held on May 13. The next meeting will be held at the Blacksmith's Arms, South End, Croydon, on June 10, commencing at 7.30 p.m.

**Worthing and District Amateur Radio Club.**—The annual "Bucket and Spade" Party is being held on June 22 and will again be an informal event but with some additional attractions. Full details may be obtained from *Hon. Secretary:* J. R. Tootill, 113 Kings Road, Lancing, Sussex. Details of other meetings are given in *Forthcoming Events*.

# Forthcoming Events

## REGION 1

Blackpool (B. & F.A.R.S.).—May 21 ("Manufacture of modern radio valves," Lecture (with film) by Mr. Calvert); June 18 ("Transmitter design and TVI" by N. Shires, G3BTM), 7.30 p.m., Back Gadsby Street, Nelson Road.  
Bury (B.R.S.).—June 10 (Junk Sale), 8 p.m., George Hotel, Kay Gardens.  
Chester (C. & D.A.R.S.).—May 20 (Discussion on operating procedure), 8 p.m. Tarran Hut, Y.M.C.A.

Manchester (M. & D.R.S.).—June 2 ("Receivers" by A. A. H. Moss, G8VF), 7.30 p.m., The Brunswick Hotel, Piccadilly.  
Preston.—May 28 ("Basic Theory" by G. Lancefield, G3DWQ); June 11 (Junk Sale) 7.30 p.m., Fruiterers Club, High Street. Meetings are preceded by half an hour of Morse instruction.

Stockport (S.R.S.).—May 21 (Junk Sale), June 4 (Final N.F.D. arrangements), 8 p.m., The Blossoms Hotel, Buxton Road.  
Wirral (W.A.R.S.).—May 23 ("Tape Recording" by R. Cumberbridge, G3CK), June 6 (Final N.F.D. arrangements), 7.45 p.m., No. 4, Hamilton Square, Birkenhead.

## REGION 3

Birmingham (M.A.R.S.).—May 16, Midland Institute, Paradise St., 7.30 p.m. ("Oscilloscopes" by Alex Watt), (Slade).—May 23 ("Portable Receivers" by A. C. Weaver of Ever Ready), June 6, 7.45 p.m. ("I.G.Y. Research" by D. Ramsden, Birmingham University), Church House, High St., Erdington, Birmingham 23.

Coventry.—May 23 (Formal Meeting), 7.30 p.m., Wine St. School, Coventry.  
Stourbridge (St. A.R.S.).—June 3 (Discussion on N.F.D.), 8 p.m., Brotherhood Hall, Scotts Road.

## REGION 4

Derby (D. & D.A.R.S.).—May 19 (Open Evening); May 21 (Inquest on D.F. Contest); May 23 (Open Evening); June 1 (Visit to Rugby); June 4 (Junk Sale); June 11 (Open Evening), 7.30 p.m., Room 4, 119 Green Lane, Derby.

Ilkeston (I. & D.A.R.S.).—May 15 ("Interplanetary Travel," recorded talk by W. A. Scarr, G2WS), May 22 ("How to Align Your Receiver for the Best Performance," practical demonstration by F. Smith); Room 5, Ilkeston College of Further Education, Field Road, Ilkeston.

Retford and Worksop.—May 19 (Film Show—"The Cathode Ray Tube"), 8 p.m., Victoria Hall, Eastgate, Worksop.

## REGION 5

Cambridge (C. & D.A.R.C.).—May 16 (Demonstration of Stereo-sound by Ivan Howard, G2DUS); May 30 (Talk by C. H. L. Edwards, G8TL); June 27 (Junk Sale), 7.45 p.m., "The Jolly Waterman," Chesterton Road, Cambridge.

## REGION 7

Acton, Brentford & Chiswick.—May 20 (N.F.D. Gear Test); June 17 (N.F.D. Inquest), 7.30 p.m., A.E.U. Rooms, 66 High Road, Chiswick.  
Barnet & District.—May 27 (Discussion on N.F.D.), 7.30 p.m., No. 1374 Squadron, Air Training Corps, Gloucester Road, New Barnet.  
Bexleyheath (N.K.R.S.).—June 12 (R.A.E. Quiz), 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.

Coulsdon & District.—June 11 (Discussion), 8 p.m., Small Hall, Railwayman's Hall, Whytecliffe Road, Purley, Surrey (near to Purley Station).

Croydon (S.R.C.C.).—June 10 (Discussion), 7.30 p.m., "Blacksmiths' Arms," 1 South End, Croydon.

Ealing.—Sundays (Discussion), 11.30 a.m., ABC Restaurant, Ealing Broadway.

East Molesey (T.V.A.R.T.S.).—June 4 ("Problems of Space Travel" by W. A. Scarr, M.A., G2WS), Carnarvon Castle Hotel, Hampton Court.

Holloway (G.R.S.).—Mondays and Wednesdays (R.A.E. & Morse), Fridays (Club), 7 p.m., Montem School (ex Isledon School), Hornsey Road, N.7, June 14-15. Annual Field Day, Hampstead Heath.

Ilford.—Thursdays (Discussion), 8 p.m., G2BRH, 579 High Road, Ilford.  
London (U.H.F. Group).—June 5, 7.30 p.m. ("Stacked Arrays for 2m and 70cm," G5KG), Bedford Corner Hotel, Bayley Street, Tottenham Court Road, W.C.1.

Norwood & South London.—May 17 ("International Amateur Radio," D. Deacon G3BCM), Windermere House, Westow Street, Crystal Palace.

Slough.—June 2 (Final N.F.D. Discussion), Stag Hotel, Wexham Street, Slough.

Welwyn Garden City.—June 12, 8 p.m. (Demonstration of Commercial 100 watt Transmitter by Clive Scott, G3DXI), I.C.I. Recreation Club, Blackfan Road.

## REGION 8

Brighton (B. & D.R.C.).—May 20 ("The C.R.O." by J. P. Clement), May 27 (Final N.F.D. arrangements), 8 p.m., "The Eagle Inn," Gloucester Road, Brighton 1.

Worthing (W. & D.A.R.C.).—May 29, June 12 (Slow Morse), 8 p.m., Beach House; June 9 (Application of Components), 8 p.m., Adult Education Centre, Union Place; June 22 (Bucket and Spade Party).

## REGION 9

Bath.—June 23, 7.30 p.m. ("Any Questions?" G2ZR), 12 James Street West.

Bristol.—May 30, 7.30 p.m. ("The Principles of the Transistor, and the Manufacture of the Junction Transistor"—film show and talk by Mullard Ltd.), Carwardine's Restaurant, Baldwin Street.

## REGION 11

Prestatyn (F.R.S.).—June 2, 7.30 p.m. (Arrangements for N.F.D.), Railway Hotel, Prestatyn.

## REGION 12

Aberdeen (A.A.R.S.).—May 16 ("N.F.D. Film Show and Talk"), May 23 ("2m Converter—Club Project"), May 30 ("Sale of Surplus Components"), June 6 ("N.F.D.—Final Arrangements"), June 13 ("Sensitivity"), 7.30 p.m., 6 Blenheim Lane, Aberdeen.

## Slow Morse Practice Transmissions

B.S.T.	Call-sign	kc/s	Town
<b>Sundays</b>			
09.00	G3GYV	1900	Hartford, near Northwich
09.30	G3BKE	1900	Newcastle-on-Tyne
10.15	G3FBA	1910	Bath
11.00	G2FXA	1900	Stockton-on-Tees
11.30	G3JDO	1900	Hebburn-on-Tyne
12.00	G3LP	1850	Cheltenham
12.00	G3KAN	1850	Northampton
12.00	G15UR	1860	Belfast
15.00	G3LEQ	1990	Tunbridge Wells
15.00	G3LKG	1850	Ilkeston, Derby
20.30	G3HTA	1850	Exeter
21.00	G2FIX	1812	near Salisbury
<b>Mondays</b>			
18.00†	G3IHH, G3LEQ, G3GIE	1990	R.E.M.E., Arborfield, near Reading
18.30	G3NC	1825	Swindon
19.00	G3KTP	1850	Heanor, Derby
19.00	G3LMT	1850	Exeter
20.30	G3LSF	1900	Southport
<b>Tuesdays</b>			
18.30	G2FXA	1900	Stockton-on-Tees
20.00	G2FCI	1850	Exeter
21.00	G3EFA	1855	Southport
21.45†	G3ETP	1875	Lowestoft
<b>Wednesdays</b>			
18.30	G3GCY	1830	R.A.F., Dishforth
19.00	G3HUB/A	1902	Chelmsford
19.00	G8RQ	1850	Chesterfield
21.00	G3HWI	1987	Blackburn, Lancs.
21.00	G3LNS	1900	Birmingham
22.00	G3JJC	1990	S.E. London

B.S.T.	Call-sign	kc/s	Town
<b>Thursdays</b>			
18.30	G3NC	1825	Swindon
19.00	G3LXL, G2ABR, G3FCY, G3GWT, G3KTO	1850, 1919	Nottingham, Hull, Yorks
20.00†	G3GDT	1910	Kingsbury, N.W.9
20.30	G3JQM	1878	Barwick, Yeovil
21.30	G3HMY	1850	Exeter
22.00	G3JIT	1990	S.E. London
<b>Fridays</b>			
19.30	G3FUA	1850	Kilburn, Derby
21.30	G3MGS	1970	Chislehurst
20.30	G3ICX	1915	Sutton Coldfield
21.30†	G3KLZ, G3INW (or G3KSS), G3KEP	1900	Bradford, Bradford, Bingley
22.00	G3KYU	1859	Bournemouth
<b>Saturdays</b>			
13.00	G2FXA	1900	Stockton-on-Tees
14.00	G3LZC	1830	Heanor, Derby
21.00	G3HWI	1987	Blackburn, Lancs

† Alternately.

### LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road,

at 12.30 p.m. on Fridays, May 16 and June 20, 1958

Telephone table reservations to HOL 7373 prior to day of luncheon. Visiting amateurs especially welcome.



# Letters to the Editor...

Neither the Editor nor the Council of the Radio Society of Great Britain can accept responsibility for views expressed by correspondents.

## Unlicensed Operation

DEAR SIR,—No doubt the Society is aware of the ever increasing number of cases of piracy on the amateur bands, and on vital shipping and aircraft allocations and their associated distress frequencies. Most of this piracy is due to the ease with which unlicensed persons can purchase and put into operation high power transmitters which are capable of causing dangerous interference in the hands of inexperienced persons. Equipment such as the type 19 set which has a frequency range from 2 to 8 Mc/s, is being used, as well as the so called "Walkie Talkies" which are openly advertised as being "ready to put on the air" presumably by anyone who has a few pounds to spend and can find an associate(s) with whom to operate.

The signatories to this letter and others were concerned recently with locating two such pirates for the G.P.O. These two and, we believe, three or four others, were openly operating a nightly net on frequencies varying from 2 to 8 Mc/s, their favourite occupation being the *deliberate jamming of the ships' calling and distress frequency of 2182 kc/s*, and re-transmitting the signals of local Top Band licensed amateurs on frequencies outside our band! Fortunately we were able by means of D.F. equipment to locate two of the offenders who were duly prosecuted. They had been operating unheeded for nearly a year, both fixed and mobile, and boasted openly of contacts 200 miles away.

The *Society News and Proceedings* (R.S.G.B. BULLETIN, March 1958) carried a note that "Top Band users should take heed" on certain frequencies. Dividing the band width of 200 kc/s by the number of frequencies we are asked to avoid, gives an answer of approximately 8.3 kc/s, which represents the average separation between adjacent channels. How can the Top Band operator be expected to take heed when pirates are openly using the band apparently unchecked?

A request that we should "off load" frequencies appears in *Current Comment* (R.S.G.B. BULLETIN, April 1958). A good deal of the QRM on certain bands is caused by deliberate jamming by pirate stations and the, presumably, unauthorised use of frequencies within our bands by Air Force Cadet units, School Army units and others who think the amateur bands are as good as any in which to operate. The writer recently monitored such a group who were operating on c.w. on 1995 kc/s for nearly two hours non-stop. Signals were S8/9 plus. This group have been operating regularly for some months. A recent case of the use of transmitters by misguided persons came to light when a group of Boy Scouts arrived at the scene of the recent Dagenham train disaster, complete with Walkie Talkies—unlicensed of course. Tightening up of the G.P.O. licence regulations seems likely to encourage more piracy especially as it appears so easy to get away with.

The G.P.O. are undoubtedly overwhelmed with other commitments of interference tracking and so on and cannot afford to deploy personnel and equipment for the location of the ever-increasing number of unlicensed transmitters. As a point of interest one of the signatories to this letter and three others were out every night until nearly midnight, for a fortnight in the effort of locating the pirates mentioned above; this plus the gallons of petrol consumed in chasing D.F. fixes over an area covering some 25 square miles presented difficulties that are not hard to appreciate.

At the present moment the undersigned have knowledge of several unlicensed transmitters operating in the districts of N.E. London, S.W. Essex and N.W. Kent, for which the G.P.O. have asked co-operation in helping to locate them. We are naturally willing to do so because some of these pirates are operating in amateur bands. However, we feel that more could be done in this direction in other parts of the country, particularly in the Greater London area, Liverpool, Manchester and similar large towns. Perhaps some help could be given by the Society with publicity on the matter and the sponsoring of groups of responsible R.S.G.B. members willing to co-operate with fixed or portable

D.F. receivers. Liaison with the G.P.O. Radio Branch, is of course necessary and some arrangements would have to be made in this direction.

Some form of control over the sale of surplus transmitters would help, or dealers, at the request of the G.P.O., might point out to purchasers that a transmitting licence is necessary if the equipment is to be used for that purpose.

We, who have had some experience of this problem would be only too pleased to help. Protection of the frequency bands we have had to work for, pay to use and share with other services, is vitally necessary. Are we to share our frequencies with anyone who cares to buy a surplus market transmitter and create untold interference for which we are likely to get the blame?

The G.P.O. have already expressed gratitude for our help with this problem. We could undoubtedly strengthen our good terms with them by continued co-operation and would, therefore, be most interested to hear the opinion of the Council and the views of other members.

Yours faithfully,

F. C. JUDD (G2BCX).  
J. HUNTER (G6HU).  
N. TABOIS (G3HWG).

South Woodford,  
London, E.18.

## A TVI Problem—Can you Help?

DEAR SIR,—I wonder if any of your readers may have any helpful advice to offer regarding a problem I have encountered, which is probably not uncommon. I have an 813 p.a. similar to the G5RV p.a. described in the R.S.G.B. BULLETIN, but neutralized, with pi-section output and some additional supply lead filtering. When operating into an 80 ohm dummy load inside the screening, harmonic radiation is negligible.

With the p.a. operating into an external 80 ohm load and no low pass filter, harmonic radiation is naturally high. I have tried two different commercial makes of l.p. filter, and also a home-built l.p. filter as described in a past issue of the R.S.G.B. BULLETIN. All of these reduce the strength of the radiated harmonics, the homebuilt filter providing the best suppression. However, even using a l.p. filter, harmonics radiated are stronger than the local TV signal on a receiver in the shack. Adding another l.p. filter in series makes no improvement. Using a co-ax stub as in the March issue of the BULLETIN produces a harmonic suppression of the same order as a l.p. filter. However adding one or two l.p. filters when using the co-ax stub does not reduce the level of radiated harmonics any further.

My latest experiment has been to add another l.p. filter mounted inside the p.a. screening. Results from this show no difference to one mounted externally, and the addition of an external l.p. filter in series makes no improvement.

Incidentally, I use cubical quads on 21 Mc/s and 28 Mc/s, and these are quite efficient beams at 42 Mc/s and 56 Mc/s respectively. Harmonic interference is only caused when the quads are pointing towards the TV aerials concerned. This was confirmed by the G.P.O. engineers.

It seems to me that with the transmitter screened and filtered to such a degree that there is virtually no harmonic radiation until an external load is added, it should be possible to reduce harmonic output to whatever degree is necessary by means of suitable l.p. filters. However, I have been unable to do so by the methods described. Only the nearest two TV receivers are suffering any interference, but I am unable to find a way of achieving the further 20db or so suppression necessary to effect a cure. Any comments would be appreciated.

Yours faithfully,

Hilland, Headley,  
Bordon, Hants. D. L. COURTIER-DULTON (G3FPQ).

## Frequency Shift Keying

DEAR SIR,—Recently I was presented with some copies of your BULLETIN. On perusing them I came across a *Current Comment* by W. H. A. in the August 1957 issue on Frequency Shift Keying and read with amazement the statement "not of interest to amateurs, being concerned with . . . teleprinter operation . . ."

To an avid Amateur Radio teletype operator, one of some three thousand on this continent, such a statement is sheer heresy! We RTTY devotees consider this the ultimate in Amateur Radio communication—other modes are interesting historical phases of our hobby through which we have passed!

Here, Sir, is truly the last stronghold of the true radio amateur. Radio teletype equipment cannot be bought, certainly not over a

radio store counter for a small down payment, and must be built or borrowed in the traditional amateur methods of thirty years ago. Each new amateur RTTY station is a unique combination of salvaged junk and modern electronic computer techniques; many weeks or months of fumbling, and frustration; much correspondence seeking unpublished information from other amateurs who "have got it to print" and finally emerges on the air as an individual effort and different from any other amateur RTTY station.

The writer has operated Amateur Radio teletype for many years, has worked over four hundred stations on RTTY in five continents; all the world excepting Europe, which for some reason appears to be absolutely barren of such activity.

Again I am amazed that your contributor should so lightly pass over this vital and interesting phase of Amateur Radio activity for here is truly an opportunity for the amateur to prove his worth in the advancement of the communications art as he has done so often in the past.

For the information of R.S.G.B. members who might be planning to obtain a VE/VO licence I would mention that the examination for our new Advanced Amateur Radio Operators' Certificate (mandatory for phone operation below 27 Mc/s.) includes questions on radio teletype.

Yours sincerely,

JAMES T. HEBURN (VE7KX).

Richmond, B.C.

**Editorial.** Mr. W. H. Allen who wrote the *Current Comment* has been quoted out of context. He said: "Many of the advantages claimed for this system in commercial practice are, however, not of interest to amateurs, being concerned with high speed or teleprinter operation and diversity reception."

### A Matter of Taste

DEAR SIR,—As County Controller for Essex, and on behalf of fellow R.A.E.N. members, I feel I should answer Mr. W. H. Matthews' spiteful letter in the March BULLETIN.

I refer to his suggestion that "everybody wanted to crash in, etc." This is most untrue as the operational channel was kept quite clear and the calls in were few and snappy. The behaviour of the net and other amateurs was to be commended.

His comment on the "smash not being big enough" shows, in my opinion, a distorted mental outlook.

Mr. Matthews has a car and a mobile unit, but is not in R.A.E.N. He also has a telephone and knows all of the local R.A.E.N. personnel. From this one would assume that he would rather see his name in print in order to attempt to discredit his fellow members, than in good taste use his telephone to air his views.

Yours faithfully,

C. H. L. EDWARDS (G8TL).

DEAR SIR,—I was indeed sorry to read the extract from G2CD's letter.

"The impression gained" is not fact and his suggestion that anyone would desire a smash to be bigger in order, as he puts it, "to get a show" should never have been printed.

For the record, the only reason R.A.E.N. was not called out in the Dagenham Railway Disaster was over licence conditions which we honoured—it was as simple as that. The British Red Cross had at their disposal a private telephone, at the scene of the accident, throughout the incident and at no time did communications become "congested or disrupted."

R.A.E.N. stood by just in case and the only good point that comes out of G2CD's letter is that so many members were anxious to help. I am able to say that the British Red Cross Society was most grateful.

Yours faithfully,

Bridlington, Yorks.

ARTHUR C. DUNN (G2ACD).  
Chairman, R.A.E.N. Committee

### Trends in Aerial Design

DEAR SIR,—I read with interest the article on aerial design which appeared in the March issue of the BULLETIN and there are several points raised by Mr. Kharbanda on which I would like to comment.

I have also experimented with single- and double-stub tuning of the cubical quad, but unlike G2PU I have found no measurable difference in gain [1]. Inspection of Fig. 7 indicates an apparent increase in total radiated power when using two tuning stubs in the reflector. This suggests that the effects observed by G2PU may be due to a change in radiation resistance rather than an increase in power gain. Also, when radiating horizontal

polarization from the cubical quad (single stub) the asymmetry of the polar diagram will tend to lower the angle of radiation slightly.

Walkinshaw [2], [3] has given theoretical calculations for the gain of the aerial system depicted in Section 4 of Fig. 6. Using a radiator/reflector spacing of  $0.2\lambda$  and vertical spacing of  $\lambda/2$  the maximum power gain over a  $\lambda/2$  dipole is less than 8db. Due to the reduced spacing and shorter element lengths, the quad, and also the bisquare, should have a slightly smaller gain than this array. G2PU has claimed 10db to 12db which from his own data would correspond to a 6- to 8-element Yagi.

The quad and bisquare are roughly equivalent to two stacked two-element parasitic beams and it is only necessary to study the various references on aerials of this type to determine the gain which can be expected from the bisquare. The figure of 8db, which is often quoted for the cubical quad is therefore a more realistic value.

I agree entirely with G2PU's sentiments regarding the advantages of the cubical quad and bisquare over more conventional arrays. However, there is insufficient evidence to claim any appreciable advantage for the bisquare in comparison with the cubical quad and there is even less to support the rather optimistic claims of 10db gain for the bisquare.

Yours faithfully,

C. W. DAVIDSON, B.Sc., (GM3LAV.)

Edinburgh, 8.

### References

- [1] "A Three-Band Cubical Quad," J. S. McCaig and C. W. Davidson. *Short Wave Magazine*, December 1957.
- [2] "Theoretical Treatment of Short Yagi Antennas," W. Walkinshaw. *Journal I.E.E.*, Part IIIA, 93, 598 (1946).
- [3] "The Theory of Linear Antennas," R. W. P. King, Harvard University Press, (1956), p. 648.

### On-the-spot Service

DEAR SIR,—It may interest your readers to know what happened at a recent meeting of our local society. We had invited the maker of a popular transmitter to address us on its circuitry. Two technicians arrived with a skeleton transmitter and duly delivered an exceptional technical talk and concluded by inviting questions. Nearly half of those present were users of this transmitter and the questions rolled in and were dealt with. One member had an early model which differed considerably from the present-day one. On learning that the owner lived two miles away, one of the technicians offered to fetch the transmitter, convey it back to the makers and modify it for him.

Another member had complained of an intermittent fault and the two technicians decided to go home with him and see what was wrong. This owner is disabled and they decided that repairs must be carried out on the spot so that the owner could keep "on the air." The technicians arrived at 10 p.m. and at 11 p.m. the fault was discovered to be due to a faulty mod. transformer. So the technicians gallantly stripped down part of the faulty transmitter, inserted parts from the skeleton transmitter used for the lecture and at 1.30 a.m. departed with the owner "on the air."

In view of recent criticism of commercial rigs, I feel that such excellent on-the-spot service should be recorded. Incidentally, one of the technicians was a licensed amateur!

Yours faithfully,

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# NEW CALLS

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- G3MJN** L. A. Harvey, 56 Devonshire Road, Laidon, Basildon, Essex.
- G3MJO** S. J. Arnold, 102 Clementina Road, Leyton, London, E.10.
- G3MJP** M. M. B. Philpott, "Majorca," Seamead, Stubbington Lane, Fareham, Hants.
- G3MJQ** M. A. Noble, Burdens Cottage, All Cannings, Devizes, Wilts.
- G3MJR** B. P. Robinson, St. Mary Magdalene Vicarage, Silver Road, Norwich, Norfolk.
- G3MJS** E. C. Long, 27 Marguerite Way, Wickford, Essex.
- G3MJT** A. J. Parkes, 24 Ardgowan Road, Catford, London, S.E.6.
- G3MJU** M. A. Stott, 6 Preston Road, Southport, Lancs.
- G3MJV** D. T. Hawken, "Sunnydene," Southfield Place, St. Ives, Cornwall.
- G3MJW** D. Edmunds, 14 Hope Street, Bozeat, Wellingborough, Northants.
- G3MJX** A. Bird, 2 Cheviot Walk, Pogmoor, Barnsley, Yorks.
- G3MJZ** T. E. J. Brett, "Avonside," 1 Elgin Road, Seven Kings, Essex.
- G3MKA** Flt./Lt. J. M. Faithfull, 106 O.M.Q. R.A.F. Upavon, Pewsey, Wilts.
- G3MKB** A. C. W. Watts, Black Dogs Lodge, Zeals, Warminster, Wilts.
- G3MKC** Sqdn. Ldr. R. A. Hale, Black Mikes, Dursden Lane, Pewsey, Wilts.
- G3MKD** P. W. Lougher, 20 Beech Grove, Fallowfield, Manchester 14.
- G3MKE** W. J. Smith, 49 Greencroft Road, Heston, Hounslow, Middlesex.
- G3MKF** H. A. Richards, 89 Belmont Road, Uxbridge, Middlesex.
- G3MKH** G. Rooney, 270 Spital Road, Bromborough, Wirral, Cheshire.
- G3MKI** A. D. Duffin, 24 Forester Road, Bath, Somerset.
- G3MKK** G. V. Gadd, 42 Park Avenue, Oswestry, Shropshire.
- G3MKL** F. E. Whitby, 3 Leeswood Road, Upton, Wirral, Cheshire.
- G3MKMT** A. B. McClelland, 45 Fairfield Road, Epping, Essex.
- G3MKN** W. G. West, 23 Palmer Road, Poole, Dorset.

#### Channel Islands

D. Stewart, Boulivot House, Boulivot, Grouville, Jersey.

#### Northern Ireland

S. J. Milligan (Jnr.), 78 Richardson Street, Belfast.  
A. McMurtry, 13 Upper Canning Street, Belfast.

**G13MCZ** C. H. Low, 35 Knock Eden Park, Belfast.  
**G13MDA** D. W. Beeden, Sgts.' Mess, R.A.F. Ballykelly, Limavady.  
**G13MDQ** A. G. H. Heaney, 182 Kings Road, Knock, Belfast.  
**G13MER** L. MacKellar, Sgts.' Mess, R.A.F. Ballykelly, Limavady.  
**G13MFA** R. P. Vere, Sgts.' Mess, R.A.F. Ballykelly, Limavady.  
**G13MGD** R. A. Gordon, Sgts.' Mess, R.A.F. Ballykelly, Limavady.  
**G13MHE** V. J. Tointon, Sgts.' Mess, R.A.F. Ballykelly, Limavady.  
**G13MHI** J. W. McLroy, Cromwell House, 37 Cromwell Road, Belfast.  
**G13MIZ** Major S. A. Bevan, 12 Cricklewood Park, Stranmillis, Belfast.  
**G13MJY** K. O. Dyson, 64 Coleraine Road, Portstewart, Co. Derry.  
**G13MKG** D. T. Grafham, Sgts.' Mess, R.A.F. Aldergrove, Co. Antrim.

**Scotland**  
**G13MAQ** G. Banner, 46 Bank Street, Grange-mouth, Stirlingshire.  
**G13MAS** A. B. Pringle, 31 Sugworth Avenue, Garrawhill, Baillieston, Glasgow.  
**G13MBC** J. H. A. L. Churchill, 46 Dalziel Drive, Glasgow, S.1.  
**G13MCH** N. Stewart, 16 Kings Road, Forfar, Angus.  
**G13MCM** D. D. Simpson, Aberdeen Wireless College, 56 Union Street, Aberdeen.  
**G13MDV** F/Sgt. R. Hoggan, 22g Quakerfield, Bannockburn, Stirling.  
**G13MDX** J. L. Lawson, Shandwick, Bentinck Crescent, Troon, Ayrshire.  
**G13MEX** A. Cunnean, Sgts.' Mess, R.A.F. Kinloss, Forres, Morayshire.  
**G13MFE** D. W. Aird, la Bruce Street, Bannockburn, Stirling.  
**G13MGT** A. W. Hope, 11 Craigs Road, Corstorphine, Edinburgh 12.  
**G13MHG** J. Enderby, 40 Anderson Street, Glasgow, W.1.  
**G13MHJ** C. W. Wallace, 121 Navitie Park, Ballingry, Lochgelly, Fife.

**GM3MHP** D. G. Head, Sgts.' Mess, R.A.F. Kinloss, Forres, Morayshire.  
**GM3MIF** A. J. Hall, 29 Friarton Road, Merrylee, Glasgow, S.3.  
**GM3MIT** J. W. Black, 40 Clelland Avenue, Auchinairn, Bishopbriggs, Glasgow.  
**GM3MJE** R. Bond, 118 Gartcraig Road, Carnynte, Glasgow, E.3.  
**GM3MJG** R. S. D. Munroe, 8 Clune Terrace, Newtonmore, Inverness-shire.  
**GM3MKJ** A. Gillies, 83 Curle Street, Whiteinch, Glasgow, W.4.

**Wales**  
**GW3MDK** R. Jones, Woodcote, Coed-Pella Road, Colwyn Bay.  
**GW3MFY** W. M. Lee, Avondale, Bryntirion Hill, Bridgend, Glam.  
**GW3MFZ** C. Donnelly, Ivy Bank, High Street, Cilgerran, Cardigan.  
**GW3MIM** I. F. Riemer, 96 Wenallt Road, Rhiwbina, Cardiff, Glam.  
**GW3MIW** R. Robinson, Bronheulog, St. Davids Road, Caernarvon.

## New Members

THE following were elected to Membership at the March 1958 meeting of the Council:

### Corporate Members, Home (Licensed)

**G2VO** †J. J. PLATT, Underhill, High Spring Gardens, Keighley, Yorks.  
**G3HBU** †F. A. HALL, Morlaix, Reading Road, Finchampstead, Berks.  
**G3JOU** †E. WALKER, 67 Pope Lane, Ribbleson, Preston, Lancs.  
**G3LFS** †A. FOULSHAM, 84 Cranborne Avenue, Tolworth, Surbiton, Surrey.  
**G3LKP** †N. TEMPERTON, 132 Fareham Road, Gosport, Hants.  
**G3LLE** K. WEBSTER, 28 Athelstan Road, Handsworth, Sheffield 13.  
**G3LTS** J. STEFOX, 27 Buttermere Road, Ashton-under-Lyne, Lancs.  
**G3LTM** B. E. MOYLER, Pegwell Lodge, Pegwell Road, Ramsgate, Kent.  
**G3LVP** †K. F. EASTY, 83 Herongate Road, Wansstead, London, E.12.  
**G3MED/T** †F. A. GRIFFITHS, 9 Heyeswood Lane, Hartford, Northwich, Cheshire.  
**G3MHK** G. F. Bradshaw, 22 Aldwych Place, Brownhill, Blackburn, Lancs.  
**G3MHL** R. Gis, 20 Linden Buildings, Bethnal Green, London, E.2.  
**G3MHV** T. G. LANGDON, 20 Upper Marsh Road, Warminster, Wilts.  
**G3MHW** J. R. R. BAKER, 10 Dagnell End Road, Bordesley, Redditch, Worcs.  
**G5ZB** †H. BEARDWOOD, 35 Heath Road, Chickenley, Dewsbury, Yorks.  
**G6HN** †J. A. B. HORNER, 15 Belmont Road, Brislington, Bristol 4.  
**GM3LTP** P. Joy, 5 Well Street, Monifieth, Nr. Dundee, Angus.  
**GW3DIX** †G. MOORFIELD, Bryn Hyfryd, Alwch Port, Anglesey.

### Corporate Members, Overseas (Licensed)

**F7DK/K6ZUI** T/Sgt. E. C. GENTNER, Apt. 397, Bldg. "N," Cite de Touvent, Chateauroux (Indre), France.  
**K2FC** SIDNEY X. SHORE, 191 Parkway Drive, Roslyn Heights, N.Y., U.S.A.  
**K2QBV** JOEL H. KORNREICH, 102-12, 65 Avenue, Apt. D57, Forest Hills 75, New York, U.S.A.  
**KN9IGP** R. ALLAN FICK, 639 Barbour Avenue, Terre Haute, Indiana, U.S.A.  
**K2UYG** WILLIAM R. SCHNEIDER, Jr., 17 Buckminster Road, Rockville Centre, New York, U.S.A.  
**K2YHU** E. RHEA HURD, Jr., 85 Samson Avenue, Madison, New Jersey, U.S.A.

**K4MUP** EARLE FINDLEY, Jr., 113 Hagood Street, Pickens, South Carolina, U.S.A.  
**OD5CB** K. NABHANI, P.O. Box 266, Tripoli, Lebanon.  
**SM5AHK** CURT R. E. ISRAELSSON, Inteckningsvagen 31, Hagersten, Sweden.  
**W2GHK** STUART F. MEYER, 1103 Kent Place, Linden, New Jersey, U.S.A.  
**W4YOX** JAMES BLASKE, 2500 Bayview Drive, Fort Lauderdale, Florida, U.S.A.  
**W6TGF** W. J. NAGEL, 154 West 223 Street, Torrance, Calif., U.S.A.  
**W9PGP** ADDISON E. KLOPHEL, 1315 West Ash Street, Springfield, Ill., U.S.A.  
**YO3RF** ING. GEORGE CRAIU, P.O. Box 73, Bucharest, Roumania.  
**ZL3PM** SAUL D. MCGEE, 28 Conway Street, Christchurch, New Zealand.  
**ZSIOU** J. P. SNYMAN, Box 80, Strand, South Africa.

### Corporate Members, Overseas (British Empire Receiving Stations)

**973** Cpl. P. J. CROSBIE, B Troop, 2 Sqdn., Cyprus District Signal Regiment, B.F.P.O. 53.  
**974** R. ESLOD, Air Trails Unit, Woomera, South Australia.

### Corporate Members, Home (British Receiving Stations)

**21783** J. HILLMAN, 41 Kenbrook House, Leighton Road, Kentish Town, London, N.W.5.  
**21784** J. BOND, 13 Curzon Road, Southport, Lancs.  
**21785** G. S. LEE, 129 Berkeley Court, London, N.W.1.  
**21786** W. C. JENKINS, Gardeners Cottage, Kintbury Park, Kintbury, Berks.  
**21787** J. LIXENBERG, 16 Cranwich Road, Stamford Hill, London, N.16.  
**21788** P. F. R. PITCHER, 1 West Down Road, Beacon Park, Plymouth, Devon.  
**21789** A. L. ROLES, 30 Gosterwood Street, Deptford, London, S.E.8.  
**21790** J. SWINGWOOD, 187 Brettell Lane, Stourbridge, Staffs.  
**21791** R. E. BALL, 121 Sandyleaze, Gloucester.  
**21792** J. H. ROUTLEDGE, 13 Cathedral View, Newbottle, Houghton-le-Spring, Co. Durham.  
**21793** J. EAGLE, B.Sc.(Eng.), 175 Ewell Road, Surbiton, Surrey.  
**21794** F. A. SINGLETON, 22 St. Augustines Road, Chesterfield, Derbys.  
**21795** A. D. MASON, 52 Arnelcliffe Terrace, Lidget Green, Bradford 7, Yorks.  
**21796** A. J. McDONALD CAMERON, 17 Swanston Grove, Fairmilehead, Edinburgh 10.  
**21797** D. R. MORSE, 92 Marlborough Road, Brynmill, Swansea, Glamorgan.  
**21798** †R. J. PIGOU, 7 Gloucester Walk, London, W.8.

**21799** S. Crowther, 36 Manor House Lane, Holme Slack, Preston, Lancs.  
**21800** †K. Bentley-Briscoe, 311 Eton Road, Ilford, Essex.  
**21801** †A. H. P. WILSON, c/o 63 Officers' Married Quarters, R.A.F., Upavon, Pewsey, Wilts.  
**21802** †A. G. WHEELER, 29 Park View Road, Southall, Middx.  
**21803** †R. MERCER, High Weald, Smallhythe Road, Tenterden, Kent.  
**21804** †B. SEARBY, 59 St. Stephens Road, Rotherham, Yorks.  
**4865** †L. D. JEFFREY, 69 Gloucester Crescent, Delapre, Northampton.  
**6072** †R. WILLIAMS, 43 Cliffe Road, Grantham, Lincs.  
**815** †F. C. WADHAMS, 40 Oakway, Stifford Clays, Grays, Essex.  
**18771** †R. J. DURRANT, 26 Preston Drive, Ipswich, Suffolk.  
**19514** †R. A. CATHLES, 4 Dawnay Road, Great Bookham, Surrey.

### Associates

**1585** D. W. JEREMIAH, 688 Llangyfelach Road, Treboeth, Swansea, Glamorgan.  
**1586** I. F. CHAMBERLAIN, Poplars, Little Melton, nr. Norwich, Norfolk.  
**1587** B. J. REYNOLDS, 49 Station Road, Crayford, Kent.  
**1588** F. INGLIS, 39 Melville Street, Kilmarnock, Ayrshire.  
**1589** I. AITKEN, 91 Arksey Lane, Bentley, Doncaster, Yorks.  
**1590** C. P. LEWTON, 322 Milton Road E., Weston-super-Mare, Somerset.  
**1591** A. BASKEYFIELD, 54 Outclough Road, Brindley, Ford, Stoke-on-Trent, Staffs.  
**1592** G. BOWTELL, Glenparke, St. Georges Avenue, Hinckley, Leics.  
**1593** A. G. DAVEY, Grassmere, King Richard Road, Hinckley, Leics.  
**1594** J. M. WERRALL, c/o Staff Quarters, Cable & Wireless Ltd., Porthcurno, Penzance, Cornwall.  
**1595** H. W. E. BENTLEY, 111 Sudbury Court Drive, Harrow, Middx.  
**1596** W. J. M. HUME, 29 Spottiswoode Street, Edinburgh.  
**1597** C. TWIGGS, 6 Woodbank Avenue, Offerton, Stockport, Cheshire.  
**1598** D. W. DILLON, 16 Ann Street, Ballycastle, Northern Ireland.  
**1599** E. M. KELLY, JR., Orton Hall, Orton, via Penrith, Westmorland.  
**1600** R. POSEN, 24 Tavistock Avenue, Mapperley Park, Nottingham.  
**1601** G. G. ELSE, 70 Great Park Road, Kimberworth, Rotherham, Yorks.  
**1602** J. McMULLEN, 1 Lugar Street, Coatbridge, Lanarkshire.

\* Denotes transfer to Corporate Grade.  
† Denotes re-elected.

# Affiliated Societies and Clubs

THE following Clubs and Societies were affiliated to the Radio Society of Great Britain as at April 30, 1958. The addresses given are for communications.

- Aberdeen Amateur Radio Society (GM3BSQ):** A. G. Knight, 6 Blenheim Lane, Aberdeen.
- Acton, Brentford & Chiswick Radio Club (G3IUU):** W. G. Dyer (G3GEH), 188 Gunnersbury Avenue, Acton, London, W.3.
- Admiralty Electronics Society (G3BPU):** W. J. Green (G3FBA), 82 Bloomfield Avenue, Bath, Som.
- Ainsdale Radio Club:** H. Hilton (G3LWQ), 60 Montrose Drive, Southport, Lancs.
- Aldershot and District Amateur Radio Society:** S. E. Hume, 25 Kingsway, Aldershot, Hants.
- Amateur Radio Club of Nottingham (G3EKW):** F. V. Farnsworth, 32 Harrow Road, West Bridgford, Nottingham.
- \*Amateur Radio Club (G5PM):** Royal Military Academy, Sandhurst, Camberley, Surrey.
- \*Aquila Amateur Radio Club (G3BRK):** R. C. B. Cuts (G3HRC), Section L21, "Aquila" I.E.M.E. (M.O.S.), Golf Road, Chislehurst Station, Bromley, Kent.
- Ariel Radio Group (G3AYC):** B. A. Toms, Room 616, Centre Block, Bush House, London, W.C.2.
- Ariel Radio Group (G3GDT):** B. A. Toms, 38 Ashbourne Avenue, South Woodford, London, E.18.
- Army Wireless Reserve Amateur Radio Society (GB3AWR):** J. A. Bladen (G3FDU), 28 Jack Lane, Davenham, Northwich, Ches.
- Ashington & District Amateur Radio Club:** J. F. Wood, Teviotdale, Hagg House, Ellington, Morpeth, Northumberland.
- Bailleul Radio Society (G3IHH):** 3 Trg. Btm., R.E.M.E., Bailleul Camp, Arborfield, Reading, Berks.
- Barnsley & District Amateur Radio Club:** P. Carbutt, 19 Warner Road, Barnsley, Yorks.
- Barrow Radio Society:** J. T. Leviston, 48 Oxford Street, Barrow-in-Furness, Lancs.
- Bournville Radio Society (G6BV):** Council Office, Cadbury Bros. Ltd., Bournville, Birmingham, Warwick.
- Brighton & District Radio Club:** R. Purdy, 37 Bond Street, Brighton 1, Sussex.
- British Amateur Television Club:** D. W. E. Wheeler (G3AKJ), 56 Burlington Gardens, Chadwell Heath, Romford, Essex.
- Britannia Radio Club (G6VJ):** Senior Communications Officer, Royal Naval College, Dartmouth, Devon.
- B.T.H. (Rugby) Radio & Television Section (G3BXF):** c/o Honorary Secretary, Radio & Television Section, B.T.H. Recreation Club, British Thomson-Houston Co. Ltd., Rugby, Warwick.
- Bury Radio Society (G3BRS):** C. L. Robinson, 56 Avondale Avenue, Bury, Lancs.
- Cambridge & District Amateur Radio Club:** A. H. G. Waton (G3GGJ), "Arkengarthdale," New Road, Barton, Cambridge.
- Cambridge University Wireless Society (G6UW):** R. Kerley, St. John's College, Cambridge.
- Cheltenham Amateur Radio Society (G3GPW):** C. Wallis, 147 Hales Road, Cheltenham, Glos.
- City of Belfast Y.M.C.A. Radio Club (G16YM):** R. J. Boal, 98 Breda Road, Belfast, Northern Ireland.
- City of Chester A.T.C. Amateur Radio Club, 1366 (G3KZK):** c/o P/O P. J. D. Kay, Old Wrexham Road, Chester.
- Cornish Radio & Television Club (formerly West Cornwall Radio Club):** J. Brown (G3LPB/T), Marlborough Farm, Falmouth.
- Courtauld's Amateur Radio Group (G3CQD):** W. P. Stevens, Courtauld's Ltd., Foleshill Road, Coventry, Warwick.
- Coventry Amateur Radio Society (G2ASF):** V. A. Dalkin, B.Sc., 8 Westminster Road, Coventry, Warwick.
- Crystal Palace & District Radio Club:** G. M. C. Stone (G3FZL), 10 Liphook Crescent, Forest Hill, London, S.E.23.
- Derby & District Amateur Radio Society (incorporating Derby Wireless Club, 1911) (G3ERD):** F. C. Ward (G2CVV), 5 Uplands Avenue, Littleover, Derby.
- Derby Short Wave Experimental Society (G3EEO):** J. Anthony, 56 Sherwood Street, Derby.
- \*Dorking Radio Society (G3CZU):** J. Greenwell (G3AEZ), Wigmore Lodge, Beare Green, near Dorking, Surrey.
- Dowry Amateur Radio Club (G3LAM):** N. F. O'Brien (G3LP), Dowry Nucleonics Ltd., Brockhampton Park, Andoversford, Glos.
- Edgware & District Radio Society (G3ASR):** E. W. Taylor (G3GRT), 99 Portland Crescent, Stanmore, Middx.
- Electronics & Amateur Radio Society (G4RG):** Queen Mary College, Mile End Road, London, E.1.
- Flintshire Radio Society:** J. T. Lawrence (GW3JGA), 9 East Avenue, Bryn Newydd, Prestatyn, North Wales.
- Grafton Radio Society (G3AFT):** A. W. H. Wennell (G2CIN), 145 Uxendon Hill, Wembley Park, Middx.
- Grammar School Radio Society (G3KZA):** E. T. Ward, B.A. (G3JWC), The Grammar School, Burton-on-Trent, Staffs.
- Gravesend Amateur Radio Society (G3GRS):** L. C. Bodycombe, 21 Grieves Road, Northfleet, Kent.
- Great Portland Radio Club (G3GJD):** V. F. Turner (G3DOH), 18 Henley Road, Edmonton, London, N.18.
- Grimby Amateur Radio Society:** J. Browne, 245 Yarrow Road, Grimby, Lincs.
- \*Harrow Radio Society:** S. C. J. Phillips, 131 Belmont Road, Harrow Weald, Middx.
- \*Harlow & District Radio Society:** H. Ivan Wright, "Rest Harrow," Hart Road, Harlow, Essex.
- Hartlepool Amateur Radio Club (G3IDY):** Frank J. Dodds, 36 Whitfield Drive, West Hartlepool, Co. Durham.
- Hastings & District Amateur Radio Club (G6HH/M):** W. E. Thompson, 8 Coventry Road, St. Leonards-on-Sea, Sussex.
- \*Hoffmann Gloucester Radio & Electric Society (G3IFH):** S. R. Boakes (G3HXN), "Cambridge Villa," Bristol Road, Cambridge, Glos.
- Hull & District Radio Society (G3AMW):** Alan Beauteament (G2CNX), 56 Ings Road, Hull, East Yorks.
- Ilford & District Radio Society:** C. E. Largen, 44 Trelawney Road, Barkingside, Ilford, Essex.
- \*Ilkeston & District Amateur Radio Society:** E. Eric West (G3KTP), 21 Westfield Avenue, Marple, Heanor, Derbys.
- \*International Aeradio Ltd. Social Club, Amateur Radio Section:** c/o Personnel & Admin. Officer, Engineering Division, Hayes Road, Southall, Middx.
- \*Isle of Man Amateur Radio Society (G3JFLH):** T. R. Moore (G3JENK), Glynmoar, St. John's, Isle of Man.
- Kingston & District Amateur Radio Society (G3KIN):** R. S. Babbs, B.Sc., 28 Grove Lane, Kingston-upon-Thames, Surrey.
- Kinloss Amateur Radio Club (G3HRZ):** Sgt. A. F. Hunter, Sgt's Mess, R.A.F. Kinloss, Forres, Morayshire, Scotd.
- Kynoch Radio & Television Society (G3HPP):** G. E. Nicholls, 20 Merriams Close, Gt. Barr, Birmingham 22A, Warwick.
- Lancaster & District Amateur Radio Society:** A. Thompson, 51 Princes Crescent, Bare, Morecambe, Lancs.
- Leicester Radio Society (G3LRS):** P. G. Goadby (G3MCP), 535 Welford Road, Leicester.
- \*Lincoln Short Wave Club (G3IXH):** S. Harrison, 4 Main Avenue, Bracebridge Heath, Lincoln.
- \*Liverpool & District Amateur Radio Club (G3AHD):** W. Wardle (G3EWZ), 16 Mendip Road, Liverpool, Lancs.
- Liverpool Diocesan Regiment, Church Lads' Brigade (G3SCA):** c/o Col. E. C. Arden, LL.B., T.D., 521 Aigburth Road, Liverpool 19.
- \*Lothians Radio Society:** A. A. Dewar, 37 Calder Circle, Edinburgh 11.
- \*Loughborough College Radio Society:** R. B. Woodland, Union of Loughborough Colleges, Loughborough, Leics.
- Manchester & District Radio Society:** J. A. Elliott (G3KIQ), 2 Pennine Close, Blackley, Manchester 9.
- Marconi Apprentices' Amateur Radio Club (G3JTW):** A. R. Williams (G3KSU), 24 Queens Road, Chelmsford, Essex.
- Medway Amateur Receiving & Transmitting Society (G3FJA):** H. G. Cheeseman (G3KNO), 265 Cliffe Road, Strood, near Rochester, Kent.
- Midland Amateur Radio Society (G3MAR):** C. J. Haycock, 360 Portland Road, Edgbaston, Birmingham 17, Warwick.
- Mitcham & District Radio Society:** D. Johnston, 23 Woodland Way, Mitcham, Surrey.
- \*Newark & District Amateur Radio Society:** J. R. Clayton, 160 Wolsey Road, Newark, Notts.
- \*Newbury & District Amateur Radio Society:** J. A. Gale, 1b Bartholomew Street, Newbury, Berks.
- Northampton Short Wave Radio Club (G3GWB):** S. F. Berridge (G3ITW), 20 Ethel Street, Northampton.
- North-West of Ireland Amateur Radio Society:** J. G. Logue, 42 Clooney Terrace, Londonderry, Northern Ireland.
- North Kent Radio Society (G3ENT):** D. W. Wooderson (G3HKX), 39 Woolwich Road, Bexleyheath, Kent.
- Nottingham University Radio Society:** c/o The Treasurer, Societies' Room, The University, University Park, Nottingham.
- Oxford & District Amateur Radio Society:** J. Hickling, 33 Chestnut Road, Botley, Oxford.
- Plymouth Radio Club:** C. Teale (G3JYB), 3 Berron Park Road, Peverell, Plymouth, Devon.
- Portsmouth & District Radio Society (G3DIT):** A. C. Cake (G3CNO), 7 Wheatstone Road, Southsea, Hants.
- \*Port of London Authority Staff Club Radio Section (G3HXL):** Lighterage Office, Northern Dept, Millwall Dock, London, E.14.
- Queens University of Belfast Radio Club (G3LLQ):** F. H. Gould, Students' Union, Queens University, Belfast.
- Radio Society, City & Guilds College (G5YC):** L. G. Davis, City and Guilds College, South Kensington, London, S.W.7.
- Ravensbourne Amateur Radio Club (G3HEV):** J. Wilshaw, 4 Station Road, Bromley, Kent.
- \*R.E.U. Radio Club:** S/Ldr. Copeland, R.E.U., R.A.F. Henlow, Beds.
- \*Romford & District Radio Society (G4KF):** N. O. Miller, 55 Kingston Road, Romford, Essex.
- Royal Air Force (Compton Bassett) Amateur Radio Club (G3HXZ):** F/Lt. A. J. Munro, R.A.F. Compton Bassett, Wilts.
- Royal Air Force (Debden) Amateur Radio Society (G3KRN):** F/Lt. R. Jackson, D.F.M., Officer's Mess, R.A.F. Debden, Saffron Walden, Essex.
- \*Royal Air Force (Dishforth) Amateur Radio Club:** G. G. Brown (G3GTL), 10 Whitley Road, R.A.F. Dishforth, Thirsk, Yorks.
- \*Royal Air Force (Locking) Amateur Radio Society (G8FC):** R. Weston, Headquarters (G8FC), R.A.F. Locking, Som.
- Royal Air Force (St. Athan) Radio Society (GW3CKB):** c/o No. 32 M.U., R.A.F. West Camp, Barry, Glam.



- Salisbury & District Short Wave Club (G3KFK): J. H. Dunn, c/o Command Secretariat, H.Q. Southern Command, Salisbury, Wilts.
- Scarborough Amateur Radio Society (G4BP): P. B. Briscoe (G8KU), "Roseacre," Iron, near Scarborough, Yorks.
- Science Museum Radio Society (GB2SM): G. C. Voller (G3JUL), The Science Museum, South Kensington, London, S.W.7.
- Scunthorpe Amateur Radio Society: J. Stace (G3CCH), 38 Skippington Road, Scunthorpe, Lines.
- Sheffield Amateur Radio Club: B. Cliffe, 16 Moorbank Drive, Sheffield 10, Yorks.
- Shefford & District Radio Society (G3JFE): G. R. Cobb, "Western House," 75 Amphill Road, Shefford, Beds.
- Slade Radio Society (G3JBN): C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.
- South Manchester Radio Club (G3FVA): M. Barnsley (G3H2M), "Greenways," 11 Cemetery Road, Denton, Lancs.
- \*Southampton University Amateur Radio Society: Connaught Hall, Wessex Lane, Swaythling, Hants.
- \*Southend Radio Society (G5QK): P. C. Baldwin, 13 Inverness Avenue, Westcliff-on-Sea, Essex.
- South Shields & District Amateur Radio Club (G3DDI): K. Skethway (B.R.S. 20185), 51 Baret Road, Walkergate, Newcastle-on-Tyne 6.
- Spenn Valley Amateur Radio Society: N. Pride, 100 Raikes Lane, Birstall, near Leeds, Yorks.
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- Students Union, Northern Polytechnic & National College of Rubber Technology Radio Society: R. A. Nye (G3LPY), Students' Union, Northern Polytechnic, London, N.7.
- \*Stourbridge District Radio Society: A. K. Davies, 48 Church Avenue, Vicarage Road, Ambleside, near Stourbridge, Worcs.
- Surrey Radio Contact Club (Croydon): S. A. Morley (G3FWR), 22 Old Farleigh Road, Selsdon, South Croydon, Surrey.
- Sutton and Cheam Radio Society: F. J. Harris (G2BOF), 143 Collingwood Road, Sutton, Surrey.
- Thames Valley Amateur Radio Transmitting Society: K. A. H. Rogers, 21 Links Road, Epsom, Surrey.
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- \*Torbay Amateur Radio Society: G. A. Western (G3LFL), 118 Salisbury Avenue, Barton, Torquay.
- Unit Amateur Radio Club (G3LTL) 21st (NM) Corps Signal Regiment (TA): J. A. Morley (G3KUO), T.A. Centre, Kingsway, Derby.
- University of Bristol Amateur Radio Society (G3KAC): P. F. Spranklin, The University of Bristol Union, Victoria Rooms, Bristol 8.
- \*Upton House School Radio Club: R. H. Lamb, 17 Queens Road, Leytonstone, London, E.11.
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- Weald Radio Club (G3LPC): Sgt. R. Conway, 3 Sqdn., U.K. Comcan Sig. Regt., Bampton, Oxon.
- West Kent Amateur Radio Society: H. F. Richards, 17 Reynolds Lane, Tunbridge Wells, Kent.
- \*West Lancashire Radio Society: S. Turner, 5 Balfe Street, Seaford, Liverpool 21.
- Wirral Amateur Radio Society: H. V. Young (G3LCI), 9 Eastcroft Road, Wallasey, Ches.
- Wolverhampton Amateur Radio Society (G8TA): R. P. Thomas, 91 Fraser Street, Bilston, Staffs.
- Worthing & District Amateur Radio Club: J. R. Tootill, 113 Kings Road, Lancing, Sussex.
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- \*York Amateur Radio Society (G3HWW): G. F. Nottingham (G3DTA), 23 Abbotts Way, Yorks.
- No. 1 Special Communication Regiment (City of London), Royal Signals, T.A. Radio Club (G3LUN): 79/85 Worship Street, London, E.C.2.

#### OVERSEAS

- \*Amateur Radio Club (SAITP), Tripolitania Signal Troop: Sgt. W. E. Ingram, British Forces Post Office 57.
- \*Fort Churchill Amateur Radio Club (VE4CQ): Major E. C. Ilott, Fort Churchill, Manitoba, Canada.
- \*Malayan Amateur Radio Transmitters Society: S. A. Faulkner, Dept. of Inland Revenue, Suleiman Building, Kuala Lumpur, Malaya.
- \*Montreal Amateur Radio Society: Miss E. L. Pick, 535 Lansdowne Avenue, Westmount, Montreal, Quebec, Canada.
- \*R.A.F. (Ayios Nikolaos) Amateur Radio Club: c/o Hon. Secretary, R.A.F. Station, Ayios Nikolaos, B.F.P.O. 53.
- \*R.A.F. (Changi) Amateur Radio Club: B. Gauntlett, c/o S.C.S., R.A.F. Changi, Singapore 17, Malaya.
- \*R.A.F. (Labuan) Amateur Radio Society (ZC5RF): Cpl. R. Wallis, R.A.F. Detachment, Labuan, British North Borneo.

\* Denotes Secretary's name and address subject to confirmation.

Corrections or amendments to this list should be sent to R.S.G.B. Headquarters.

#### Can You Help?

- J. Tennant (B.R.S. 21845), 15 West Close, Greenford, Middlesex, who requires information on the conversion of the T.1154 transmitter for amateur use?

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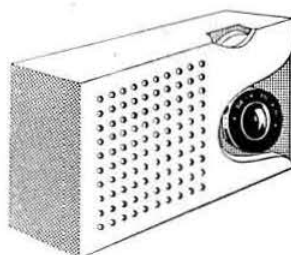
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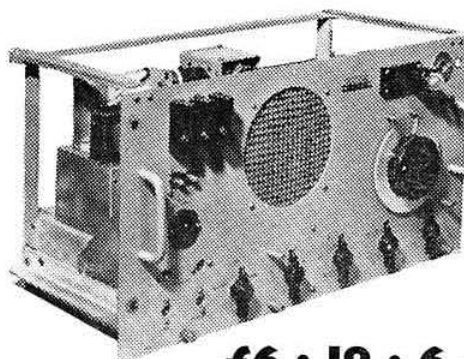
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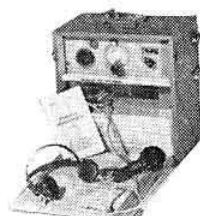
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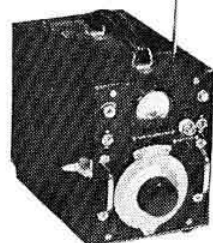
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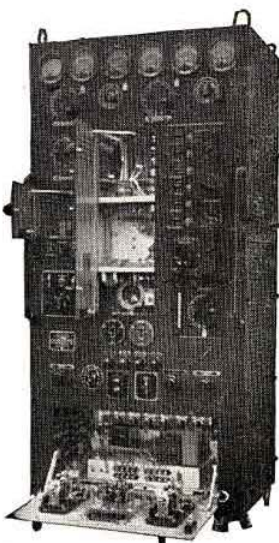
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