



RSGB

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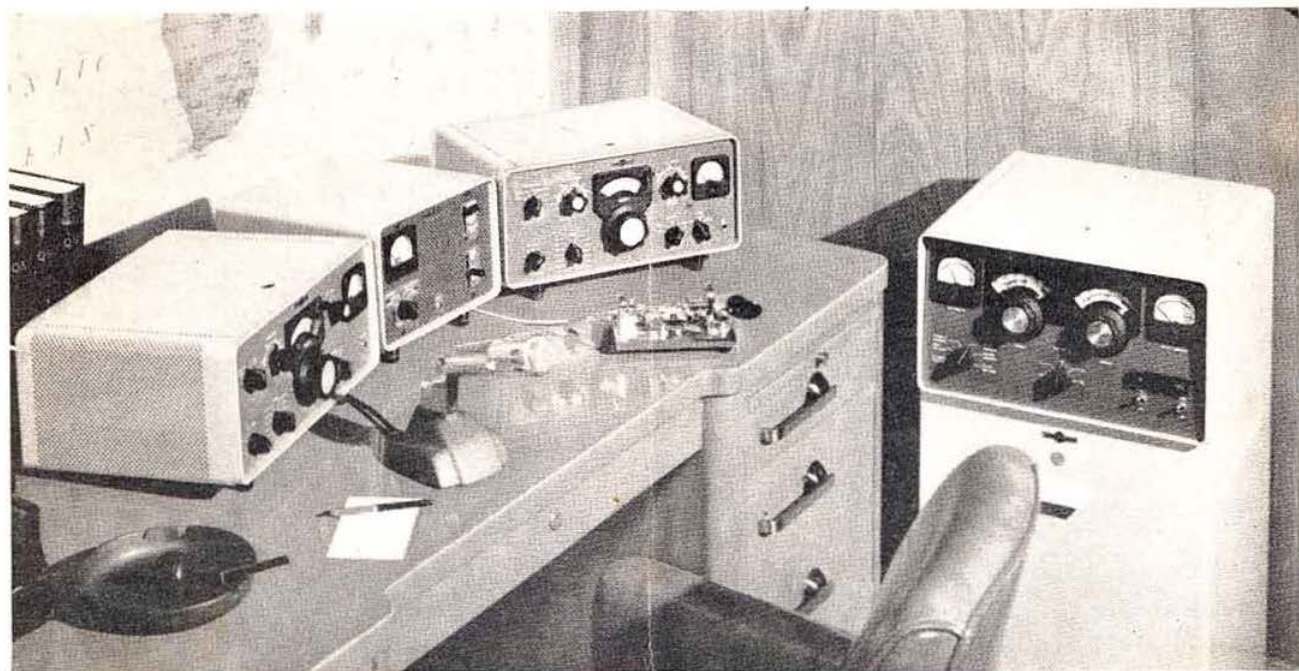
BULLETIN

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

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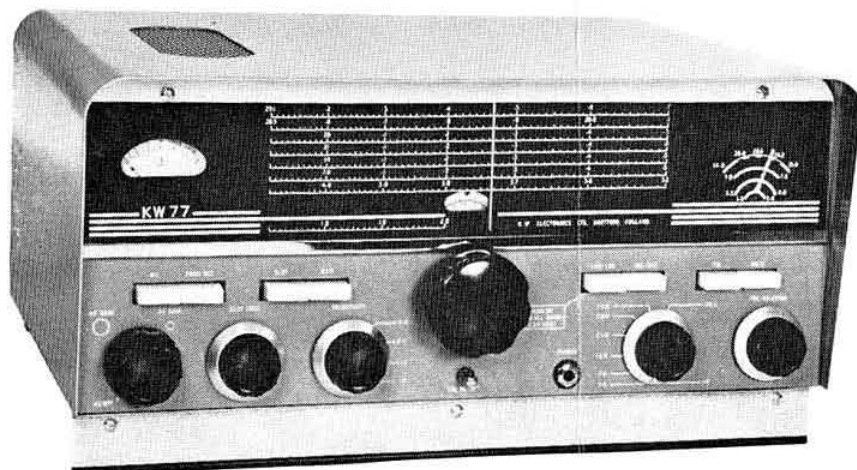


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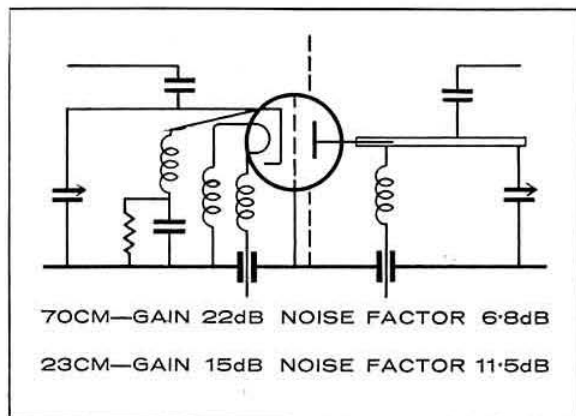
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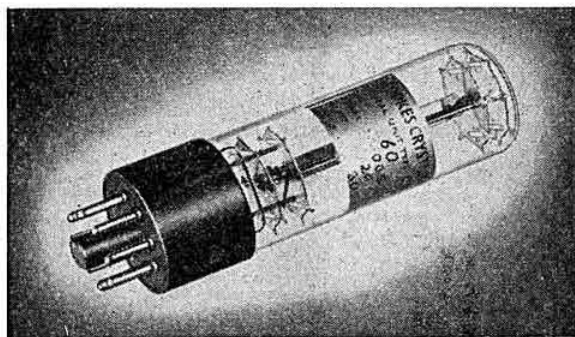
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Volume 38 No. 5

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3/- Monthly

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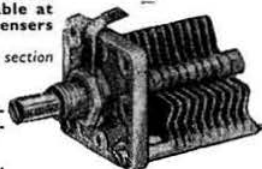
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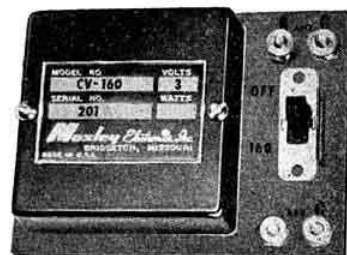
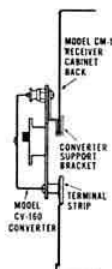
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R.S.G.B. BULLETIN NOVEMBER, 1962

Current Comment

discusses topics of the day



Unlicensed Operation

ON at least three occasions during the past few weeks sections of the National and provincial Press have published reports, under bold headlines, of successful prosecutions by the Post Office against people—mostly young—who have been charged with the offence of operating transmitting equipment without a licence. In nearly every such report the offender has been referred to as a "ham" much to the annoyance of many members, some of whom have written to Headquarters to protest.

After the publication of a report in one National daily on September 25, a letter was sent from R.S.G.B. Headquarters to the Editor explaining that operators of unlicensed radio stations are not "hams" but law breakers and should be treated as such. The letter also pointed out that radio amateurs, who are sometimes called "hams", are licensed by H.M. Postmaster-General and that in order to obtain a transmitting licence an applicant is required to pass a Morse Test at 12 words a minute sending and receiving for three minutes and a three hours' technical examination set by the City & Guilds of London Institute. The letter emphasized that many hundreds of young men and a number of young women are licensed radio amateurs and that some had qualified at the early age of 14.

The letter from the Society duly appeared on October 1 without Editorial comment, but one member who had written in protest direct to the paper was informed by the Letters' Editor that "The term 'ham' for radio amateur has been recognized for many years and is a term of affection, not derision. *We will certainly avoid calling this first-class body of experts 'pirates.'*" (Our italics—J.C.) And yet, not withstanding that assurance, obviously given in good faith, the same National newspaper on October 19 when referring to another case of unlicensed operation described the offender as a radio "ham"!

Such references, as one member pointed out in a letter to the Society, give the non-enlightened public a totally wrong impression of the true radio "ham", the vast majority of whom are highly skilled, intelligent, law-abiding citizens who are in possession of the qualifications laid down by the Post Office.

What then can be done to ensure that members of the public are not misled by badly written Press reports? Three thoughts come to mind. First, the editors of both National and provincial newspapers should be informed whenever a misleading report, likely to jeopardize Amateur Radio, is published. Provincial members can themselves help a great deal in this direction.

Second, the public should be given ample opportunity of appreciating the value of Amateur Radio. This can be done by carefully arranged Press publicity and public demonstrations on all suitable occasions. Third—and by far the most important—unlicensed operation must cease. Piracy can be stopped if a really determined effort is made by the Post Office, other Government Departments, licensed amateurs and those responsible for the management of local radio organizations. Pirates usually "hunt" in pairs or in groups, which means that their whereabouts are probably known to at least some of those with whom they associate locally. The ease with which ex-Government transmitting equipment can still be purchased is the main reason why unlicensed operation continues. From time to time the Society has drawn attention to the type of advertisement that inspires people to purchase and use transmitting apparatus without a licence and in particular, the walkie-talkie type of set which can be bought for a few pounds.

Until the G.P.O. and those responsible for the disposal of surplus equipment get together and tackle the problem properly, unlicensed operation will continue in the United Kingdom. Clearly stiff fines, up to as much as £50 in some cases, do not provide sufficient deterrent to those who are prepared to break the law. If the full penalties of Section 14 (i) (c) of the Wireless Telegraphy Act were invoked in a few really bad cases there is little doubt that piracy would cease, or at least become a highly unprofitable pursuit.

J. C.

A Challenge to Youth

ALMOST every recent issue of the Amateur Radio journals published by the National Societies of Czechoslovakia, Poland and Yugoslavia, to mention but three, has given great prominence to "Fox Hunting" including full reports on the Second Annual European Fox Hunting Championships held this year in Ankar, Yugoslavia. Those Championships attracted support from amateurs in many European countries including the Soviet Union and it was teams from the U.S.S.R. that won both the 80 metre and 2 metre events.

Photographs appearing in such journals have shown young men with identity numbers fastened to their singlets carrying v.h.f. beam aerials in their hands and v.h.f. transceivers strapped to their bodies hurrying across country in search of the hidden "foxes."

In the United Kingdom "Fox Hunting" in the

(Continued on page 249)

A High Power Amplifier for 430 Mc/s

By H. L. GIBSON (B.R.S.1224)*

A U.H.F. beacon transmitter, with the call-sign GB3GEC, has been in continuous operation on a frequency of 431.5 Mc/s since the beginning of 1962, and several features of this transmitter are of general interest to amateurs who wish to work in the 70cm. band.

In this article, design details are given for a comparatively simple amplifier based on the 4X150A tetrode valve, and which uses a cavity type resonator. The beacon transmitter employs two 4X250B tetrodes in parallel in the p.a. stage, and cavity operation lends itself admirably to this situation. As a result of work done by Messrs. R. P. Forward and E. Kantarizis at the M.O. Valve Company's Application Laboratory in Hammersmith, London, a simple cavity was devised which was suitable for either one or two valve operation.

Cavity Design

The interest in using a cavity for one valve lies mainly in the simplicity of construction, since the cavity has no advantage in either efficiency or physical size over the alternative coaxial line circuit.

It may be shown that an unloaded cavity, square in shape,

has a resonant frequency equal to $\frac{C}{a\sqrt{2}}$ where $C = 300 \times$

10^8 and a = length of the cavity in metres. Using this formula as a starting point, the actual cavity size when loaded with a valve is determined by "cut-and-try" methods. In the cavity to be described, the size is fixed to resonate at 440 Mc/s, and a trimmer capacitance added which allows the cavity to be tuned from 420 Mc/s to 440 Mc/s. A d.c. blocking capacitor is fitted to the top surface of the cavity, and includes a spring finger assembly to make contact with the valve anode. An Eimac type SK-610 air system socket is clamped by a ring to the inside lower surface of the cavity. With the valve in place the cavity is then effectively between anode and screen. A loop attached to a type "N" socket is arranged to rotate within the cavity to couple the output feeder.

The input circuit is a simple trough line of half-wave electrical length, tuned by a trimmer capacitor at the end remote from the valve. Input matching is achieved with a fabricated trimmer capacitor in series with the input feeder. The whole grid circuit is conveniently housed in an Eddystone die-cast aluminium box, the bottom of which is fixed to the skirt of the air system socket. The space between the die-cast box and the lower surface of the cavity is enclosed, and

becomes an r.f. "dead space." Heater and d.c. screen connections to the valveholder are made within this space.

Construction Details

Fig. 1 shows the basic construction of the anode cavity resonator, which measures $1\frac{1}{2}$ in. square by 1 in. deep internally. The internal dimensions control the resonant frequency of the cavity, and this should be borne in mind if it is desired to replace the 1 in. \times $\frac{1}{4}$ in. brass bars specified by aluminium "U" section which may be either fabricated from sheet or extruded. The trimmer capacitance mounting is placed as close as possible to the valve for maximum effect, and the output loop assembly is placed as near the outer edge of the cavity as possible. The reason is that the voltage and current distribution within the cavity is such that the voltage is a maximum at the centre of the cavity, and where capacitive loading has maximum effect, and the current is a maximum at the outer edge of the cavity where inductive loop coupling will be a maximum. Figs. 2(a), (b) and (c) show the construction of the valveholder clamp and trimmer capacitor. The valveholder clamp is shown as a complete ring which ensures intimate contact between the socket and the cavity. In the event of difficulty in fabricating this ring, an alternative would be to use the three small clamp pieces supplied with the valveholder. It may be necessary, however, to fabricate three additional clamp pieces to ensure good contact around the periphery of the valveholder.

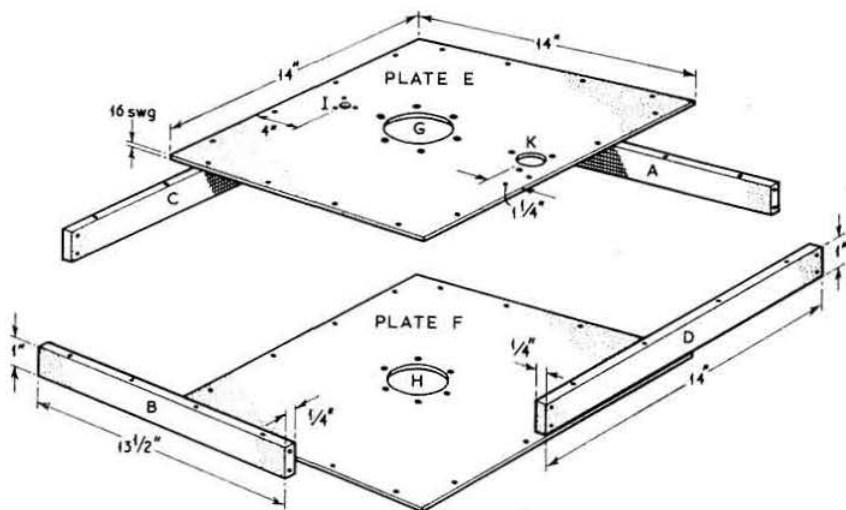
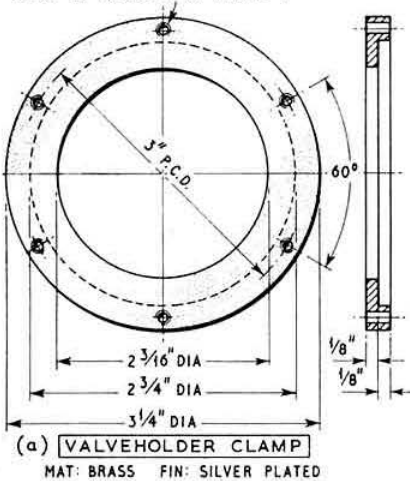


Fig. 1. Construction of the main cavity for the high power 430 Mc/s amplifier.

- | | | | |
|------------|--|--------|--|
| A, B, C, D | 1 in. \times $\frac{1}{2}$ in. brass bars making the side walls of the cavity. | I on E | $\frac{1}{2}$ in. diameter hole spaced 4 in. from edge of plate with three 6 B.A. clearance holes equally spaced on $\frac{1}{2}$ in. P.C.D. to permit fixing of the trimming capacitor support. |
| A, B | 13 $\frac{1}{2}$ in. long. | K on E | Output coupling hole 1 in. diameter spaced at $\frac{1}{2}$ in. from edge of plate with three 4 B.A. clearance holes equally spaced on $\frac{1}{2}$ in. P.C.D. |
| C, D | 14 in. long. | H on F | 2 $\frac{1}{2}$ in. diameter hole centrally placed with six 4 B.A. clearance holes equally spaced on 4 in. P.C.D. to enable the d.c. blocking capacitor to be clamped on the outside of the plate. |
| E, F | Top and bottom plates of cavity made of $\frac{1}{16}$ in. aluminium, 14 in. \times 14 in. | | |
| G on E | 3 in. diameter hole centrally placed with six 4 B.A. clearance holes equally spaced on 4 in. P.C.D. to enable the d.c. blocking capacitor to be clamped on the outside of the plate. | | |

* 132 Pine Gardens, Eastcote, Ruislip, Middlesex.

6 HOLES TAP 4BA TO COINCIDE WITH THOSE OF HOLES 'H' ON PLATE 'F'



3 HOLE TAP 6BA EQUISPACED ON 3/4" P.C.D. TO COINCIDE WITH THOSE OF HOLE 'I' ON PLATE 'E'

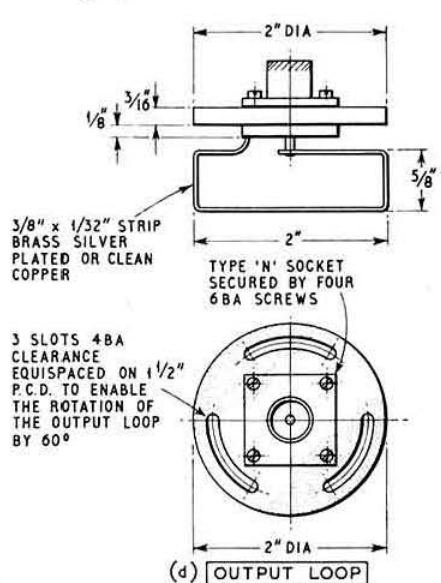
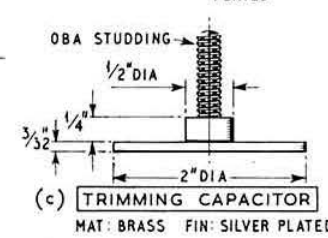
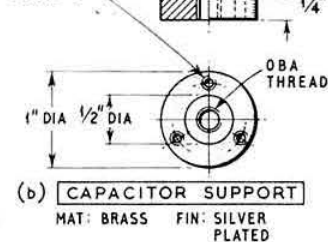


Fig. 2. (a) Valveholder clamp. (b) Capacitor support. (c) Trimming capacitor. (d) Output loop.

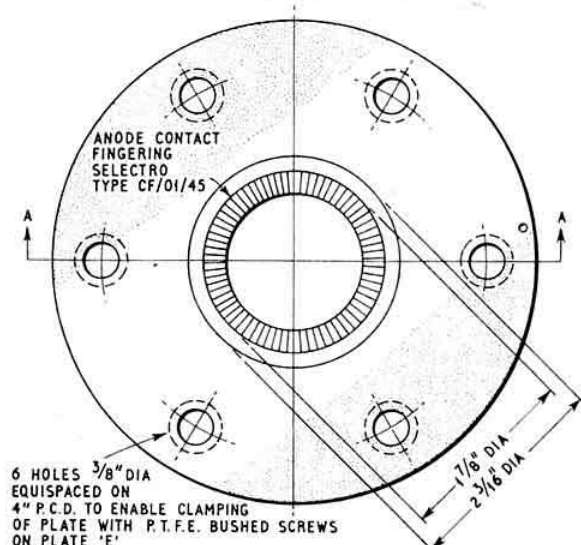
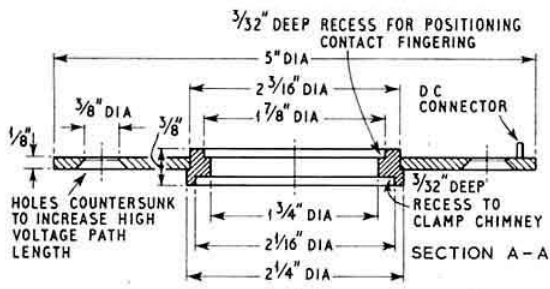


Fig. 3. Anode capacitor plate.

The main requirement as far as the trimmer capacitor is concerned is that the disc face should rotate parallel with the surface of the cavity.

Fig. 2(d) shows the output loop assembly which should be fitted to the cavity with the loop in line with the valve for maximum coupling.

The anode capacitor plate with 3/8 in. diameter fixing holes to facilitate fitting of the insulating bushes is illustrated in Fig. 3. This assembly may be simplified by using a square form rather than circular, but should be of the same effective area, e.g. 4 1/2 in. x 4 1/2 in. A recess is provided for fitting spring finger contacts which make connection to the anode. A recess on the underside is provided to locate the ceramic chimney, part of the air system socket.

The insulator for the d.c. blocking capacitor and the insulator bushes are shown in Fig. 4. Mica was used on the prototype cavity, but p.t.f.e. or polythene sheet would be equally satisfactory. Similarly, the insulator bushes were p.t.f.e. on the prototype, but since no r.f. voltage appears across these bushes other materials may be used, e.g. Tufnol, Perspex or polystyrene.

Fig. 5 shows the layout of the grid circuit within the die-

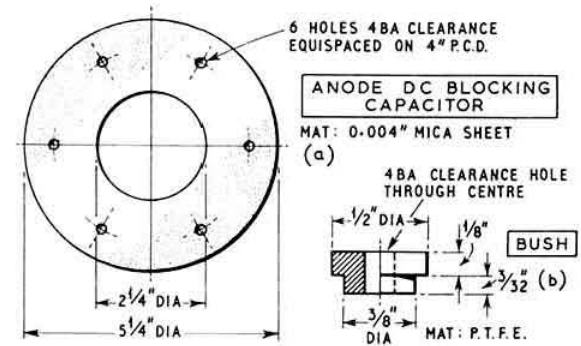


Fig. 4. (a) Anode d.c. blocking capacitor. (b) P.T.F.E. bush.

cast aluminium box. The grid line is fabricated from $\frac{1}{8}$ in. wide by 18 s.w.g. strip and one end is bent through a right-angle to form one plate of the trimmer capacitor. The line is screwed to the grid connector of the air system socket with a short tube to space the line $\frac{1}{8}$ in. from the bottom of the box, and a $\frac{1}{8}$ in. p.t.f.e. spacer serves to support the other end of the line. The type "N" input socket is fitted with a type "N" hood on the inside of the box which, in conjunction with a short length of 50 ohm coaxial cable, preserves the continuity of the input feeder to the matching capacitor. The d.c. grid connection consists of an r.f. choke and wire wound resistor in series between the grid of the valve and a 1000pF feed-through type capacitor.

The complete amplifier is illustrated in Fig. 6. The r.f. dead space between the cavity and the grid circuit is enclosed

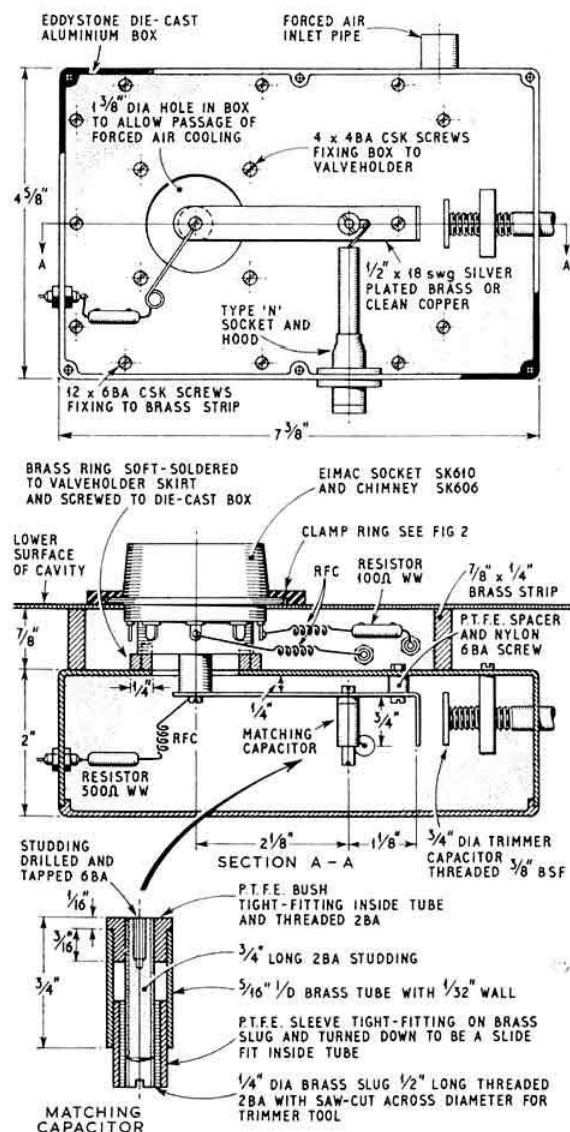


Fig. 5. Construction and layout of the grid circuit for the 430 Mc/s amplifier.

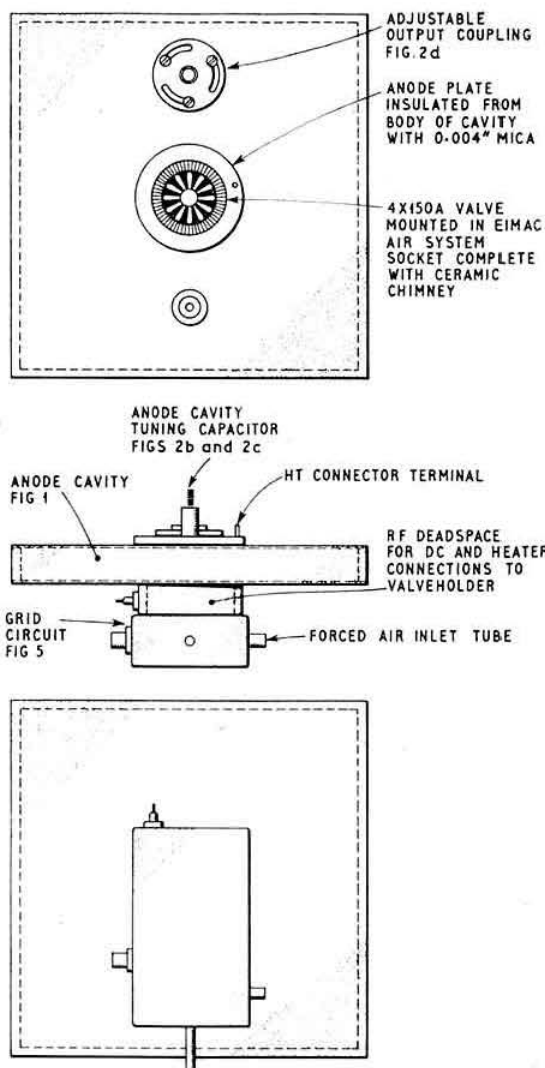


Fig. 6. Assembly of the complete 430 Mc/s amplifier.

by $\frac{3}{8}$ in. \times $\frac{1}{4}$ in. brass strip and fitted with two 1000pF feed-through capacitors for the screen and heater leads. An r.f. choke is fitted in the heater lead, and another r.f. choke with a 100 ohms wire wound resistor in series connected in the screen lead.

Operation

It is necessary to monitor the anode, screen and grid currents to the valve, and meters should be connected in circuit. A forced air supply should be connected to give a minimum flow of 7.5 c.f.m. through the anode cooler even with only the heater supply switched on. After allowing at least 30 seconds for the heater to warm up, the grid bias, anode and screen voltages should be applied, in that order.

The grid circuit may then be tuned and matched to the drive source, using the anode current meter as an indicator. Due to secondary emission effects, grid current may not be

(Continued on page 218)

Long Wires and V Beams

Wire Aerials with Gain

By F. G. RAYER, Assoc.Brit.I.R.E. (G3OGR)*

WHEN trying to work DX the need for an aerial giving increased signal strength in the required direction is soon likely to become apparent. A rotatable Yagi beam aerial is an excellent solution to this problem, but is quite expensive, especially if it has a turning motor. For these reasons, wire aerials which offer some gain over a dipole may well be adopted.

Such wire aerials naturally have their limitations, as well as advantages. Their cost is small, and they are easy to erect when suitable supports are available, or can be provided, but they require quite a large space. Generally, a gain

its directivity will not be steerable, though it will probably give good results in several directions.

As is well known, the gain of an aerial is usually given by comparison with a half-wave dipole. The approximate gain of various wire aerials is known or can be calculated, and this gives an indication of results which may be obtained, and allows some measure of comparison with a two or three element Yagi array. A two element beam of this kind has a gain of about 5.5db, while a three element beam has a gain of about 9db, actual figures depending on element spacing, whether the beam is for more than one band, and other factors.

A long wire aerial offers some gain in favoured directions, and is simple to erect if space is available. It should be several wavelengths long if possible.

Radiation Pattern

A half-wave aerial has a radiation pattern similar to that at "A" in Fig. 1. If the aerial is twice as long, the pattern resembles "B." Increasing the length by two further half-waves adds two extra lobes each side, and "C" gives an indication of the pattern for a two full wave wire. The lobes towards the ends of the wire show some power gain over a half-wave dipole, and this is the feature explaining the gain of the long wire and V aerials described here.

It is apparent that doubling the frequency will have a similar result to leaving the frequency unchanged and doubling the length of wire. For example, if the wire is a half-wave on 3.5 Mc/s ("A") it will be about a full wave on 7 Mc/s ("B") and about two wavelengths on 14 Mc/s ("C"). It would also be about three full-waves on 21 Mc/s, and four full waves on 28 Mc/s.

The gain of the main lobes is too small to be very helpful if the aerial is only a wavelength long, but becomes useful if it is several wavelengths long. For a wire four wavelengths long, the gain is slightly over 3db (twice the power). For a six-wave aerial, it is about 5db (e.g., approaching that of a two-element beam). For eight wavelengths long, it is a little over 6db (that is, a fourfold increase in power).

Calculating the Length

The same wire may be used on several bands. For example, if it is four full-waves on 28 Mc/s, it will be approximately two full-waves on 14 Mc/s. Due to end effects the actual exact length is not the same for four full-waves on 28 Mc/s as it is for two full waves on 14 Mc/s, or for other multi-band operation purposes. A half-wave aerial may be taken as 0.95 of a half-wave in free space. To obtain the length in feet this can be:—

$$\frac{492 \times 0.95}{\text{Freq. (Mc/s)}} \quad \text{or} \quad \frac{468}{\text{Freq. (Mc/s)}}$$

When the aerial is several half-waves long, end effects apply to the two ends of the aerial only. An aerial six half-waves long would thus be five half-waves without end effects, plus one half-wave with end effects. That is:—

$$\frac{492(5 + 0.95)}{\text{Freq. (Mc/s)}} \quad \text{or} \quad \frac{492 \times 5.95}{\text{Freq. (Mc/s)}} = \text{length in feet.}$$

This method can be used to work out the length for any number of half-waves.

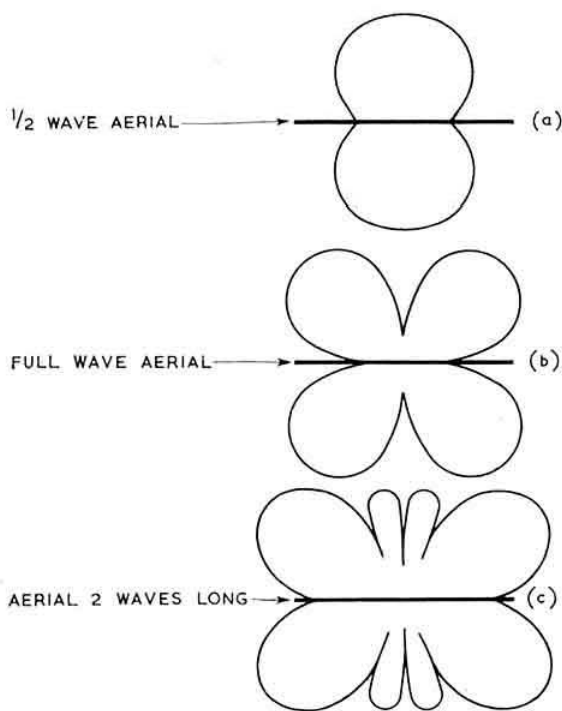


Fig. 1. Radiation patterns of long wire aerials.

equal to that of a rotary beam will not be obtained, while a long wire or V beam will lack the unidirectional property of the Yagi. This is a disadvantage from the point of view of interference from unwanted directions.

Again, some form of aerial tuner will probably be required for use with a wire aerial, and this is more troublesome than a beam aerial simply fed with co-axial cable. But an aerial such as a long wire will work well on l.f. bands in addition to h.f. bands, which is often an advantage. Unfortunately,

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The whole aerial can be one continuous length of wire, any joints being soldered. It will usually be erected as an inverted L. The bend slightly reduces electrical length, so a little (a matter of a foot or so) is generally added to compensate. An exactly correct length is unnecessary, and is almost impossible, without experiment, and would in any case not remain exactly correct for other frequencies. Fortunately, this is not very important, as an aerial tuner will allow the whole system to be brought to resonance.

For 28.5 Mc/s, a four full-wave wire can be about 138 ft., and this is about two full-waves on 14.1 Mc/s. For a 14.1 Mc/s four full-wave aerial, 277 ft. 6 in. of wire will suffice, and this is two full-waves at about 7 Mc/s. A four full-wave length for 21.1 Mc/s can be about 185 ft. 9 in. If space permits, longer wires can be used.

The main lobes point more towards the ends of the wire as the number of wavelengths is increased. Because the wire is horizontal this also helps to increase low angle radiation, which is helpful for DX working on the h.f. bands.

Orientation

The orientation may well depend on what supports are available, so it may be impossible to arrange the aerial so that the lobes radiate in a preferred direction. In these circumstances, it is probably easiest not to bother too greatly about the direction. When testing on 14 Mc/s a 272 ft. wire oriented in favour of ZL and VK, it was found that contacts with UB5, ZL, VK, 9M2, VS9, VQ2, ZE, 5N2, and other countries spread round other sectors could be made, representing coverage outside the main lobes. It should be added that signal strength reports did not equal those being obtained at the same time by U.K. stations using rotary beams. Somewhat similar results have been obtained with 138 ft., and 132 ft. top with 19 ft. downlead.

Even if much change to the supporting points is impossible, it is helpful to know the approximate bearing of the main lobes, with respect to the aerial itself. For a half-wave aerial, the lobes are at 90° ("A" in Fig. 1). In a horizontal plane, and for a full-wave, they are at about 54° ("B"). With a wire two full-waves long, they are at approximately 36° ("C"). A wire four full-waves long has main lobes at about 24°, the main lobes being near 20° for a six full-wave wire, and 17.5° for an eight full-wave aerial. If the main lobes are regarded as cones of radiation surrounding the aerial wire, it will be seen that the aerial tends to give increasingly low angle radiation when it is made a greater number of wavelengths long, and this is useful for DX. It will also be seen that radiation by the main lobes in other than the horizontal plane will be more nearly in line with the aerial.

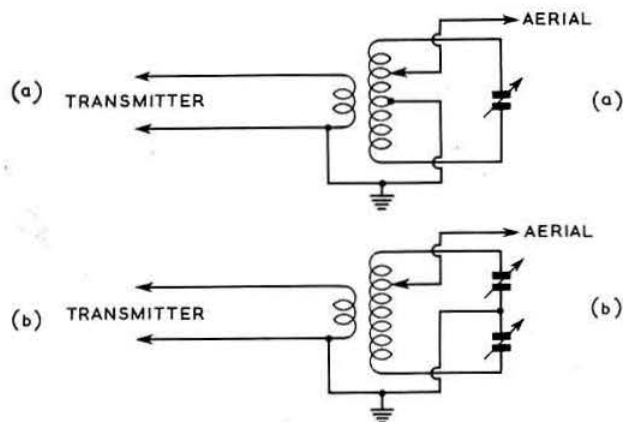


Fig. 2. Simple aerial tuning units.

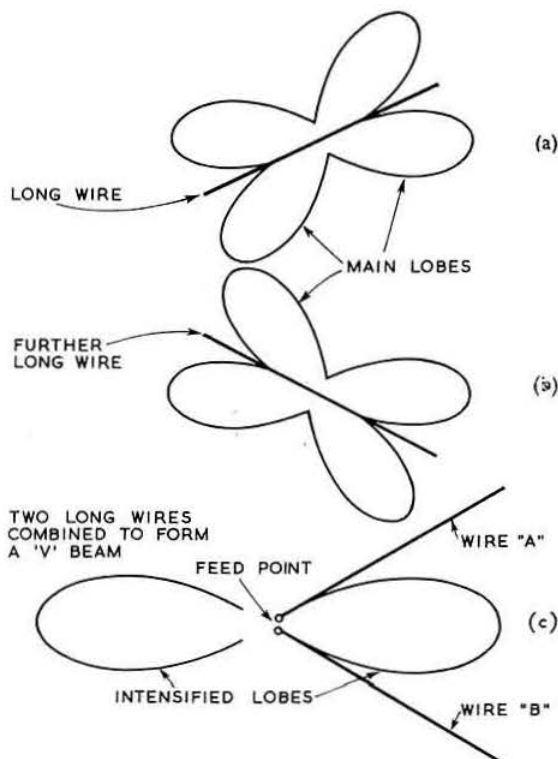


Fig. 3. Radiation patterns of V beam aerials.

The relative strength of the lobes varies from lobe to lobe, being greatest in the main lobes adjacent to the ends of the aerial in Fig. 1. These are of primary importance. If the aerial is four full-waves long, all the minor lobes have roughly half the amplitude of the major lobes. With a wire eight full-waves long, the minor lobes have very roughly one-third the amplitude of the major lobes. These provide "all round" contact, though with reduced gain.

Feeding the Long Wire

The long wire is fed at one end. Any of numerous aerial tuners will do for this. A simple tuner circuit is shown in Fig. 2 at "A" while that at "B" is similar, but less likely to spark over with the same capacitor spacing. A two-gang capacitor is suitable for "B." The coil and capacitor can resemble those in the transmitter. The loop is a few turns, taken to the pi output socket, when the transmitter has this type of circuit. The pi output is adjusted for a fairly low impedance, or that of a harmonic trap. Some aerials will load the transmitter satisfactorily, at least on some bands, without a tuner. But the pi output capacitor will need to be at lower capacity when the aerial is near a multiple of half-waves, and this may give too much harmonic radiation, and cause other troubles. So some form of tuner, to transform from the low impedance transmitter output to the high impedance of the aerial, will probably be needed, and should be included. A tapped coil will permit working several bands.

The V Aerial

A wire V beam aerial allows increased gain and directivity. At "A" in Fig. 3 is shown a long wire, with main lobes as already described, other lobes being omitted for clarity.

(Continued on page 218)

The Application of Silicon Power Diodes

By P. T. PITTS (G3GYE)*

THE overriding advantages of silicon rectifiers compared with other forms of power rectification are now widely appreciated: greatly reduced size and weight together with better reliability and high temperature operation, in addition to the increased efficiency which results from the very low forward resistance and low leakages. These advantages, however, bring about a greater need for careful selection and protection of the diodes to ensure that they are at all times used within their ratings.

Due to the low forward resistance, very high currents can pass under fault conditions or when charging a capacitor or battery. The other point requiring careful attention is the maximum p.i.v. to which the silicon diode is extremely susceptible. Unlike selenium or thermionic rectifiers, silicon diodes will not withstand inverse voltages above their ratings for even extremely short periods; this point is clarified later.

In his article *Using Silicon Power Rectifiers*,† Pat Hawker (G3VA) wisely pointed out that the most generous safety margin should be allowed that is economically practical. The aim of the present article is to bring to light the differences in manufacturers' ratings and show how these ratings may be used with a safety factor that is both reliable and economic, i.e. not over-cautious.

Silicon Diode Current and Voltage Ratings

Peak Surge Current

Care must be taken to ensure that the total source impedance is sufficient to limit both the switch-on surge and the peak recurrent current to the value allowed for any particular diode. The source impedance is approximately the transformer secondary resistance plus the reflected primary resistance plus any series resistance found to be necessary. This value will be modified by the transformer leakage inductance and by saturation of the core at high current levels, so that even if the effects mentioned are not taken into consideration some safety factor is always present.

With a capacitor input filter the switch-on peak value will be $\frac{\sqrt{2}V}{R_s}$ where V is the applied r.m.s. voltage and R_s is the total source impedance in ohms.

A diode with a high peak surge current rating (at present these vary from 10 to 35 amps. for diodes whose normal rating is 500 mA), besides conforming to the requirements for switch-on surge, also provides its own protection when used with standard type fuses. If sufficient source impedance is present to limit the switch-on surge correctly then it is usually found that the recurrent peak is also within the current limit.

The winding resistance of a transformer will in most cases be sufficient to limit the surge current to a reasonable figure but a limiting resistor will be required when using a diode in a half-wave circuit connected direct to a mains supply. For example, with a 100 μ F reservoir capacitor and a mains supply of 240 volts a.c., the required limiting resistor would be at least 10 ohms.

Maximum Mean Forward Current

The mean forward current rating is the average value of the whole cycle based upon conditions of sinusoidal supply and resistive load. It is the value indicated by a d.c. moving coil instrument connected in series with the diode, whether the diode is operating alone or whether it forms part of a

larger rectifier arrangement. This is the rating which is most used by manufacturers.

Maximum Direct Current in the Load

To find the maximum permissible direct current in the load from a particular diode, a factor can be applied to the maximum mean forward current. The factor used depends on the circuit configurations as shown in Table 1. The factor is approximate and should the resultant approach the maximum mean forward current the manufacturer of the diode must be consulted. This is likely to be infrequent as most equipments take less than 500 mA which is well within the rating of the average diode in a full wave circuit. Other types of diodes are available to supply anything from 100 mA to 100 amps. if necessary.

Table 1

Configuration	Load	Maximum continuous d.c. output current
Half-wave	Capacitor	0.81
Bi-phase half-wave	Resistor or choke	21
Bi-phase half-wave	Capacitor	1.61
Bridge	Resistor or choke	21
Bridge	Capacitor	1.61
Doubler	Capacitor	0.81

Where I = maximum mean forward current.

Voltage Considerations

A diode or diodes with a suitable reverse voltage rating can be selected using the known r.m.s. input voltage or, with old equipment, by deduction from the rating of the selenium type rectifier it is to replace.

The R.M.S. Method

Care must be taken with the use of manufacturers' ratings for reverse voltage which may be given in one or two of the following terms now widely employed (each of these are sometimes loosely referred to as p.t.v.).

Crest Working (Reverse) Voltage (C.W.V.)

This is the crest value of the circuit voltage applied across the rectifier in the reverse direction, excluding recurrent oscillatory overvoltages, and excluding random transient overvoltages (see p.t.v.), but including fluctuations in the normal value of applied voltage.

Maximum Recurrent (Reverse) Voltage (M.R.V.)

This is the maximum value of the periodic overvoltage impressed across the rectifier in the reverse direction including circuit effects, but excluding random transient overvoltages (see p.t.v.).

The voltages defined by m.r.v. occurs in a diode connection due to diode junction properties in conjunction with circuit constants.

Peak Transient (Reverse) Voltage (P.T.V.)

This is the peak value of any non-periodic surge voltage impressed across the rectifier in the reverse direction, due to a random circuit transient. The causes of surge voltages defined by p.t.v. are usually outside the control of the designer, but these voltages may be minimized by the

* 5 Durham Road, Raynes Park, London, S.W.20.

† R.S.G.B. BULLETIN, March 1962.

provision of surge suppression components and the effects of such voltage limited by using a suitable safety factor when selecting the diodes.

The c.w.v. per rectifier arm can be found from Table 2 to which a safety factor is added later to cover m.r.v. and p.t.v. which may be present. C.w.v. and m.r.v. are taken as roughly the same, some manufacturers, however, quoting c.w.v. only, whilst others quote m.r.v. only. Very few use p.i.v. but where this is employed it should be clarified.

In Table 2, 10 per cent is added to take into account both manufacturers' tolerances on the mains transformer voltages and the rise in mains supply voltage.

When using C and R suppression (as described later) it is sufficient to add at least 60 per cent to the c.w.v./m.r.v. to

Table 2

Circuit	Filter	Maximum C.W.V. or M.R.V. per arm
Half-wave	Capacitor	R.M.S. + 10 per cent \times 2.8
Doubler (series or Cockcroft Walton)	Capacitor	R.M.S. + 10 per cent \times 2.8
Bi-phase half-wave	All types	R.M.S. + 10 per cent \times 2.8 (R.M.S. is one half of total winding)
Bridge	All types	R.M.S. + 10 per cent \times 1.6

provide a reasonable safety margin for transient voltages. This represents a minimum safety factor of 1.6.

When the safety factor exceeds 150 per cent, i.e. c.w.v. \times 2.5, any transients present can be handled by the diodes and CR suppression may be omitted. For example, a standard 60 volt relay supply would use 400 c.w.v. rating diodes.

Some manufacturers only state the maximum p.i.v. and unless they confirm that this can be exceeded this represents the p.t.v. rating (see Fig. 1), in which case the c.w.v. rating

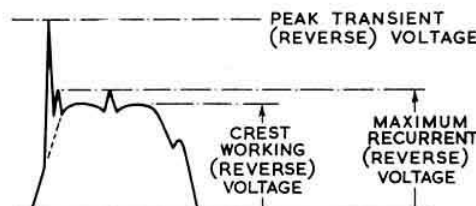


Fig. 1. Voltages across a silicon rectifier.

should be taken as 30 per cent less than the p.i.v. in making comparisons with other types of diode with a c.w.v. rating.

Example

A bridge circuit with a transformer secondary of 250 volts r.m.s. is to be used. D.C. current required is 300 mA.

Choose values for C and R suppression as described later. Calculate the c.w.v. present = 250 volts + 10 per cent \times 1.6 = 440 volts per arm.

Total c.w.v. rating with a minimum safety factor = 440 \times 1.6, thus necessitating the use of a 700 c.w.v. diode in each arm. Using an 800 c.w.v. diode (or two 400 volts) in each arm would give a safety factor of 1.8. This would be satisfactory.

Use of Diodes in Series

To allow for variations (in the steady state or transient impedance) of series connected diodes, it is often recommended that precautions be taken to equalize the reverse voltage distribution so that all diodes have the same reverse voltage developed across them.

Three recommendations are made here for dealing with this situation:

(i) Shunt a resistor across each diode (the value should be 25 per cent of nominal reverse resistance, i.e. $\frac{c.w.v.}{I(\text{leakage})}$)

This will take care of recurrent reverse voltages.

(ii) Shunt capacity across each diode (the value should be between 0.001 μ F and 0.01 μ F). This is to deal with short transient surges where the reverse voltage distribution is controlled by the capacitance across each diode and to earth.

(iii) Derating of the diode characteristics can also be employed in order to obtain sufficient safety factor so that any unequal sharing is not great enough to cause harm.

With up to three diodes the derating method is to be preferred and even with a greater number it is advantageous from the point of view that there is less to go wrong. For example, an open circuit resistor across a diode is likely to jeopardize the diode it shunts. Likewise a short-circuit capacitor across a diode places a greater p.t.v. on the remaining diodes.

Apart from very short transients a diode with a low back resistance will have a proportionally low c.w.v. developed across it, there being a self-compensating division of c.w.v. across the whole arm of diodes. This, together with an adequate safety factor for c.w.v. has in practice proved very satisfactory.

It is not recommended that different makes or types of diodes should be used in series, due to the great differences in reverse current characteristics of various types. At present the maximum reverse currents for different types of diodes (in the same power rating) range from 5 μ A to 2 mA.

The low leakage current diode is not always the most suitable as these types tend to have a very sharp knee (avalanche point) in their characteristic and may be more readily damaged by transients.

Use of Diodes in Parallel

The use of silicon diodes in parallel is not recommended because of the inherently low forward resistance. Where diodes are connected in parallel, small variations in forward voltage drop between the individual specimens will cause unequal current sharing. In general, current equalization may be improved by the use of selected diodes or series swamping resistors, although it should be noted that this lowers the efficiency.

Current derating is also sometimes advised but reference should always be made to the manufacturer, the use of a single higher power diode definitely being the recommended solution.

Transient Suppression

Choice and Placing of C and R for Transient Voltage Suppression

Recommended methods of determining component values for switching-transient voltage suppression are as follows:

- By observation with suitable test equipment.
- By simple measurement of the transformer operating conditions, for calculation purposes.
- By a simplification of the method outlined in (ii), using assumed factors and known load resistance.

The same procedure also helps in dealing with mains borne transients.

The first method is probably the best but requires a very good oscilloscope with high voltage probe and also a great deal of time. The amount of time involved is mainly due to having to carry out hundreds of switching operations in order to determine the maximum amplitude of voltage transients when caught at different points on the mains

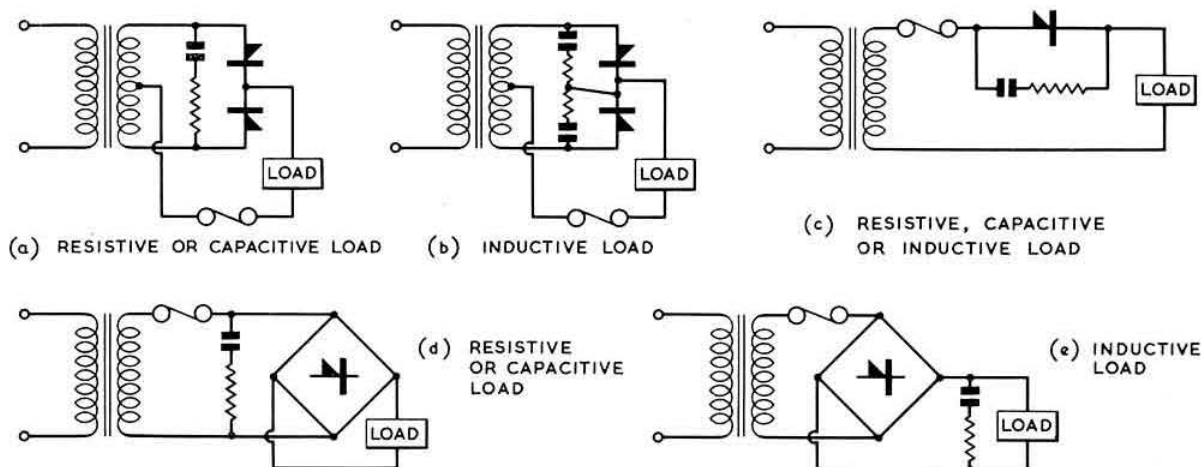


Fig. 2. Positioning of fuses and transient suppression components.

supply cycle. During the initial stages of the tests it is recommended that the input voltage be reduced considerably so that risk of damage to the diodes by excessive surges is removed.

With the safety factor already suggested the methods of (ii) and (iii) can be completely satisfactory.

Voltage Protection on the Transformer Secondary

Referring to Fig. 2, a suitable capacitor is placed directly across the secondary circuit of the transformer. For equipment with high power ratings the value of C may be uneconomically large, and, if it is greater than $0.05 \mu\text{F}$, it is possible for the circuit to oscillate. A smaller capacity of half the calculated value may be used provided a damping resistor R is connected in series with the capacitor (this also applies to suppression measures applied to the primary of the transformer).

Voltage Protection on the Transformer Primary

In those cases where the secondary voltage is either low or very high it will probably be more convenient and economical to connect the protection components on the primary side of the transformer. Suppression on the secondary of the transformer is always to be preferred and in fact is essential when using an inductive load.

In both cases the value of the capacity C required is given by

$$C = \left(\frac{KI}{V\pi f} \times 10^6 \right) \mu\text{F}$$

Secondary Primary

where

V = open circuit r.m.s. secondary voltage r.m.s. primary voltage
 I = r.m.s. secondary current r.m.s. primary current
 f = supply frequency supply frequency.
 K = $\frac{\text{magnetizing current}}{\text{normal primary current}}$ $\frac{\text{magnetizing current}}{\text{normal primary current}}$

When using half the calculated capacity with a series resistor, the value of the resistor R is given by

$$R = \frac{3V}{5KI} \text{ ohms}$$

For the high powered case (up to 5 kVA), assume $K = \frac{1}{16}$ (which is reasonable in practice) and $f = 50$ cycles per second.

$$\text{Therefore } C = \frac{60}{RL} \text{ and } R = 6RL$$

where $RL = \frac{V}{I}$ = load resistance, V = d.c. output voltage and I = d.c. load current.

For the low power case (up to 300 VA), assume $K = \frac{1}{4}$ (which is reasonable in practice) and $f = 50$ cycles per second.

$$\text{Therefore } C = \frac{150}{RL} \text{ and } R = 2RL$$

It should be noted that the power dissipated in the series resistor R can sometimes be quite high.

Table 3

Rectifier Circuit	Rating of Fuse	
	Capacitor Input	Choke Input
Bridge	D.C. $\times 1.4$	D.C. $\times 1.1$
Bi-phase half-wave	D.C. $\times 1.4$	D.C. $\times 1.1$
Half-wave	D.C. $\times 2$	D.C. $\times 1.4$

A thermo-ammeter is required to determine the exact fuse rating required. The factors given in Table 3, however, will give an approximate answer, the nearest higher rating to that calculated usually being satisfactory.

Whilst quick or medium acting fuses are normally recommended for use with silicon diodes, the delay fuse type Alert-TDC11 has certain advantages. Its surge resistant properties enable a fuse rating to be selected closer to the working current than with a normal type. Thus the delay feature is to some extent cancelled. This type has been found to be satisfactory with most diodes.

It can be seen that the fuse in the bi-phase half-wave circuit does not protect the transformer should the diodes become short circuited. In all equipments the primary fuse should be carefully selected to give the maximum protection preferably using the Alert-TCD11 fuse. Characteristic curves showing the performance of these fuses are available from the manufacturers, K. E. Beswick Ltd., Alert Works, Frome, Somerset.

Testing Silicon Diodes

Almost without exception a faulty diode will be a short circuit due to a breakdown of the junction, in contrast to other types of rectifier where invariably a high impedance is the result of a fault condition. For this reason a safety fuse is essential and if the mains fuse does not protect the transformer from a silicon diode fault, then an h.t. fuse is recommended.

It is sufficient to test silicon diodes with an ohmmeter to ensure that the forward to reverse resistance ratio is greater than 10 : 1. Under normal working conditions this ratio is usually in the hundreds of thousands to one but when measured with an Avometer at low voltage varies considerably with different types of diode.

Installation of Diodes

Most diodes will operate in an ambient temperature of 50° C without derating. As they dissipate very little heat, ventilation is no problem, but they should be kept clear of heat from other high temperature components.

The temperature whilst soldering a diode into circuit can permanently damage it. Precautions should therefore be

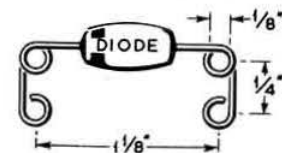


Fig. 3. Correct method of terminating leads on semiconductor rectifiers.

taken to limit the temperature reaching the junction. This is best achieved by leaving a reasonable length of lead, using a heat shunt, and a quick soldering action.

The leads should never be bent directly from the diode body as this can put a strain on the junction. A recommended termination for close spaced diodes is shown in Fig. 3. The lead is looped around an $\frac{1}{8}$ in. diameter former (a grub screwdriver will do), the lead from the body remaining straight.

Converting Existing Equipment

When modifying equipment from thermionic to silicon rectifiers, the resultant h.t. will be higher and the regulation improved. It is important to ensure that capacitor voltage ratings are sufficient ($1.4 \times$ r.m.s. voltage) to avoid damage during what was the normal warm-up period of the thermionic rectifiers when first switching on.

Replacement of Existing Selenium Rectifiers by Silicons

A suitable silicon diode c.w.v. rating can be derived by examining the existing selenium rectifier design (this is an alternative to using the r.m.s. method already given).

Sentercel (S.T.C.) Rectifiers

Determine the number of plates per arm and multiply by 25 (this being the factor required to obtain the c.w.v. rating per plate). This gives the c.w.v. per arm; to this add 100 per cent to take care of transient voltages, having fitted C and R suppression.

Other Rectifier Units

To find the c.w.v. per rectifier arm, multiply the r.m.s. input rating of existing rectifiers by (i) 1.6 for bridge circuits (all loads) and half-wave circuits with resistance loads; (ii) 2.8 for all other circuits.

To the resultant add 100 per cent to cover transient voltages. This will be satisfactory with C and R suppression.

Current Considerations

When transformer resistances are unknown it can be taken for granted that a diode with a 35 amp. peak surge current

rating will work satisfactorily in all cases likely to be encountered. A diode working into a capacitor (100 μ F) filter direct from the mains supply (240 volts) would require a limiting resistor of at least 10 ohms.

Acknowledgment

The author would like to thank H. A. Martin for help in the preparation of this article.

Long Wires and V Beams (Continued from page 214)

At "B" is another similar long wire, at an angle to the one at "A." At "C" the two have been brought together, so that two lobes of each wire tend to assist each other, and the remaining two lobes of each wire tend to cancel out. This gives a bi-directional beam.

The gain of the V beam aerial is naturally greater than that of the single long wire. If each side is two-wavelengths long, the gain is about 5.5db, or similar to a two-element rotary Yagi. If each side is four full-waves long, the gain increases to about 8db. It is possible to use the V beam on more than one band, with reduced efficiency. For example, it could be four full-waves each leg on 28 Mc/s, which would be about two full waves each leg on 14 Mc/s.

If each wire forming the aerial is a multiple of half-waves long, the feed point is high impedance, in the same way as a single wire which is a half-wave or multiple of half-waves and end fed. If the elements are an odd number of quarter-waves, the feed point is low impedance. A simple way to feed the array is to have each wire a multiple of half-waves, and to use an open wire line.

The angle of the main lobes from each wire grows smaller as the wire length increases. For best results, the angle of one wire to the other is chosen to allow the lobes to combine. This means that the angle is not necessarily correct for another band, where the legs will be a different number of half-waves. So the aerial is designed for best results on the preferred band.

If each leg is to be a multiple of half-waves, 91 ft. 9 in. will be satisfactory for legs two full-waves long on 21.1 Mc/s. For 14 Mc/s, legs two full-waves long may be about 138 ft. 6 in. each. For four full-wave legs, each may be 183 ft. for 21.1 Mc/s and 278 ft. for 14.1 Mc/s. A suitable angle between the legs is 70° for legs each two full-waves long, and 52° for legs each four full-waves long. A small V with legs only one wavelength long may have legs at right angles. For about 21.5 Mc/s each wire can then be 45 ft. 6 in.; or each wire may be 68 ft. 6 in. for 14.5 Mc/s. This beam has a gain of only about 2.5db but the advantage of much less sharp directivity.

As with the long wire aeriels, a length chosen to be around the middle of the band will be satisfactory for all the band. Practical aeriels often have to be adjusted to suit the location, and some change in the angle, to suit supports, may be tolerated.

A High Power Amplifier for 430 Mc/s

(Continued from page 212)

indicated even when full drive is applied, and may even be negative. In this respect it is necessary to fit a bleed resistor across the negative bias supply drawing approximately 20 mA to stabilize the supply under negative grid current conditions. These remarks also apply to the screen supply. The bias voltage should be -80 volts and the screen voltage 250 volts. The drive requirement is 15 to 20 watts.

With an anode voltage of 1000 volts and current of 200 mA, an r.f. output of approximately 100 watts may be obtained.

The Practical Alignment of Cascaded Crystal Half-Lattice Filters

By K. R. CLARKE (G3KRC)*

RECENTLY it was desired to align the crystal filter in (i) a G2DAF type receiver, and (ii) a G2DAF s.s.b. transmitter. As this was a type of work with which the author was not at all familiar, the task was undertaken with some trepidation.

Textbooks seemed rather vague in their explanations and it was soon realized that the correct alignment was no mean task. However, after a number of false starts the following plan of attack was adopted. The method described is for the symmetrical type of filter used in receiver i.f. chains. Surplus FT241 crystals were used throughout.

The instruments required are a valve voltmeter with a diode probe (preferably calibrated, 0-1 volts, 0-10 volts) and a BC221 frequency meter. Other types of frequency meter may be used, but few other instruments available to the amateur are capable of a re-setting accuracy of better than 10 c/s at 460 kc/s. An error of 50 c/s in the alignment frequency can give grave errors in the passband characteristic.

Checking the Crystals

The arrangement for testing the crystals is illustrated in Fig. 1. Tune the BC221 around the nominal resonant fre-

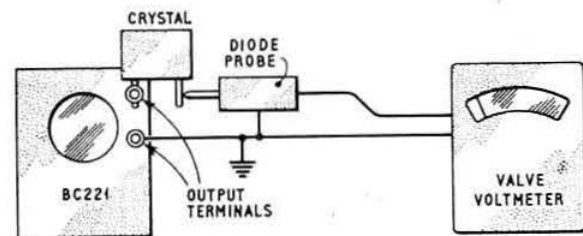


Fig. 1. Checking the resonant frequencies of a crystal. It is essential that leads are kept short and that each crystal is measured in exactly the same way.

quency of the crystal; a sharp rise in output on the valve voltmeter indicates the series resonance of the crystal. There should also be nearby a sharp dip in output indicated on the valve voltmeter (this is the anti-resonance, i.e. parallel resonant, frequency of the crystal) and may be difficult to observe even on a 0-1V valve voltmeter scale, since the output of the BC221 may be too small to give a good indication. When the exact peak has been found, the frequency should be measured accurately with the BC221. A calibration graph of the exact frequencies against BC221 dial reading can then be made around the channel frequencies in use to assist crystal selection. The frequencies obtained should be scribed on the crystal holder.

Check all crystals in the manner described and in each case note the peak valve voltmeter reading which is a measure of the Q of the crystal. Faulty crystals give no rise or a very small one and closer examination will probably reveal the crystal is disconnected owing to a dry joint on its

mounting or severely tarnished plating. The reader should not be too disappointed if a few of the crystals purchased suffer from these defects—five out of 15 purchased were found to have detached or tarnished mountings.

Almost a complete range of FT241 crystals have recently become available from Crystals & Components Ltd., 2-4 Earlham Street, London, W.C.2. This supplier has the facilities to check the crystals selected before purchasing. Even so it is better to purchase one or two extra crystals in order to select crystals sufficiently near the frequencies required.

If a poor crystal mounting is suspected a gentle tap on the case while measuring the frequency will cause a different output reading to be obtained if the mounting is faulty. It cannot be too strongly emphasized that when measuring crystal frequencies the connecting leads must be kept as short as possible and all crystals should be measured in the same way.

It is quite possible that pulling of the frequency of the BC221 and the extra capacity imposed by the leads to the crystal will cause errors in the above check. However, if all the crystals are subjected to the test in exactly the same way it is safe to assume the displacement will be constant and the crystal spacing may be accurately measured. Having selected two sets of three crystals correctly spaced either side of the passband, the alignment of the filter can be started.

Aligning I.F.s at the Centre of the Passband

The textbooks state that i.f. stages must be aligned to the centre of the passband of the crystals in the filter. This is more difficult than it would at first appear, as it is only possible to obtain an approximate idea of the frequency by averaging the frequencies of all the crystals being used. This only gives a starting point as the *in situ* frequencies can vary from the original measurement by 50 c/s or more.

After allowing the BC221 and the receiver to warm up for at least 30 minutes, align to the average frequency of the filter crystals. Use extremely light coupling from the BC221 to the receiver—a 2 in. length of wire connected to the generator and placed close to the mixer wiring is sufficient, making sure that the "hot" lead does not pass near the filter and its wiring. For measuring the filter output use a diode probe valve voltmeter between the r.f. side of the detector diode and earth (or the "S" meter if it is connected to the last i.f. stage). All trimmers or cores should be adjusted two or three times until maximum output is achieved. It may be necessary to retain the dust cores with a short length of elastic thread to allow only minute alterations of the dust core when aligning.

The response of the filter should be plotted on graph paper to 20db down. It is useful to remember that if peak output is, say, 1 volt (f.s.d. of the valve voltmeter), then a reading of 0.1 volt indicates 20db down. So if the peak output is set to 1 volt, tuning the generator until the output drops to 0.1 volt either side of this peak will provide the 20db points. Increasing the receiver gain to 1 volt at the 20db points and tuning the generator until output again drops to 0.1 volt will provide the 40db points and so on. Finally, when measuring to, say, 60db down it may be necessary to use an ordinary signal generator with greater output than the BC221 to get a useful reading on the valve voltmeter. The 60db points are then checked by measuring the frequency of the signal generator using the BC221 as the standard. It is easier when plotting the graph quickly to use BC221 dial calibration, then to extrapolate the frequencies later. A curve similar to Fig. 2(a) or (b) should be obtained. It should be remembered that altering the gain of the receiver can affect the filter response unless, for example, negative feedback methods are employed as in the G2DAF receiver.†

Assuming that a response curve similar to Fig. 2 has been achieved, tune the BC221 to, say, 100 c/s either side of the first alignment frequency, peak the i.f. transformers again

* "Quantocks," 24 Galley Lane, Barnet, Herts.

† The G2DAF receiver is described in detail in the R.S.G.B. booklet *Communication Receivers* by G. R. B. Thornley (G2DAF), obtainable from Headquarters, price 2s. 6d. (by post 3s.).

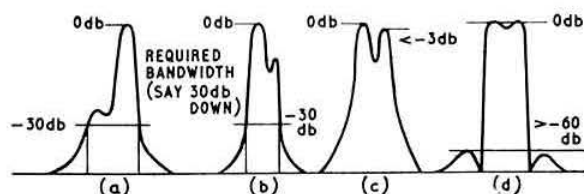


Fig. 2. Response curves of a crystal filter at various stages of alignment. Note how the addition of a small capacity across the h.f. crystal reduces the dip in the curve at the centre frequency in (c) but brings up the side lobes as in (d).

and plot the response on the same graph. Repeat the procedure until it is possible accurately to select the centre frequency, i.e. giving response like Fig. 2(c). Do not worry about the depth of the rejection notch at this stage. It is well worth making 10 or more graphs as the centre frequency is more nearly approached. If only one peak is obtained at the outset several plots may be required to find the other peak, although a quick run through with the BC221 without drawing a graph may detect the other peak.

When both peaks are reasonably symmetrical, i.e. one peak is not more than 3db down from the other peak, a full curve may be plotted. If the curve contains a sharp rejection notch and a wide skirt (as in Fig. 2(c)) the need for shunt capacities across the crystals is indicated. It should be possible to obtain a response curve similar to that shown in Fig. 2(d).

Shunt Capacities

If shunt capacities are placed across the *higher* frequency crystal, the effect on the passband is to steepen its skirt. As the capacity is increased so the skirt gets steeper—this sounds ideal but unfortunately side lobes appear and get larger as these capacities are increased. In practice 1 or 2 pF is a good starting point. This is most easily provided in practice by taking a double length of 22 s.w.g. p.v.c.-covered wire and twisting it tightly together using a hand drill. Cut off 1 in. lengths and solder them across the base of the h.f. crystals. Carry out the alignment procedure again and plot another curve; this should look like Fig. 2(d) with smaller or larger lobes. If the side lobes are too large cut a little off the "capacitor." These capacitors are cheap and do a fine job, but two or three may be cut up before final alignment is obtained. Incidentally, any capacity across the l.f. crystal merely widens the base of the skirt and is quite useless [5].

For final alignment the complete procedure should be repeated as the extra capacity will have slightly altered the resonant frequencies of the crystals. Although the writer could not quite achieve the excellent figures of G2DAF [1] (side lobes appeared 68db down) alignment was made without crystal grinding or plating.

Cleaning Crystals

Most surplus (FT241) crystals have been badly stored and nearly all of them show signs of sulphide tarnishing. Before using these crystals it is therefore a good idea to clean them, as this improves the *Q* and usually restores the crystals to their original resonant frequencies. This is conveniently done by first degreasing the crystal in a suitable solvent (e.g. alcohol or acetone, but not proprietary brands of carbon tetrachloride as they contain some contaminant that seems to decrease the *Q* of crystals). After degreasing, allow the crystals to dry, then soak them in a dilute solution of washing soda, add a piece of aluminium foil and touch the side wires of the crystal on to the foil and the sulphide layer will flash off leaving a cleaned silver plating.

If the crystal still appears tarnished then it is some coating other than sulphide and there is very little that can be done

about it. The sulphide coating appears to come from the sulphide compounds in the rubber gasket used in the crystal holder. It is therefore as well to replace it with a plastic gasket if possible to prevent recurrence of tarnishing.

Edge Grinding Crystals

A crystal may be shifted slightly *higher* in frequency by holding it in its mountings and gently rubbing with grade 1 emery paper on the top surface. (One rub of 3 in. = 1 cycle is a very rough guide.) Crystals should not be moved more than 50 cycles or so by this method.

If more frequency change is required then the crystal must be removed from the outer support wires. To do this hold the crystal holder in a small vice, heat shunt the finer support wire, and using a miniature soldering iron, remove it from the outer support wire. Great care and a steady hand will be required. The crystals do not like heat and one crystal exploded when attempting to remove it even with the heat shunt. Once removed from its mounting the crystal may be edge ground in the usual way and may be shifted up to 2 or 3 kc/s higher. However, if more than 1 kc/s shift is required it is advisable to grind all edges equally. Unfortunately the crystal must be resoldered to its support wires and washed with alcohol each time it is desired to check its frequency.

Plating Crystals

Crystals may be shifted *lower* in frequency by copper plating. The method adopted is described in references [3] and [4]. The formula used by the writer was as follows:

15 gm. copper sulphate, 5 c.c. sulphuric acid (battery acid strength, not concentrated), 5 c.c. alcohol and 100 c.c. distilled water.

Put the solution in a glass tumbler, bend a piece of cleaned bare copper wire (about 16 s.w.g.) so that it dips well into the solution and clamp it to the side of the tumbler. Connect this copper electrode via a 330 ohm resistor to the *positive* terminal of a 1.5 volt battery. The crystal with both pins shorted together should be connected to the *negative* terminal. The crystal should then be dipped rapidly into the solution, left for about 10 seconds and quickly removed. The crystal must be degreased and washed with distilled water before and after the process. Make sure the crystal is thoroughly dry before attempting to measure its frequency again. Further platings for longer periods can then be attempted, changes of up to about 2 kc/s being obtained without seriously lowering the *Q*.

This process is highly recommended, since it is to a certain extent reversible: if the plating is taken too far a mere reversal of polarity of the battery raises the frequency again. This process is simpler than it sounds: a set of six or more crystals may be "jockeyed into position" in an afternoon.

Filter Layout

When wiring a crystal filter it is essential to make sure that one part of the crystal filter cannot "see" any later stage, as instability cannot be tolerated. Similarly small capacity leaks across the filter and coupling via heater, h.t., and, particularly, a.g.c. wiring, must be avoided. Any trace of instability must be cured before attempting to line up the filter and screening may be necessary in severe cases.

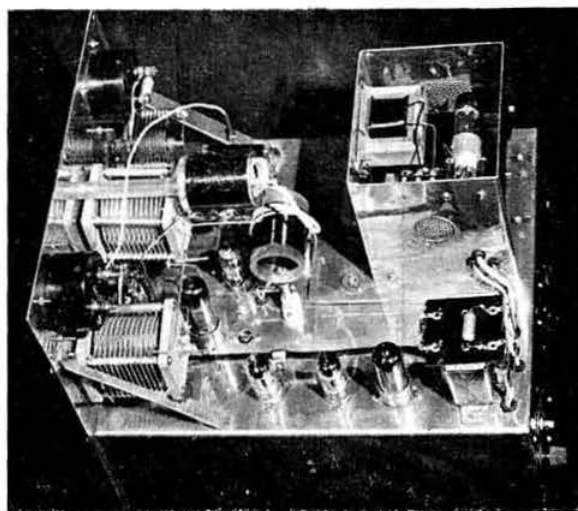
References

- [1] "The G2DAF Communication Receiver." R.S.G.B. BULLETIN, March and April 1961.
- [2] "The G2DAF S.S.B. Transmitter." R.S.G.B. BULLETIN, September, October and November 1959.
- [3] "Alignment of Half-lattice Filters," by W7ESM, "Half-lattice Crystal Filters," by W2CVI, *Single Sideband for the Radio Amateur* (A.R.R.L.).
- [4] The R.S.G.B. *Amateur Radio Handbook*, page 311.
- [5] "Receiver Selectivity," R.S.G.B. BULLETIN, April 1957.

A Desk-top 160 Metre Transmitter

*Compact Modern Design with built-in
Power Supplies and Modulator*

By C. H. L. EDWARDS, A.M.I.E.E., A.M.Brit.I.R.E.
(G8TL)*



A side view of the transmitter.

THE transmitter to be described was designed to meet the requirements of the writer—a Top Band addict of long standing—for a thoroughly reliable, compact and self-contained unit for the lowest frequency amateur allocation. With the prospect of good conditions on 1.8 Mc/s during the coming winter, it is believed that other members will be interested in the design which has proved itself over an extended period of successful operation.

Owing to the 10 watt limitation on power input, it was decided to make the transmitter for single band operation only. Other desirable features were considered to be excellent stability, freedom from TVI and good phone quality. To this end, lightly loaded circuits, high quality components and generous screening are employed.

The Circuit

It will be seen from the complete circuit diagram in Fig. 1 that the oscillator V1a (one half of a 12AT7) is of the Clapp type, experience having shown that this arrangement is stable and free from drift. A cathode follower (V1b) isolates the oscillator from the buffer stage V2 (type 6AM6). Drive to the buffer stage is via a 50pF variable air-spaced capacitor (C9) which permits adjustment for the minimum amount required. Either the oscillator or buffer stage may be keyed for c.w. transmission by inserting a key into J1 or J2.

To provide a low impedance path to earth at high frequencies for the control grids and screen grids of the buffer and p.a. valves (V2 and V3 respectively) 10pF bypass capacitors (C11, C13, C18, C19) and 50 ohm grid stoppers (R9 and R11) are used. The additional capacitance introduced by these capacitors can be ignored at the frequency concerned. An anti-parasitic choke comprising a 100 ohm resistor (R14) overwound with eight turns of 20 s.w.g. enamelled copper wire is connected to the anode of the p.a. valve as a further aid to stable operation. To help reduce harmonic radiation to a minimum, link coupling is used between the p.a. tank (L3) and aerial (L6) coils. Both buffer and p.a. coils plug into sockets mounted on porcelain stand-off insulators, thus making it a simple matter to modify the transmitter for 80m if desired.

The modulator and speech amplifier, designed for use with a crystal microphone, comprises two triode voltage

amplifiers, V5 and V6 (both type 6AT6), driving a pentode power amplifier, V7 (type 6BW6), coupled to the anode and screen of the p.a. (V3) by means of the modulation transformer, T3.

Separate power supplies are employed for the r.f. section and the modulator, the former being carried under the chassis and the latter above, both in their own screening compartments. Bias for the p.a. is obtained from the secondary of the r.f. section power supply transformer with a small metal rectifier (MR1) and a bleeder network (R26, R27, R28) to earth.

Construction

The complete unit is built on an aluminium chassis measuring 10½ in. × 12 in. × 4 in. deep with the controls and meters mounted on a 10½ in. × 10½ in. front panel. The v.f.o. section is fitted underneath the chassis, the coil and capacitors being separately boxed. The oscillator coil L1 is wound on a paxolin former and mounted in a metal screening box together with its associated capacitors. The values of C4 and C5 shown in Fig. 1 were found to give the most output consistent with good stability.

Next to the oscillator are the buffer and p.a. stages, which are carefully screened from the modulator and power supplies. Lids are fitted to all of the sections before the chassis is fitted into the metal case.

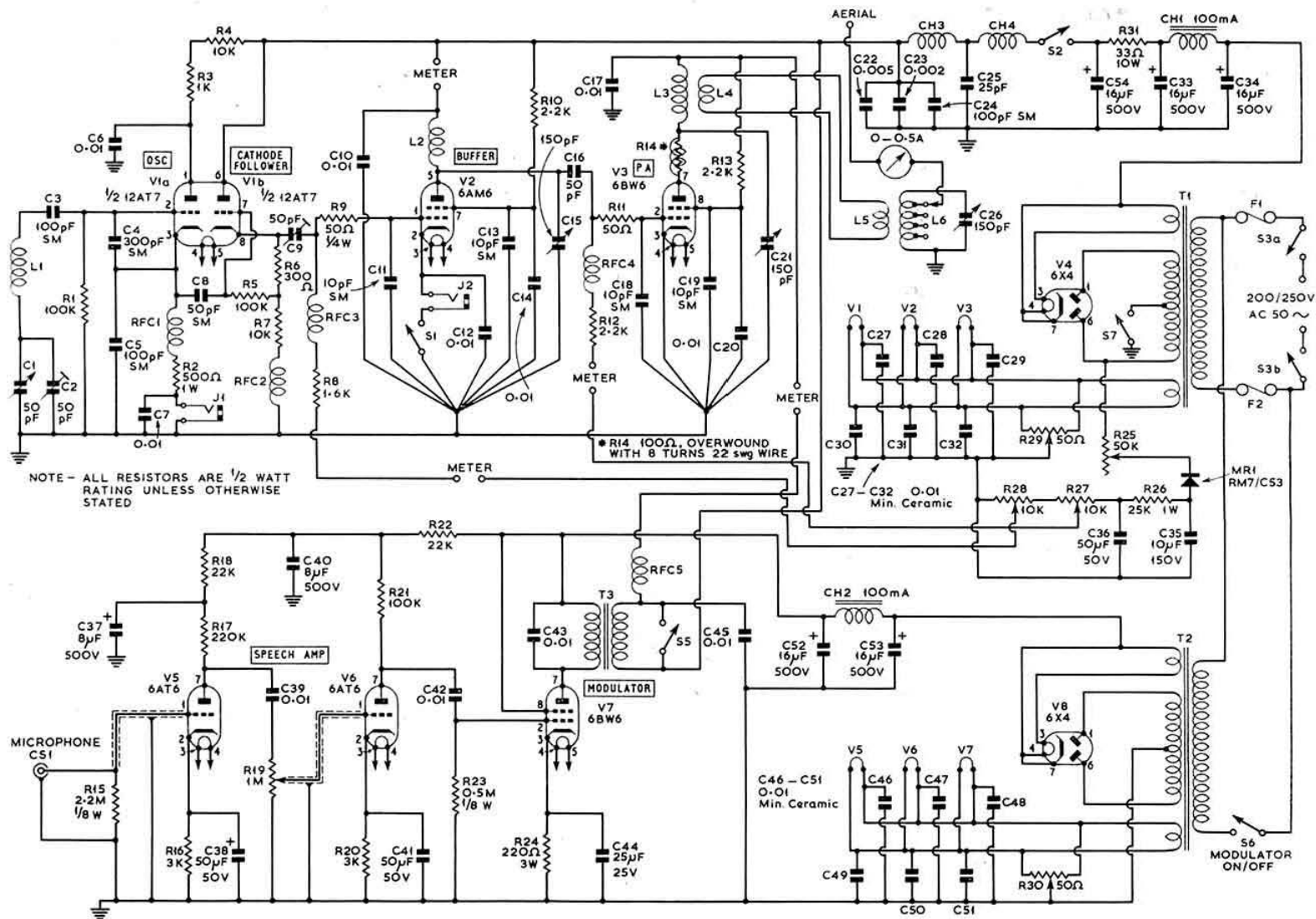
The transmitter power supply and bias pack are mounted in a separate compartment at the rear of the chassis to which it is secured by two screws. Connections are made by plugs and sockets so that the unit can be removed completely for inspection and servicing if required.

The modulator and speech amplifier run along one edge of the chassis in another screened compartment. The power supply for this section is built into a ventilated aluminium box mounted on top of the chassis. Provision is made to switch off the mains transformer (T2) when using c.w. while a further single pole switch (S5) short-circuits the secondary of the modulation transformer (T3).

In order to eliminate any traces of hum the centre-taps of the heater supplies in both the r.f. section and the modulator are connected to earth via 50 ohm wire wound potentiometers, with 0.01 µF decoupling capacitors connected to each side.

All wiring, other than that for the heaters, is carried out

* 28 Morgan Crescent, Theydon Bois, Essex.



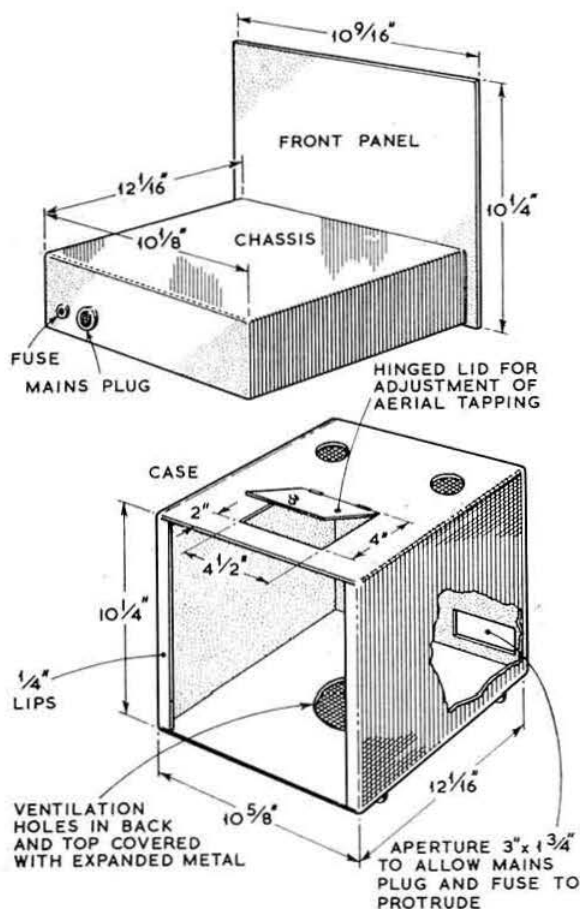


Fig 2. Construction of the metalwork for the transmitter.

in bare 18 s.w.g. tinned copper wire, sleeved only at crossover points or where leads pass through the chassis. Heater wiring is in twisted pair throughout. The a.c. mains input is via a Bulgin three pin connector mounted on the rear drop of the chassis with a fuse fitted adjacent to it.

The complete unit fits into a cabinet measuring 10 1/2 in. x 10 1/2 in. x 12 1/2 in. Provision is made for adjusting the tappings on the aerial coil through a door in the top. The cabinet stands on short Perspex insulators thus allowing air to pass underneath and through large ventilation holes into the box, helping to maintain an even temperature throughout. Constant temperature in the cabinet after the initial warm-up period is an aid to good frequency stability.

Operation

The range 1.8 to 2 Mc/s is spread over 10° to 90° of the v.f.o. slow motion dial which was calibrated with the aid of a BC221 frequency meter. A check on the calibration after some weeks of operation showed the accuracy to be most satisfactory. In operation the v.f.o. was found to be very stable when left running for long periods, so much so that a QS150/15 stabilizer tube originally installed was discarded as unnecessary.

The buffer coupling capacitor C9 was reduced in capacity

until just sufficient drive was obtained and then locked. Correct bias for the various stages was set by means of the 10K ohms potentiometers R27 and R28.

On c.w. the note is reported to be a good clean T9 with no chirp whatsoever. Used with a crystal microphone, excellent reports on the phone quality have been received. No TVI has been caused although the rig is frequently used during television hours in area in which there are many TV receivers.

COMPONENTS LIST

- C1, 50pF air-spaced variable (Jackson Bros.).
- C2, 9, 50pF air-spaced trimmer (Jackson Bros.).
- C3, 5, 24, 100pF silver mica (Dubilier).
- C4, 300pF silver mica (Dubilier).
- C6, 7, 10, 12, 14, 17, 20, 0.01µF tubular (Dubilier).
- C8, 50pF silver mica (Dubilier).
- C11, 13, 18, 19, 10pF silver mica (Dubilier).
- C15, 21, 26, 150pF air-spaced variable (Jackson Bros. type 5070/7).
- C22, 0.005µF 350V mica (Dubilier).
- C23, 0.002µF 350V mica (Dubilier).
- C25, 25pF 350V silver mica (Dubilier).
- C27, 28, 29, 30, 31, 32, 0.01µF miniature ceramic (Dubilier).
- C33, 34, 52, 53, 54, 16µF 500V wkg. electrolytic (Dubilier).
- C35, 10µF 150V electrolytic (Dubilier).
- C36, 38, 41, 50µF 50V electrolytic (Dubilier).
- C37, 40, 8µF 500V wkg. electrolytic (Dubilier).
- C39, 42, 43, 45, 0.01µF mica (Dubilier).
- CH1, CH2, 100mA smoothing choke.
- CH3, CH4, Eddystone type 1066.
- L1, 90 turns 30 s.w.g. enam. close wound on 1 1/2 in. dia. paxolin former.
- L2, 28 s.w.g. enam. close wound for 1 1/2 in. on 1 1/2 in. dia. paxolin former.
- L3, 26 s.w.g. enam. close wound for 1 1/2 in. on 1 1/2 in. dia. paxolin former.
- L4, L5, 4 turn insulated link coils.
- L6, 28 s.w.g. enam. close wound for 2 in. on 1 1/2 in. dia. paxolin former.
- R1, 5, 21, 100 K ohms 1/2 watt (Dubilier).
- R2, 500 ohms 1 watt (Dubilier).
- R3, 1K ohms 1/2 watt (Dubilier).
- R4, 7, 10K ohms 1/2 watt (Dubilier).
- R6, 300 ohms 1/2 watt (Dubilier).
- R8, 1.6K ohms 1/2 watt (Dubilier).
- R9, 11, 50 ohms 1/2 watt (Dubilier).
- R10, 12, 13, 2.2K ohms 1/2 watt (Dubilier).
- R14, 100 ohms 1/2 watt resistor overwound with 8 turns 22 s.w.g. enam.
- R15, 2.2 Megohms 1/2 watt (Dubilier).
- R16, 20, 3K ohms 1/2 watt (Dubilier).
- R17, 220K ohms 1/2 watt (Dubilier).
- R18, 22, 22K ohms 1/2 watt (Dubilier).
- R19, 1 Megohm potentiometer with s.p. switch (Dubilier).
- R23, 0.5 Megohm 1/2 watt (Dubilier).
- R24, 220 ohms 3 watts (Dubilier).
- R25, 50K ohms wire wound potentiometer (Dubilier).
- R26, 25K ohms 1 watt (Dubilier).
- R27, 28, 10K ohms wire wound potentiometer (Dubilier).
- R29, 30, 50 ohms wire wound potentiometer (Bulgin type 1.V.C.5).
- R31, 33 ohms 10 watt wire wound (Dubilier).
- RFC1, 2, 3, 4, 5, Bulgin type S.VV. 88.
- S1, 2, 5, 7, single pole toggle switch (Bulgin type S.259 P/D).
- S3, double pole toggle switch (Bulgin type S.277).
- S4—not used.
- S6, modulator on/off switch (part of R19).
- T1, 2, 300-0-300 volts 80 mA., 6.3 volts 3 amps., 6.3 volts 1.5 amps.
- T3, modulation transformer (G. & B. Electric Co. Ltd.).
- V1, 12AT7 (Brimar).
- V2, 6AM6 (Brimar).
- V3, V7, 6BW6 (Brimar).
- V4, V8, 6X4 (Brimar).
- V5, V6, 6AT6 (Brimar).

Other Components

- Bulgin dial lights, jacks, knobs, fuseholders, couplers, tagboards, etc.
- Eddystone slow motion dial (for the v.f.o.).
- Clix plugs and sockets for the coils.
- McMurdo valve bases.
- 0-0.5 amp. r.f. meter.
- 0-50 mA. m.c. meter (for anode currents).
- 0-5 mA. m.c. meter (for grid currents).



International Radio Communications Exhibition 1962



Mr. A. H. Mumford, O.B.E., B.Sc.(Eng.), M.I.E.E., Engineer-in-Chief of the General Post Office, opening the R.S.G.B. International Radio Communications Exhibition at the Seymour Hall, London, on October 31, 1962. Seated, left to right, Air Vice-Marshal C. M. Stewart, C.B.E., Director General of Signals at the Air Ministry, the President (Mr. E. G. Ingram, GM6IZ), the General Secretary (Mr. John Clarricoats, O.B.E., G6CL), and the Exhibition Organizer (Mr. P. A. Thorogood, G4KD).

(Photo by Tella Photography Ltd.)

"THE best yet" succinctly sums up the view of most regular visitors to the annual R.S.G.B. show, entitled this year the International Radio Communications Exhibition and held at the Seymour Hall, London, from October 31-November 3. Undoubtedly the venue was the major factor in producing a brighter and more modern



After the official opening, an informal reception was held in the restaurant at Seymour Hall. From left to right, Mr. Austin Forsyth, O.B.E., G6FO (Editor, *Short Wave Magazine*), Mr. A. H. Mumford, Dr. J. A. Saxton of the Radio Research Station, Major-General E. S. Cole, C.B., C.B.E., G2EC, Immediate Past President, and (in the background) Mr. Norman Caws, G3BVG (Executive Vice-President and Hon. Treasurer).

(Photo by Tella Photography Ltd.)

appearance in tune with the space age, a feeling further increased by the model of the Telstar satellite hanging above the stage and visible from all parts of the hall.

Opening the Exhibition at noon on the Wednesday, Mr. A. H. Mumford, O.B.E., B.Sc. (Eng.), M.I.E.E., Engineer-in-Chief of the General Post Office, referred to the great contribution made by radio amateurs to the investigation of space communications problems in recent months, particularly in connection with the completely amateur Project OSCAR. On the stage behind Mr. Mumford as he spoke was a cut-away model of *Oscar 1*. Referring to the Post Office's own satellite communications programme he said that £750,000 had been spent on the Telstar experiments at the Goonhilly station in Cornwall where the staff included ten active amateurs and six ex-amateurs. Looking to the future, Mr. Mumford said he foresaw that it would not be long before satellites provided a complementary means of satisfactory long distance communication.*

Following the official opening, Mr. Mumford toured the Exhibition with the Society's President, Mr. E. G. Ingram, GM6IZ, the Executive Vice-President and Hon. Treasurer, Mr. Norman Caws, G3BVG, the General Secretary, Mr. John Clarricoats, O.B.E., G6CL, and the Exhibition Organizer, Mr. P. A. Thorogood, G4KD.

Others present at the opening included Major-General E. S. Cole, C.B., C.B.E., G2EC, Past President, Mr. F. C. McLean, C.B.E., Deputy Director of Engineering at the B.B.C., Mr. A. Wolstencroft, C.B., Director of Radio Ser-

* During the exhibition it was announced that an R.S.G.B. Space Communications Group is to be formed. At the first meeting to be held in London on January 3, 1963, Bill Sykes (G2HCG) will be the principal speaker. Members interested in joining the Group are invited to communicate with either G2AOX or G4KD.

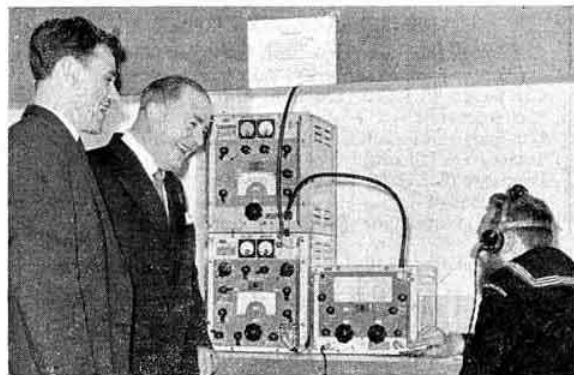


Mr. A. L. Mynett, G3HBW, received the Silver Plaque for the transistor communications receiver for the 430 and 1296 Mc/s bands shown in this picture.
(Photo by Tella Photography Ltd.)

vices, G.P.O., Mr. W. A. Brady of the *Voice of America*, Mr. J. Hutchinson, Deputy Counsellor for Public Affairs at the American Embassy, Capt. J. R. G. Trechman, R.N., Director of the Signals Division of the Admiralty, Air Vice-Marshal C. M. Stewart, C.B.E., Director General of Signals at the Air Ministry, Mr. S. E. Allchurch, O.B.E., Director of the British Radio Equipment Manufacturers' Association, Dr. J. A. Saxton, Deputy Director of the Radio Research Station, D.S.I.R., Major Katherine Milner, O.B.E., of the 65th Signal Regiment, T.A., and Mr. John Gilbert, member of the Council of the Radar and Electronics Association.

The Prize Winners

The Silver Plaque for the best home-constructed exhibit was won by A. L. Mynett, G3HBW, whose entry was a



Tom Withers, G3HGE and Fred Lambeth, G2AIW, share a joke with one of the R.N.R. operators on the Royal Navy stand. The equipment is the type 619/CAT general purpose low power transmitter-receiver fitted in all classes of ships and in Royal Naval Reserve Training Centres.
(Photo by courtesy of Electronics Weekly)



Erecting the aerials for the exhibition station, GB3RS, on the roof of the Seymour Hall, London. Left to right, Stuart Yeomanson (son of G3IIR), G2VB, G4KD, G3FZL, G3POI and G2LW.
(Photo by G3JE)

magnificently built triple conversion transistor communications receiver for 432-436 Mc/s and 1296-1300 Mc/s. Each band is covered in either four ranges of 1 Mc/s or in two of 2 Mc/s. The first i.f. is 28 Mc/s for the lower frequency band and 23 Mc/s for 1296 Mc/s. The second i.f. stage is tunable over 2-4 Mc/s or 2-3 Mc/s and the third i.f. is 456 kc/s.

The front-end comprises two separate converters built on brass sub-chassis embracing all stages up to the second frequency conversion, the output in both cases being in the range 2-4 Mc/s. Noise factors of 6db and 10db are achieved on 432 and 1296 Mc/s respectively. The receiver uses inexpensive commercially available transistors and diodes.

The Horace Freeman Trophy was won by J. C. Huntley, G3PPI, with a very neat transceiver for Top Band measuring only 8½ in. long by 5 in. high by 7 in. deep. A QVO4/7 is used in the final of the transmitting section. The equipment is a true transceiver, i.e., the v.f.o. and receiving tuning are ganged.

The £10 prize for the best home-constructed exhibit by a



Mr. A. H. Mumford discussing the K.W.77 amateur bands communications receiver with Mr. R. G. Shears, G8KW, Managing Director of K.W. Electronics Ltd. The receiver was awarded the Silver Plaque for the most interesting piece of new commercial equipment for the amateur.
(Photo by Tella Photography Ltd.)



Angus McKenzie, G3OSS, was one of the many visitors to the Amateur Radio Mobile Society's stand. Others in this picture are Norman Fitch, G3FPK (Hon. Secretary), Rowley Shears, G8KW (Chairman), and Mrs. Sylvia Margolis. In the foreground is the "Courier" s.s.b. transceiver.
(Photo by courtesy of Electronics Weekly)

member resident outside Region 7 (the London Area) was won by P. Lumb, G3IRM, of Bury St. Edmunds, Suffolk, who showed a very ambitious electronic keyer and associated paddle-type key employing 12 transistors and 11 diodes. The £5 prize went to R. Stanforth, G3EGV, of Weymouth, Dorset, who entered a transistor receiver for 2m and 70cm.

K.W. Electronics Ltd. won the Silver Plaque for the most interesting item of commercially built equipment for the amateur with the new K.W.77 triple conversion amateur bands communications receiver, a prototype of which aroused so much interest at the 1961 Exhibition. This instrument covers all amateur bands from 1.8 to 29.7 Mc/s, the maximum frequency coverage on any band being 600 kc/s. The first mixer is crystal controlled, tuning being effected at the first i.f. Selectivity is obtained at the third i.f. which uses 50 kc/s Ferroxcube inductances, the bandwidth being variable (0.5 kc/s, 1 kc/s, 2.1 kc/s or 3.8 kc/s at 6db down.) Sensitivity is stated to be 0.5 μ V for a 10db signal-to-noise ratio. Silicon diodes are used in the power supply.

The winner of the K.W.77 receiver in the free Exhibition draw was R. V. Sturtart of Yelvertoft, Rugby. Other prizes were won by G3OXO (Valve Tester donated by Relda Radio Ltd.), a transistor d.c.-to-d.c. converter by G3NAC (donated by Avel Products Ltd.) and a "Topmobile" receiver by A. F. Schubert (donated by Withers Electronics). The tickets were drawn by YVIEO.

The winners of Superspeed soldering irons and low voltage transformers presented each day by Enthoven Solders Ltd., were A. J. Swift of Beckenham, Kent, O. P. Moss of Bournemouth, Hants., B. Ridgway of Taunton, Somerset, and L. J. Parllour of Enfield, Middlesex.

Exhibition Station

Throughout the period of the Exhibition GB3RS was active on Top Band and 80m using a K.W.77 receiver and K.W. Electronics Vanguard transmitter loaned by the manufacturers and on 2m with equipment loaned by G3OSS. Many hundreds of contacts were made with amateurs throughout the country and all are being confirmed by a distinctive QSL card specially printed by G6MN.

A review of some of the interesting exhibits to be seen on the commercial and amateur stands will appear in the December issue of the BULLETIN.

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Single Sideband for the Amateur (A.R.R.L.)	-	14/6
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73 Magazine (A.R.P.Co.) Monthly	-	(p.a.)	30/-

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Single Sideband

By G. R. B. THORNLEY (G2DAF) *

COMMENTS have recently been heard on the 80m band that the selectivity of the ex-government AR88 receiver was just as good as a mechanical filter, because it had the same shape factor of 2:1. While this statement was no doubt made in good faith, it is nevertheless complete nonsense.

Although it has become customary to rate single sideband filters in terms of the 6/60db bandwidth (known as the shape factor) it is quite meaningless to use this term without also specifying the band of frequencies the filter has been designed to pass. The bandwidth of the AR88 in the normal selectivity position is 9 kc/s at 6db and 18 kc/s at 60db, so it is true to say the shape factor is 2. However, the attenuation of the unwanted sideband, or an adjacent signal, is governed by the slope of the filter response. As the figures just quoted show, the slope of the AR88 is 4.5 kc/s for a drop of 54db. This is shown in Fig. 1. In the case of the well-known Collins

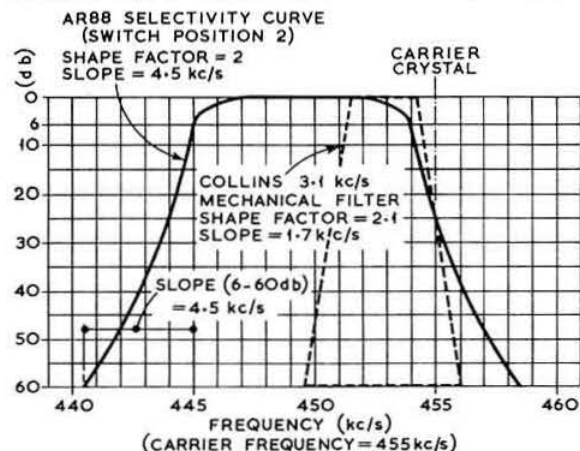


Fig. 1 Selectivity curve showing the slope of the filter response between the 6db and 60db points. The dotted curve is that of a 3.1 kc/s mechanical filter drawn to the same scale.

mechanical filter used in the "S Line" equipment the figures are 2.1 kc/s wide at 6db and 5.3 kc/s wide at 60db down—the slope is therefore 1.6 kc/s for a drop of 54db. This filter has a shape factor of 2.5, but it should be obvious that it has a rejection to the unwanted signal that is three times better than the AR88. From this it follows that to compare filter selectivity in terms of "shape factor" without defining the passband at the 6db points is both inaccurate and misleading.

Slope and Its Effect on Selectivity

The plot of a 2.1 kc/s mechanical filter is shown in Fig. 2 and superimposed on this is the wanted lower sideband and the unwanted higher sideband as they would be in relation to the inserted carrier frequency. It will be noted that the carrier frequency is placed 25db down the filter skirt—in this position a frequency of 300 c/s in the wanted sideband will be attenuated 14db and 300 c/s in the unwanted sideband 35db. If the carrier frequency were placed lower down, say at the 30db point, the sidebands would move over to the right of the diagram and the suppression of a 300 c/s signal in the unwanted sideband would be improved to 40db;

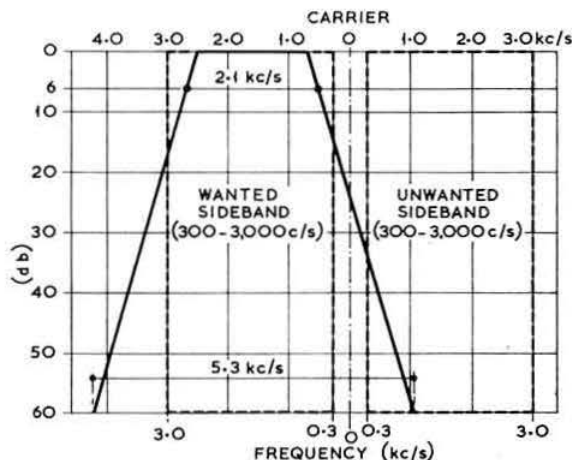


Fig. 2 Response curve of a Collins 2.1 kc/s mechanical filter. The shape factor is 2.5 and the slope 1.6 kc/s. The two sidebands are shown in their correct relationships to the carrier and the filter passband.

however, the same 300 c/s in the wanted sideband would be attenuated 20db and there would be a severe cut in the lower audio register that could not be tolerated. If the carrier were placed higher up the slope, say at 20db, the sidebands would move over to the left of the diagram and a wanted frequency of 300 c/s would be attenuated 9db. This would give an improvement in the lower frequency response but the attenuation of 300 c/s in the unwanted sideband would only be 30db and this would not be acceptable.

From this it follows that placing the carrier frequency higher up the skirt of the filter response gives better low frequency response but degrades the sideband rejection. Placing the carrier frequency lower on the skirt of the filter improves the unwanted sideband rejection but gives poorer speech quality. The two requirements, (i) good speech quality and, (ii) good unwanted sideband rejection, are in conflict with each other. The positioning of the carrier is therefore a compromise and the 25db point—with a filter slope of 1.6 kc/s—gives an acceptable balance between the two requirements.

Considering this matter further, it will be obvious that if the filter were better and had a steeper slope—say 700 c/s in a drop of 54db—the carrier would be placed further down at the 30db point. The wanted 300 c/s in the passband would then be at the required 6db position, but the same 300 c/s in the unwanted sideband would be attenuated by more than 50db—a very acceptable figure indeed.

Ideal Filter Response

In a well-designed communication receiver it is advisable to restrict the frequency translation processes to two in order to avoid the generation of spurious birds caused by beating between the v.f.o. and the fundamental and harmonic frequencies of the conversion oscillators. Because of this, sideband switching by a third mixing process is undesirable and the preferred method is to use two switched carrier insertion oscillator crystals, positioned on either side of the filter passband.

In order to retain both the audio passband and the filter rejection constant on either sideband, it is necessary for the filter response to be symmetrical. The requirement therefore for a receiver is (i) a passband as narrow as possible in the interests of adjacent channel selectivity but not so narrow as to impair speech quality and make it "boxy," (ii) the steepest possible slope and, (iii) a symmetrical passband shape. Using surplus FT241 crystals, these requirements

* 5 Janice Drive, Fulwood, Preston, Lancashire.

can be met with three half-lattice filter sections with a crystal spacing of about 2.2 kc/s. This gives a 2.5 kc/s 6db bandwidth and a slope of about 1.0 kc/s in a drop of 54db.

In a transmitter it is advisable to translate the audio frequencies up to the required amateur band in a series of steps, with a frequency multiplication ratio of 6 : 1 or less, rather than with one or two large jumps. There is therefore an advantage in using a third frequency changing process and this additional translation can be arranged to have two heterodyning crystals—one above and one below the wanted output frequency—so that switching the crystal changes the transmitted sideband.* This method of sideband switching takes place after the crystal filter which requires only one associated carrier crystal. Because of this, the filter response curve need not be symmetrical. The ability to be able to use an asymmetrical passband shape confers considerable advantage. It is now possible to improve the slope of the carrier frequency side—without additional half lattice sections and associated transformers—in a simple manner with the aid of one or more shunt crystals. This gives a very steep slope to the response curve, allows the carrier frequency to be positioned lower down the slope, gives a better low frequency response with more natural speech quality and last but by no means least improves the unwanted sideband attenuation. In addition the gradual slope of the response curve on the high audio frequency side, remote from the carrier, gives a more gradual "fall off" in the higher voice frequencies and eliminates that undesirably hard and metallic quality that is so noticeable from a transmitter with a "narrow" filter and a restricted audio frequency range.

The requirement therefore for a transmitter is, (i) a pass-band that at the 6db points will allow the transmission of all voice frequencies in the range 300 to 3000 c/s, (ii) a very steep slope on the carrier side, (iii) a gradual roll-off on the high frequency side. Using surplus FT241 crystals, these requirements can be met with two half-lattice sections and two or more shunt crystals. The response curve of the writer's i.f. filter in the G2DAF Mk. II transmitter is shown in Fig. 3. Alignment was undertaken using a frequency modulated oscillator and an oscilloscope. The plot was obtained by feeding a BC221 into the grid circuit of the carrier oscillator and measuring the output voltage across the grid circuit of the transmitter output stage. Measure-

* This is the method used in the G2DAF Transmitter described in the October and November 1959 issues of the BULLETIN.

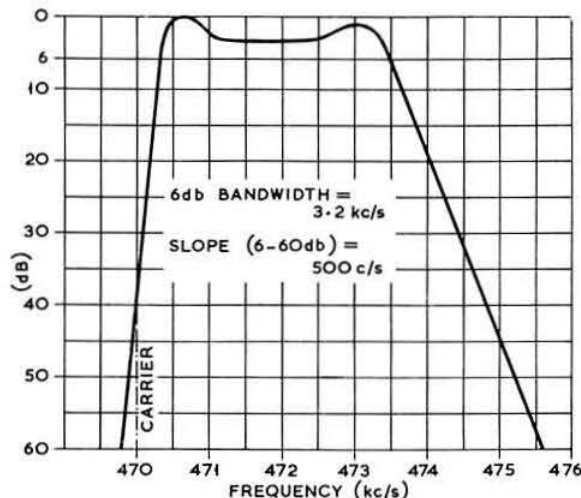


Fig. 3. Response curve of the filter in the G2DAF Mk. II transmitter filter using FT241 crystals.

ments were not made below the 50db point because of the limitation of the measuring equipment. However, the diagram is shown with the skirt extended to 60db and drawn to the same scale as the response in Fig. 2, for the purpose of comparison. The slope on the carrier side is 500 c/s for a drop of 54db and if the carrier frequency is positioned at the 36db point the attenuation of all frequencies (200-3000 c/s) in the unwanted sideband is better than 60db.

In practice this figure is not realized and measurements made using an audio signal generator into the microphone socket and checking the voltage developed across the primary of the output transformer of a selectable sideband receiver indicate a suppression throughout the audio range of approximately 45db. The discrepancy between the plotted figure and the "on the air" figure is attributed to r.f. leakage across the filter sections. Experimental work is at present in hand to determine to what extent this "leak through" can be avoided by improved capacitive balance. It is felt that a figure of 55db should be realized in practice.

For the benefit of the experimenter, the crystal spacing in the half-lattice sections is 2.35 kc/s—and there are four shunt crystals. The i.f. transformers used were "Maxi-Q" miniature can type, IFT.11/465. Finally, remember that in an asymmetrical response filter, the steep skirt is obtained by the "short circuit" action of the shunt crystals which are operating on their series resonant frequencies, and neutralizing capacity across the two high frequency series crystals in the half-lattice legs is not required. In fact any attempt to use neutralizing capacity will bring up side lobes that will ruin the otherwise obtainable rejection.

Thought for the Month

Now you are on single sideband are you taking advantage of the ability to be able to engage the other station in a normal conversation and get away from those unnatural 10 minute monologues? Let go of your "press to talk" button at the end of each sentence and give the other man the chance to reply!

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R.A.F. Amateur Radio Society Opening of New Headquarters Station

By FLT. LT. N. A. GRIFFITHS*



The newly equipped Headquarters station of the R.A.F. Amateur Radio Society at Locking, Somerset. The 2m gear is on the left, the s.s.b. equipment in the centre and the a.m./c.w. transmitting and receiving position on the right.

(Photo by E. V. Wheeler, Weston-super-Mare)

FOR many years the Headquarters Station of the Royal Air Force Amateur Radio Society (G8FC) has been located at R.A.F. Locking, near Weston-super-Mare, Somerset, and from that station many thousands of contacts have taken place. A multitude of personalities famous in Amateur Radio circles, have signed the visitors' book and operated the station.

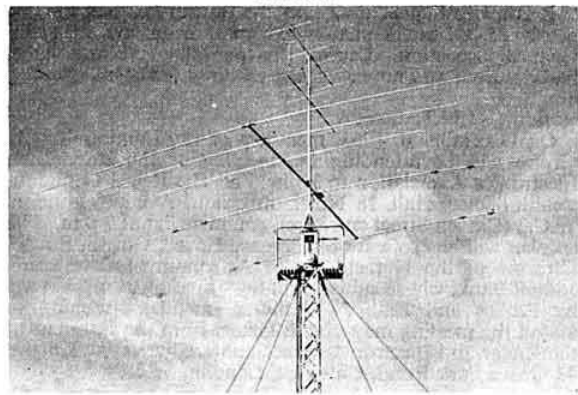
Until recently G8FC consisted of a transmitter built by the late G6ZH (and donated to the Society by his son, Mr. T. Winchcombe, the present holder of that call), a Top Band transmitter and two AR88 receivers.

Towards the end of 1960 a Technical Sub-Committee was appointed to draw up recommendations which would lead to the establishment of a modern communications station designed to operate on as many bands as possible using rotary beam aerials on 2, 10, 15, and 20 metres, half-wave dipoles on 40 and 80 metres and a long wire on 160 metres.

In April 1961 a specification was prepared and tenders invited. The quest was for the best available equipment which would give continuous trouble-free service.

The most favourable tender came from the Collins Radio Company whose S line equipment was chosen. There was very little competition for the beam aerial, the Telrex TC99B being selected. Financial assistance for the project came from the Nuffield Trust for the Forces of the Crown in the form of a grant for £660. The Society itself purchased

* Secretary/Treasurer, R.A.F. Amateur Radio Society, R.A.F. Locking, Somerset.



A view of the new aerial system at G3RAF/G8FC. The h.f. aerial is a Telrex TC99B and the 2m aerial a J-Beam slotted array.

(Photo by E. V. Wheeler, Weston-super-Mare)

a Heathkit DX100U transmitter and a Withers v.h.f. transmitter and converter both for use in conjunction with the original AR88 receivers which by then had been overhauled and given a new look.

The rebuilt and re-equipped station was opened by the President of the R.A.F. Amateur Radio Society (Air Commodore W. D. Disbrey, C.B.E., A.F.C.) on Saturday, September 22, 1962, in the presence of a distinguished company, which included three past presidents of the R.S.G.B. (A. O. Milne, G2MI, H. A. Bartlett, G5QA, and L. E. Newnham, B.Sc., G6NZ), the General Secretary (John Clarricoats, O.B.E., G6CL) and past vice-presidents of the R.A.F.A.R.S. (Wing Commander W. E. Dunn, O.B.E., G2LR, and Wing Commander A. R. Gilding, G3KSH).

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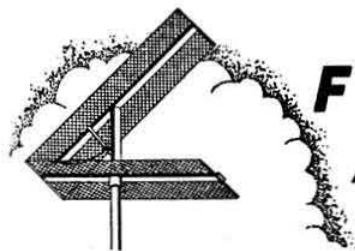
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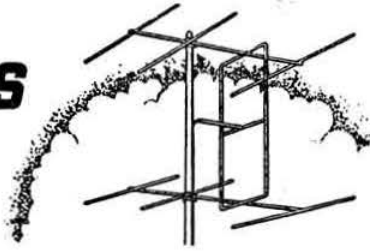
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FOUR METRES AND DOWN



By F. G. LAMBETH (G2AIW)*

SCOTTISH activity comes into the picture quite a bit this month and one of the events which calls for congratulations is the 70cm QSO which took place on October 7 at 03.00 G.M.T. when G3LTF (Galleywood, Essex) worked GM3FYB (Dunfermline, Fife) with signals 579 both ways. At one time G3LTF's phone was readable in Dunfermline. This is probably an inter-G/GM record for 70cm and we should be glad to know if anyone knows of a better. During the same session, GM3FYB and G3JMA heard one another, but no QSO was possible because of rapid deterioration of the conditions. However, this should put new heart into some of the 70cm enthusiasts; as in other spheres, there appears to be always something new. Which is something to be thankful for.

EI2W (Dublin) has made another "first," this time EI/GM on 70cm by a QSO with GM3FYB on October 16 at 21.50 G.M.T. This is EI2W's 21st v.h.f./u.h.f. "first" and he thinks he will retire; we sincerely hope not. This makes four countries worked (GW, G, F and GM) and 12 counties.

"Uncle Mike" in Argyllshire

From G5UM comes the following account of his activities during his holiday in Argyll in September.

While the Birmingham expedition station was thundering away from mountain tops in Scotland down to avoid two-metre operators in the south, a small peep might have been heard occasionally from GM5UM/P, situated on the Kintyre peninsula about 75 miles west of most of the centres used by GM3IUB/P.

The equipment employed had a QOV03/10 operating at 9 watts input on the key and 7 watts on phone feeding a Birkett collapsible five element aerial which during each evening's operation was clamped to the top of two broomsticks in tandem, united by a metal coupler and giving a height of about 12 ft. above road level.

The road to the Mull of Kintyre lighthouse was tried but not liked as a site. No one was heard during the two nights' operation from there, though subsequently it transpired that G5YV did hear the "pipsqueak" from that site. Later operations were transferred to a more accessible lane 270 ft. a.s.l. on the east side of the peninsula. Great help was afforded by GM2FNF 20 miles across the water at Arran in telling GM5UM who was calling him.

In all, four countries were worked, all of which appear to be "locals" to the stations in the south west of Scotland, namely GM, GI, EI and G. The best contact was with G6NB at 320 miles on c.w.

The expedition (and the terrain) were so much enjoyed that G5UM promises himself and the XYL a repeat trip as soon as circumstances allow.

Apologies to all who called but were not answered with the hope that they will be next time!

* R.S.G.B. V.H.F. Manager, 21 Bridge Way, Whitton, Twickenham, Middlesex. Please send all reports for the December issue to arrive by November 19. Reports for the January issue should arrive by December 17.

V.H.F. Operating Certificates

The V.H.F. Committee is being kept fairly busy checking a steady flow of claims for "Four Metres and Down" certificates, but it is regrettable that of late one or two claims have had to be rejected, usually for wrongly dated contacts.

The qualifying date for contacts is *on and after January 1, 1961*, and all claims must be fully supported by QSL cards, and accompanied by a check list. A stamped addressed envelope to Headquarters will bring a copy of the rules, together with a special duplicated claim form, which lists the eligible counties and has space for the addition of call-signs and dates as the various stations are worked, together with a separate space for countries. It is hoped that members will take advantage of this form, which will make it easier for them to list their contacts, and also facilitate checking at Headquarters.

Remember! (i) Contacts must be on or after January 1, 1961; (ii) QSL cards are required, together with a check list; (iii) Claims should be sent direct to R.S.G.B. Headquarters.

County Status

After careful consideration by the V.H.F. and Contests Committees, the Society has decided that the Scilly Isles will not be allowed separate county status for the purposes of scoring in R.S.G.B. contests and certificates. They are not self-administered but are part of the Duchy of Cornwall. It has also been agreed that the counties of the Republic of Ireland will not be eligible.

Wrotham V.H.F. Beacon Station GB3VHF

Advantage has been taken of a programme of power supply modifications being made by the B.B.C. at their Wrotham transmitting station to take out of service for a complete overhaul and test the Society's v.h.f. beacon transmitter, GB3VHF. This work commenced early in October and the station became operative again on October 21.

It is interesting to note that the transmitter had run for nearly 15,000 hours unattended apart from routine maintenance inspection. During this period no serious faults had occurred and no valves had required replacement.

London U.H.F. Group

On December 6, 1962, members of the London U.H.F. Group will be attending the meeting of the Radar and Electronics Association to be held at The Royal Commonwealth Society Hall, 18 Northumberland Avenue, London, W.C.2 (Craven Street entrance), commencing at 7 p.m. The speaker will be Professor Sir Bernard Lovell, O.B.E., F.R.S., Director of the Nuffield Radio Astronomy Laboratories, Jodrell Bank, whose subject will be "Investigation of Space by Probes and Radio." R.S.G.B. members wishing to attend the meeting may obtain tickets from the secretary of the Radar and Electronics Association, Charles W. Knight, 43 Grove Park Road, Chiswick, London, W.4.

North West V.H.F. Group

The North West V.H.F. Group is to hold a Hot-Pot

Supper at "The Swan with Two Necks," Withy Grove, Manchester, on December 8 at 7 p.m. The venue is next door to the offices of the *Manchester Evening Chronicle*. All v.h.f. enthusiasts will be welcome. Further information may be obtained from G3AGS, G3AOS or G3MAX. Tickets, price 10s. each, are available from Fred Nicholls (G3MAX), 125 Rochdale Road, Manchester.

Plans are being made by the Group to hold another Northern V.H.F. Convention in Manchester, probably during September, 1963. It will be remembered that very successful events were held in that city in 1955 and 1961.

Two Metre Station Reports

GM3POK/P was operational on September 23 from the top of Blackford Hill, Edinburgh. In all 13 stations were worked, the best DX being GM3PMB (Kilbride) and GM4HR (Dundee). The transmitter was running 500 mW to an EF91 and the aerial was a four-element Yagi. A cascade converter was used. The equipment was designed and built by S.W.L. Murphy, a keen Edinburgh v.h.f. listener.

G3OCB (near Truro) reports that recent openings have certainly shown what the band can be like. On September 16 the QV06/40 was induced to run much more efficiently and now gives approximately 200 watts p.e.p. resulting in greatly improved reports. The 2m score now stands at seven countries, 18 counties and 63 stations in two months. Over 50 of these were worked with s.s.b. at the Truro end. During the evening of September 24 15 stations in the London area were worked within 90 minutes. Little or no difficulty was experienced by stations in reading the s.s.b. (G2BHW uses a s.e.o. to read it, with no trouble at all). The same evening GB3VHF was peaking S7 at 17.30 G.M.T., although down to S2 by 20.00 G.M.T. The station is not usually audible. The best QSO on the 24th was with PAORDM (Eindhoven) who was S9 + for 95 per cent of the time, with very rapid but infrequent "dips" to about S3-4. Several other PAs were called without success, French stations were heard, but no DJ/DLs. A sked with G3MCS starting September 25 brought weak signals on September 25 and October 2, but on October 4 two-way contact was established at S6/7 both ways. GC2FZC, G5TZ and G6NB were all very strong between October 4/10, but although the conditions appeared right, few other stations were heard during the period September 13 to 23 apart from locals although G3LTN, G6GN, G3OBD, G3LNX, G3RCY, G2JF, G3EDD, G2AXI, G3OHD, G2MV and G3GYQ were worked; on September 24 G3LTF, G3BNE, G3CO, G3BLP, G2DZH, G3FIJ, G3JMA, G3LQR, G8SK, G3IIT, G6OU, G3JTK, G3OQH, G2DQ, G3OQB, PAORDM, G3JLA, G3FJA (two-way s.s.b.) and EI7D were all worked.

G2JF (Wye, Ashford) remarks on the influx of new calls on 2m and among those worked from the south-east between mid-September and early October were G3GVV (Haywards Heath, Sussex), G3PGR (Ulverston, Lancs.), G3DBM (Bucks.), G3JZF (Birmingham), G3ABF (Maidstone), G3AWY (Dorset), and G3MTG (Bristol). ON4HN reported that conditions on the Continent were exceptional from September 21 to 24 when stations had Scandinavian, SP and OK contacts.

G3GVV (Haywards Heath) is on 2m with 30 watts to a QV06/40, Nuvistor converter into an Eddystone 888A, a four-over-four at 30 ft. at a QTH 240 ft. a.s.l. on the crest of a ridge, with a clear view of 15 miles to the east. For the first fortnight c.w. working brought only three stations, which was very disappointing. A change to phone has brought far more calls, using the same input. Regular schedules between 17.00-19.00 G.M.T. would be appreciated. The working frequency is 144.63 Mc/s.

G3LTF (Galleywood) managed to get through to the GM3IUB/P expedition and worked them in Dumfries, Kirkcubright, Wigtown, Ayr, Berwick, Selkirk and Roxburgh, also hearing them in Lanarkshire and Midlothian;

this makes them about the best GM expedition yet, thinks G3LTF, who also thinks that with band occupancy as high as it is nowadays QSOs with expeditions should be kept as short as possible, as there are always another dozen or so waiting to call and "we don't want to end up like 20m." On September 23 GM3HLH/A (Crail, Fife) was a good QSO, and on the 24th 2m was really wide open to the west, a most unusual occurrence, with GB3CTC 599 (usually unreadable). G3OCB (Cornwall) and G5TZ (s.s.b.) were worked, with GC2FZC called several times. Some F stations in south Normandy were worked.

G3HRH (Digswell, Herts.) reports band conditions as seen from his QTH since the beginning of September. Although time was very limited during the contest on September 1-2, a short period on the morning of the 2nd brought contacts with ON4KJ, DJ1UP, PA0YZ/A and ON4MV, together with the belated information that the previous evening had seen a short but spectacular EDX opening. Conditions thereafter remained about average until September 19 when northern stations were heard at good strength, and G2XK, G2HHV and G6XT, all in Yorkshire, were worked on phone with quite deep QSB. Conditions improved during the next few days, and on September 22 an excellent first phone QSO was had with EI2A (Co. Meath) at 59 + both ways, followed by GW3RBM (Wrexham) and GW2HIY (Holyhead). On September 24 conditions were good to the south-west, and G2BHW (Falmouth) was worked on phone. On October 6 there was a general GDX opening under the influence of a static high pressure system over the United Kingdom. Excellent phone contacts were made with G3LNX (Wimborne), G3NAQ and G3PLS both in the Midlands. However, the highlight of the evening was a c.w. contact with GM3HLH at 579 who was responding to the plea in the July BULLETIN. On October 7 EI2W was worked as a good signal into the south-east, and on October 10 a short EDX opening produced phone QSOs with F3XY (Colombey), F9NJ (Lille) and ON4KJ (Tournai).

The most interesting activity during the period was a series of skeds with the Birmingham University expedition. Successful c.w. contacts were made on every evening except Wigtown (when G3HRH was away) and Midlothian. On this latter occasion, nothing was heard at the sked time, but later that evening phone signals could be copied in short bursts. It is indisputable that the success of the expedition resulted from a series of well-kept skeds, and the use of the high-power and c.w. by the portable station. Signals were very variable over the period September 17-26, ranging from S3 (Ayrshire) on c.w. to S7 (Dumfriesshire) on phone. As far as G3HRH was concerned the outcome of the expedition was a very interesting insight into the limiting distance for c.w. propagation under normal conditions, and the addition of one country and seven counties to the list, to bring the present score up to 11 countries and 60 counties since January 1, 1961. Attention will now be focused on the rarer European countries in a sustained effort to meet the Senior "Four Metres and Down" certificate requirements.

A final comment on conditions is the fact that eight countries have been worked on phone since September 1, 1962.

EI2W reports that the GM path was very good to Dublin on the night of October 16 when GM3GUL (Angus) and GM3LDU (Renfrewshire) were good signals on 2m. On the 17th G3GHI and G4CM, both in Surrey, were strong,

R.S.G.B. V.H.F. BEACON STATION GB3VHF

The frequency of the Society's v.h.f. beacon transmitter at Wrotham Hill, Kent, when measured by the B.B.C. Frequency Checking Station, was as follows (nominal frequency 144.50 Mc/s).

Date	Time	Error
October 2, 1962	18.00 G.M.T.	1300 c/s high
October 23, 1962	11.00 G.M.T.	960 c/s high
October 30, 1962	15.55 G.M.T.	1220 c/s high

whilst G6NB was also 59+. G15AJ (Bangor, N.I.) and EI6AI (Donegal) were other S9 signals. On October 20, the following were worked on 2m: G2JF (Kent), G3CO (Kent), G5HZ (Oxon), G2HOP (Lincs), G3IQM (Notts) and G6NB (Bucks). G6OU (Hants) was also a strong signal. On October 22, G13RMD (Belfast) on 145.88 Mc/s and EI4Q (Dublin) on 145.93 Mc/s were both worked. Another new station, only heard so far, is G13HFA (Gortin, Co. Tyrone). EI6D (Kildare) has been testing, and has worked some of the EI/GI stations.

G13OFT (Belfast 5) found 2m conditions generally good—indeed, he says, most people in Northern Ireland recognize the pattern of recent years—that September and October, and often December, are the DX months. The opening of September 24 was strong there (preceded by a characteristic drop in pressure of about 1½ mb) when G13FJA (Carraduff) worked F8MX for his first Continental station, plus four Cornish stations, all S9+ phone. GB3CTC was heard for the first time ever in Northern Ireland at strengths varying with locations (S9+ at G13FJA to S6 with G15AJ at Bangor) all that evening. On the following day G13OHF (Portadown) heard a DL9, and two French stations between 13.30-14.00 G.M.T. chatting together. On October 7 and 8 the band again opened to the south and G13FJA worked F9II (Paris) at about 22.00 G.M.T. In the early hours of the 8th G13ONF, G15AJ and G13NFM (Pomroy, Co. Tyrone) all worked F8VN (Chartres) on phone. No ON, PA or DL stations were heard, although G15AJ “chased” an SM5 for over an hour on the 7th. The band was wide open to Scotland on October 11-13 with GIs and GMs all S9+—the QRM in the top 200 kc/s had to be heard to be believed! GM3JFG (Invergordon) and GM3MUT (Black Isle) were outstanding, and gave most GIs and EIs Ross-shire as a new one. Oddly, little was heard on these nights south of Manchester. A new station, EI6D (Kildare, and a rare one!), has been heard recently S7/8 and called for over an hour by G13OFT. This also applies to EI3S (Dublin). G13OFT wonders if they are tuning the top end? A recently active station in a good Belfast location is G13RMD. He has a 6-over-6 J-beam aerial at 50 ft. and is operating c.w. only at present with a potent 30 watts and a Nuvistor pre-amp.

Seventy Centimetres

G3BIK (Gosforth, Newcastle-on-Tyne) reports that he is active most evenings from 22.45-23.15 clock time on 433.91 Mc/s. He uses a 16-element stack 45 ft. high beaming south, with 100 watts to a QV06/40 and would welcome skeds. He has already worked G3ILD, G3LTF (250 miles), G5YV and heard G2XV, G3NOX/T, G3KJX and G3BNL.

G3LHA (Coventry) says that 70cm has at last awakened from the doldrums; stations to the east and south-east have been S9, and several new ones have been worked. There have been some outstanding contacts, such as G3ILD (Durham, a new county), G3NJO/T (Diss, Suffolk), another new county, G3KKD/T (Ely), G3KMP (Hastings), and EI2W (Dublin) for a new county. Apart from these G3KEQ, G3LTF and G3JMA have all been S9+ signals.

The peak night for activity and contacts was October 6 when nine DX stations were raised. A poor direction appears to be south-west over 30 miles from Coventry from which nothing has been heard and Devon and Somerset stations are asked to turn their beams towards Birmingham and Coventry. Activity is still creeping up in the Midlands with at last another Coventry station to help G3LHA to keep the flag flying—this is G3KEF on 434.25 Mc/s who has already worked four counties. G3LHA himself has now worked seven counties (EI, G, PA, DL, ON, SM and F) but GW is still awaited; one wonders if GW3ATM reads this column. Portable activity has now ceased for the season, but four counties were visited in recent weeks—Huntingdon-

shire on September 2 (only one contact, G3BNL), Oxford on September 23 gave 12 contacts in 90 minutes, with G3JMA (Harlow), G3KEQ (Sanderstead) and G3LTF (Galleywood). The site was 785 ft. a.s.l. near Chipping Norton. This was the best effort so far, and proved that activity is good on Sunday nights.

October 7 in Northamptonshire, 720 ft. a.s.l. activity was not so good but the conditions were and G3KPT, G3LTF, G3JMA and G2FNW were all worked between 17.30 and 18.56. G3ILD was heard (S9) at 160 miles.

G3LTF (Galleywood) found conditions generally good, with some brighter patches. On September 21, G3BNL, G3EEZ, G3KFD and G2CIW were worked, distances being between about 120/140 miles. On the 22nd G6GN (Bristol) was worked. The following day G3LHA/P was worked from Oxfordshire, a new county. On September 24, GW3ATM was worked for the first time (GW and Monmouth on 70cm), also G2CIW with QRM from EI2W! EI2W was then worked with G3LTF and G3JMA peaking S9+. This made nine counties on 70cm. There was then a quiet period until October 4 when G2CIW was worked, with G3LHA, G3KPT and G3EEZ on the 5th and G6GN at midday on the 6th. Also on the 6th G3LTF was heard by ON4HN who unluckily had transmitter trouble. On the 7th G3LHA/P was worked in Northamptonshire, another new county. That evening G3ILD was contacted on phone, peaking to S9, who put G3LTF in touch with G3BIK (Newcastle) and they had a QSO, making 30 counties in all. After G2CIW on the 8th came ON4HN and DL1LB on the 10th but signals were stronger inland. G2CIW was weak, so conditions had moved round. On October 15 G2CIW was up to S9+ so with the weather set fair, things looked good again.

EI2W could only operate for a couple of hours in the 70cm Contest on October 20, but during this time worked G3BNL (Notts), G3KQJ/T (Staffs), G3EEZ (Staffs), G3LHA/P (Oxon), G3KPT (Warwicks), G3CIW (Warwicks) and G3GZM (Worcs).

G13KYP (Belfast) hopes to be active around Christmas time and has recently erected a 55 ft. tower to take an 8-over-8 beam. Skeds would be welcome.

Four Metres

G13HXV is really going places since erecting his new four element J-beam aerial, and has now successfully accomplished all his G and GM schedule contacts. He would welcome further skeds with interested 4m stations.

V.H.F. Frequency Measuring Test

A PRACTICE v.h.f. frequency measuring test will be held on January 13, 1963, at 16.00 G.M.T. The test will involve measuring the frequency of GB3VHF, the Society's beacon station at Wrotham, Kent. Results should be sent to Headquarters marked for the attention of the Contests Committee.

This is a “dummy run” for a full-scale v.h.f. frequency measuring test to be held later in 1963.

International V.H.F. Society Trophies 1962

THE International V.H.F. Society's Perpetual Trophy (Rose Bowl) has been awarded to Edward P. Tilton (W1HDQ) for exceptional services to v.h.f. in the field of research and as V.H.F. Editor of *QST* for many years and the Millan Trophy to William Long (EI6AI), Donegal, for exceptional v.h.f. work on 2m. from a difficult QTH.

Claims for Four Metres and Down Certificates must be sent to Headquarters for checking.

FP8BX

DXpedition to St. Pierre and Miquelon, February 1962

By EDWARD L. LAMB, Jr. (WIRAN, FP8BX, ex-DL4II)*

TWELVE miles off the southern tip of Newfoundland in the midst of some of the finest fishing grounds in the world lies the last of the French Empire in North America. Miquelon (pronounced mee-kee-low) is really two isles connected north-south by a sandy isthmus. In winter its woodlands are dark brown with patches of grey, ringed by sandy beaches which are themselves traced by a dark brown waterline. Twenty-seven miles to the east is the Isle of St. Pierre with the capital city of the same name. Here perhaps 90 per cent of the islands' 4600 inhabitants go about making livings mostly dependent upon the sea.

St. Pierre is quite different from its neighbour, and its granite base has little cover of green in summer. The town is nestled on a slanting shelf at the south-east corner of the island, shut off by a high granite ridge to the north and west. A fine natural port which is abetted by breakwaters and a keystone-like islet provides haven for four French trawlers, owned mainly in corporate fashion by the townsfolk. The Spanish and others also make this a base for fishing operations. From their first settlement in 1604 until the French Revolution the isles changed hands no fewer than eight times. The Treaty of Paris, 1816, finally ceded them to France.

Walking over most of the isle's ice-packed streets one is struck by the continental architecture. This is indeed a piece of France. The houses, each trimmed in a different colour, are something right out of a Montmartre print. The streets are old and narrow, and as each corner is blind, the custom for the few motorists is to blow their horns at each block's intersection. By sound a Citroën can be followed all the way across town. This, then, was to be the site of operation for FP8BX.

Faint Stirrings

Probably all DXpeditions begin as faint stirrings of spirit in some half-forgotten DX contest, listening to past masters such as KH6IJ, W0NWX[1], and W6MHB[2] dispensing serial numbers at Katashi speeds! This feeling grows until it breaks out into a well-why-the-heck-not insistence that must be met. This point came on the eve of (U.S.) Field Day 1961. While sitting on WA2OJD's mosquito-proof porch in the Catskills, he, K3GUR, and I were reflecting over the DX spots reasonably reachable from North America. Toss in a lack of light-weight equipment, and commercial air travel is about out, unless trusting prized gear to unknown surface transport is your meat. This brought a consideration of the islands around North America, and for a single-handed show, the best spot worked out to be Iles St. Pierre



The operating position at FP8BX.

et Miquelon. Equipment, spares, tools, and measuring gear lists were worked out with an estimate of six or seven cartons and an excess (over 44 lb.) of 150 lb. This was pared drastically and finally worked out as eight cartons and 217 lb.!

After two weeks of perfect mid-winter weather, the rain started as the last of the boxes was being loaded into the Rambler. From New London, Connecticut, to North Sydney, Cape Breton, at the far tip of Nova Scotia is 970 miles. After the first 10 miles it was to be snow all the way, totalling 19 in. in Sydney. The Rambler carried me safely through all of it. Even so, there are few "kicks" to match fish-tailing down a Maine hill and skidding into a drift spare tyre first.

Into Canada...

At Canadian customs a friend of VE1CL checked the manifest and issued an "equipment-in-transit" permit. Roads in the Maritime Provinces are every bit as good as in the U.S., and in Nova Scotia they are slightly elevated so as to blow clear of snow. The second night the temperature got down to minus 15°F, and with many deep drifts kicking up snow, besides the continual storm, the distributor swamped out... just 50 ft. past a petrol station. That's not bad, considering that service stops are few and far between up there in winter.

... And Out

After three days of lounging in snowbound uncertainty in North Sydney's Highland Motel, a twin-engined Piper carried me the last 115 miles to land on the strip at St. Pierre. There with blue eyes twinkling and hand extended, was Gus Roblot (FP8AP), the lone amateur on this remote island. In quick succession immigration issued a visa, the licence, previously arranged, was picked up, the inn found, and a 7 Mc/s dipole erected. W2KIR became the first of many hundreds to enter the log. The next day, after still more snow, the 3.5 Mc/s dipole went up. As the hallway proved to be a free-space half-wave for 14 Mc/s running north-south, the third dipole was placed there.

Praise for the DX60

In early December 1961 a DX60 and matching v.f.o. had been assembled. These were the delight of the trip and performed better than any small rig I've laid hands upon before. The gyrating line voltage necessitated a few QRTs and missed skeds, but outside of r.f. getting into the keyer and giving me sporadic fits, the operation was silky smooth. (I suspect that the line voltage difficulty was abnormal, as lines had been down and 200 families were without power when I arrived.) A neon-tube sidetone oscillator was fed directly to the receiver a.f. stage and gave a pleasing "beep" for off-frequency operation. The receiver gain was keyed simultaneously, and

(Continued on page 235)

* 207 Thames Street, New London, Conn., U.S.A.

[1]—FO8AJ (Clipperton), VP7NG ("Gon-Waki" Expedition), VP1JH 1960, VP2VA, HK0TU, VP5BP.

[2]—TI9MHB, VP7BT.

Mobile Column

By C. R. PLANT (G5CP)*

UNDER the heading "The Ideal Mobile Rally" Tom Darn (G3FGY), of Ripley, Derbys., outlines his ideas of the minimum requirements for a really successful rally. G3FGY has for many years been the organizer of the Derby and District Radio Societies' Mobile Rally and all who have attended will agree that it is certainly one of the outstanding meetings of the year. It may well be that some of the suggestions made will be of assistance to club secretaries who may soon be considering their rally arrangements for 1963. An appeal is made for dates to be allocated well in advance so that duplication may be avoided: two or more rallies on the same date means a loss to both—please see that this does not occur this coming year. Already two dates have been fixed—the R.S.G.B. Golden Jubilee Rally at Wethersfield, Essex, on Whit Sunday, June 2, and the Lincoln Radio Society's Mobile Rally at North Kesteven Grammar School, North Hykeham, Lincoln, on September 15, 1963.

The Ideal Mobile Rally

The first essential of a successful mobile rally is a venue that is central for a radius of about one hundred miles by first-class roads, but away from the main road and with plenty of parking space. Admission should be free and there should be plenty of room for the XYLs and juniors and room for the club to do its own catering. A further requirement is plenty of cover in case the weather turns out to be unfavourable. Modern school buildings are very suitable for this purpose and some local education authorities are willing to let schools for a weekend rally at reasonable charges provided they are convinced that there is an "educational trend" in the proceedings—any meeting of technicians is considered to be so.

The programme must have interest for all members of the family, particularly the children and ladies—Treasure Hunts and other games if properly run form such an attraction. For the children there should be plenty of prizes which may be obtained very cheaply: 50s. will provide for about 100 competitors. The mobile drivers require some novel form of contest such as contacting the talk-in stations and measurement tests, but these have been used so very often, why not arrange something original? Other ideas have included the checking of log books, elimination contests, mobile treasure hunts (this year Derby had an aerial photograph competition). Probably the most popular event for all the family is a sale of surplus gear, if this is properly run and if it includes items other than radio. A band concert is always appreciated, as are such novelty items as judo displays, model aircraft flying, police dogs and handlers and Morris dancing. Another favourite is the Grand Raffle—make the prizes good and you will collect enough money to more than cover the cost. It is really surprising what a local electrical or radio wholesaler will find in his old stock for ready cash. Do not plague the radio firms—they have given enough during the past few years! Make sure that you have good talk-in facilities operated by amateurs who know the district and have experience of operating mobile in strange places themselves. It is also important to have people at the reception point who are capable of answering all enquiries in an intelligent manner.

The ingredients for a successful large rally, then, are: (i) a capable organizer; (ii) a committee of at least ten workers; (iii) plenty of advance publicity; (iv) at least 40 active helpers on the day; (v) an outlay of at least £100; (vi) insurance cover against possible third party claims; (vii) generous assistance from the weather man!

* "Lynton," 17 Nottingham Drive, Wingerworth, Chesterfield, Derbyshire.

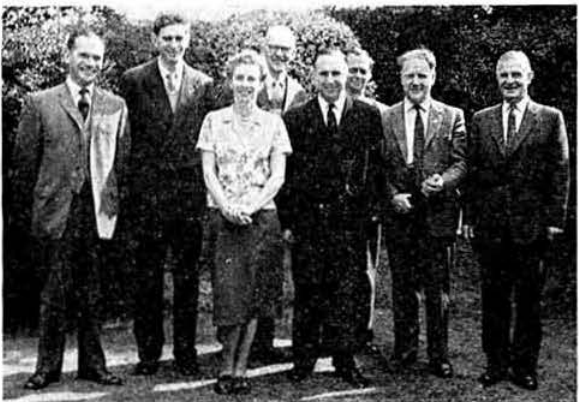
All these factors combined, G3FGY believes, make a first-class event for both the organizing club and the 2,000 people who will come along to a good rally. Comments from other organizers will be appreciated.

Rally Reports

The Northern Amateur Radio Mobile Society Rally was held at Harewood House on September 2, and the weather was fine and sunny until the late afternoon when there was a light shower. This was the first really big event for the society and reports indicate that they are to be congratulated for a very fine effort. Already they have suggested the next year's Rally may be brought back to May, the time of year always associated with the Northern Rally. The attendance was good; about 600 people signed in and these included over 200 amateurs and eight SWLs. The talk-in station on Top Band was G3NBI/A who worked over 60 mobiles.

A Top Band frequency measuring competition in which four separate frequencies had to be measured was won by Jack Petty (G4JW) of Sheffield. The Mystery Competition (the first mobile amateur to show his Mobile Licence, Log Book, Driving Licence and Certificate of Insurance) was won in record time by W. Farrar (G3ESP) of Doncaster. The prize for the amateur who travelled the greatest distance to the Rally was won by J. Dunnington (G3LQZ), who travelled from Guildford, Surrey. One of the main attractions was the mammoth sale of surplus equipment which went on all the time—this idea is to be extended next year. The major prize of the day was a Cossor double beam oscilloscope donated by Baird Television Ltd.—this went to G4JW. A cake weight guessing contest proved popular—the cake was made and presented by the Hon. Treasurer's wife, Mrs. D. Millard. Members of the local Civil Defence Corps were in attendance and gave continuous demonstrations of their radio communications systems. During the Rally the society enrolled 20 new members including two from Southern Rhodesia who happened to be on leave in Leeds.

The Lincoln Short Wave Hamfest and Mobile Rally took place on September 16 at North Hykeham. Over 500 people in about 100 cars attended and from the earliest hours it was obvious that the loyal assistants were to be kept busy dealing with reception, refreshments, the sale of raffle tickets and the many duties which form an essential part of any well-run rally. G5CP was asked to judge the Mobile Contest for the best all-round installation. The prize went to R. F. Weston (G2BVW) of Leicester. G2CAJ gave valuable assistance in making the final decision. The Grand Raffle disposed of a large number of prizes and this was followed by a sale of surplus equipment efficiently presided over by



Members of the "Morning Net" at the Lincoln Mobile Rally on September 16, 1962. From left to right, G3PZC, G3LAZ, G3LWY, G6QA, G3MND, G2CAJ, G3ESR and G5CP.

(Photo by G5CP)



G3LWY of Saxilby, Lincs., and G3OMM of Halifax, Yorkshire, at the Lincoln Mobile Rally.

(Photo by G5CP)

Tom Darn (G3FGY). A photographic quiz competition in which the competitors were invited to identify radio components greatly magnified and photographed from unusual angles provided a great deal of amusement; the winner was G3JBR (Scarborough, Yorks.). The fancy dress competition was won by Paula Sprott as "Miss QSL" and the runners-up were the Misses Pauline and Ann Box as "The R.A.I.B.C. Net." All were daughters of SWLs.

The Region 9 Mobile Rally held at Weston-super-Mare on September 22 was favoured with good weather, the site was ideal and all who attended were enthusiastic, particularly those who took part in the mobile competition, one entrant being heard to say that he wished the contest could have gone on all day! The Mobile Competition Cup was awarded to Terry Russell (G3JFH) of Cheltenham, who scored 485 points out of a possible 700, the runner-up with 440 points being G3CHW (Bristol), who received a flagon of cider. The raffle was a great success and some 60 prizes were won by the lucky ticket holders. The Top Band talk-in station, G5UG, was kept busy directing the 46 mobiles into the area but the 144 Mc/s station promised by a well-known company failed to materialize and there was little 2m activity. Both B.B.C. and Independent Television camera teams were present and the pictures were broadcast the following Monday evening at about 6 p.m. In all a most encouraging day for the organizers, who are to be congratulated on a successful Rally.

Operating News

G2DHV on holiday in Somerset met G3AMG (Sevenoaks, Kent.) at Ilfracombe and on 144 Mc/s worked G3GRA/M, G3GYQ/M, G3LMG/M and heard G3XC/M, G6OX/M and G3IFS/M. He also worked six GW stations and heard seven London stations.

G5CP/M whilst on holiday in North Wales met G3JBF (St. Albans, Herts.) in Anglesey and spent a day in his company, but little DX was worked apart from DJ1BV, DM2ANN and OK1CX, all on 21 Mc/s c.w., and G3HYU (Solihull, Birmingham) on 3.5 Mc/s phone who always manages to hear G5CP/M wherever he is located! G3NLR/M (Wilmslow, Cheshire) was found in a lane near Beaumaris working a Manchester station on Top Band c.w., and a pleasant chat was had before moving on to another location. A report from G3OJY (Penzance, Cornwall) states that the following Cornish stations are operating /M—G3XC/M, G3CZZ/M and G3JFS/M. G2BHW and G3OYJ/M hope soon to be out and about in the county.

G5SN (Leigh-on-Sea, Essex) works all bands /Mobile and finds the 7 Mc/s band very rewarding, contacts on this band including G2CDN/M at Bude and G61F/M at Edin-

burgh, at S9 both ways. The writer has worked G5SN on many occasions and can testify to the fine signal he always puts out. G3MBQ (Sheffield) reports that in connection with the Rotherham Radio Society two /M cars are active, G3NEO and G3OJG. Two other amateurs, G3LLE and G3MBQ, are active on Top Band in the area and there is also a mobile SWL.

Woburn Abbey National Mobile Rally Balloon Race

THE balloon race at the National Mobile Rally organized by the R.S.G.B. Mobile Committee and held at Woburn Abbey on September 9, 1962, was won by Mrs. Angus McKenzie, wife of G3OSS. Mrs. McKenzie's balloon was picked up at Diss, Norfolk.

FP8BX (Continued from page 233)

my own signal was audible at a comfortable level in the 75A-2. This left no distractions from logging, outside of a few untimely callers.

W3ECR the only Six-Bander

After the first day or so the bands improved, and the "storm-proof" 14 Mc/s doublet proceeded to bring contacts with ZL3IS, ZL1HY, and VK3ARX over the long path, along with 5R8AG, TN8AG, 5U7AC, and the more usual UA9s, 4X4s, etc. Special effort was made to work W6-W7 and DX stations, as the closer-ins were workable with loud signals at most hours. All bands, 160-10, were worked, but though there were a half-dozen five-banders, only W3ECR made it on all six bands. G3KMQ turned up on four bands within 12 hours.

Top Band Delivers the Goods

A spare 40 watt rig covering 160m was packed and for four nights gave contacts with G, GW, GI, EI, VO, VE 1, 2, 3, W 1, 2, 3, 4, 8, with S9s in Europe. A 266 ft. wire, 40 ft. high and running east-west did the job. WA6JPQ and K6HYT were identified on 1999 kc/s, but overloading Loran QRM up to 2100 kc/s washed out the high end for most. On the whole, Top Band was good but disappointing. Calling just inside the low edge was hopelessly swamped by QRM. CQ calls and tuning from 1826 kc/s brought occasional answers with good reports, but in general Ws failed to listen above 1825. GD3UB, EI9J, and many others just above me chased Ws with the same luck. I called my heart out at some of the W5s and W0s on their own frequencies, only to have them come back to K8s, etc. (I later learned that EP2BK in Abadan had heard me on this band!)

Who had the big signals? On Top Band it was W1PPN, W1BB, GD3UB; on 80: W1JTD, K3EKO, W6RW, UD6KAB; on 40: W9WNV (two element beam 250 ft. up), K6EVR, W8VSK, W0AIH/VE3; on 20: the W2s, VE2WW, G3FKM, ZL3IS; on 15: W8OOR, W3ZAO, W3ECR, W3AOH, K6JT, W6CYV; on 10: W4HUE. In all, 2380 contacts were made in 12 days, some kind of a record for FP8. The log shows at least five hours of 95-or-more contacts per hour.

QSLs have gone off direct to those who were eager enough to supply postage. All others went via the bureaus. Thanks are due to Gus Roblot (FP8AP), for help with those kinky wires in that everlasting freezing gale; to Charlie O'Brien (W2EQS/FP8AS) for invaluable information and encouragement; to M. Guillemain, Chief of Transmissions, for speedy processing of the licence application; and to M. and Mme. Miller whose comfortable inn, French cuisine, endless cups of hot tea, and wonderful conversation would alone have been worth the trip.

Kent Summer School 1962

Introducing Electronics in Secondary Schools

By D. J. BRADFORD, B.Sc. (G3LCK)*

THE science of electronics is largely a development of the twentieth century. Like all scientific developments it has been rapidly accelerating for the past three decades. In fact, it seems fair to say that this scientific acceleration is largely due to the rapid progress in electronics.

Consider the senior science teacher of 55 years of age. He would have graduated around 1920-1925. His teachers would have been graduates of the Victorian era. His grounding in electronics would have been either very limited or very out of date, by modern standards. It is reasonable to say that such things as syllabuses, examination papers and so on are decided on by men of this seniority. With these thoughts in mind it is not fair to conclude that in physics teaching at all levels there may be too little emphasis on electronics or indeed even the wrong emphasis?

Having been a secondary grammar school teacher for seven years, a licensed radio amateur for about the same period and interested in radio for 20 years the writer was prone to wonder about these things. As a result of a tentative offer to speak at an East Kent Science Teachers' Association meeting he (a chemist) found himself saying these things to physics teachers. For the most part they agreed! As a result of this talk an invitation was received to arrange a course at the annual Kent Summer School.

Introduction to Electronics

With the aid of G3FCT an outline was planned. What could we teach them? How is a course planned for "pupils" ranging from "O Level physics and one-year teaching" to "B.Sc. (Hons.) Physics and 25 years' teaching"? Should we try to brain wash them into becoming radio amateurs? Should we soak them in a.c. theory?

Had we had previous experience, our own or second hand,

* 42 Mount Road, Canterbury, Kent.



Students at the Kent Summer School working on a variety of electronic projects.

(Photo by courtesy of Kentish Express, Ashford, Kent)



Practical construction was an essential part of the introduction to electronics at the Kent Summer School held in Folkestone in July, 1962.

(Photo by courtesy of Kentish Express)

we would have planned to the last detail. We had not. No one, so far as we could discover, had run such a course before. However, by dint of a great deal of admin. work, 20 school-teachers, a mountain of equipment and G3LCK and G3FCT came together on July 20, 1962, at Folkestone.

Several firms had been asked for assistance and thus there were a pair of Cossor double-beam oscilloscopes, half a dozen Avo meters, Advance audio generators and voltmeters, Daystrom Heathkit valve voltmeters and electronics kits, Science Electronics kits, Verroboard material, a great deal of invaluable literature from Mullard Ltd., an Eddystone 840C, a Heathkit DX40 and, for the last six days, a K.W. Vanguard and a Tiger Radio 600 ohm a.t.u. It can be appreciated that, without this aid, the course would have been most difficult to run.

The course started with the students making crystal sets. Those who needed a.c. theory instruction looked worried at resonance, Q and so on. Most of those who were not bothered by this were the group who were unsure of how to handle aluminium and could not identify a 6 B.A. screw on sight. Furthermore, by being thrust together in groups of two or three the ice had been broken. Luckily the sets worked!

The pleasure which registered on teachers' faces as the "Home" came out of earphones was worth seeing; in fact the more senior the teacher the brighter the glow.

Some students found themselves welding soldering irons for the first time. Others were able to work on theory they had either never done or, having done, had failed to comprehend. The value, sources and pitfalls of surplus equipment were discussed.

The work on semi-conductors aroused much interest and led to the conclusion that transistors must be dealt with but are not the best way to begin electronics. They seem likely to be harder to teach than thermionic valves. They readily fail if wrongly connected and even well-intentioned pupils can put positive to negative! Further work is indicated on these problems since transistors afford a splendid means of

(Continued on page 242)

THE MONTH ON THE AIR

A CHRONICLE OF EVENTS ON THE HF AMATEUR BANDS

By R. F. STEVENS (G2BYN)*

THE vexed question of S meter readings is something which appears to be once again engaging the attention of phone operators. The rather odd reports which have emanated from some stations in the Pacific area have probably caused some thoughts on this matter. Reports of R5 and S1 or R5 and S2 are hardly flattering, whilst for a time one station persisted with R5 and S0 when working break-in s.s.b. It would appear that these operators are slaves to their S meters paying no account to any other factors. The undesirability of this is apparent when one recalls that the S meter of a very highly priced receiver would read S9 only on the application of a signal which would normally be heard only from a nearby station.

Current receivers have S meters calibrated in 3db, 5db and 6db per S unit, whilst on one receiver S9 corresponds to an input of 48 μ V, and the next requires only 25 μ V to produce a similar reading. A handbook on one modern receiver states that "the S meter will give an accurate reading on an incoming signal," but is otherwise discreetly silent, and one wonders just how many receivers will produce similar readings for identical signal inputs on different bands. In the matter of comparative reports an S meter can be helpful, whilst an accurately calibrated unit can be used to give sideband suppression figures, but in the matter of signal reporting one is inclined to agree with the operators who largely disregard the erratic movements of this unpredictable indicator.

News from Overseas

From Ascension Island, ZD8JP, John Packer, comments that after the departure of ZD8RN, he is once again the only licensed operator on the island. For two weeks ZD8JP had the use of a KWM-2 from W5ZWT, who has now left the island, and John is now back to his original 25 watt rig on a.m. and c.w. using 7, 14 and 21 Mc/s. There is plenty of space for wire aerials, and good results have been achieved with the use of a quarter of a mile of insulated wire buried 6 in. underground! There are over 40 volcanoes on the island and the soil is metallic volcano ash. The permanent population is about 250 persons and there is perpetual water rationing.

ZBIRM provides up-to-date news on happenings amongst the amateur population of Malta: ZBINZE has returned to Scotland, and ZBIJF has now given up Amateur Radio after a period of intense activity. Amongst new licensees are ZBIBY, who uses a ground plane and 15 watts on a.m. with very good results. ZB1LS has returned after four years in the U.K. and is now using a DX100. Owing to the advent of television ZB1BI is rarely on the air, not because of TVI but owing to business commitments! Both ZB1BX and ZB1RM are active daily on 3.5 and 7 Mc/s, with 14 Mc/s fading out about 20.00 local time. News would be welcomed of ex-ZB1RF, now G3PJA, and ZB1FA, believed to be in Italy.

* Please send all reports for the December issue to arrive at R.S.G.B. Headquarters not later than November 20. Contributions for the January issue should arrive at Headquarters by December 17.

VS9MB at Gan in the Maldive Islands will probably be QRT until another licensed operator arrives to replace G3JJH now returned to the U.K. Due to Service commitments G3JJH found little time for operating, and was unsuccessful in his efforts to promote s.s.b. activity from the station. All the backlog of cards has been cleared, including s.w.l. reports, but there may be some disappointments owing to some "pirate" activity, notably on June 7 and July 7.

The 160 meter DX Bulletin from WIBB contains details of the tests arranged for the coming months, and these are to take place on the following Sundays: December 2 and 16; January 6 and 20 and February 3 and 17, on all days from 05.00 to 07.30. W/VE stations will call "CQ DX Test" during the first five minutes of each hour, and each alternate five minutes thereafter, listening the second five minute period and each alternate five minute period after that. DX stations will use the opposite periods for transmitting and receiving. Most of the W/VE stations east of the Mississippi River will operate in the segment between 1800 and 1825 kc/s, whilst those west of the river will use 1975 to 2000 kc/s. DX stations usually operate between 1800 and 1850 kc/s, although New Zealand stations will be found near to 2000 kc/s. DX stations should tune 1975 to 2000 kc/s carefully for unusual W/VE contacts. All operators are asked to report their DX contacts and accomplishments to WIBB, and details for inclusion in M.O.T.A. will be appreciated.

VS9APH has returned to the U.K. and Aden has thereby



Cpl. George Stanton operating DL2VR, the club station of the 1st Signal Regiment in Germany. The transmitter is a K.W. Viceroy and the receivers include an AR88 and Eddystone 770. A Drake 2B is to be added shortly. Aerials include a Mosley three element beam for 15m, a cubical quad for 20m and dipoles for 40 and 80m.

lost one of its most active and capable operators. Before he left, Phil Hudson did the initial work necessary for the Kuria Muria DXpedition, which, it is hoped, will materialize in the months ahead. All QSLs for VS9APH and VS9KPH should be forwarded to GW3IEQ. The VS9 QSL Bureau will now be taken over by VS9AAA, F/O. John Hern (ex-G3NAC).

From Cyprus, 5B4CS comments on the lack of QSLs following recent QSOs although the stations concerned seemed very anxious to work Cyprus and a new prefix. 5B4CS particularly commends the short wave listener reports especially that received from GM-9709 of Glasgow who incorporated a graph covering signal strengths over a half-hour period. It is felt that the reports received from s.w.l.'s often give a more accurate idea of the signal strength of the station than reports received during QSOs which may be slightly optimistic due to the desire for a QSL. 5B4CS makes a plea for true reporting and assures s.w.l.'s that all worthwhile reports will be answered.

Finnish stations have received permission to operate between 1820 and 1845 kc/s and between 1915 and 1955 kc/s with a maximum of 10 watts. This should increase the total of W1BB who has so far worked 60 countries on Top Band, a commendable achievement.

DXpeditions

ZS6BBB and **ZS6PC** will operate /ZS9 from Bechuanaland from November 29 to December 3. Operation will be on s.s.b. using frequencies of 28,465; 21,445 and 14,315 kc/s, and on a 24 hour basis. The address for QSLs will be found in *QTH Corner*. (G4MJ and G3LVC.)

VR30 (WA6MFY on Christmas Island) has been worked at 19.45 on 14,345 kc/s, and is standing by daily at 07.00 on 3795 kc/s and looking for U.K. contacts (G4MJ).

VQ9HB has plans to return to Agalega at the end of November according to VQ4GT. It is hoped that this trip will result in somewhat less confusion and more QSOs than the last period of operation, which was somewhat marred by some piratical activity.

ZK1BY has been very active from Suvorov Island in the south of the Manihiki Group on c.w. and s.s.b. Most of the contacts with U.K. stations appear to have been made around 07.30-08.30 although G3YF reports hearing Danny Weil at 13.00 with S5 signals on c.w. It is understood that the next ports of call will probably be Tonga and recently independent Samoa (ZM6) which will not however count as a new country.

KA2JL was heard to say that the proposed trip to **Marcus Island** would not now take place owing to lack of transport.

VK5AB has obtained a licence to operate from Willis Island as **VK4WE**. Plans are going ahead for the trip but the transport is expensive and a journey by the relief boat would allow operation for only 36 hours. **VK5AB** also has permission to operate from Dili in Portuguese Timor and from Christmas Island (**VK9**).

VP7BP will proceed to **Ascension Island** on duty during November and will take along s.s.b. equipment in the hope that permission to operate may be obtained. QSLs will continue to be dealt with by **W2CTN**. (G3KZI).

VK0VK will be operating from **Heard Island** for about one month from mid-January 1963. Activity will be concentrated on 7 and 14 Mc/s with c.w. and a.m. the modes most likely to be used. After the period on **Heard Island** **VK0VK** will go to Wilkes Land for a stay extending over the winter period. QSLs for the **Heard Island** operation should go to **K5ADQ**.

San Andres Island will be visited during the c.w. section of the **CQ W.W. DX Contest** by a party headed by **W4CKB**, who will use the call **HK0ZU**.

The stay of **W4BPD** at **Bouvet Island** will be limited to three or four days according to statements at present circulating. This operation will take place after the visit to



The first convention of the SP DX Club was held in Wisla, Southern Poland, on September 21-23, 1962. Among those present were, left to right, SP9KJ, SP7HX, SP8CK, SP5HS and SP9DT.

Gough Island, which was scheduled for the beginning of November, and it is not possible to give firm dates. It is suggested that the usual frequencies employed by **W4BPD** (14,065 and 14,125 kc/s) should be monitored for signs of activity.

DXCC News

The latest listing in *QST* shows changes at the top of the table. **W6CUQ** is now first with **W2AGW**, **W3GHD**, and **W1GKK** following, all with scores of 308 taking into account the deleted countries. The total number of DXCC credits given to **W6CUQ** is 322. The leading U.K. stations are **G3AAM** with 303/316 and **G2PL** with 302/314. In the telephony only list **VQ4ERR** is the leading Commonwealth station with 302/315.

Following the recent independence of **Uganda** the prefix has been altered to **5X5**, and that for **Sierra Leone** is now **9L1**.

A new edition of the **R.S.G.B. Countries and Zones list** has been prepared and is available from Headquarters, price 9d. post free.

Contests

The **OK DX Contest 1962** will take place on c.w. between 00.00 and 24.00 G.M.T. on December 9. Stations may operate during the whole 24 hour period but must select any continuous 12 hour period to count for scoring purposes. Logs must contain details of all contacts whether or not these occur in the selected period. The bands to be used are from 3.5 to 28 Mc/s and participating stations will call "Test OK." Stations will exchange the usual six figure number groups consisting of the RST report and consecutive numbers for each contact. One point is scored on sending a number and two points upon receiving a number, thus there is a total of three points for each completed QSO. Contacts with Czechoslovak stations count double the above points. Each of the six continents counts as a multiplier, and these may be scored on each band, thus the total possible number of multipliers is 30. Classes of entry are: (a) single-operator stations, (b) multi-operator stations, (c) single-band operation or (d) multi-band operation, and in the latter case the three bands producing the maximum points should be chosen as the entry. A score for this type of entry would consist of the sum of multipliers of three bands multiplied by the sum of the QSO points for three bands obtained during any continuous period of 12 hours. Separate logs must be used for each band and should contain the following information: date; time; call of station worked; number sent; number received; points; multipliers (first contact only), and should include the statement "Herewith I

declare that I have observed the rules of this contest as well as the regulations of the licensing authority in my country, and that all the data stated in this log is true." Certificates will be awarded to the top stations in each classification in the separate countries outside Czechoslovakia, and stations contacting 100 different Czechoslovak stations will obtain the "100 OK Award." Logs should be sent to the Czechoslovak Central Radio Club, Box 69, Prague 1, and must be mailed not later than January 15, 1963.

The recent Scandinavian Activity Contest provoked a fair amount of activity, most of which occurred on 14 Mc/s, although 7 Mc/s was used during the hours of darkness. G3PSY comments that new stations were difficult to find after the first hours of the contest, and the largest number of stations operating came from Finland followed by Sweden, Norway and Denmark in that order. Sixty-three

contacts were made up of: OH-31; SM/SL-20; LA-9 and OZ-3. Nothing was heard from LA/P, OY or OX. Certain of the Scandinavian stations seemed to have been active during the whole contest period and contact numbers of over 400 were being given after 15.00 G.M.T. on the Sunday. In common with a number of U.K. operators, G3PSY participated in the contest primarily to obtain qualifying contacts for the OHA and WASM 1/2 certificates.

Awards

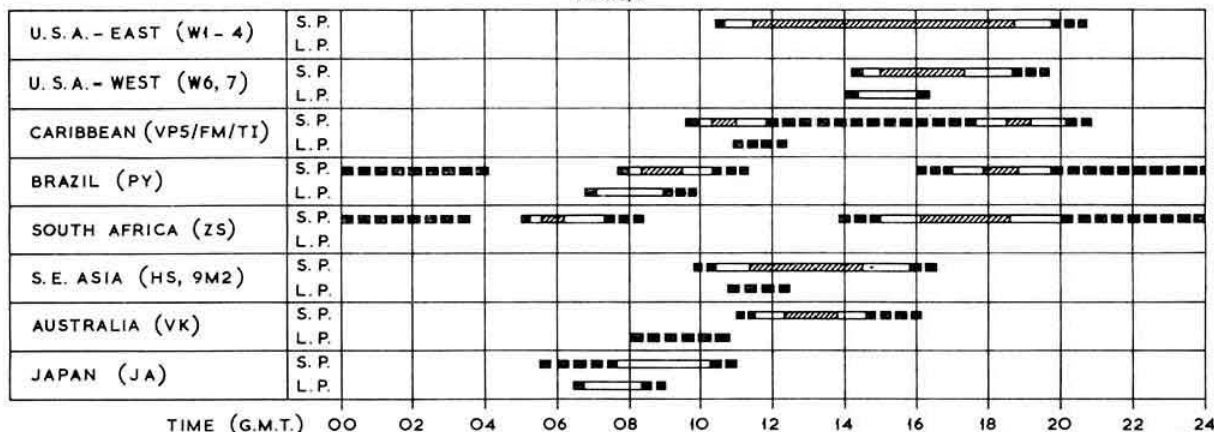
Announcement is made of the establishment of the **Short Wave Listeners' Certificate Hunters Club** w.e.f. January 1, 1963. This will be a companion organization to the world-wide CHC and will be administered by K6BX, Box 385, Bonita, California, U.S.A., from whom particulars may be obtained by sending a self-addressed envelope and an IRC.

Propagation Predictions for 14 and 21 Mc/s

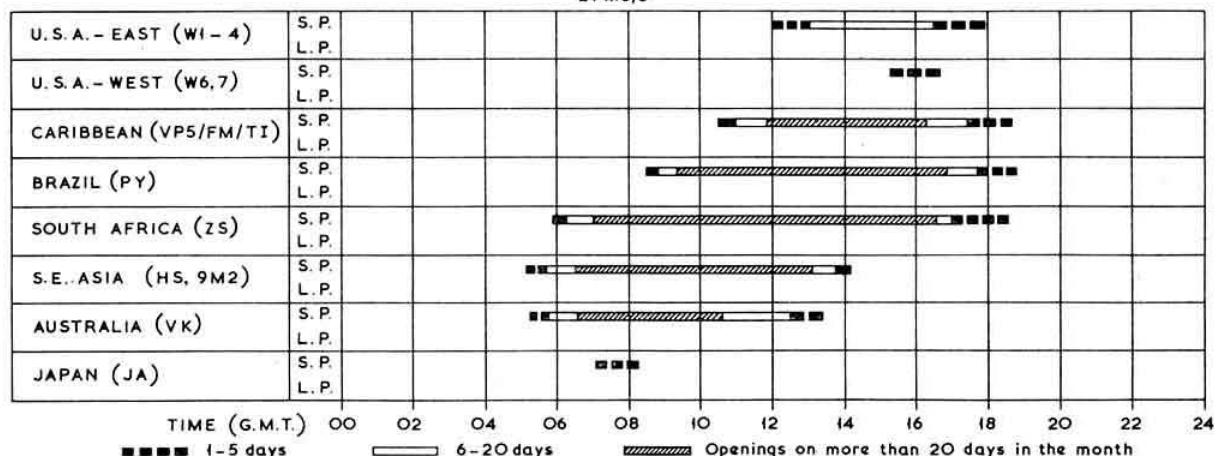
With the higher m.u.f. DX conditions should be noticeably better than during the summer months, but with the sun's position giving short days the 14 and 21 Mc/s bands may be expected to close relatively early. Although conditions favour 28 Mc/s the diminishing sunspot activity will severely limit the use of this band. On days with above average F2 layer m.u.f., the paths to South America, Africa and South-East Asia may be open, with even rarer openings to the Caribbean. Generally the 21 Mc/s band will close by 18.00 G.M.T. but communication by auroral reflection may be possible on isolated days after this time. The 14 Mc/s band may be normally expected to close by 20.00, although occasional later openings to Africa and South America may be experienced. The winter season favours the indirect routes (long path) and the chart shows when communication by this method may be expected. Contacts with Hawaii on 14 Mc/s between 17.30 and 18.00, and using the short path, may be possible on occasional days. With the falling off of atmospheric noise on 3.5 and 7 Mc/s conditions on these bands will be favourable for DX contacts especially when the greater part of the path lies in darkness, and generally 21.00 is the earliest time at which this band will open.

The charts below cover 14 and 21 Mc/s for the period November 15 to December 15, 1962.

14 Mc/s



21 Mc/s



To join SWL-CHC a short wave listener must have obtained at least 25 Amateur Radio type awards on a heard basis, and particulars of a large number of these are given in the current *Directory of Certificates and Awards*. SWL-CHC, as with CHC, is strictly non-profit.

The Highveld Branch of the South African Radio League announce the **Highveld Award** which can be claimed by stations outside Zone 38 who can produce proof of two way communication as follows:

- Five ZS call areas on 28 Mc/s.
- Four ZS call areas on 21 Mc/s.
- Three ZS call areas on 14 Mc/s.
- Two ZS call areas on 7 Mc/s.
- One ZS call area on 3.5 Mc/s.

It is not necessary to send the QSL cards providing the log extracts are certified by two officials of a radio club, but the right to call for the cards is reserved. The Award may be claimed on a mixed or one mode basis, and applications, accompanied by 7 IRC, should be sent to P. Avidon (ZS6BBB), Awards Manager, P.O. Box 117, Edevalle, Transvaal, Republic of South Africa.

Around the Bands

Conditions on 1-8 Mc/s appear to be heading for an all time best and undoubtedly September 30 provided the best opening to date. **GW8PG**, operating four miles from Wrexham, found the band open for trans-Atlantic contacts from 04.00 until 06.15, working **W3GQF** and hearing **W2's** **FYT**, **EQS**, **GGL**, **IU**, **KHT** and **K2PNF**. The peak time was around 05.30 and signal reports varied between **S4** and **S6**. **G6BQ** (Gravesend) records an excellent QSO with **W1BB/1** between 04.05 and 04.30; signals were better than during a previous contact on 3-5 Mc/s and the report from **W1BB** was **RST579**. The log at **G6BQ** for September 30 reads: 03.55 **W2FYT**; 04.10 **W8HGW**; 04.21 **W2GGL**; 04.28 **K2PNF**; 04.57 **W2EQS**; 05.16 **W2KHT**; 05.30 **W1PPN**; 05.40 **W2IU**; 05.55 **W3GQF**. Outgoing signals reports varied between **S5** and **S7**, with incoming reports mainly **S6** and **S7**. The best North American signal was

undoubtedly **W1PPN** who received a report of **RST579**. **B.R.S.20317** (Bromley) recorded all this activity, and mentions **W3GQF** as the best signal at his QTH. On October 6 our reporter heard **W8HGW** in QSO with **VP8GQ** at 05.33, with **VP8GQ** transmitting on 1801 kc/s, and draws attention to "WCC" transmitting on a frequency of 2035 kc/s which may be useful as a marker station. However on October 7 this station was audible at 05.50 but no amateur signals were heard. **G6BQ** found October a very poor month, at least up to the 22nd and only **W3FBV** and **W8HGW** were strong enough to positively identify. On the 9th a weak signal was heard on 1801 kc/s believed to be **5B4PB**, who confirms that he has been very active on the band, and will continue to be so during November. **5B4PB** confirms his transmitting frequency as 1801 kc/s, listening between 1800 and 1830 kc/s, saying that his only identification to date was **G3OIT** at 04.15 on October 21. **GW8PG** found conditions very disappointing after the one excellent opening, but found some consolation in the news that Top Band operation is now permitted in Finland and Australia. Stations in the latter country have already made a number of contacts with the U.S.A., the first being between **K3MBF** and **VK3HG** on September 20; the next day several stations worked **VK3AKR**, amongst them being **W1BB/1** using 50 watts from a farm in Maine. The Australian stations have so far been heard only in the segment between 1800 and 1825 kc/s. **ZL3RB** has also been heard in the U.S.A. but so far no QSO has resulted. On October 6 signals from **VP8GQ** (South Orkneys) were definitely identified by **G6BQ** at 05.45 and 05.55 on 1801 kc/s. A subsequent QSO with **VP8GQ** on 14 Mc/s confirmed the logging and elicited the information that **G6BQ** had also been heard on Signy Island, so that given the right conditions another "first" is in the offing.

Conditions on 3-5 Mc/s have been reasonable but none of our correspondents have anything DXotic to report. **B.R.S.20317** comments that conditions to North America are generally only fair with the usual outstanding signals from **VE1ZZ** (23.50) and **KP4AO/KV4** heard at 05.50. The **VK/ZL** Contest produced s.s.b. signals from all ZL districts, including **ZL's** **1AIX**, **2AAG**, **2WS**, **3UC**, **4BX** and **4OD** between 06.00 and 06.30. Between 02.55 and 03.52 **G6BQ** worked **VE1ZZ**, **W2PEO**, **W2OPQ**, **W3FRZ** and **W1BB/1**, the latter using a V beam 520 ft. long. **A.2340** (Plymouth) heard s.s.b. signals from **LA5OG** (21.25), **OZ4MN** (20.10), **UP2NV** (21.10), **VE3FFW/SU** (22.45), **ZL2**, **ZL3** and **ZL4** (06.20 to 06.45).

Despite the interference which has become almost a permanent feature of 7 Mc/s a fair amount of DX has been worked on c.w. **G3HDA** (Stratford-on-Avon) records **5T5AI** (23.30) with other stations in **PY1**, **PY4**, **PY7**, **VK2**, **VK3**, **VK5** and **ZL1**, all between 05.30 and 07.30. **G3LPS** (Blackburn) QSO'd **KC4USB** (23.15), **VP6RG** (21.51), **VP8GQ** (22.57) and **W2CSQ/MM** (off HK5, 00.15). **G3JAG** (Rochdale) worked **OX3BZ** (06.25) **VE8DD** (06.00), **VK2QL** (06.55), **VK4SS** (19.40), **VP5XG** (06.00), **W6HOC** (06.40), **XE1OK** (06.30), **ZL1AV** (06.50) and **TA3BA** (19.50) who, with a typical middle European note, is rather suspect. **B.R.S.20317** renders a comprehensive report on this band concentrating on c.w. One incident illustrates the haphazard manner in which the commercial stations make use of this amateur band and adds further emphasis to the opinion that their operation is a complete waste of r.f. and spectrum space. A station signing **PAOTMC** commenced testing on 7011 kc/s broadcasting pop music interspersed with announcements. After some time it was stated that the station was on the wrong frequency and would be moving to 7060 kc/s! It would seem that the Central Netherlands Broadcasting Station is in the market for a BC221. Returning to DX, Australasia continues to be heard by our reporter with the earliest signals appearing at 15.30. The **VK/ZL** Contest was a disappointment with only one **VK** and six

QTH Corner

- | | |
|-------------------|---|
| CE9AS | Base Naval Arturo Prat, Greenwich Island, S. Shetlands. For operator Alberto: A. Sir, C. Valparaiso 120, Dept. Nr. 72, Vina del Mar, Chile. |
| CN8AW | General Delivery, Navy 214, F.P.O., New York, N.Y., U.S.A. |
| CR8AC | Aurelio Fernando de Brito Seco, Capitania dos Portos, Dili, Portuguese Timor. |
| ET3RC | via KIKOM. |
| ET3RS | M. C. de Henseler, Box 3005, Addis Ababa, Ethiopia. |
| W6POP/KJ6 | via KH6EGO. |
| LZ1HA | P.O. Box 205, Sofia, Bulgaria or via W0EUO. |
| PJ5MC | via W3ZQ, 9208, Rosehill Dr., Bethesda 14, Md., U.S.A. |
| VR3B | via W3FSF, RD3, Box 137, Export, Pa., U.S.A. |
| VR3H | via W6AFI, 44 Toyon Terrace, Danville, California, U.S.A. |
| VR3O | via Marcia Guest, WA6MAZ, 701 Ash St., Vandenberg AFB, Calif., U.S.A. |
| VS9APH | } via GW3IEQ. |
| VS9KPH | |
| VU2NR | via G3MNV (not W/K stations). |
| ZC5FF | via V5IFF. |
| ZK2AB | via W6ZEN. |
| ZP5CN | via K4RSM. |
| ZS6BBB/ZS9 | P.O. Box 9299, Johannesburg. |
| ZS6PC/ZS9 | P.O. Box 9321, Johannesburg. |
| 5A5TR | 1950ch. Comm. Sqdn., Box 1446, U.S. Forces, Tripoli, Libya. |
| 5N2HJA | P.O. Box 15, Minna, Nigeria. |
| 5T5AI | Box 208, Nouakchott, Rep. of Mauretania. |
| 9K2BZ | Box 3488, Kuwait. |
| 9L1HB | Box 7, Freetown, Sierra Leone. |

R.S.G.B. QSL Bureau: G2MI, Bromley, Kent.

ZL stations heard on this band. Outside the contest period VK6CE was heard working G3HGD at 06.30, followed by VK3KF, VK3AZZ and VK2QL around 08.00 with VK2HC at 08.30, the latest time that VK signals were logged. At 16.40 VK6SM was heard working a Scandinavian station, an unusual time for signals from Western Australia. Asian stations were heard between 15.00 and 19.00, most of the U.S.S.R. republics being represented, and with two unusual ones in 4S7PG and BY1PK, both at 19.00 working into Europe. South America has been well represented with regular signals from PY and KP4, also TI2LA and TI2WR at 05.00, HI8XAG and unusual HC0NE a little later at 05.20, the latter located at 19,000 ft. on Mt. Cotopaxi. There was little of interest from Europe, only LA2NG/P from Jan Mayen at 20.15 and LX1FA (15.00) being worthy of note.

On 14 Mc/s, sideband from OE1ME (Vienna) accounted for: CE0Z1/1 (18.54, a U.S.N. vessel in Chilean territorial waters), KC6BK (11.36), W6POP/KJ6 (06.10), KX6DC (11.50), K5KOR/KS6 (06.20), KG6IJ (05.55), VK8CW (12.03), VP8GQ (19.26L), VR2BJ (09.30), VR30 (06.12), VS6AE (15.30), ZK2AB (07.21), 9U5BH (19.10L) and 9U5ZZ (17.43L). CE9AS in the South Shetlands was QSO'd on two-way a.m. at 21.27 and PY1BCR on Trinidad Island worked s.s.b. to a.m. at 20.13 on 14.105 kc/s. Recent QSO's at G2HFD (Blackheath) have included: BV1US, CE8AG, HH9DS, KG4AO, OA4CV, PJ5MB, UD6KAR, VQ5IU (now signing 5X5IU), VP8GQ and VU2NR. These and many other countries have been worked using indoor aerials, and G2HFD stresses that to obtain optimum results care must be taken to ensure that the aerial is truly resonant in the amateur band. The proximity of nearby objects and bending produce odd effects with regard to electrical length. A.2404 (Manchester), engaged in a R.A.E. course, found time to log: DU7IM (14.05), EL2G (20.45), EP2AD (07.35), KM6CE (09.05), SM5BM/9Q5 (18.25), UM8FZ (06.15), YN7GJ (20.55L), ZS3E (18.15), 5B4PC (06.35) and 9Q5AF (21.15L). In addition to the above ET3RS was QSO'd on the high end while preparing for activity during the CQ W.W. DX Contest starting the following day. VP2KP/A on Anguilla provided many stations with their first sideband contact with this island; the QSL should go to Box 161, St. Kitts. Unfortunately ZK1BY operating from the Manihiki Group did not make many U.K. contacts, due partly to poor conditions and partly to the fact that the mains transformer in his linear amplifier blew up in the first week. The majority of the contacts were made on October 21 when signals from ZK1BY peaked at 5 and 8.

C.w. on 14 Mc/s continues to produce the DX, and G3HDA records CE9AL (20.30), CO6XZ (20.03), FY7YE (21.00), PY1BCR (19.42), UA1KAE/2 (Antarctica 17.32), VP5XG (20.50), VP8GU (20.10), VR2DK (08.35), 6W8DD (21.48) and 9U5BH (17.58). G3RFS (Barnet), recently licensed at 16 years, used his 40 watts to raise CT3AB, ET2US, KG4AO, PX1RV and numerous U's and W's. G3PSY (Thorpe Bay) found this band still the best for DX and contacted DJ1ZG/M1 (22.50), EA8BF (07.53), FS7GS (22.08), OH5TK/OH0 (08.55), PY4AP (22.29), U18LB (09.20), UO5GB (17.07), and VQ2MS (23.17), whilst the got-aways included CR6CA (23.01), FG7XQ (23.01), KV4AA (22.35), PJ2ME (22.06), VE0NU (22.58) and ZE8JW (14.09). A worked/heard listing from G8PL (London, N.W.3) produces: 05.00/06.00, LU6FA, OA4CG, PX1AR, UA9S, UD6, UF6, UH8, U18, UL7, YK1AK, ZLIAMO, ZL4's, 4X4OW and 5B4CS. 06.00/07.00 EP2BN, MP4TAM, UF6, UH8, UL7, 5A3BC, 5B4OS and 5N2JKO. 07.00/08.00 UG6KAA, U18AP, UL7, VE8JJ, VK2VA, ZLIAM and 5A3CJ. The trusty HRO of G3AAE (Loughton) continues to respond to the DX as the following worked/heard listing will prove: AP5JA (16.20), CR8AC (14.00), DU1OR (14.00), ET3RC (15.30), FG7XC (20.40), KG4AO

(21.20), MP4TAM (15.35), PY1BCR (19.30), VP5TK (20.20 Grand Turks Island), VP8GU (19.25), TT8AL (18.25), VQ8AI (16.30), VQ9HB (18.10), VS4RB (15.20), VS6EP (16.30), ZS2MI (18.10), 5X5IU (18.20), 5R8AB (17.30) and 9U5ZZ (19.20).

Turning now to 21 Mc/s, G3NXW/Mobile worked the following on a.m. using a 9 ft. whip with an input of 35 watts: K4PLR (12.00), MP4BDC (12.16), UA3KTK (07.25), UB5RZ (07.15), 5A3BC (11.45), 5A5TE (11.40), 5B4GT (12.11), and XW8AL (12.08). On the same mode G3AAE spoke to or heard AP2MR (12.20), DU1AN (11.50), EP3HS (10.35), FG7XL (11.45), FG7XS (13.26), TN8AD (18.15), TT8AA (10.38), TU2AE (10.40), VP2GX (11.05), VP4RS (11.00), VS4RS (13.15), ZD6HK (16.10), 4S7NB (10.45) and 9U5XX (11.45), whilst c.w. accounted for MP4QBB (12.20), VK6RU (07.35), VP8GQ (12.30), VS4RS (12.38) and 9U5ZZ (08.00). G3LPS keyed with CT2AI (17.44), CP5EZ (18.25), CR6DX (18.22), ET2US/2 (12.08), VP8GU (18.22), ZD6JO (03.37), XE1PJ (12.30), ZB1CR (12.00) and 6W8DD (11.35). G3PSY feels that the band is improving and some of the short skip is being replaced by DX; the southerly path opens early in the afternoon and North America can be heard between noon and 22.00. Contacts include CE3UT (22.32), FY7YE (20.05), TT8AL (10.46), UA2AK (09.53), UO5RO (08.08), VO1FF (16.56) and ZB1CR (09.05). B.R.S.24643 (Potters Bar) heard CT2AI, UL7NB, VU2GG and ZD6JO on c.w., whilst a.m. loggings were AP2MR, CR5SP, KP4AYH, 5H3IW and 9G1EE.

The wide open spaces of 28 Mc/s seem to be sparsely populated and only G3AAE renders any account of doings on this band. Between 15.00 and 17.00 signals were heard and worked from CR6, CR7, KP4GN, VQ2, W4, ZE, ZS1—ZS6, 5N2 and 9G1. Once again it is urged that this band be used for short distance QSO's that are often heard on 14 Mc/s when that band is open for DX working.

DX Briefs

For those operators who wish to obtain more up-to-date news than can be supplied by a monthly journal, the *DX News Sheet* published by Geoff Watts, B.R.S.3129, of 62 Belmore Road, Norwich (Nor. 72.T), is highly recommended. The subscription of this weekly news sheet for U.K. readers is 10s. plus a supply of s.a.e. for the despatch thereof, usually on Tuesday or Wednesday. *DX News Sheet* can be sent to most European countries for £1 per year of 48 issues, and air-mail to the majority of other countries for 36s. per year.

G2FFO has obtained a copy of the U.S. Directory of Post Offices and offers help in connection with identification problems when claiming the U.S. Counties Award.

Operators still needing a QSL from CR5AR should try CT1LL which is the home call.

After a tour of duty in Cyprus, 5B4CT will be returning to the U.K. this month and will reappear under the call GW3PSM. Of late Colin has provided many stations with their first 5B4 s.s.b. contact.

CR8AC is now sending out QSLs by air-mail and these should dispel the last doubts as to his status. The full address is given in *QTH Corner*.

The W.A.E. Certificates Manager is now DL1EE, I. Falster, Tillystrasse 44, Nuremberg 85, (G2YS.)

G3MQY asks for patience from those stations that he worked from the Isles of Scilly during the period September 5 to 23, as QSL cards have not yet arrived from the printers. Directly these are to hand all stations that were contacted will receive cards. G3MQY will again be operating from the Scillies from November 20 to December 4.

After his hasty departure from Dutch New Guinea, G3MJL (ex-JZOML) returned to the U.K., but will shortly be departing for the Middle East and hopes to operate from

EP, MP4B, MP4Q and MP4T. W2CTN will continue as his QSL manager.

VP8GU (ex-G3LHG), now active from Adelaide Island on 3-5, 7, 14 and 21 Mc/s, is particularly looking for U.K. contacts. Antarctic stations are often heard at good strengths around 19.00-20.00 on 14 Mc/s. (G2KO.)

G3EMY, a former holder of the call VR30, hastens to disclaim any of the present activity under that call. This would seem to be a case of a reissued call for the present holder, WA6MFY, is very active from Christmas Island.

VP2SZ (ex-B.R.S.22489) will be signing /MM using a DX100 and a CR100 receiver, and hopes to be operating from Bermuda during December. The QSL address is Radio Supervisor G. J. Perry, H.M.S. Whirlwind, c/o G.P.O. London. Surface mail from the U.K. takes between four and six weeks.

VR6AC on Pitcairn Island is reported to be looking for European contacts on Mondays after 06.00 generally on 14,275 kc/s using s.s.b.

It is learnt from VQ9HB/MM that he did not land on the Agalega Islands and that all contacts were made from aboard ship.

* * *

Thanks are due to the numerous correspondents and acknowledgment is made to the *DX'Press* (PA0FX), the West Gulf DX Club *Bulletin* (K5ADQ), *The DX'er* (K6CQM), *DX* (W4KVX) and *Florida DX Report* (W4CKB). Please send all items for the December issue to arrive at R.S.G.B. Headquarters not later than November 20. Reports for the January issue should be posted as early as possible to arrive by December 17.

CONTESTS DIARY

November CQ WW DX Contest (C.W.).

24-25

December 1-2 R.S.G.B. 21/28 Mc/s Telephony Contests. (For rules, see page 193, October 1962).

December 9- OK DX Contest.

1963

January 26-27 — CQ WW 160m Contest.
January 27 — 144 Mc/s C.W. Contest.
February 2-3 — Affiliated Societies' Contest.
February 9-10 — A.R.R.L. DX (phone) Contest.
February 16-17 — B.E.R.U. Contests.
February 23-24 — First 1-8 Mc/s Contest.
March 2-3 — 144 Mc/s Open and Listeners' V.H.F. Contests. *
March 9-10 — A.R.R.L. DX Contest (phone).
March 23-24 — A.R.R.L. DX Contest (c.w.).
March 23 — Pakistan Day DX Contest.
March 30-31 — CQ W.W. S.S.B. Contest.
April 6-7 — Low Power Contest.
April 6-7 — PZK (c.w.) Contest.
April 21 — D/F Qualifying Event.
May 4-5 — U.S.S.R. DX (c.w.) Contest.
May 5 — First 144 Mc/s Portable Contest. *
May 12 — D/F Qualifying Event.
May 19 — D/F Qualifying Event.
May 26 — First 420 Mc/s Contest. *
June 8-9 — National Field Day.
June 15-16 — 70 Mc/s Contest.
June 23 — 1250 Mc/s Tests.
June 30 — D/F Qualifying Event.
July 6-7 — Second 144 Mc/s Portable Contest. *
July 21 — D/F Qualifying Event.
September 7-8 — National 144 Mc/s Open Contest. *
September 15 — D/F National Final.
September 22 — Low Power Field Day.
October 6 — R.A.E.N. Rally.
October 19-20 — 7 Mc/s DX Contest (phone).
October 27 — Second 420 Mc/s Contest.
November 2-3 — 7 Mc/s DX Contest (c.w.).
November 9-10 — Second 1-8 Mc/s Contest.
November 16-17 — R.S.G.B. 21/28 Mc/s Telephony Contests.

* To coincide with Region 1 I.A.R.U. Contest dates.



Maurice Firth (G3MMK) accepting a "Thanks Badge" from Mr. J. Foster Beaver, Scout County Commissioner for West Yorkshire. Looking on is G3JWN. G3MMK received the award for his work in connection with the Jamboree-on-the-Air and in particular with GB3RSS near Brighouse. The R.S.G.B. was represented by Philip H. Wade, G2BPJ (Zone A Representative). Also present was the Mayor of Brighouse who was conveyed from GB3RSS to another function by G2HYU/M. Equipment in use at GB3RSS during the Jamboree included a K. W. Viceroy and three Vanguard transmitters, four AR88 receivers and an Eddystone S504. The operators were G3MMK, G3KKP, G3HPD, G3PFA, G3JWN and G8NF.

(Photo by Ben Wade)

Kent Summer School 1962 (Continued from page 236)

introducing electronics at low voltage provided these difficulties can be convincingly and inexpensively overcome.

Generating Enthusiasm

As well as learning about a.c. theory, how to wire up components, bend aluminium and use test gear, Amateur Radio was put on show through GB3KEC. This was done because experience has shown that few things can generate enthusiasm and desire to learn physics among pupils of all levels of ability as quickly as Amateur Radio.

The aerials available were a 132 ft. Zepp, 40 ft. high, and a dipole for 15m. The transmitters used were a Heathkit DX40 and a K.W. Electronics Vanguard. The operating time was usually after 7.30 p.m. on weekdays, over the single weekend and at odd moments during the day. The presence of G3POY on the course gave us an extra operator. The results obtained on 160, 80, 40 20 and 15m brought about 200 QSOs in 35 countries and all Continents other than Australasia.

Results

The impact of our hobby was considerable, not only on the electronics students but on our visitors, including senior members of the Kent Education Committee. To talk to someone in Bolton was remarkable but to talk to Brazil . . . !

As a result of the course a group of teachers went off with some up-to-date ideas, based on experience with up-to-date equipment, having seen Amateur Radio communications at work. Thanks to the comments of the pupils and from personal observations the two tutors went off with many fresh ideas on how to run a course on "Introducing Electronics."

In conclusion the writer and his associates would like to thank the Kent Education Committee for running the course, industry for their invaluable assistance and the students for their active participation.

Weston Weekend

By R. E. GRIFFIN (G5UH)

THE weekend of the Mobile Rally and Official Regional Meeting of Region 9 (September 22-23, 1962) will long be remembered by those fortunate enough to be present.

Saturday was the occasion of the Mobile Rally centred on the Beach Lawns, by kind permission of the Weston authorities. A treasure hunt and balloon race, with pony rides for the children, were added attractions. The Rally was supported by 44 mobile stations with a total attendance of over 200; the event was covered by B.B.C. and T.W.W. television news cameras. The great distances covered by some mobileers indicated how wide was the interest in the event.

The Rally Competition Silver Cup was won by T. Russell (G3JFH/M) with D. V. Newport (G3CHW/M) as runner-up. This was followed by a raffle at the Beach Lawns and by an informal dinner at night which was very well attended. Apologies are offered to those who could not be accommodated owing to the demand for places.

On the Sunday morning, members visited the G.P.O. Radio Station, Burnham-on-Sea, and the R.A.F. Amateur Radio Station Headquarters (G8FC) at Locking. Various station visits were made in Weston-super-Mare.

The Official Regional Meeting, held in the ballroom of the Grand Atlantic Hotel, was honoured by the presence of the Mayor of Weston, Councillor E. B. Moore, J.P., who extended a civic welcome and formally opened the proceedings. Thanking the Mayor for his presence, the Chairman, Mr. R. E. Griffin (G5UH), Regional Representative, also expressed thanks to the town authorities for their assistance to the Weston Group in the organization of the events of the weekend.

The Council Representatives, Mr. A. O. Milne (G2MI), Mr. L. E. Newnham (G6NZ), Zone D Representative Mr. H. A. Bartlett (G5QA), Mr. John Clarricoats, O.B.E. (G6CL), General Secretary, Mr. J. Etherington (G5UG), C.R. for Somerset, and other members of the Organizing Committee were then introduced to the meeting.

Reports were read by the Chairman from C.R.s in Bristol, Cornwall, Devon, Dorset and Somerset. He then paid



Much of the success of the Weston-super-Mare Mobile Rally and Region 9 O.R.M. was due to the hard work put in by Jack Etherington, G5UG (C.R. for Somerset) seen here (left) with Wing Commander Wally Dunn, G2LR (centre) of Bridlington and Vic Newport, G3CHW, of Bristol. Wing Commander Dunn was for many years Chairman and is now a Vice-President of the R.A.F. Amateur Radio Society. Mr. Etherington is a member of the Committee of that Society, being attached to R.A.F. Locking.

(Photo by G6CL)



During the Weston-super-Mare Mobile Rally an interested spectator was Alderman G. H. Goodwin, an ex-Mayor of Bexhill, Sussex, who held an amateur licence way back in 1913. In this picture he is inspecting Wing Commander Alec Gilding's mobile aerial. Also showing an interest are A. E. (Pop) Seymour, G3GNS and Harold Andrews, G5DV—king pins in the Mobile Rally and Region 9 O.R.M. Young man is Michael Gilding, son of G3KSH.

(Photo by G6CL)

tribute to those holding office in all parts of the region for their work on behalf of the Society and local members.

Mr. Newnham gave an interesting review of his work as Chairman of the G.P.O. Liaison Committee and as Official Delegate to the Geneva Radio Conference, 1959. Mr. Milne addressed members on his 23 years as QSL Bureau Manager and as a member of the G.P.O. Liaison Committee. Mr. Clarricoats spoke on membership, the Articles of Association, Society publications and the Society's Golden Jubilee Celebrations in 1963. Mr. Bartlett then addressed the meeting, offering his services at any time to those requiring them.

The meeting was thrown open for questions and a lively discussion followed on many points. These were answered by the representatives of the Council and some subjects were taken away for consideration by Council.

The Chairman concluded the business meeting by thanking the representatives of the Council for their attendance and the Weston Organizing Committee for a great effort in producing such a successful weekend.

After an interval for tea, a raffle was held, prizes being donated by local members in Weston. This was followed by a most interesting lecture on "Power Transistors" by Mr. J. I. Brown (G3EUR) of Aveley Electric Ltd. which was well received and produced some lively discussion. The Chairman thanked Mr. Brown and also Mr. J. Tanner (G3NDT/T), C.R. for Bristol, who provided a closed-circuit television system of the proceedings in the ballroom. Thanks were also expressed to organizations providing the demonstrations and displays on the ballroom veranda and to the hotel management for the excellent arrangements provided.

In closing the meeting the Regional Representative expressed the hope that the Weston Group would provide another similar "Weston Occasion" at some future date.

J-Beam Aerials Ltd.

THERE are two errors in the advertisement for J-Beam Aerials Ltd. on cover (ii) of the 1963 Edition of the R.S.G.B. *Amateur Radio Call Book*.

The gain of the basic 2m single skeleton slot array with two reflectors should read 8db and the catalogue number should be 2/4.

The gain of the basic 2m four-over-four array is 11db and the correct catalogue number 2/8.

Annual Report of the Council for the Year ended June 30, 1962

THE Council has pleasure in submitting the following Report which covers the more important events and happenings that occurred during the year ended June 30, 1962.

A Supplementary Report dealing with the period from July 1, 1961 to the early part of December 1961 was submitted to the Annual General Meeting of the Society held on December 16, 1961. The Supplementary Report was published in the January 1962 issue of the R.S.G.B. BULLETIN.

Membership

For the sixth year in succession the Council is pleased to report that membership has shown an increase. The nett gain amounted to 491 compared with 608 last year and 496 during the previous year. At June 30, 1962 the total membership was 11,135 compared with 10,644 on the same date in 1961.

The following table compares the number of members in each grade over the past three years.

Grade	June 30 1960	June 30 1961	June 30 1962	Gain during year 1961/2
Corporate members:				
Licensed	6473	6686	6910	224
Not Licensed ..	2756	2942	3047	105
Associates	807	1016	1178	162
TOTALS	10036	10644	11135	491

An analysis shows that at June 30, 1961, 60 per cent of all Home Corporate members held an Amateur (Sound) Licence.

Details of the current analysis compared with those of the two previous years, follows:

Grade	June 30 1960	June 30 1961	June 30 1962
Corporate Members: (Licensed)			
Country	3963	4145	4334
London	1325	1413	1473
Overseas	1185	1128	1103
	—6473	—6686	—6910
Corporate Members: (not Licensed)			
Country	1766	1883	1923
London	793	833	900
Overseas	197	226	224
	—2756	—2942	—3047
Associates	807	1016	1178
TOTALS	10036	10644	11135

There has again been a reasonably satisfactory increase in the number of Corporate members except that for the third year in succession the number of licensed overseas members has shown a falling-off, this time by 25. The Associate grade has again increased—this year by 162.

The turnover in membership is still running at a high rate. When it is borne in mind that during the year about 1,600 members were elected, a nett increase just short of 500 is not as good as it should be.

Affiliated Societies and Clubs

The number of societies and clubs affiliated to the R.S.G.B.

was 172 as at June 30, 1962, compared with 157 a year earlier—a net increase of 15. However as 33 new societies and clubs were granted affiliation during the year the turnover was rather high. It seems that the prestige value of affiliation is still greatly appreciated by the vast majority of local societies and clubs in the United Kingdom.

Licences

According to G.P.O. records, as at June 30, 1962, 9,622 persons held an Amateur (Sound) Licence and of this number 1,151 held also an Amateur (Sound Mobile) Licence. In addition 102 Amateur (Television) Licences were current.

Compared with a year earlier there has been an increase of 511 in the number of Amateur (Sound) Licences, an increase of 108 in the number of Amateur (Sound Mobile) Licences and an increase of 19 in the number of Amateur (Television) Licences.

The Council is indebted to the Radio Section of the G.P.O. for the foregoing information on licences.

In order to avoid possible confusion with Q Code signals the G.P.O. decided during the year that call-signs in the G3QAA-G3QZZ series would not be issued to amateurs.

Licence Matters

Following discussions between representatives of the Society and the Radio Services Department the G.P.O. announced in September 1961, that a limited number of amateurs were being authorised for a period of two years to use the narrow-band (slow scan) transmission system on all amateur frequencies from 28 Mc/s upwards, subject to the usual restrictions in respect of the band 144-145 Mc/s. It was also announced at the same time that following negotiations between the Society and the G.P.O. Radio Teleprinting was to be permitted generally on all bands—except 1.8-2 Mc/s.

Intruder Watch

The Council records its thanks to Major Dennis Haylock (G3ADZ) and those associated with him in the work of the R.S.G.B. Intruder Watch. Reports of persistent intruders in exclusive amateur bands have been passed on to the G.P.O. and although results have not been spectacular a number of intruders are known to have moved out of amateur bands shortly after a particular Intruder Watch report has been sent to the G.P.O.

R.S.G.B. News Bulletin Service

The R.S.G.B. News Bulletin Service has now developed into one of the most important features of Society life. A few years ago it appeared that very few members were listening regularly to the bulletins but it is clear now that the number of listeners is very considerable.

Transmissions on 3600 kc/s are now broadcast from stations in six parts of the British Isles whilst the area covered by the v.h.f. transmissions has recently been extended.

The Council wishes to thank the news readers for the valuable services they rendered to the Society throughout the year.

The Radio Amateurs' Examination

Two examinations took place during the year. At the first, in October 1961 (conducted by the G.P.O.), 227 of the 302 candidates were successful. In the May 1962, examination, conducted by the City and Guilds of London Institute, 808 of the 1189 candidates were successful.

As the result of proposals put forward by the Society's representatives on the City and Guilds of London Institute Advisory Committee for the Radio Amateurs' Examination the Institute will in future conduct two examinations each year.

The Council records its thanks to those members who devoted their time and resources to the task of coaching candidates for the examinations.

Slow Morse Practice Transmissions

During the year slow Morse exercises were transmitted nightly for the benefit of those seeking to pass the G.P.O. Test. The Council wishes to thank all who helped to provide this service, which was of value to both members and non-members alike.

R.S.G.B. Bulletin

Volume 37 of the R.S.G.B. BULLETIN ran to 616 pages compared with 592 pages in Volume 36 and 572 pages in Volume 35.

The technical standard of the BULLETIN remained consistently high throughout the year, in fact there was an occasional criticism that the standard was too high for some of the newer and less experienced members. However, during the year the Council, acting on the advice of the Technical Committee, decided that as from January 1963 the size of the BULLETIN would be increased to 64 pages per month. This should enable the editorial staff to cater for a wider range of interests than is possible at the present time.

The Council records its thanks to all who contributed to Volume 37 of the BULLETIN and in particular to the regular monthly contributors, Mr. F. G. Lambeth, G2AIW (*Four Metres and Down*), Mr. R. F. Stevens, G2BVN (*The Month on the Air*), Mr. G. R. B. Thornley, G2DAF (*Single Sideband*) and Mr. C. R. Plant, G5CP (*Mobile Column*). The last named feature was developed during the year to cater for an ever-increasing interest in mobile operation.

Mr. J. P. Hawker (G3VA) again contributed his much appreciated bi-monthly article—*Technical Topics*—which in recent Gallup-type polls conducted by the editorial staff was voted the most popular BULLETIN feature.

The Amateur Radio Handbook

As stated in the Supplementary Report the publication on November 16, 1961, of a new edition of *The Amateur Radio Handbook* brought to fruition the efforts of a great many members who had pooled their knowledge and experience in order to enable the Society to offer the most up-to-date work of its kind.

Nearly 3000 members took advantage of the Society's pre-publication offer, since when several thousand additional copies have been sold. The first printing of 5000 was exhausted within a few weeks with the result that a second printing became necessary early in the New Year. An order for a third printing was placed in May 1962.

The Council is pleased to report that the *Handbook* is selling well in overseas markets and in particular in Australia and New Zealand. Encouraging review notices have appeared in various overseas journals.

Other R.S.G.B. Publications

During the early part of the year Mr. J. P. Hawker (G3VA) revised *A Guide to Amateur Radio*. This edition—the ninth—has again been one of the Society's best sellers. In November 1961 the 1962 edition of the R.S.G.B. *Amateur Radio Call Book* appeared. This edition contained, for the first time, a list of Amateur (Sound Mobile) licence holders, to a total of 1030 calls. The call-sign record contained nearly 2000 amendments and additions to the 1961 edition.

Also published in November 1961 was a new Society publication, *Communication Receiver Design Considerations*. This booklet was based on a series of articles by Mr. G. R. B.

Thornley (G2DAF) which had previously appeared in the R.S.G.B. BULLETIN. An order for a second printing was placed in June 1962.

Due to heavy demands it became necessary to produce a second edition of the *Radio Amateurs' Examination Manual* and this duly appeared in June 1962. The original author, Mr. B. W. F. Mainprize, B.Sc.(Eng.) (G5MP) was responsible for appropriate amendments to the text.

During the year work began on yet another new Society publication, *Radio Data Reference Book*. This book took shape as the result of discussions within the Technical Development Sub-Committee and later in the Technical Committee. Mr. G. R. Jessop, A.M.Brit.I.R.E. (G6JP) agreed to compile the data and publication was expected during the autumn of 1962.

Golden Jubilee of the Society

The Council decided during the year to invite the whole membership to express an opinion on the question as to whether or not the Society should celebrate its Golden Jubilee in July 1963.

Nearly 1400 members completed the reply paid postcard sent to them from which it became clear that an overwhelming percentage were of the opinion that the occasion should be celebrated in an appropriate manner. The Council thereupon decided to reserve accommodation at the Connaught Rooms for a dinner during the evening of the Golden Jubilee Day—July 5. A Golden Jubilee Celebrations Committee was set up under the Chairmanship of the President to prepare a programme of events.

Headquarters Fund

The September, 1961, issue of the Society's Journal contained a personal letter from the then President of the Society (Major General E. S. Cole, C.B., C.B.E.) inviting all members to support a fund which was being established to provide new Headquarters. The Council wishes to record its thanks to all who became donors.

The Council has set up an *ad hoc* Building Committee to make firm proposals for establishing new Headquarters.

Exhibitions

As recorded in the Supplementary Report, the Society's stand at the National Radio and Television Show at Earls Court from August 23 to September 2, 1961, again aroused much interest.

The R.S.G.B. Radio Hobbies Exhibition held in the Old Hall of the Royal Horticultural Society, London, from November 23 to November 26, 1961, was opened by Mr. Henry Loomis (Director of *Voice of America*) in the presence of many distinguished guests. The exhibition attracted good attendances.

The organization of the Society's stand at Earls Court and at the Radio Hobbies Exhibition was in the hands of the Exhibition Committee (Chairman, Mr. C. H. L. Edwards, A.M.I.E.E., A.M.Brit.I.R.E., G8TTL), whilst the management of the stands at both Exhibitions was undertaken by Mr. F. Ruth (G2BRH).

Regional Representatives' Conference

On November 18, 1961, a Conference between the Council and the Regional Representatives was held in London. A comprehensive report, prepared by the General Secretary, was afterwards studied by the Council when decisions were taken on a number of the matters dealt with at the Conference.

Official Regional Meetings

Official Regional Meetings were held in Ayr (Region 14) on September 10, 1961, Cardiff (Region 10) on September 16, 1961, Newbury (Region 17) on October 1, 1961, and in Cheltenham (Region 6) on October 8, 1961. No Official

Regional Meetings were arranged during the period from January 1 to June 30, 1962.

Eighth International V.H.F.-U.H.F. Convention

On May 19, 1962, in conjunction with the London U.H.F. Group, the Society organized another successful V.H.F.-U.H.F. Convention. A comprehensive lecture programme and exhibition together with prospects of an excellent dinner, which was amply fulfilled, attracted a very good attendance. The Convention was held at The Kingsley Hotel, London, W.C.1.

Mobile Rallies

Following the decision of the Council to set up a Mobile Committee, three national mobile rallies were held during the year. The first, at Woburn Abbey, Bedfordshire, took place on September 10, 1961, and this was followed by rallies at Belton House, Grantham, Lincs. on May 13, 1962, and at the U.S. Air Force Base, Wethersfield, Essex, on June 10, 1962. The Woburn Abbey and Wethersfield rallies were well supported, but a cold wind and dull weather was no doubt responsible for the rather poor attendance at Belton House.

During the year a great many other mobile rallies were held, several of which attracted large attendances. Occasionally dates clashed but on the whole organisers of rallies realised the desirability of avoiding any overlapping in the same general area.

The Mobile Committee (Chairman, Mr. C. H. L. Edwards, G8TL) carried out a comprehensive programme of work during the year besides organising the National Mobile Rallies.

London Lecture Meetings

During the year three lecture meetings were held at the Institution of Electrical Engineers, London. On October 27, 1961, Mr. G. A. Bird, Assoc.Brit.I.R.E., F.Inst.P.O. (G4ZU), discussed Multibeam Aerial Systems and gave a description of an entirely new type of ferrite loaded wire array for 10-80 metre work. On February 23, 1962, Mr. E. G. Ingram (GM6IZ) delivered his Presidential Address, entitled "The Development of a Duplex Radio-Telephone System for Police Use." On March 30, 1962, members of the London U.H.F. Group took part in a V.H.F. Symposium. All three meetings were well attended.

Certificates and Awards

The task of checking claims for Society certificates and awards (with the exception of the v.h.f. certificates) was undertaken for the first part of the year by Mr. George Verrill (G3IEC) and later by Mr. K. A. V. Hurrell (G3NBC). The Council records its thanks to Messrs. Verrill and Hurrell for their valuable services to the Society.

Films and Tapes

Mr. C. W. Austin (B.R.S.22019) and Mr. N. C. Ta'Bois (G3HWG) continued their work for the Society as Honorary Curators of the R.S.G.B. Film and Tape Recorded Lecture Libraries respectively. The demand for both films and tapes showed little sign of diminishing during the year.

The Council records its thanks to Messrs. Austin and Ta'Bois for their very valuable services.

QSL Bureau

For the 23rd year in succession Mr. Arthur Milne (G2MI) has been responsible for the Society's QSL Bureau. Mr. Milne was assisted by a number of sub-managers, all of whom are thanked for their help. The Society's QSL Bureau is one of the largest in the world and is operated with great smoothness and efficiency.

Technical Committee

The Technical Committee (Chairman, Mr. H. A. M. Clark, B.Sc.(Eng.), M.I.E.E., G6OT) dealt with a variety of technical

problems during the year including the preparation of Safety Recommendations. Individual members of the Committee gave valuable assistance to the editorial staff in connection with technical articles and technical enquiries.

The Technical Development Sub-Committee (Chairman, Mr. G. M. C. Stone, A.M.I.E.E., A.M.Brit.I.R.E., G3FZL) continued its important task of preparing programmes of work leading to the publication of up-to-date technical articles. Individual members of the Sub-Committee co-operated closely with Mr. Rouse in connection with the *Handbook* and in the preparation of material for the new *Radio Data Reference Book*.

Scientific Studies Committee

The Scientific Studies Committee (Chairman, Mr. G. M. C. Stone, G3FZL) has worked very closely with the V.H.F. Committee especially in connection with V.H.F. Beacon programmes. Members of the Committee have taken an active part in the OSCAR projects and in co-operation with programmes the United States Office for Satellite Scatter (which is a project group of the Massachusetts Institute of Technology) in connection with the Echo A12 project. The analysing of I.G.Y./I.G.C. results has continued.

The GB3GEC propagation experiment with PEIPL at The Hague commenced early in the year and is continuing successfully.

The Council has accepted a recommendation of the Committee that the Society should participate in the International Quiet Sun Year programme.

V.H.F. Committee

Among its many other duties, the V.H.F. Committee (Chairman Mr. R. C. Hills, B.Sc.(Eng.), A.M.Brit.I.R.E., G3HRH) has been responsible for the Society's V.H.F. Beacon programme. The establishment last year of a 144 Mc/s station at Wrotham (GB3VHF) was followed later by the setting-up of a beacon station in Cornwall (GB3CTC).

The Committee has dealt with a wide variety of v.h.f. matters including the judging of claims for R.S.G.B. v.h.f. certificates, Project OSCAR, the Eighth International V.H.F./U.H.F. Convention, I.A.R.U. Region 1 Contest rules, the use of QRA Locators, v.h.f. news bulletin transmissions, high power v.h.f. permits.

TVI/BCI Committee

The TVI/BCI Committee (Chairman, Mr. D. Deacon, G3BCM, July-December 1961; Mr. E. W. Yeomanson, G3IIR, January-June 1962) again gave assistance and advice to members who had experienced difficulties in regard to television and broadcast interference. Headquarters continued to distribute free of charge to members literature designed to help them to solve their TVI/BCI problems.

Contests Committee

The Contests Committee (Chairman, Mr. W. H. Matthews, G2CD) was responsible for drafting the rules, judging and reporting upon upwards of 20 events, ranging from world wide contests such as B.E.R.U. and the R.S.G.B. Telephony Contest to small events such as the Low Power Field Day.

National Field Day 1962 was won by Stourbridge and District Amateur Radio Society for the second year in succession. The High Power Section of the B.E.R.U. Contest 1962 was won by Mr. David Parr (ZB1HC, G3MIR) and the Low Power Section by Mr. D. F. Kiesewetter (VK2APK). Mr. W. E. Wilkinson (B.R.S.20317) won the Receiving Section.

The R.S.G.B. Telephony Contest 1961 was won by Mr. A. J. Slater (G3FXB) and the Receiving Section by Mr. D. S. Kendall (B.R.S.24643).

Radio Amateur Emergency Network

The activities of the Network were again co-ordinated by

the R.A.E.N. Committee (Chairman, Dr. A. C. Gee, G2UK, July-December 1961, Mr. C. H. L. Edwards, G8TL, January-June 1961). Exercises with the British Red Cross Society, the St. John Ambulance Brigade and the Police were carried out by local groups in order to test out the efficiency of the Network.

Fortunately R.A.E.N. was not called upon during the year to participate in any major disaster but the Council is satisfied that should the services of members be required in an emergency the Network will be able to make a worthwhile contribution.

G.P.O. Liaison Committee

The G.P.O. Liaison Committee (Chairman, Mr. L. E. Newnham, B.Sc., G6NZ) has given consideration to a number of matters of policy which are at the present time under discussion with the G.P.O. These include proposals in respect of a Novice form of licence and a Technicians' (V.H.F.) licence. The Committee is also seeking to persuade the United Kingdom Government to enter into reciprocal Amateur Radio Licensing arrangements with other Governments, and is pressing for the present very restricted Maritime Mobile facilities to be extended.

Appreciations

The Council records its warm appreciation to all members of Committees. Without the voluntary contribution made by such members the work of the Society would be seriously retarded.

Council Meeting Attendances

The following table gives a list of attendances at meetings of the Council during the period July 1961 to June 1962.

Name	Actual	Possible
Bartlett, H. A. (1)	1	2
Caws, N.	12	12
Cole, E. S.	11	12
Edwards, C. H. L.	12	12
Ellis, K. E. S. (2)	5	6
Hills, R. C.	11	12
Ingram, E. G.	12	12
Kay, J. D. (2)	5	6
Milne, A. O.	10	12
Newnham, L. E.	12	12
Parker, F. K.	9	12
Patterson, A. D. (3)	3	3
Russell, F. A. (4)	5	9
Stevens, R. F. (5)	6	6
Smith-Rose, R. L. (2)	—	6
Stone, G. M. C.	10	12
Swinerton, J. W. (5)	6	6
Wade, P. H.	12	12
Williams, A. C.	8	12
Yeomanson, E. W.	12	12

(1) Elected to fill casual vacancy, May 1962.

(2) Retired, December 31, 1961.

(3) Elected to fill casual vacancy, April 1962.

(4) Resigned, March 1962.

(5) Elected, January 1, 1962.

Silent Keys

The Council records with deep regret the passing of a number of members including, F. Forbes, ex-2BFC, S. S. Jeffs, G3PR, E. W. Rogers, G2AMN, I. Jones, GW3KY, E. G. Dennis, G3BEE, E. Hayward, GW2UH, D. E. Burgess, G4OZ, R. Graham, G2BGA, W. Krohn, G6KJ, K. Crispin, G6MH, H. V. Wilkins, G6WN (Vice-President), J. G. Maitland-Edwards, G2GS, S. Meadowcroft, G2FPM, J. Podd, G3OWT, G.B.C. Smith, G3GNJ, W. N. Hall, B.R.S.17479, C. Symonds, G5OV, A. H. Wilson, G2WN, W. J. Edwards, GW2TY, J. Speakman, G3GYV, F. N. Evans, G2KL, J. S. Johnson, G3KB, D. A. E. Samson, GM3EQY, H. W. P. Janssen, G3HAH, C. Hunt, G6ZJ, A. T. Gillies, GM3FIW, H. Millington, GW2BMN, W. Pennell, GW3FV1, N. J. Brundell, G2CPL, R. J. Dixon, G3HSY.

THE AMATEUR RADIO HANDBOOK (THIRD EDITION)

"Every now and then a book appears which demands the very finest of recommendations, and such a book is the third edition of the R.S.G.B. *Handbook*... this book is the best of its type."—*Amateur Radio* (Australia).

"This book provides a first-class course of instruction for the intending amateur operator and a gold mine of reference for those already experienced. It is difficult to imagine an amateur's problem that could not be solved by reference to *Amateur Radio Handbook*: it is nearly as hard to imagine a professional problem, too, at least in the communications sphere to which the answer would not be available..."—*Wireless World*.

"... It is comprehensive and reliable in all aspects of Amateur Radio transmission and reception."—*Technology*.

"... one of the best handbooks designed primarily for amateur use... we could do no less than highly recommend it... the chapters on S.S.B., H.F. Receivers, Noise and Measurements deserve a special mention for the manner in which the subjects are presented and the completeness of their coverage."—*Radio, Television and Hobbies* (Australia).

"... this excellent *Handbook*... the technical standard is very high..."—*Electron* (Holland).

"... covers every aspect of Amateur Radio... contains many construction articles and is beautifully printed and profusely illustrated..."—*CQ Magazine*.

"... This handbook is certainly a credit to the Society and is an absolute 'must' for everyone interested in Amateur Radio, shortwave listening or even in radio theory and construction generally. No one will read this volume without having become the wiser for having done so."—*Radio Constructor*.

The *Amateur Radio Handbook* is bound in maroon buckram linon, contains 544 pages, nearly 700 line diagrams and more than 100 halftones.

PRICE: 34s. (Postage and Packing 2/6)
(\$5.50 post paid—U.S.A. and Canada)

Obtainable from leading booksellers or direct from:

R.S.G.B. PUBLICATIONS
(Dept. B)

28 Little Russell Street, London, W.C.1

Society News

Braaten and Milne Trophies

THE Council has awarded the Braaten Trophy for the current year to Mr. C. R. Perks (G4CP) whose score was judged to be the highest made by a United Kingdom R.S.G.B. member in the 1962 A.R.R.L. DX Telegraphy Contest.

The Arthur Milne Trophy has been awarded to Mr. R. Jones (GW3JI) whose score was judged to be the highest made by a United Kingdom R.S.G.B. member (other than G) in the same Contest.

London Regional Meeting

THERE was an attendance of 70, including 20 ladies, at the London Regional Meeting held in the South Restaurant, Earls Court, London, S.W.5, on October 6, 1962. The Council was officially represented by Mr. Norman Caws, G3BVG, Executive Vice-President and Hon. Treasurer and by Mr. E. W. Yeomanson, G3IIR. Other Council members present included Messrs. C. H. L. Edwards, G8TL, J. W. Swinnerton, G2YS, and G. M. C. Stone, G3FZL. Headquarters was represented by Mr. John A. Rouse, G2AHL (Deputy Editor).

The proceedings were opened by the Regional Representative, Mr. P. A. Thorogood, G4KD, who welcomed members. He then introduced Mr. R. Copsey of Redifon Ltd., who gave a most interesting talk on "Communications Receivers."

Following the lecture, there was a business meeting at which a variety of questions were put to the Council representatives. The ladies' programme included a make-up demonstration arranged by Elizabeth Arden Ltd. and a travel film.

After an excellent high tea, the traditional raffle was conducted. During the evening, Mr. Angus McKenzie (G3OSS) and his wife gave a most enjoyable recital of high fidelity stereophonic records.

The success of the meeting was generally considered to be marred only by a rather poor attendance.

London Lecture Meeting

THERE was an attendance of about 100 at the meeting of the Society held at the Institution of Electrical Engineers, London, on Friday, October 27, 1962, when Mr. R. W. White, Senior Controller of Experiments at the



The President (Mr. E. G. Ingram, GM6IZ, right) in conversation with Mr. R. W. White, Senior Controller of Experiments at the G.P.O. Goonhilly Station, Cornwall. A model of Telstar is in the foreground. (Photo by Ben Wade)

G.P.O. Station, Goonhilly Down, Cornwall, lectured on Satellite Communication.

The chair was taken by the President (Mr. E. G. Ingram, GM6IZ) who had the support of a number of Council members.

After a very interesting discussion a vote of thanks to the lecturer was proposed by Mr. L. E. Newnham, B.Sc. (G6NZ), Past President.

At the conclusion of the Lecture the President presented the Norman Keith Adams Prize for 1962 to Mr. D. T. Bradford (VQ4EV/G3GBO).

Council Ballot Scrutineers

AT the meeting of the Society held in London on October 27, 1962, Mr. F. W. Fletcher (G2FUX) and Miss Beryl Fletcher (B.R.S.20988) were appointed to scrutinize the Council Ballot.

Headquarters Fund—List No. 14

THE following is the fourteenth list of those who had contributed to the Headquarters Fund up to October 31, 1962:

G. Slaughter (G3PAO), S. Jagger (GM3BGB), W. Jenkins (G3EIM), J. Reeve (G3INX), Lt.-Commander R. H. N. Johnston (G2ZP), L. Miles (GW3IMQ), A. J. G. Keiller (G3KXR), Woburn Abbey Mobile Rally, Welwyn Garden City Group, R. G. H. Robertson (non-member), J. Brodsky (G3HGX), T. Darn (G3FGY), H. S. Willcox (K1LXA), J. Hum (G5UM).

Total amount contributed to date: £1,593 10s. 6d.

Assistant Editor

As a result of the staff changes announced on page 186 of the October issue of the BULLETIN there is now an opening at Society Headquarters for a keen licensed radio amateur with a flair for journalism to become Assistant Editor.

Commencing salary in the range £750—£950 p.a. depending upon age and experience. Contributory pension scheme.

Applicants should submit two references and give details of their previous experience. Applications, marked "Confidential A.E." must reach the General Secretary, R.S.G.B., 28 Little Russell Street, London, W.C.1., not later than November 30, 1962. No application will be opened until after that date.

Secretary-Accountant

As a result of the staff changes announced on page 186 of the October issue of the BULLETIN there is now an opening at Society Headquarters for the position of Secretary-Accountant. An interest in Amateur Radio would be an advantage.

Candidates must possess a sound knowledge of general office administration and bookkeeping. The successful candidate will be required to attend occasional evening and weekend meetings.

Commencing salary in the range £850 to £1,100 p.a. depending upon age and experience. Contributory pension scheme.

Applicants should submit two references and give details of their previous experience. Applications, marked "Confidential S.A.," must reach the General Secretary, R.S.G.B., 28 Little Russell Street, London, W.C.1., not later than November 30, 1962. No application will be opened until after that date.

G.P.O. Morse Tests

PROVIDED there are sufficient applications, the Post Office will hold Morse Tests during the week commencing January 14, 1963, at the Head Post Offices in Birmingham, Cambridge, Derby, Leeds and Manchester.

Application forms may be obtained from the Radio Services Department, Radio Branch, G.P.O. Headquarters Building, St. Martins-le-Grand, London, E.C.1. Completed forms, to which the entrance fee of 10/- must be affixed in stamps, must be posted to the Wireless Telegraphy Section at G.P.O. Headquarters to arrive not later than December 21, 1962.

Closing Date for January 1963 Issue

IN view of the delays which occur in the mail during the period immediately before Christmas, all contributions for the January issue of the BULLETIN should be posted as early as possible. The closing date for the January issue will be Thursday, December 20, 1962.

R.S.G.B. QSL Bureau

MR. S. G. MARSH (G2CZU), 10 Vernham Grove, Odd Down, Bath, Somerset, has been appointed QSL Bureau Sub-Manager for call-signs in the G2 series. Arrangements are in hand for the transfer of the Sub-Bureau from Mr. G. E. Verrill (G3IEC) to whom envelopes for the collection of cards should no longer be sent.

QRA Locator Maps

COPIES of the British Isles QRA Locator Maps are now available from Headquarters, price 2/6 post paid.

R.S.G.B. QSL Bureau Sub-Managers

THE following is a list of the R.S.G.B. QSL Bureau Sub-Managers showing the call-sign groups for which they are responsible:

G2 and DL2 calls:	S. Marsh (G2CZU), 10 Vernham Grove, Odd Down, Bath, Somerset.
G3, 4 and 5 two-letter calls & G6 and G8 calls:	E. G. Allen (G3DRN), 65a Melbury Gardens, London, S.W.20.
G3AAA-BZZ:	A. J. Mathews (G6QM), 62 Ashlands Road, Hesters Way Estate, Cheltenham.
G3CAA-DZZ:	C. C. Olley (G3AIZ), 157 Wanstead Park Road, Ilford, Essex.
G3EAA-HZZ:	C. A. Bradbury (B.R.S. 1066), 13 Salisbury Avenue, Cheltenham.
G3IAA-KZZ, B.R.S. and A numbers:	W. J. Green (G3FBA), 790 Rochester Way, Sidcup, Kent.
G3LAA-MZZ:	T. D. J. Miles (G3NXX), 7 Hampden Road, Wantage, Berks.
G3NAA-NZZ:	C. Harrington (B.R.S. 2292), 91 Brabazon Road, Hounslow, Middlesex.
G3OAA-PZZ:	C. R. Emary (G5GH), 133 Fairlands Road, Thornton Heath, Surrey.
G3RAA-RZZ:	J. H. Brazzill (G3WP), 43 Forest Drive, Chelmsford, Essex.
GD calls:	K. Walden (G3OLN), 1 Hawthorn Road, Cheltenham, Gloucestershire.
GI calls:	T. R. Moore (G3ENK), "Glyn Moar," St. John's, Isle of Man.
GM calls:	W. H. Martin (G15HV), "Swallow Lodge," Greenisland, Co. Antrim, Northern Ireland.
GW calls:	D. Macadie (GM6MD), 154 Kingsacre Road, Glasgow, S.4.
	J. L. Reid (GW3ANU), 28 Waterston Road, Gabalfa, Cardiff.

Envelopes for the collection of cards may be sent direct to the Sub-Manager concerned or to the QSL Manager (Mr. A. O. Milne). Outgoing cards should NOT be sent to the Sub-Manager unless they are in the call-sign group for which he holds envelopes. For example, the holder of a G3J-call may send cards for calls in the series G3IAA-G3KZZ to his own Sub-Manager, together with envelopes for the collection of cards, but he should not send to him cards in any other call-sign series. Sending cards for general distribution to the Sub-Managers only involves the cards in delay and the Society in needless expense. Mr. Milne's address is 29 Kechill Gardens, Bromley, Kent.

R.S.G.B. Bulletin, October Issue

THE Society's printers have stated that all copies of the October issue of the BULLETIN were posted on October 18, 1962, with the exception of 1200 copies which were inadvertently delayed until October 19. As members are aware, Loxley Bros. Ltd. have instructions to post all copies on the same day. Every effort was made to do so on this occasion but circumstances beyond the control of Loxley Bros. prevented this being accomplished.

City and Guilds of London Institute

THE address of the Electrical and Telecommunications Branch of the City and Guilds of London Institute is now 11-13 George Street, London, W.1 (Telephone number HUNter 1371).

Current Comment

(Continued from page 209)

amateur sense is practically unknown but there is no doubt that on the continent of Europe, particularly in the countries mentioned and in Scandinavia, it is as an important part of the Amateur Radio scene as are Mobile Rallies in this country.

The great virtue of a "Fox Hunt" is that it combines technical skill with physical fitness. No motor cars or motor cycles are allowed to help the competitors on their way. Leg power alone in most cases is the sole permitted mode of transport and from the information that has come to hand, the hazards are as great as any that may be conjured up by the organizers of an R.S.G.B. D/F National Final—including the one described in this issue!

Radio "Fox Hunting" is a challenge to youth. Is it too much to hope that a group of young members—who have perhaps already enjoyed the thrills of a European "Fox Hunt"—will answer that challenge by organizing a Golden Jubilee Year "Fox Hunt" for the Society next summer?

J. C.

Summer School

DEREK BRADFORD of Canterbury, Kent, is a schoolmaster. He is also a keen and enthusiastic radio amateur.

On another page in this issue Mr. Bradford tells the story of an experiment which is believed to be unique in Amateur Radio and Education circles. It is the story of a Summer School held in Folkestone, Kent. The idea of a Summer School for teachers is not new but the idea of a Summer School devoted to radio with a bias—dare we say it—towards Amateur Radio is certainly new.

Mr. Bradford and his colleagues deserve high praise for their efforts which were backed-up in splendid fashion by the Kent County Education Committee, who authorized the experiment, and by manufacturers who loaned equipment.

Two points in Mr. Bradford's account of the Summer School are worth more than passing notice. First, his rather startling but correct assumption that many schoolmasters with science degrees were themselves taught by schoolmasters who graduated in the reign of Queen Victoria. Second, his record of the obvious delight which showed on the face of a not so young schoolmaster when he switched on a piece of simple gear he had built and heard speech coming from the headphones.

If, as the result of the enterprise shown by Derek Bradford, some of those who attended the Summer School have returned to their duties with a clearer appreciation of modern radio and electronic principles, then the youngsters they will teach will benefit a hundredfold.

Congratulations, G3LCK.

J. C.

International Conference on Satellite Communication

ABOUT 500 satellite communication experts, from several countries, are expected to gather at the Institution of Electrical Engineers in London for the International Conference on Satellite Communication to be held from November 22-28, 1962.

The Conference, organized by the Electronics Division of the I.E.E., will be opened by Sir Ronald German, Director-General of the Post Office. Others taking part will be Captain C. F. Booth, Mr. F. J. D. Taylor and Mr. W. J. Bray, members of the G.P.O. team responsible for engineering the Goonhilly project, and Mr. E. F. O'Neal, in charge of the Telstar project from the United States side, who will be accompanied by other leading U.S. engineers from the Bell Telephone Laboratories and elsewhere.

More than 60 papers will be presented and discussed, the object of the Conference being to bring together a representative cross-section of those actively concerned with furthering the science and technology of communications satellites and associated ground stations.

Projects Telstar and Relay, the first experimental systems involving active civil communications satellites, will occupy two sessions devoted to the satellites themselves and the associated ground station equipments. General sessions on equipment details will be devoted to modulation, high-power transmitters, low-noise amplifiers and satellite design.

GOLDEN JUBILEE CELEBRATIONS

PRELIMINARY PROGRAMME

To enable overseas and provincial members to make plans for attending the Golden Jubilee celebrations of the Society in London during the first week of July 1963 the following preliminary programme has been drawn up by the Society's Golden Jubilee Celebrations Committee.

Monday, July 1	Visits to B.B.C. and other places of technical interest.
Tuesday, July 2	Visits to D.S.I.R., Slough, and other places of technical interest.
Wednesday, July 3	12.30 p.m. Informal Luncheon arranged by London Members' Luncheon Club. Evening. Special presentation at London Planetarium, and Official Reception.
Thursday, July 4	River Trip by private launch from Westminster to Hampton Court. Evening. Social Evening arranged by the London U.H.F. Group.
Friday, July 5	Evening. Golden Jubilee Dinner at the Connaught Rooms, London.

Morse Code Proficiency Tests

FOLLOWING consultations with the Radio Society of Great Britain, the Royal Naval Amateur Radio Society has decided to hold Morse proficiency tests each month, commencing Tuesday, December 4, 1962. Certificates, for which there will be a small nominal charge to cover expenses, will be issued for correct copy at speeds varying from 20 to 35 w.p.m.

The R.N.A.S. has applied for the call-sign GB3RN for use in connection with these tests.

The details of the proficiency tests are as follows:

Time. Qualifying runs will be made on the first Tuesday of every month commencing at 20.00 G.M.T.

Frequency. 3550 kc/s approximately, subject to non-interference.

Speeds. 20, 25, 30 and 35 w.p.m. Each speed to last three minutes.

Speeds will be calculated by averaging five characters to the word and based on the word PARIS.

Procedure. The headquarters station of the R.N.A.R.S. G3BZU will call CQRQ from 19.50 until 20.00 G.M.T. (at 12 w.p.m.). A pre-nominated station will answer.

G3BZU will commence with a preamble transmitted at 12 w.p.m.

Speeds will be separated with the break sign (BT) and the speed, i.e. BT 25 BT.

Text. The text of all transmission will be in English plain language and will concern subjects only associated with Amateur Radio.

Copy. Listeners must copy the text of the speed transmitted for the entire three minutes. 100 per cent copy only will qualify.

Copy may be typewritten or in longhand. Words badly written, which at the discretion of the R.N.A.R.S. Committee are not intelligible, will be considered void. Listeners must certify that no mechanical means (i.e. tape recorder) was employed to receive the copy.

Certificates. A Certificate of Proficiency will be issued for 100 per cent copy at 20 w.p.m. and endorsement stickers will be provided for 25, 30 and 35 w.p.m. No claims for higher speeds will be accepted unless the 20 w.p.m. qualifying run has been read correctly or the listener already holds a certificate by previously qualifying.

Note.—This certificate is only recognized by the R.N.A.R.S.

Entries. Entries must be postmarked not later than two weeks after transmission and should be sent to Royal Naval Amateur Radio Society (QRQ Test), H.M.S. Mercury, Petersfield, Hants.

U.K. Listeners. Must enclose five 3d. stamps. If the 20 w.p.m. copy is considered 100 per cent a certificate will be issued and stickers will be attached for any other speeds copied correctly.

Should the copy, at the discretion of the R.N.A.R.S. Committee, be incorrect, four stamps will be returned with the original copy marked with the errors.

To claim stickers after a certificate has been issued it is only necessary to send a 3d. stamp with the copy.

Overseas Listeners. Must enclose four I.R.C.'s with initial copy of 20 w.p.m. and one I.R.C. with subsequent claims.

Monitoring. All transmissions will be monitored by a tape operator. Should an error occur in the tape, the error will not be corrected at the end of transmission. Any tape errors must be read as transmitted and not corrected.

PA0AA Transmissions

NEWS bulletins, m.c.w. Morse code practices, code proficiency runs and RTTY are now being transmitted from PA0AA, the Headquarters station of V.E.R.O.N. on Friday evenings on a frequency of 3600 kc/s.

Council Proceedings

Resumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Friday, September 28, 1962, at 6 p.m.

Present: The President (Mr. E. G. Ingram in the Chair), Messrs. H. A. Bartlett, N. Caws, C. H. L. Edwards, R. C. Hills, A. O. Milne, L. E. Newnham, R. F. Stevens, G. M. C. Stone, J. W. Swinnerton, P. H. Wade, E. W. Yeomanson (Members of the Council), and John Clarricoats (General Secretary).

Apologies

Apologies for absence were submitted on behalf of Major-General E. S. Cole, Messrs. F. K. Parker and A. C. Williams. A letter of apology was received after the meeting from Mr. A. D. Patterson.

Audited Accounts

The Hon. Treasurer (Mr. Caws) submitted the audited accounts for the year ended June 30, 1962, and gave information on various points raised by members.

Resolved (i) that the audited accounts, as submitted by the Hon. Treasurer, be approved for printing and subsequent presentation to the members at the Annual General Meeting on December 15, 1962; (ii) that the Audited Accounts be signed in due time by the appropriate officers; (iii) to record a vote of thanks to Mr. Norman Caws for preparing the accounts and for furnishing members of the Council with details of income and expenditure.

Membership

Resolved (i) to elect 118 Corporate members and 60 Associates; (ii) to grant Corporate membership to 14 Associates who had applied for transfer; (iii) to grant Life Membership to Mr. G. G. Douglas (B.R.S.4406) of Bexley, Kent (elected 1941).

Proposed Amendments to the Society's Articles of Association

It was reported that at the Region 9 O.R.M. held in Weston-super-Mare on September 23, 1962, members had asked for an assurance that the membership will be given an opportunity of considering proposed amendments to the Society's Articles of Association.

It was agreed to inform members by means of an announcement in the October issue of the BULLETIN that members will be given adequate time to consider the proposed amendments.

It was also agreed that the proposed amendments should first be submitted to the Board of Trade for their general approval.

Reports of Committees

The Minutes of the following meetings of Committees were submitted as Reports:

TVI/BCI Committee	.. ..	August 29, 1962
Headquarters Committee	.. ..	August 30, 1962
Exhibition Committee	.. ..	September 11, 1962
Contests Committee	.. ..	September 13, 1962
R.A.E.N. Committee	.. ..	September 15, 1962

Resolved to receive the Reports and to accept the recommendations contained therein.

The recommendations related to claims for expenses in connection with the International Radio Communications Exhibition and various Contest matters.

The very handsome Raynet Trophy recently presented to the Society by Mr. E. A. Matthews was displayed at the meeting.

The meeting terminated at 9.55 p.m.

Insurance on Amateur Radio Equipment

FROM time to time enquiries are received at Headquarters regarding insurance cover for radio equipment and aërials. Members may like to know that some companies regard Amateur Radio equipment as covered by the terms of the normal Householder's Comprehensive Policy but members are advised to check this with their own particular company. Cover for aërials can generally be arranged for a small extra premium.

In those cases where a company does not consider Amateur Radio equipment covered by the Householder's Comprehensive Policy, it is generally willing to extend the cover at a nominal extra cost.

Can You Help?

● D. Byrne (G3KPO/G3PTC), Jersey House, Eye, Peterborough, who requires information on the Army No. 10 receiver and the Army Indicator Unit No. 5?

Silent Keys

C. S. "PIM" BRADLEY (G2AX)

To those who knew of "Pim" Bradley's last serious illness, the announcement of his death on September 29, 1962, whilst on holiday with his wife in Northern Italy came as no great surprise but the sense of loss when the news became known was acutely felt by all his closest friends.

"Pim" Bradley had a remarkable career. He served in the Royal Flying Corps and Royal Air Force during the first World War as an observer. In the second World War he joined the R.A.F.V.R. holding appointments in such interesting spots as Kingsdown in Kent. He also saw service abroad and after the war continued in the Service for some time as an Entertainments Officer. He was well fitted for that duty because for many years he had been a member of the Concert Artists' Association. Clemence Bradley—to give him his real name—was one of the very first baritones to broadcast from 2LO, in fact his name appears on the programme of artists who broadcast during the first All British Wireless Exhibition organised by the Wireless Society of London in September 1922—and that was before the British Broadcasting Company started.

In 1926 "Pim" Bradley—then living in North London—became licensed as G2AX. Within the next few years he had made his mark in Society circles becoming a member of the Council in January 1931 after performing yeoman service in connection with the social side of the Society's Annual Convention.

In more recent years he had lived in Hythe, Kent and it was from there that he brought his skill and experience into full play during the I.A.R.U. Region I Conference held in Folkestone in June 1960 when he headed the group of local amateurs who assisted the Conference Secretariat. The news of his death will be received with much sorrow by all who attended that Conference and especially by those who heard him sing to the delegates on a never-to-be forgotten occasion.

He remained keenly alert to Society affairs until the end of his life and his station—operated from delightful Mill Stream Cottage in Horn Street, Hythe—was often heard on the air.

"Pim" Bradley was a member of the Radio Amateur Old Timers' Association and a member of a great many other organisations locally and nationally.

To his widow, Ruth, who nursed him so devotedly during his illness, our deepest sympathies are extended.

J. C.

W. H. HARRIS (B.R.S. 15876) and W. E. HARRIS (G3DPH)

It is with sorrow that we record the deaths of W. H. Harris (B.R.S. 15876) on October 11 and his son W. E. Harris (G3DPH) on October 13, 1962. Mr. W. H. Harris, an invalid for many years, was Hon. Secretary of the Radio Amateur Invalid and Bedfast Club until he handed over to his son two years ago. Although also handicapped by ill health, G3DPH took an active part in R.A.E.N. in East Anglia.

To both widows and families we extend our sympathy at this time. G3LWY.

F. TILLOTSON (G6XT)

It is with deep regret that we record the sudden death of Fred Tillotson (G6XT) of Ossett, Yorkshire, at the age of 55. Mr. Tillotson, who served in the R.A.F. during the Second World War, owned a photographic studio in Dewsbury where he met his death by electrocution.

He was well known for his aerial theories and at one time was a keen DX operator but in recent years he had confined his activities to 144 Mc/s.

The funeral, which was attended by J. Clegg, G3FQH, H. Beaumont, G5YV, and Philip H. Wade, G2BPJ (R.S.G.B. Zonal Representative), took place at Dewsbury Moor Crematorium.

Our condolences are extended to his widow, two sons, daughter and mother, in their tragic loss. G2BPJ, G5YV.

D. T. BRADFORD (VQ4EV/G3GBO)

It is with deep regret that the Society records the death of D. T. Bradford (VQ4EV/G3GBO) in a flying accident over Reading on November 4, 1962. A tribute to his memory will appear next month.

- R. W. Howe (G3PLB), 162 Victoria Road, Wood Green, London N.22, who requires the circuit diagram and any other information on the Oscilloscope No. 11, A.A. Predictor Mk 1?
- G. H. Kenny, 27 Tareena Street, Nedlands, Western Australia, who requires the crystal frequency chart for the A.M. Receiver Unit Type 71?
- D. J. Ingrey (A.3021), 5 Mitchley Road, Tottenham, London, N.17, who wishes to obtain details of the conversion of the 25 receiver (part of the TR1196) to short wave coverage? He also requires information on the plug connections.



A new catalogue showing the actual size of Taylor panel meters is available from Taylor Electrical Instruments Ltd., Montrose Avenue, Slough, Bucks.

J-Beam Aerials Ltd., Westonia, Weston Favell, Northampton, is now manufacturing skeleton slot beam aerials to cover Channels 23 to 33 and Channels 34 to 44 for use in forthcoming colour TV transmission tests. The gain for the 6-over-6 version is 9.5db and for the 10-over-10 14.5db. In each case it is claimed these gains are maintained constantly over the channel coverage. A balun is incorporated to which a variety of sockets and cables can be attached.



The Avel 130 watt d.c.-to-d.c. converter manufactured by Aveley Electric Ltd. The converter, which operates from a nominal 12 volt d.c. supply, provides outputs of 425 volts at up to 300 mA and 265 volts at 100 mA. It is thus suitable for providing power to a complete mobile station such as a K.V. Valiant transmitter and companion receiver.

(Photo by courtesy of Aveley Electric Ltd)

Two new ranges of capacitors—"Supamold" and "Duomold"—have been announced by The Telegraph Condenser Co. Ltd., North Acton, London, W.3. The "Supamold" type has paper dielectric and separate aluminium foil while "Duomolds" are of mixed dielectric construction, i.e. paper and synthetic film with solid foil. Both types are encapsulated in coloured polystyrene tube. Insulation resistance is 30,000 Megohms at 20°C in both cases. Self-inductance is stated to be very low.

Tin-A-Lum is a new product for soldering aluminium, duralumin, tin-plate, zinc and other metals, which requires no flux. The melting temperature is stated to be from 180°C (356°F). A descriptive leaflet is available from Tin-A-Lum Ltd., Drift Road, Fareham, Hants.

Nottingham Electronic Valve Co. Ltd., East Bridgford, Notts., is now marketing the Nev Icon television camera at £75. The new camera weighs 4 lb. and measures only 8 in. x 4½ in. x 3½ in. An illustrated brochure is available from the manufacturers.

Oryx soldering tweezers are a new type of instrument intended of use on micro-miniature circuit modules, diodes, transistors, relays and similar components. Another addition to the Oryx range is the duo-thermal wire stripper tweezer. Each limb of the instrument has a miniature heating element, the total consumption being 12 watts at 6 volts. Further information may be obtained from W. Greenwood Electronic Ltd., 677 Finchley Road, London, N.W.2.

Standard Telephones and Cables Ltd., Transistor Division, Footscray, Sidcup, Kent, are renumbering their silicon planar

and germanium transistors in accordance with the Pro-Electron coding system. At the same time, substantial reductions in price have become effective.

Technical difficulties in the manufacture of micro-soldering instruments have been overcome by Light Soldering Developments Ltd. with the result that two new models for mains operation have been added to the "Adamin" range: the C10L (10 watts) and the C15L (15 watts). The C10L has a ⅜ in. diam. replaceable alloy copper bit while the C15L has a similar bit with a ⅜ in. diam. face. A catalogue giving full details of the complete range is available on request from Light Soldering Developments Ltd., 28 Sydenham Road, Croydon, Surrey.

Home Radio (Mitcham) Ltd. of 187 London Road, Mitcham, Surrey, is now supplying a new universal mounting bracket for such components as potentiometers and variable capacitors. A slot in the bracket permits a choice of position. The bracket is finished in grey hammertone and costs 1s. 6d. retail. Special terms are available to the trade.

R.A.E.N. Notes and News

By E. ARNOLD MATTHEWS (G3FZW)*

R.A.E.N. Committee Secretary

OWING to his impending removal from the Manchester district, Mr. C. M. Denny (G6DN) has found it impossible to continue as Hon. Secretary to the Committee and Mr. E. R. L. Bassett (B.R.S. 16075) of Flat 2, Pound Court, Pound Street, Bitterne, Southampton, Hants, has been appointed to succeed him.

Committee Matters

After considerable practical testing in group exercises the recommended procedure has been subjected to various local modifications, and the Committee has decided to review the subject. To this end a whole meeting has been set aside, and it will be attended by a member of the Essex Constabulary, who will be able to advise on matters likely to be affected by police liaison.

From time to time there arises a need for walkie-talkie equipment for R.A.E.N. purposes, particularly amongst groups

R.A.E.N. Membership Cards

In an emergency the Police may require R.A.E.N. members to produce their membership cards. Carry yours with you—always.

working with police. Published designs are frequently found to be too complex or too simple, and the Committee now awaits completion of a project by the Manchester group. Constructional details will be made available to members in due course.

Around the Groups

During the National First Aid Week held by St.J.A.B. the Buckinghamshire Group demonstrated R.A.E.N. (and Amateur Radio) work with two stations installed at the Wolverton St.J.A.B. exhibition. G3NOC/A operated s.s.b.on DX bands, and G3HIU/A operated a battery-driven transmitter-receiver built by G3KVT to demonstrate emergency operation, maintaining contact with G3LCS, G3PV and G3IVX/M. G3IMV and G3BKC/M also helped, but unfortunately G3PBV became involved in a motor accident and was himself the recipient of St.J.A.B. aid before spending the rest of the demonstration week in hospital.

Essex group, after a quiet summer, is ready for winter, and together with Hertfordshire and North Middlesex now have 40 mobiles, permanent fixed stations at County Police and B.R.C.S. Headquarters. These operate on 160m, but a quantity of 2m stations is being acquired. Future plans include an exercise with B.R.C.S. late this year.

With the re-appointment of G2ACD as C.C., East Yorkshire, we may expect an increase in the activity in that area.

* 1 Shortbatts Lane, Lichfield, Staffs.

CONTEST NEWS



— RESULTS — — REPORTS — — RULES —

D/F National Final 1962

THE 1962 National Direction Finding Final was held in Buckinghamshire on September 9, when 16 of the 17 finalists assembled in perfect weather at a point a few miles north of Aylesbury. From the start at 13.30 B.S.T. on high open ground, the strong signals enabled both stations to be easily identified despite the intensive Top Band activity from the National Mobile Rally at Woburn Abbey only some nine miles away.

Competitors soon found that the two hidden stations were in line on diametrically opposing bearings and all but one party correctly decided that station "A" (G8VZ/P) lay to the north-east and was the nearer of the two. It was in fact 5½ miles away, hidden on an open derelict site between the B.488 road and the Grand Union Canal, but surrounded by numerous picnic parties, parked cars, fishing enthusiasts and other distractions. The aerial consisted of a loaded whip partially concealed in an old asbestos drain pipe innocently leaning against a tree. First to arrive was O. L. Harding at 14.27 with eight other competitors in close pursuit arriving more or less at minute intervals. Fifteen of the 16 starters successfully located this station.

Station "B" (G3DQC/P) was nearly 16 miles to the south-west and in a totally different situation. It was located some 50 yards from the road alongside the fence of a steep railway cutting which effectively divided a large and very dense wood. The available footpaths all lead to the wrong side of the cutting and crossed the railway by bridges or over the top of a tunnel. The organizer had hoped that competitors would approach by the direct but heavily overgrown, marshy and tedious route from the road, but in fact all avoided these pitfalls and came from all directions but the expected one, arriving in various states of exhaustion.

The transmitter crew were surprised by the arrival of J. H. Andrews at his first transmitter, at the unexpectedly early time of 14.42 B.S.T. He had ridden pillion on a motor cycle and fortuitously protected by his more appropriate raiment was able to force a way through the thick undergrowth to arrive comparatively cool and unscathed. Nevertheless the long journey back and some difficulty in locating station "A" lost him his advantage and he was only able to take second place. For over an hour and a quarter the remote tranquility of Station "B" remained undisturbed until the bushes parted at 16.00 B.S.T. to herald the arrival of E. L. Mollart at his second transmitter, to win the contest by 11 minutes. By this time many other competitors were in the vicinity and during the final half hour ten completed a difficult contest by locating both hidden stations.

At the conclusion of the event a total of 56 persons assembled for tea at Waddesdon. The organizer, G. T. Peck (B.R.S.15402) congratulated the competitors on their very high percentage of successes in a contest that had deliberately been made as difficult as possible in a district that represented new ground to all participants. Mr. D. Findlay, D.F.C. (G3BZG), of the R.S.G.B. Contests Committee, thanked Mr. Peck and his associates for arranging a very fine event, and also congratulated the competitors on overcoming difficulties that would have proved insuperable a few years ago.

The final result of the competition was as follows: E. L. Mollart (B.R.S.10977), Oxford, 16.00; J. H. Andrews, Rugby, 16.11; T. J. Hayward (G3HHD), Slade, 16.13;

M. P. Hawkins, Oxford, 16.14; G. Nicholson (G3HKC), Slade, 16.25; O. L. Harding, Rugby, 16.28; E. Hickey, Slade, 16.29; E. W. Bristow, Oxford, 16.29½; P. M. Williams, Slade, 16.29¾; A. C. A. Newman, (G2FIX), Salisbury, 16.31.

B.E.R.U. Contest 1962

IN the results of the Twentyfifth B.E.R.U. Contest 1962 published on page 137 of the September issue of the BULLETIN, 5N2RSB placed 43rd in the High Power Section should have been shown sixth in the Low Power Section and as a certificate winner.

V.H.F. Frequency Measuring Test

A PRACTICE v.h.f. frequency measuring test will be held on January 13, 1963, at 16.00 G.M.T. The test will involve measuring the frequency of GB3VHF, the Society's beacon station at Wrotham, Kent. Results should be sent to Headquarters marked for the attention of the Contests Committee.

This is a "dummy run" for a full-scale v.h.f. frequency measuring test to be held later in 1963.

More Pirates Fined

ON October 8, 1962, at Bristol Magistrates' Court, Frederick George Edmund Hoddinott of 29 Vale Road, Seaford, Sussex, pleaded guilty to a charge of using wireless telegraphy transmitting apparatus without the necessary licence. He was fined £30, ordered to pay £4 4s. advocates' fees and £1 10s. witness's expenses and ordered to forfeit the equipment to the Postmaster-General.

At Gloucestershire Juvenile Court on October 11, 1962, a 16-year-old youth pleaded guilty to a charge of using wireless telegraphy transmitting apparatus without the necessary licence. He was fined £4.

No National Radio Show in 1963

RADIO Industry Exhibitions Ltd. have announced that there will be no National Radio Show at Earls Court in 1963 but a trade show, to take place in the late Spring or early Summer in 1963, is being considered. It is intended to resume the series of highly successful public radio shows in 1964 and plans for this are already under active consideration.

GB2RS SCHEDULE

R.S.G.B. News Bulletins are transmitted on Sundays in accordance with the following schedule:

Frequency	Time	Location of Station
3600 kc/s	9.30 a.m.	South East England
	10 a.m.	Southern Area
	10.30 a.m.	North Midlands
	11 a.m.	North East England
	11.30 a.m.	South West Scotland
145.3 Mc/s	12.00	North East Scotland
	10.30 a.m.	Beaming north west from Sutton Coldfield
145.50 Mc/s	10.45 a.m.	Beaming south west from Sutton Coldfield
	11.00	Beaming north from Leeds
145.1 Mc/s	11.15	Beaming east from Leeds
	12 noon	Beaming north from London area
	12.15 p.m.	Beaming west from London area

News items for inclusion in the bulletins should reach Headquarters not later than first post on the Thursday preceding transmission. Reports from Affiliated Societies and from non-affiliated societies in process of formation will be welcome.

B.E.R.U. Contest

Rules for the Twenty-sixth Event, February 16-17, 1963

RADIO amateurs throughout the British Commonwealth are invited to take part in the Twenty-sixth B.E.R.U. Contest to be held on February 16-17, 1963. The Contests Committee is again arranging to secure the maximum amount of overseas publicity but solicits the assistance of members in bringing the dates and rules to the notice of all operators.

- Sections.**—The contest is divided into two sections: (a) High Power—maximum licensed power; (b) Low Power—maximum input 25 watts.
- Duration.** The contest (both sections) will start at 00.01 G.M.T. on Saturday, February 16, and end at 23.59 G.M.T. on Sunday, February 17, 1963.
- Eligible Entrants.** The contest is open to all fully paid-up corporate members of the R.S.G.B. resident within the United Kingdom and to all British subjects outside the U.K. but within the British Commonwealth and British Mandated Territories. All entrants agree to be bound by the rules of the contest.
- Operator.** Only the entrant will be permitted to operate his station for the duration of the contest.
- Entries.** Entries must be set out, as shown in the example, on **ONE SIDE ONLY** of foolscap paper. Entries must be postmarked not later than **March 11, 1963**, and must be addressed to the Contests Committee, Radio Society of Great Britain, 28/30 Little Russell Street, London, W.C.1, England. Log sheets are available on request.

B.E.R.U. CONTEST, FEBRUARY 16-17, 1963

Section: (High or Low Power)..... Claimed Score.....
Name..... Call-sign.....
Address.....
Transmitter..... (D.C. input to any stage of the transmitter shall not exceed 25 watts in the Low Power Section)

Receiver..... Aerial(s).....
DECLARATION: I declare that this station was operated strictly in accordance with the rules and spirit of the contest, and I agree that the decision of the Council of the R.S.G.B. shall be final in all cases of dispute. I certify that the maximum input to the final stage of the transmitter was..... watts.

Date..... Signed.....
Failure to sign the declaration may involve disqualification of the entry.

SAMPLE LOG SHEET

Date	Time GMT	Call-sign of station worked	I sent him	He sent me	Band Mc/s	Leave blank	Bonus Points	Points Claimed
16	0005	G3XXX	569001	559002	14		20	5
16	0009	VK2ZZZ	579002	569004	14		20	5
17	0012	GM3YYY	569113	579102	14		—	5
17	0730	GW8XXX	589164	589154	21		20	5
Total (Points Claimed + Bonus Points) 20 + 60 = 80								

- Bands.** Operation is restricted to the following bands: 3.5, 7, 14, 21 and 28 Mc/s. Transmission must be of type A1 (pure c.w.) only, and frequent tone reports of T8 or less may result in disqualification.
- Licence Conditions and Power Input.** Entrants must operate within the terms of their licences.
- Contacts.** Contacts may be made with any station using a British Commonwealth call-sign except within the entrant's own call area. British Isles stations may not work each other for points. Contacts with unlicensed stations will not count for points. The decision as to whether or not a contact is valid will rest with the R.S.G.B. Contests Committee. Only one contact on each band with a specific station will count for points. **Duplicate contacts should be logged**, but no points claimed.
- Scoring.** Each completed contact will score 5 points. In addition a bonus of 20 may be claimed for the first contact with each new Commonwealth call area (as defined in the Appendix) on each band. All British Isles stations (G, GB, GC, GD, GI, GM and GW) count as only one call area.
- Contest Exchanges.** Contest numbers must be exchanged and acknowledged before a contact can count for points. The contest number of six figures shall be made up of the RST report and three figures starting with 001 for the first contact and increasing by one for each successive contact, e.g., 559001 for the first and 439002 for the second contact, and so on.
- Awards.** At the discretion of the Council, a trophy or miniature will be awarded to the winner of each section, and certificates will be awarded

to the first three entrants in each section. In addition a certificate will be awarded to the leading entrant in each call area regardless of the number of entrants in his call area provided that his score exceeds 1,500 points in the High Power section or 750 points in the Low Power section. A certificate will be awarded to the runner-up in each call area in which there are ten or more entrants, provided his score exceeds 1,500 points in the High Power section or 750 points in the Low Power section.

Appendix

The following call areas are recognized for the purposes of scoring in the B.E.R.U. contest:—

AC3 Sikkim	VQ4
AP (West Pakistan)	VQ7 (Aldabra Island)
AP (East Pakistan)	VQ8 (Chagos)
G, GB, GC, GD, GI,	VQ8 (Agalega)
GM, GW—as one call area.	VQ8 (Rodrigues)
MP4 (Bahrein)	VQ8 (St. Brandon)
MP4 (Muscat and Oman)	VQ8 (Mauritius)
MP4 (Qatar)	VQ9
MP4 (Trucial Oman)	VR1 (Gilbert & Ellice Islands)
VE1	VR1 (British Phoenix Islands)
VE2	VR2
VE3	VR3 (Christmas Island)
VE4	VR3 (Fanning Island)
VE5	VR4
VE6	VR5
VE7	VR6
VE8	VS1
VK0 (Australian Antarctica)	VS4
VK0 (Heard Island)	VS5
VK0 (Macquarie Island)	VS6
VK1	VS9 (Aden)
VK2	VS9 (Maldives Islands)
VK2 (Lord Howe Island)	VS9 (Kamran Island)
VK3	VU2
VK4	VU4 (Laccadive Islands)
VK4 (Willis Island)	VU5 (Andaman and Nicobar Islands)
VK5	ZB1
VK6	ZB2
VK7	ZC5
VK8	ZD3
VK9 (Admiralty Island)	ZD6
VK9 (Christmas Island)	ZD7
VK9 (Cocos Island)	ZD8
VK9 (Norfolk Island)	ZD9 (Gough Island)
VK9 (Nauru)	ZD9 (Tristan da Cunha)
VK9 (New Guinea and Bismarck Island)	ZE
VK9 (Papua)	ZK1 (Cook Islands)
VO	ZK1 (Manihiki Island)
VPI	ZK2
VP2 (Anguilla)	ZL1
VP2 (Antigua and Barbuda)	ZL1 (Kermadec Island)
VP2 (British Virgin Islands)	ZL2
VP2 (Dominica)	ZL3
VP2 (Grenada and Dependencies)	ZL3 (Chatham Island)
VP2 (Montserrat)	ZL4
VP2 (St. Kitts and Nevis)	ZL4 (Auckland & Campbell Islands)
VP2 (St. Lucia)	ZL5 (N.Z. Antarctica)
VP2 (St. Vincent & Dependencies)	ZM6
VP3	ZM7 (Tokelau)
VP4	ZS3
VP5 (Jamaica)	ZS7
VP5 (Cayman Islands)	ZS8
VP5 (Turks & Caicos Islands)	ZS9
VP6	457
VP7	5B4
VP8 (Falkland Islands)	5H3
VP8 (Grahamland)	5N2
VP8 (Sandwich Islands)	5X5
VP8 (South Georgia)	9G1
VP8 (South Orkney Islands)	9K2
VP8 (South Shetland Islands)	9L1
VP9	9M2
VQ1	
VQ2	

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. Letters for inclusion in this feature should be concise and preferably not more than 200 words in length.

Is the Bulletin becoming too highbrow?

DEAR SIR,—As a member of the Society and an ever-interested reader of the BULLETIN for nearly 30 years I should like to underline Mr. Roe's (G2VV) letter in the July issue.

I have noticed the increasing amount of space allotted in recent years to technical subjects and often very technical at that. While in no way wishing to question the value of such articles or the fact that they should always find a place in the Society's journal I think it is probable that they are appreciated or indeed understood by a comparatively small percentage of the membership. By way of illustration I cannot but wonder how many of us can follow the "Mathematical Appendix" on page 19 of the July issue in G3JJG's article on s.s.b.?

G2VV proposes that a questionnaire be submitted to the membership on this matter. I should like to second his proposal. He outlines something of the form such a questionnaire might take and I feel Council would be well advised to act on the suggestion.

I have in my possession copies of all issues of the "BULL" since 1935. What Mr. Roe says about the decrease over the years of the friendly atmosphere, informal news, etc. is very noticeable and in my view a very real loss.

Like him, I should wish our BULLETIN to maintain a high standard—as indeed it has always done—but the fact that we are not all highbrows is something which I would heartily suggest should not be overlooked.

Yours faithfully,
(Rev. Canon) N. H. F. WARING (E18J).

Dublin, Eire

New Headquarters and Subscription Rates

DEAR SIR,—I'd like to say a word about the proposed new H.Q. I will start off by saying I have not yet made a donation towards the cost. In the language my old friend, Ted Ingram, will understand, we must stop 'footin' about! For what we get from the R.S.G.B. the subscription is ridiculous. If we compare the increase in incomes with the rise in subscription over the past 25 years, there is no comparison. It costs the average amateur (my estimate) at least £100 to put him on the air. Surely the paltry figure of 5 per cent of that sum is little enough to pay for the privilege of belonging to the body which keeps him there.

I am prepared to allow my name to be associated with a proposal for the next A.G.M. that "The annual subscription for Corporate Members of this Society should be increased forthwith to £5 5s." I do not make this proposal as a member of an affluent society. £5 5s. is to me five pounds five shillings in exactly the same way as it appears to anyone else anywhere in the world. I am only trying to say that I am prepared to pay for what I get, and I feel sure that very many British amateurs will support me. My wife pays more than £5 5s. for her two women's magazines. Surely our own BULLETIN as it could be, written by some of the finest technical brains in the country plus the service rendered to British amateurs, is worth 2s. a week! With that income and Norman Caws' financial brain, we could have the standard of H.Q. our Council needs within the year and a BULLETIN which would be one of the best technical publications in the world.

I've said my piece and you may use it as you see fit.

Yours faithfully,
A. G. FOWLER, (GM8SV/MP4BBQ)

Bahrain, Persian Gulf.

The TVI Problem

DEAR SIR,—I have often read articles and editorials in radio journals such as the BULLETIN which go to great pains to show that television interference caused by amateurs is negligible compared with that from other sources. Whilst I can but agree with the analysis provided, I do not think that a true picture is

provided, since one can hardly expect interference from stations which are QRT.

In my area there are approximately 30 amateur stations, and the writer knows of nobody, apart from himself, who operates above 7 Mc/s during TV hours. It is indeed a common complaint of the few who engage in 3.5 or 1.8 Mc/s operation that they are experiencing TVI with ten watts! How can one, then, expect to operate QRO and on the higher frequencies?

The writer's station runs an LG300, heavily filtered and "groomed" for harmonics. It can be proved without doubt that the latter are non-existent on all bands from 3.5 to 28 Mc/s, and yet the author is still subject to the following complaints:

- 28 Mc/s—Heavy swamping on receivers over a wide area—high pass filters ineffective in several cases.
- 14 and 21 Mc/s—Phone operation causing havoc over a wide area whilst c.w. operation is completely clear.
- 3.5 Mc/s—Heavy patterning, presumably due to the frequency difference of the B.B.C. sound and vision channels.

What can one do in the circumstances? I do not wish to go QRT with the others but I am forced to operate phone on 7 Mc/s, where I have to compete with the Cairo, Peking, Tirana and Teheran broadcast stations not to mention the Israeli jammer on 7050 kc/s.

After a four year "battle" with neighbours the writer is about to move to a new address. He would appreciate hearing the views of others before he once again hurls himself into the fray.

Yours faithfully,
D. G. PINNOCK (G3HVA)

Luton, Beds.

Operating Manners

DEAR SIR,—Following a short 80 metre listening session on the morning of September 13, 1962, I am prompted to write to the BULLETIN for the first time. My reason for this is to make a plea to members to use common sense and discretion in what they say over the air. We hear many things discussed which have no bearing whatsoever on Amateur Radio. Within reason this is fair enough, and I would be the first to admit the humour and backchat is enjoyed.

On the occasion to which I refer an operator with an early call-sign and resident on the west coast, was in QSO with another G station. They appeared to be educated people from their accent but were making very personal comments about a young man who had recently taken up the post of curate locally. Remarks regarding this gentleman's calling were, to say the least, disrespectful. After discussing his blazer, "which was definitely non-U, old boy!", plans were made for goading this young man with carefully prepared questions when they met him. This to provide humour for future QSOs.

I regret I did not take a tape recording of the conversation as I feel that if it was played over in the presence of the operators in question and their friends (with the young curate also present) they would not feel very proud of themselves.

Should other operators get involved in a QSO with this type of person they should pull out smartly and give their reasons.

Yours faithfully,
F. C. SOANS (G2HJV)

Leamington Spa, Warwickshire.

Safety on the Road

DEAR SIR,—Having had the pleasure of attending many Mobile Rallies during the last few years I have been appalled at the poor standard of some of the installations I have seen.

Recently I made the suggestion that an unbiased inspection should be made of mobiles attending rallies, and in fact, I was prepared to undertake such an inspection myself at the recent National Mobile Rally at Woburn Park but unfortunately time was too short to get the R.S.G.B. Mobile Committee to approve the idea, so it was dropped for the time being.

As I feel very strongly on this matter, I make the suggestion that a joint committee of R.S.G.B. and A.R.M.S. should be set up to consider Road Safety in mobile working. Road Safety is so much in the public eye these days and I fear that should an accident occur involving an amateur mobile station, and if there should be the slightest suggestion that the mobile installation was in any way a contributory factor, then it is possible

that severe interference to our working as mobiles could result — even a complete shut down of mobile work.

I should also not be surprised if the authorities did not see a mobile rally as a golden opportunity to make a spot check on us all one of these days.

I should like to see a panel of volunteers willing to make a fearless but constructive criticism of the installations present at all future rallies. I am well aware that some members would resent what they might consider to be unwarranted interference with their personal behaviour but it would surely be better to have this from a fellow amateur than from some official. I am sure that the general common sense of the average amateur would prevail for the good of all for if only one possible accident was forestalled then that would be ample reward and compensation for the black looks we should get.

A suitable form of confidential report† was suggested which would be handed to the owner of the car not to be made public in any way, but for his personal consideration.

Let us make sure that we are all above reproach when we take the open road, enjoying our hobby as we travel.

Yours faithfully,

Ruislip, Middlesex.

F. W. FLETCHER (G2FUX/M)

† (Mr. Fletcher enclosed with his letter a copy of a "confidential report form on mobile installation" prepared by the Amateur Radio Mobile Society which Mr. Fletcher suggested should be headed "R.S.G.B. and A.R.M.S. Joint Safety Committee." The copy has been passed on to the Society's Mobile Committee.—EDITOR).

Suppressing Static Interference

DEAR SIR,—We were interested to see the article *Mobile Column* on page 68 of the August BULLETIN, describing methods of suppressing static interference in a mobile receiver.

It might be of interest to your readers to know that the method applicable to the front wheels of the car is covered by Patent No. 848,371 (Morris Motors), which was applied for in 1958, and that the device is obtainable from B.M.C. Distributors under Part No. ACA.8013.

Yours faithfully,

Morris Motors Ltd.
Cowley, Oxford.

A. H. STEED,
Patent Agent, B.M.C.

Band Planning

DEAR SIR,—As most DX operators know, there exists the European Band Plan to which most Region I operators adhere. Recent phone operation by W0MLY in various African countries in the usually accepted exclusive c.w. parts of the 14 Mc/s band has caused considerable controversy. This has culminated in the A.R.R.L.'s refusing to accept future two-way phone contacts for DXCC credit if conducted below 14.1 Mc/s.

I would like to make some relevant points on this matter:

(i) The DXCC is an A.R.R.L. award and that body is therefore free to make whatever rules it pleases in connection with that award.

(ii) The terms of the British Amateur (Sound) Licence, and those of many other countries, generally permit telegraphy, telephony and radio teleprinter operation anywhere in the allotted bands. Any band planning is a gentleman's agreement and entirely voluntary.

(iii) In the U.S.A. the amateur bands are sub-divided by law which generally allows exclusive c.w. operation in the lower portions of the bands and mixed phone and c.w. working over most of the remainder.

(iv) The A.R.R.L. decision about DXCC credits was given in a WIAW Bulletin which also referred to W0MLY's activities. The text of this Bulletin was such as to cause indignation amongst many non-American amateurs since they had every reason to conclude that the A.R.R.L. was attempting to interfere with, or influence, the licence conditions of other countries. It has been contended by some of the world's leading operators noted for their courtesy, that the A.R.R.L.'s decision has been prompted by a vigorous, minority "pressure group" of die-hard c.w.-only operators in the U.S.A. This may be true but I have no proof.

(v) In the case of W0MLY operating in Africa he has every right to operate on whatever mode is permitted, anywhere in a band. He has undertaken this trip for the Yasmé Foundation for the single purpose of giving the world's DX operators the chance to contact a rare country or two for DXCC credit, etc. For the A.R.R.L. to attempt to force him to use frequencies other than

those he desires, by refusing to credit two-way phone QSO's conducted below 14.1 Mc/s, is wholly unwarranted.

(vi) The A.R.R.L. does not issue a special DXCC for single sideband but the *CQ Magazine* does. Could it be that herein lies the real reason for the A.R.R.L.'s action?

(vii) On band planning in general, I suggest that the situation is a little unrealistic at present for, on the 7, 14, 21 and 28 Mc/s bands where the lower portions are exclusively c.w. it is impossible for a phone station to call a c.w. station on the latter's frequency. However, a c.w. station can call a phone station on the same frequency.

(viii) I propose that, to remedy this state of affairs and to take into account the growing number of phone stations and the declining number of c.w. operators, the I.A.R.U. consider adopting the following proposals:

3500 - 3600 c.w. only	21,000 - 21,125 c.w. only
3600 - 3630 c.w. & phone	21,125 - 21,150 c.w. & phone
3630 - 3800 phone only	21,150 - 21,450 phone only
7000 - 7040 c.w. only	28,000 - 28,150 c.w. only
7040 - 7050 c.w. & phone	28,150 - 28,200 c.w. & phone
7050 - 7100 phone only	28,200 - 29,700 phone only
14,000 - 14,100 c.w. only	
14,100 - 14,120 c.w. & phone	
14,120 - 14,350 phone only	

I would be interested to hear members' reactions to these ideas.

Yours faithfully,

London, E.10.

N. A. S. FITCH (G3FPK)

Gold Tinted Lacquer

DEAR SIR,—Mr. Foye, whose letter appeared in the June issue of the BULLETIN, may like to know that a suitable mixture for lacquering radio equipment can be made from the following materials:

4 lb. manilla gum.
1 gallon industrial alcohol plus 2 per cent by volume of castor oil.

Spirit soluble colour to requirements.

All these materials should be available from suppliers of fine chemicals to industrial and other chemical laboratories.

The metal to be lacquered should be warmed and plunged into the varnish.

Yours faithfully,

Seven Kings, Essex.

W. H. MATTHEWS (G2CD)

How Do You Make Them QSL?

DEAR SIR,—I have heard from time to time that U.K. amateurs are the worst for QSLing contacts with overseas stations and I wonder why, for are not amateurs the same the world over?

I QSL promptly all requests and all foreign contacts. During the ten months up to January 28, 1962, I received only 40 cards in response to 143 cards sent out, which covered nearly all European countries. So to me it seems that nearly all other amateurs are bad at QSLing. As all these cards have gone through the R.S.G.B. QSL Bureau, may it not be that our Bureau system needs overhauling? I feel some positive action must be taken to remove this stigma from U.K. amateurs and also to get back our cards as quickly as possible. A published report on the working and delays involved in our Bureau and the Bureau of the world would be appreciated by myself and I feel sure by other disgruntled amateurs.

Let's have a good system even if our subscriptions have to go up a bit to pay for it.

Yours faithfully,

Weybridge, Surrey.

STANLEY S. BISLEY (G3ORB)

Radio Amateurs' Examination Model Answers

DEAR SIR,—As an instructor for R.A.E. classes in the Birmingham area for a number of years, I would heartily endorse the remarks made by Alan J. Bayliss (G8PD) in the July BULLETIN. Publication of model answers in supplement form or even as a booklet additional to *A Guide to Amateur Radio* would, I feel, be of great use.

Like Mr. Bayliss we in Birmingham train students of all types and ages from 15-72 years of age and it is often difficult to tread the middle path without either over simplification or making things too difficult for some of the class.

Yours faithfully,

Birmingham 24.

MAURICE A. BRETT (G3HBE)

Some Thoughts on Contests

DEAR SIR,—As one who enjoys dabbling in contests I would like to make a few remarks on what appears to be becoming a vexed question. Firstly, I think it is unfair to be too harsh on the U.S.S.R. for its number of WSEM contests without considering the size of that country and its proximity to us. I think that we would be equally annoyed if we were closer to the U.S.A. than we are, for then we would get the full benefit of the U.S. activity during the many internal and external contests sponsored from within that country. We do not get much QRM from such events as R.A.C.E.S., S.S. and F.D. events, but if we were as close to them as we are to the U.S.S.R. we would certainly be a little less one-sided in our criticism.

This is not the most important point at issue however, for what really matters is the fact that the plethora of multi-band contests is thinning out the number of interested operators so much that many contests are not being healthily supported—the OZ CCA test this year was a good example of this. As one who likes to participate in these events at least part time, I find myself in favour of them only if they really stimulate activity and go with a swing.

I would, therefore, like to see the R.S.G.B. sponsor an international programme to rationalize the contest calendar, at least so far as the multi-band events are concerned. To start the ball rolling, I have the following proposals in mind:

- (1) Cut out the parochial European activity contests and amalgamate them into a comprehensive event with the following sections:
 - (a) European station with best non-European score. Administered by rotation of European National Societies.
 - (b) Non-European station with best European score. Administered by rotation of European National Societies.
 - (c) Parochial sub-sections replacing such events as H22, PACC, OZ CCA, SAC, REF etc. Administered by the interested National Societies.
 - (d) Possible band splits for the European/Non-European sections.
 - (e) Phone and c.w. weekends.
 - (f) Contest period of 48 hours of which only 36 hours operating to count.
 - (g) Agreement that contest logs should be eligible for QSL claims for diplomas.
 - (h) If the event gets good support other sections could be worked in, e.g. Transistor QRP.
- (2) Make more effort to combine all N.F.D.s so that, for instance, the U.S.S.R. and U.S.A. events coincide with the already concerted efforts of EI/ON/DL/PA/HB/G.
- (3) Failing co-operation on point (1), launch a campaign to shorten and concentrate the contest periods to 24 hours or less (the OK DX Test is a good example of this).

I believe that the adoption of these proposals would free many weekends of contest clutter but at the same time concentrate interest and activity on to relatively few lively events. The short period—one band contests can remain as a useful training ground for beginners or those afflicted by TVI. They would also remain to stimulate activity on those bands where activity seems to wane, i.e. 80 and 15 metres.

I hope that this letter provokes some useful thought.

Yours faithfully,

Palmers Green, London, N.13. I. S. DAVIES (G3KZR)

(I.A.R.U. Region I Division have for the past two years produced a list of international Region I contests and a copy has been sent to each society in the region. The idea of the list is to avoid clashing of dates.—EDITOR.)

In Praise of Low Power Field Day

DEAR SIR,—Fresh from the latest Low Power Field Day, I am once again filled with wonder that one contest can offer so much pleasure and, at the same time, provide the answer to so many of the criticisms one hears of almost all other events.

L.F.D. is the Great Leveller, offering equal opportunities to everyone who does not suffer from hay-fever or an aversion to bugs (multi-legged type). The result is not decided by the ease with which an individual (or group) can acquire limitless supplies of car batteries, generators, ornate aerial arrays and 200 guinea receivers, nor by the knowledge of how to run QRO valves at remarkably low inputs. The only criterion is the kitchen scales, on top of which can be seen, prior to each event, a tiny mass of utmost ingenuity to rival that of a sputnik

"telemetry-filler." It would be interesting to see how some of the "big boys" would fare with 20 lb. of equipment that simply has to be home-constructed.

I offer congratulations to those who already take part and thank them for the many happy hours of operating enjoyment they have given me over the years. Always a friendly contest—the signals, receiving techniques and operating standards are improving each year, and 1962 seemed exceptionally good. Keep those logs rolling in.

Yours faithfully,

Cheltenham, Glos. JOHN J. YEEND (G3CGD)

QRA Locators

DEAR SIR.—The first v.h.f. contest using QRA locators is over; we are now faced with a task or test of endurance far more formidable than 24 hours' operation from the hill tops of England. I feel sure it will take me more than 24 hours to find out from those cryptic symbols where the other man's station was located. If we must use a string of numbers resembling some Services jargon why not just use Lat. and Long. references to the same end.

Anyway I would far rather know I was talking to a person in Den Haag than at CM72.

For some time now we have been told that the next contest would be using the Locator System; surely if the Society advocated using it they should have published maps of the European countries for us to use. Yes, you publish one for England which would be of more use to stations abroad than to us.

Please do the job properly, don't leave us locatorless if we must have them.

Yours faithfully,

J. R. N. CLINE (G3EMU)
Canterbury, Kent.

The European Band Plan and 7 Mc/s

DEAR SIR.—May I be allowed to make an amendment to my letter in the November, 1961 BULLETIN? The Swedish authorities have now made great improvements for class B, as well as for class C (novice) amateurs. The latter are now authorized to use the whole 40 and 80m bands with 10 watts input. However, only c.w. may be transmitted, and transmitters must still be crystal controlled. Phone operation in the c.w. part of the band still appears to be one of the most serious problems of c.w. operators.

Yours faithfully,

HANS-ERLAND LARSSON (SM7COS)
Borgeby 17, Flädie, Sweden.

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Fifth Edition

Compiled by G. C. Fox, A.M.I.E.E., G3AEX and
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R.S.G.B. PUBLICATIONS

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Forthcoming Events

Details for inclusion in this feature should be sent to the appropriate Regional Representatives by the 18th of the month preceding publication. T.R.s and club secretaries are reminded that the information submitted must include the date, time and venue of the meeting and, whenever possible, details of the lecture or other event being arranged. Regional Representatives are requested to set out the copy, preferably typed double spaced, in the style used below. Standing instructions for more than three months ahead cannot be accepted.

DATES FOR YOUR DIARY

December 15.—Annual General Meeting, Overseas House, London, S.W.1.
January 25, 1963.—Presidential Address at I.E.E.
March 29, 1963.—London Lecture Meeting at I.E.E.
June 2, 1963.—R.S.G.B. Golden Jubilee Mobile Rally, Wethersfield, Essex.
June 10-15, 1963.—Region I I.A.R.U. Conference, Malmö, Sweden.
July 5, 1963.—R.S.G.B. Golden Jubilee Dinner.
September 15, 1963.—Lincoln Mobile Rally.

REGION 1

Ainsdale (A.R.S.).—November 21, December 5, 19, 37 Hawthorne Grove, Southport.
Blackburn.—Fridays, 8 p.m., West View Hotel, Revidge Road.
Blackpool (B. & F.A.R.S.).—Mondays, 8 p.m., Pontins Holiday Camp, Squires Gate.
Bury (B.R.S.).—December 11 (A.G.M.), 8 p.m., Knowsley Hotel, Kay Gardens.
Chester.—Tuesdays, 8 p.m., Y.M.C.A.
Eccles (E. & D.R.C.).—Tuesdays, 8 p.m., The Congregational Mission Church, King Street, November 27 "Junk Sale."
Liverpool (L. & D.A.R.S.).—Tuesdays, 8 p.m., Gladstone Mission Hall, Queens Drive, Stoneycroft.
Macclesfield.—November 27, December 11, 42 Jordongate.
Manchester (M. & D.A.R.S.).—Wednesdays, 7.30 p.m., King George VI Club, North Road, Moston, Manchester 10. (S.M.R.C.).—Fridays, 7.45 p.m., Rackhouse Community Centre, "Rackhouse," Daine Avenue, Northenden.
Morecambe.—December 5, 125 Regent Road.
Preston.—November 27 ("Radio Interference" by J. Hallatt, G3DBY), December 11 ("On the Air"), St. Paul's School, Pole Street. (Morse practice at 7.30 p.m.).
Southport (S.R.S.).—Wednesdays, 8.30 p.m., Sea Cadets Camp, The Esplanade.
Stockport.—November 21, December 5, 19, 8 p.m., The Blossoms Hotel, Buxton Road.
Wirral.—November 21, December 5, 19, 7.45 p.m., Harding House, Park Road West, Cloughton.

REGION 2

Barnsley.—November 23 (Display of Members Equipment), December 14 (Receiver Construction), 7.30 p.m., King George Hotel, Peel Street.
Catterick.—Tuesdays and Thursdays, 7.30 p.m., Club Room, Vimy Road, Catterick Camp.
Halifax (Northern Heights.).—November 21 (Ragchew), December 5 (Film Show), December 12 (Annual Dinner), 7.30 p.m., Sportsman Inn, Ogden.
Heckmondwike (S.V.A.R.S.).—November 29. Visit to Fox's Biscuit Works, Batley. December 13 (Film Show), 7.15 p.m., Grammar School, Heckmondwike.
Scarborough.—Thursdays, 7.30 p.m., Chapman's Yard, North Street.
York.—Tuesdays, (Learners and Morse Training), 7.30 p.m., Thursdays (Club Night), 8 p.m., Clubroom, Fetter Lane.

REGION 3

Birmingham (M.A.R.S.).—November 20, 7.30 p.m., Midland Institute, Paradise Street, Birmingham. (M.R.C.C.).—First Friday in each month, 7.30 p.m., Windmill House, Weather-oak, Wythall, Birmingham. (Slade).—November 16 ("Printed Circuits" by D. Wilson and "D/F Review" by G. C. Simmonds), November

30 (A.G.M.), December 14 (Fun and Games), 7.45 p.m., The Church House, Erdington.
Burton-on-Trent (A.R.S.).—First Wednesday in each month (R.A.E. Lecture), 7.30 p.m., Club Room, Stapenhill Institute, Burton-on-Trent. December 12 (Film)—Mullard Ltd.).
Cannock (A.R.S.).—First Thursday in each month, White Lion Hotel, Bridgtown.
Coventry (C.A.R.S.).—Mondays, 8 p.m., Willenhall Scout H.Q., Littlethorpe Street, James Lane, Willenhall, Coventry.
Lichfield (A.R.S.).—First Monday in each month, 7.30 p.m., Swann Inn, Lichfield.
Stourbridge (A.R.S.).—December 4, 7.45 p.m., Foley College, Stourbridge.
Sutton Coldfield.—November 22 (A.G.M.), December 13 ("Transistors"), 7.30 p.m., 92 The Parade, Sutton Coldfield.
Wolverhampton (A.R.S.).—November 26 (R.A.E. Class), December 10, Neachells Cottage, Stockwell End, Tettenthall.

REGION 4

Chesterfield (C. & D.A.R.S.).—November 21, December 5, 7.30 p.m., Newbold Observatory, Newbold Road, Chesterfield.
Derby (D. & D.A.R.S.).—November 21 ("Model Control" by R. Cullen), November 28 (Film Show), December 5 (Surplus Sale), December 12 (Members Slides & Club Retrospect), December 19 (Christmas Party), 7.30 p.m., Room No. 4, 119 Green Lane, Derby. (D.S.W. Exp. Soc.).—Fridays, 7.30 p.m., Sundays, 10.30 a.m., Club Rooms, Nunsfield House, Boulton Lane, Alvaston, Derby.
Grantham (G. & D.A.R.S.).—Mondays, 7.30 p.m., Club Rooms, rear of Manners Arms Hotel, London Road, Grantham.
Grimsby (G. & D.A.R.S.).—November 22, December 6, 8 p.m., R.A.F.A. H.Q., Abbey Drive West, Grimsby.
Loughborough (A.R.S.).—Fridays, 7.30 p.m., Corporation Hotel, Wharnclyffe Road, Loughborough.
Leicester (L.R.S.).—November 19 ("Fifty Years of Radio" by F. C. Ward, G2CVV), November 26, December 3, 10, 7.30 p.m., Club Rooms, Old Hall Farm, Braunstone Lane, Leicester.
Lincoln (L.S.W.C.).—Wednesdays, 7.30 p.m., Lincoln Technical College, Cathedral Street, Lincoln.
Melton Mowbray (A.R.S.).—November 15 ("Crystal Grinding" by D. W. Lilley, G3FDF), December 20 ("Transistors" by J. W. Bowley, G3FXP) 7.30 p.m., St. John Ambulance Hall, Asfordby Hill, Melton Mowbray.
Nottingham (A.R.C.N.).—Tuesdays (R.A.E.), Thursdays (Lecture), 7.15 p.m., Room No. 3, Sherwood Community Centre, Woodthorpe House, Mansfield Road, Sherwood, Nottingham.
Northampton (N.S.W.C.).—Thursdays, 7 p.m., Allen's Pram Works, 8 Duke Street, Northampton.
Peterborough (A.R.S.).—First Friday in each month, 7.30 p.m., Room 14, Peterborough Technical College, December 7—Two Metre Night.
Retford & Worksop (N.N.A.R.C.).—Tuesdays (Beginners), Thursdays (Club), 7.30 p.m., Club Rooms, Victoria Institute, Eastgate, Worksop, Notts.

REGION 5

Cambridge (C. & D.A.R.C.).—Fridays, 7.30 p.m., Club Headquarters, Corporation Yard, Victoria Road, Cambridge. December 5—Talk and Demonstration on Electronic Organs by I. B. Howard (G2DUS).
March (M. & D.R.A.S.).—Tuesdays, 7.30 p.m., Police Headquarters, High Street.
Sheffield (S. & D.A.R.S.).—November 15 ("General Electrical Engineering" by F. Pearce), November 22 ("Obtaining an Amateur Licence" by C. Pettifer, G2DPQ), December 6 (Quiz), December 13, ("8mm. Cine Films" by

I. B. Howard, G2DUS), Digswell House, Shefford. No meeting on November 29.

REGION 6

Cheltenham.—First Thursday in each month, 8 p.m., Great Western Hotel, Clarence Street.
High Wycombe (C.A.R.C.).—Last Thursday in each month, 8 p.m., British Legion, St. Mary Street, High Wycombe. November 29—"Amateur Closed Circuit TV."

REGION 7

Acton, Brentford and Chiswick (A.B.C.R.C.).—November 20 (Film Show), 7.30 p.m., A.E.U. Club, 66 High Road, Chiswick.
Bexleyheath (N.K.R.S.).—November 8, 8 p.m., Congregational Hall, Clock Tower, Bexleyheath.
Barnet (B.R.C.).—November 27 (J. D. Kay, G3AAE, on "Propagation"), 8 p.m., Red Lion Hotel, High Barnet.
Croydon (S.R.C.C.).—December 11, 7.30 p.m., Blacksmiths' Arms, South End, Croydon.
Dorking (D. & D.R.S.).—November 27 (Film Show by R. Cathles, G3NDF), 8 p.m., Star and Garter, nr. Dorking Station. December 11 (Informal), 8 p.m., Wheatheaf, High Street, Dorking. December 18, Christmas Dinner.
East Ham.—Tuesdays fortnightly, 8 p.m., Leigh Road, East Ham.
East London.—November 18 (M. T. Drury on "Direction Finding"), 2.30 p.m., December 16 (A.G.M.), 2.30 p.m., Lambourne Room, Town Hall, Ilford.
East Molesey (T.V.A.R.T.S.).—December 5, Carnarvon Castle Hotel, Hampton Court.
Edgware & Hendon (E. & D.R.S.).—Second and fourth Mondays in each month, 8 p.m., John Keeble Hall, Church Close, Deans Lane, Edgware.
Enfield.—November 22 (Group Exhibition), 8 p.m., George Spicer School, Southbury Road.
Gravesend (G.R.S.).—Thursdays, 7.30 p.m., R.A.F.A. Club, Overcliffe, Gravesend.
Harlow.—Tuesdays, 7.30 p.m., rear of G3ERN (G. E. Read), High Street, Harlow.
Holloway (G.R.S.).—Mondays and Wednesdays (R.A.E. and Morse), 7 p.m., Fridays (Club), 7.30 p.m., Montem School, Hornsey Road, Holloway.
Hounslow (H.A.D.R.C.).—Mondays, 7.30 p.m., Isleworth Town School, Twickenham Road, Hounslow.
Ilford.—Thursdays, 8 p.m., 579 High Road, Ilford (nr. Seven Kings Station).
Kingston.—Lectures alternate Thursdays, Y.M.C.A., Eden Street, Kingston. (Morse Classes weekly at 2 Sunray Avenue, Tolworth.)

LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road.
at 12.30 p.m. on Friday, November 16 and December 14, 1962.
 Telephone table reservations to HOL 7373 prior to day of luncheon. Visiting amateurs especially welcome.

Mitcham (M. & D.R.S.).—Lectures alternate Fridays (Morse Classes 7 p.m.), "The Canons," Madeira Road, Mitcham.
New Cross (C.A.R.S.).—Fridays, 7.30 p.m., 25 New Cross Road, London, S.E.14.
Norwood & South London (C.P. & D.R.C.).—November 17 ("Aerial Masts" by G3COX and "The G2DAF Receiver" by G3LUB), 8 p.m., C.D. Training Centre, Bromley Road, Catford.
Paddington (P. & D.A.R.S.).—Wednesdays, 7.30 p.m., Beauchamp Lodge, 2 Warwick Crescent, London, W.12.
Purley (P. & D.R.C.).—November 16 ("Ham Hop Club" by Robin Sykes, G3NFV), Railway-

men's Hall (side entrance), Whytecliff Road, Purley.

Romford (R. & D.R.S.).—Tuesdays, 8.15 p.m., R.A.F.A. House, 18 Carlton Road, Romford.

Science Museum (C.S.R.S.).—November 20 (R.S.G.B. Tape Recordings and GB2SM), 6 p.m., Science Museum, South Kensington.

Sidecup (C.V.R.S.).—December 6 (T. Withers on "V.H.F. Equipment"), 8 p.m., Church Hall, Court Road, Eltham.

Southgate & District.—December 18 (A.G.M.), 8 p.m., Arnos School, Wilmer Way, N.11.

Slough (S.A.R.S.).—First Wednesday in each month, 8 p.m., United Services Club, Wellington Street.

Sutton & Cheam.—November 20 (Visit to Cable & Wireless Services, Victoria Embankment, W.C.2.), December 18, The Harrow, High Street, Cheam.

REGION 8

Canterbury (E.K.R.S.).—Tuesday, 7.30 p.m., Canterbury Technical College, November 27 ("Chassis Construction," by R. Dale), December 11 ("Something in a Can," by W. Broad). Venue from D. N. T. Williams (G3MDO), "Selestar," New House Lane, Canterbury.

Crawley.—November 28 ("Mobile Operation in W/VE," by F. Fletcher G2FUX), 8 p.m., West Green Centre, December 12 (Informal for details contact G3FRV, December 19 (A.G.M.), 8 p.m., West Green Centre.

Folkestone.—First Tuesday in every month, Sea Cadets H.Q., Castle Road, Sandgate, Folkestone.

Details from A.R. F. C. Richardson (G3MYX), 7 West View, Canterbury Road, Folkestone.

Tunbridge Wells (W.K.A.R.S.).—November 23 (Audio Night), December 14 (Equipment Demonstrations), 7.30 p.m., K.C.C. Adult Centre, Culverden House, Culverden Park Road, St. Johns.

REGION 9

Bath.—November 21, 7.30 p.m., Committee Room, Bath Technical College, Lower Borough Walls, Bath.

Bristol.—November 16, 7.15 p.m., Carwardine Restaurant, Baldwin Street, Bristol 1. December 7 ("Receiver Tests and Measurements," by D. V. Newport, G3CHW).

Burnham-on-Sea.—December 11, 8 p.m., Crown Hotel, Oxford Street.

Exeter.—December 4, 7.30 p.m., Y.M.C.A., St. Davids Hill, Exeter.

Falmouth (C.R. & T.C.).—First Wednesday in each month, Y.M.C.A., Falmouth.

Plymouth (P.R.C.).—First Tuesday in each month, 7.30 p.m., Guild of Social Service Building, Plymouth. Other Tuesdays, Virginia House Settlement, St. Andrews Cross, Plymouth.

South Dorset (S.D.R.S.).—First Friday in each month, 7.30 p.m., alternately at Waverley Hotel, Westham, Weymouth, and Labour Rooms, West Walks, Dorchester (December meeting Weymouth).

Torquay (T.A.R.S.).—December 8, 7.30 p.m., Y.M.C.A., The Castle, Torquay.

Weston-super-Mare.—First Tuesday in each month, 7.15 p.m., Technical College, Lower Church Road.

Yeovil (Y.A.R.C.).—Wednesdays, 7.30 p.m., Park Lodge, The Park, Yeovil.

REGION 10

Cardiff.—December 10 (Christmas Informal Meeting—small charge for refreshments), 7.30 p.m., T.A. Centre, Park Street, Cardiff.

Port Talbot (P.T. & D.R.C.).—November 20, December 18, 7.30 p.m., 8/10 Jersey Street, Velindre, Port Talbot.

REGION 13

Edinburgh (L.R.S.).—November 22 (Surplus Sale), December 13 (R.S.G.B. Tape Recording "World Wide Telecommunications" by L. Parnell, G8PP), December 27 (Social Night), 7.30 p.m., Y.M.C.A., 14 St. Andrew Street, Edinburgh, 2.

REGION 14

Motherwell.—November 16, 7.30 p.m., Carfin Hall, Motherwell.

REGION 17

Bournemouth (W.A.R.G.).—December 3 (Demonstration of Equipment), 7.45 p.m., "Cricketers' Arms," Windham Road, Bournemouth.

Reading (R.A.R.C.).—November 24 ("Transistors for V.H.F. and U.H.F." by G3NNG), 7.30 p.m., Palmers Hall, West Street, Reading.

Regional and Club News

Barnet.—At the A.G.M. on September 25, 1962, the following were elected: *Chairman/Hon. Secretary:* F. E. A. Green (G3GMY); *Hon. Treasurer:* D. Purchase (G3LXP); *Minutes Secretary:* H. Sparks; *Publicity Officer:* D. Bootman (G3MWG); *Committee Members:* J. Frisbee (G8CA), K. Clarke (G3KRC), E. Brett (G3LUX), R. Cooke (G3DOX) and M. Holmes. Frank Fletcher (G2FUX) was due to give a talk on his visit to U.S.A. on October 30. The Annual Christmas Party will be held at the Hadley Memorial Hall, Hadley Highstone, Barnet, from 7.30 p.m. to 11.30 p.m. on December 22. Tickets may be obtained from any committee member. *Hon. Secretary:* F. E. A. Green (G3GMY), 48 Borough Way, Potters Bar, Middlesex.

Basingstoke Amateur Radio Club.—A talk on "Oscillators" will be given by Mr. Mansell on December 1. A recent visitor was DJ7JK of Berlin. Prospective members and visitors are always welcome at meetings. *Hon. Secretary:* P. Jackson, 11 Oaklands Way, Basingstoke.



Winners of the Top Band D/F Contest organized by Peterborough A.R.S. Back row: G3QS with junior-op and G2NJ; front row (left to right) SWLs Michael Grierson, Bill Yeomans and John Wright. (Photo by G3KPO)

Bury.—G2CDB, who is leaving the area, has donated his surplus gear to be sold at a Junk Sale to be held on December 11. The proceeds will go to the group funds. An R.A.E. course under the tuition of J. Bennett (G3PVG) is being held at Bury Technical College on Fridays at 7.30 p.m. in Room B3.

Cambridge and District Amateur Radio Club.—Under the call-sign GB3PKF the club took part in the Jamboree-on-the-Air from the new headquarters of the 12th Cambridge Scout Troop. The University group recently invited members to see the film *This is the B.B.C.* University members are most welcome to attend meetings on Friday evenings. The Junior Section meets on Thursdays for Morse practice, theory and constructional work. *Hon. Secretary:* H. L. Lowe (G3PEI), 34a Verulam Way, Cambridge.

Clifton Amateur Radio Society.—On November 30 there will be a demonstration of constructional methods while the annual Constructional Contest is arranged for December 14. *Hon. Secretary:* C. Godsmark (G3IWL), 211 Manwood Road, London, S.E.4.

Crawley Amateur Radio Club.—On November 28, Frank Fletcher (G2FUX) will give a talk on "W/VE Mobile Operation" at the West Green Centre, Crawley. Slow Morse classes are held regularly and it is hoped that more members will obtain their licences in due course. *Hon. Secretary:* R. G. B. Vaughan (G3FRV), 9 Hawkins Road, Tilgate, Crawley, Sussex.

Cray Valley Radio Society.—An Audio Evening was held on October 5 when G3FWI played a number of tape recordings. Members recently visited the B.B.C. Frequency Measuring Station at Tatsfield and took part in the Jamboree-on-the-Air under the call-sign GB3RES. *Hon. Secretary:* S. Coursey (G3JJC), 49 Dulverton Road, London, S.E.9.

Crystal Palace and District Radio Club.—At the meeting on November 17 there will be talks on "Aerial Masts" by G3COX and on "The G2DAF Receiver" by G3LUB. *Hon. Secretary:* G. M. C. Stone (G3FZL), 10 Liphook Crescent, Forest Hill, London, S.E.23.

East London.—At the September meeting Mr. R. S. Roberts gave a most interesting talk on "Aerials." After tracing the development from early Hertz and Marconi types, he briefly outlined ideas for a new v.h.f. aerial. *District Representative:* M. McBrayne (G3KGU), 25 Purlicu Way, Theydon Bois, Essex. **Farnborough Technical College Radio Club.**—At the A.G.M. on October 3, the following were elected: *President:* Dr. T. D. H. Baber (Principal of the College); *Chairman:* Dr. D. M. J. Manley (G3OWF); *Hon. Secretary:* N. Anscombe; *Hon. Treasurer:* Mrs. C. Anscombe; *Committee Members:* Dr. W. F.

Luke Fava (G3NXX), A. Warburton, P. Smith (G3PPU), and E. Payne. The Chairman reported on the club's activities and said that the club station, G3POW, had had 400 contacts with stations in 40 countries.

Grafton Radio Society.—The following were elected at the A.G.M. held on October 5: *President:* J. H. Clarke (G2AAN); *Vice-Presidents:* John Claricoats, O.B.E. (G6CL), P. Beresford (G3AFC), L. Kippin (G8PL), W. Jennings (G2AHB), B. Randell (GW3ALE), J. Reading (G2RX) and C. T. Bird; *Hon. Treasurer:* F. Kent (G3PIH); *Hon. Secretary:* A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex; *Hon. Assistant Secretary:* A. Melia (G3NYK); *Committee Members:* R. Morgan (G3KGC), D. Sloan (G3ONS), Miss B. Whitaker (G3RIW) and A. Yilmaz (G3PRK).

Harrow, Radio Society of.—November 16 and 30 will be Practical Nights, with slow Morse practice and the club station G3EFX on the air. On November 23, there will be a film show featuring *The Principles of X-Rays* and *From Us to View*, both films provided by Mullard Ltd. A Junk Sale is being arranged for December 7. Meetings are held on Fridays at 8 p.m. at Roxeth Manor Secondary School, Eastcote Lane, South Harrow. *Hon. Secretary:* A. C. W. Biddell (G3GNM), 114 Kingshill Avenue, Kenton, Harrow, Middlesex.

Leicester Radio Society.—During the winter months, a new operating room for the club station is to be constructed, aerials erected and a new h.f. bands transmitter built under the direction of G3MYI. At the A.G.M., M. Harrison (G3LIR) was elected *Chairman* and H. A. Gray (G3LTT) *Hon. Treasurer*. The *Hon. Secretary* is R. E. Hill, 28 Fayhurst Road, Saffron Lane, Leicester.

Lichfield Amateur Radio Society.—The *Hon. Secretary* is now Vic Hickman (G3LXR), 143 Main Street, Stonnall, near Walsall. **Lincoln Short Wave Club.**—If there is sufficient support, an R.A.E. course is to be held on Tuesdays from 7 to 9 p.m. at the Technical College, Cathedral Street, Lincoln, where enquiries should be made. The club meets in Room 19 at the College on alternate Wednesdays at 7.30 p.m. *Hon. Assistant Secretary:* Mrs. F. E. Woolley (G3LWY), 10 Sturton Road, Saxilby, Lincoln.

Lothians Radio Society.—The first two meetings of the new session were very successful and were attended by a number of new members. A varied programme touching upon practically every aspect of Amateur Radio has been arranged for the coming months. Visitors and prospective members will be made most welcome at meetings in the Y.M.C.A., 14 South Saint Andrew Street, Edinburgh 2, at 7.30 p.m. on the second and fourth Thursdays in each month. *Hon. Secretary:* W. T. Sutherland (GM3JWS), 47 Great King Street, Edinburgh 3.

Manchester and District Amateur Radio Society.—Meetings are arranged for November 21 (Practical and Ragchew), November 28 (Theory and Morse) and December 5 (Lecture). A new venue is being sought and visitors and prospective members should therefore contact the *Hon. Secretary:* A. B. Langfield, 2 Rowland Street, Moston, Manchester 10.

Midland Radio Contest Club.—This new club has been formed for the purpose of entering national and world-wide c.w. and phone contests, and to organize DXpeditions. Meetings are held on the first Friday in each month at Windmill House, Weatheroak, Wythall, Birmingham, commencing at 7.30 p.m. *Hon. Secretary:* J. Lockyer (G3OVA), 153 Ivor Road, Birmingham 11.

Mitcham and District Radio Society.—The Christmas Dinner, at which the Draw will be the main attraction, will be held on December 14. The society took part in the Jamboree-on-the-Air under the call-sign GB3OCT. *Hon. Secretary:* B. Blandford (B.R.S. 18572), 1 Biggin Avenue, Mitcham, Surrey.

Norfolk Amateur Radio Club.—Meetings continue to be held on Monday evenings when there are lectures on radio theory, Morse classes and practical work. Prospective members are invited to contact the *Hon. Secretary:* J. D. Simpson (G3NJQ), 50 Vicarage Road, Norwich.

North Kent Radio Society.—This society produces one of the most informative newsletters to reach R.S.G.B. Headquarters. A recent issue, for example, contained an excellent article on mercury batteries, based on a lecture given to the society by A. L. Anthon and L. Braine of Mallory Batteries. The *G3ENT News Letter* is edited by D. W. Wooderson (G3HKX). *Hon. Secretary:* B. J. Reynolds (G3ONR), 49 Station Road, Crayford, Kent.

Northern Heights Amateur Radio Society.—Recent activities have included a talk by G3OGV on receiver fault finding. Meetings are arranged for November 21 (Ragchew), December 5 (Film

Show) and December 12 (Annual Dinner). *Hon. Secretary:* Arthur Robinson (G3MDW), Candy Cabin, Ogden, Halifax.

North Notts Amateur Radio Society.—At the A.G.M. the following were elected: *President:* H. S. Chadwick (G8ON); *Hon. Treasurer:* J. Whittington (G3OZO); *Hon. Secretary:* E. W. Badger (G3OZN), 20 Tennyson Drive, Workshop; *Committee Members:* M. Dann (G3NHE) and M. Chambers. Recent events have included a recorded lecture on "The Elements of Radio Valve Manufacture" by G3DCS and a Junk Sale. Plans are being made to take part in N.F.D. next year. The society is licensed with the call-sign G3RCW. Meetings are held on Tuesdays and Thursdays at 7.30 p.m. at the Victoria Institute, Eastgate, Workshop.

Peterborough Amateur Radio Society.—W. Carter (G2NJ) spoke on Amateur Radio in the 1920's and showed a collection of early valves at the October meeting. He also brought along his new Top Band table-topper. During the evening three new communication receivers were given a comparative test. A 2m night is arranged for December 7. *Hon. Secretary:* D. Byrne (G3KPO/G3PTC), Jersey House, Eye, Peterborough.

Radio Amateur Invalid and Bedfast Club.—The club has suffered the very tragic loss of its *Hon. Secretary*, Bill Harris, Jr. (G3DPH), two days after Bill Harris, Sr., passed on. Arrangements for the future administration of the club will be made as soon as possible, meanwhile all enquiries should be addressed to the *Hon. Assistant Secretary:* Mrs. F. E. Woolley (G3LWY), Rochmount, 10 Sturton Road, Saxilby, Lincoln.

Reading Amateur Radio Club.—Amateurs moving into the district are invited to contact the *Hon. Secretary* for details of the club's activities. Meetings are held at the Palmers Hall, West Street, at 7.30 p.m. on the last Saturday in each month. On November 24, G3NNG will give a talk on transistors for v.h.f. and u.h.f. while G3OLA will describe a transistor receiver for 160m on December 29. *Hon. Secretary:* R. G. Nash (G3EJA), 9 Holybrook Road, Reading.

Royal Naval Amateur Radio Society.—Membership in the R.N.A.R.S. is open to all serving and ex-serving members of the R.N., Commonwealth Navies, R.M. Reserves, W.R.N.S. and civilians employed by the Admiralty. The headquarters station G3BZU is on 3720 kc/s every day between 12.45 and 13.15 and all weekends looking for local contacts and on 14 Mc/s in the evenings looking for overseas contacts. Operation is on A1, A3 and A3a. Recently the station was completely modernized and now uses 100 per cent British equipment in the form of a K.W. Viceroy and linear and a Racal receiver. Amateurs interested in the R.N.A.R.S. should write to the *Hon. Secretary*, R.N.A.R.S., H.M.S. Mercury, Petersfield, Hants.

South Dorset Radio Society.—At the October meeting in Weymouth, F. Marshall (G2XQ) gave a demonstration and talk on the applications of "Closed Circuit TV." Arrangements were made for a visit to the Atomic Energy Establishment at Winfrith in November. *Hon. Secretary:* C. E. Biggs (G2TZ), 54 Prince of Wales Road, Dorchester, Dorset.

South Shields and District Amateur Radio Club.—At the A.G.M. held on September 26, the following were elected: *President:* Capt. E. Clarke (G8AO); *Vice-President:* E. Glenwright; *Chairman:* S. Oake (G3GBF); *Vice-Chairman:* K. Sketheway (B.R.S. 20185); *Hon. Treasurer:* J. R. Tyzak (G3ELP); *Hon. Secretary:* Derek Forster (G3KZZ), 41 Marlborough Street, South Shields; *Hon. Assistant Secretary:* W. Armstrong (G3PRE). Meetings are held at Trinity House Social Centre on Fridays and on the last Wednesday in the month commencing at 7.30 p.m. An R.A.E. course is being held at South Shields Marine and Technical College on Tuesdays at 6.30 p.m.

Surrey Radio Contact Club.—Twenty-five participants in seven teams took part in the club's 144 Mc/s D/F Hunt on September 23. The winners were Tony Naylor (G3GHI) and Brian Henderson who found the transmitter in 1 hour 55 minutes, closely followed by Andrew Smith (G3IAS) and Ron Field (G3ODY). Third were Ted Honeywood (G3GKF) and his Purley and District Radio Club team. The transmitter was located near East Grinstead. *Hon. Secretary:* S. A. Morley (G3FWR), 22 Old Farleigh Road, Selsdon, Croydon.

Torbay Amateur Radio Society.—At the October meeting, it was stated that the society had obtained its highest position in N.F.D. in the 1962 event and the R.S.G.B. C.R. Frank Wadman (G2GK) reported on the Weston-super-Mare Regional Meeting and Mobile Rally. Three films loaned by Mullard Ltd. were shown. Following alterations and re-decorations to the club H.Q. in Belgrave Road, it is hoped to commence holding the monthly meetings there shortly. *Hon. Secretary:* Mrs. Gee Western (G3NQD), 118 Salisbury Avenue, Barton, Torquay.

Wirral Amateur Radio Society.—Recent activities have included participation in Region 1 Field Day and visits to *The Guardian* in Manchester and to the G.P.O. Transmitting Station at Criggin, North Wales. At the recent A.G.M., the following were elected: *Chairman:* N. Kendrick (G3CSG); *Hon. Treasurer:* A. J. G. Keiller (G3KXR); *Hon. Secretary:* A. Seed (G3FOO). 31 Withert Avenue, Bebington, Wirral, Cheshire. A Mullard lecture and film show is to be held in Chester on November 20, under the auspices of the society. At the meeting the following day, November 21, N. Kendrick (G3CSG) and B. O'Brien (G2AMV) are giving a joint lecture on a mobile transmitter/receiver. An R.A.E. course is being held at Birkenhead Technical College on Thursday evenings under the direction of L. Roberts (G3EGX).

World Association of Methodist Radio Amateurs and Clubs.—An Activity Weekend is being arranged for May 24 to 26, 1963,

when efforts will be made to contact members and other radio amateurs listed in the *World Methodist Register of Church Radio Amateurs and Clubs and Short Wave Listeners*. GB3MYA will be in operation at the Peterborough Methodist Midlands Youth Assembly on June 28 to 30, 1963. *Hon. Secretary:* Rev. A. W. Shepherd (G3NGF), 121 Main Street, Asfordby, Melton Mowbray, Leicestershire.

Ex-G Radio Club.—The following have been appointed QSL managers for certificates: Europe—G2CWL; Australia—VK4DD; Africa—VQ2AT and ZS6ATA; New Zealand—ZL2GX. U.K. certificate holders may obtain the *XG Bulletin* by sending a stamped addressed envelope to G4MJ, from whom details of membership and club activities are also available. The certificate winner for October was GB2SM. *Hon. Secretary:* D. W. Rayner (W3CTR), 416 Burkhart Street, Johnstown, Penna., U.S.A.

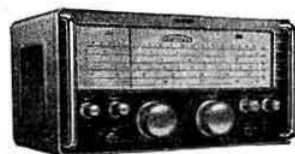
R.S.G.B. Slow Morse Practice Transmissions

The following Slow Morse Practice transmissions are sponsored by the Society. Those responsible for the transmissions have a duty to the membership to adhere to the schedule but if they cannot do so for any reason they should notify the Honorary Organizer, Mr. C. H. L. Edwards (G8TL), 28 Morgan Crescent, Theydon Bois, Essex.

Time	Call-sign	kc/s	Town	Time	Call-sign	kc/s	Town
Sundays				Wednesdays			
09.30 ...	G3BHS ...	1910 ...	Southampton	19.30 ...	G3NQR ...	1875 ...	Harrow Weald
09.30 ...	G3HNF ...	1840 ...	Doncaster	19.45 ...	G3KFE ...	1950 ...	Stevenage
09.30 ...	G3OFP ...			20.00 ...	G3BHS ...	1910 ...	Southampton
09.30 ...	G3OMJ ...			20.00 ...	G3GZE ...	1840 ...	Blackburn
09.30 ...	G3KZZ ...	1920 ...	South Shields, Co. Durham	20.15 ...	G2AYQ ...	1875 ...	St. Agnes, Cornwall
10.15 ...	G3CGD ...	1875 ...	Cheltenham	20.30 ...	G3HZG ...	1870 ...	Redditch, Worcs.
10.30 ...	G3NCZ ...	1920 ...	Blackburn, Lancs.	20.30 ...	G3LCK ...	1910 ...	Canterbury
11.00 ...	G3GZE ...	1840 ...	Blackburn	20.30 ...	G3KGU ...	1920 ...	Goodmayes, Essex
11.00 ...	G2FXA ...	1900 ...	Stockton-on-Tees	21.00 ...	G3HVI ...	1920 ...	Stoke-on-Trent
11.00 ...	G3NXQ ...	1850 ...	Warndon, Worcs.	21.00 ...	G3IVB ...		
11.00 ...	GW3PCK ...	1850 ...	Cefncoed, Breconshire	21.00 ...	G3OGD ...		
11.00 ...	GW3PEX ...			21.00 ...	G3LSC ...	1875 ...	Poole
11.00 ...	GM3HBY ...	1903 ...	Glasgow	21.00 ...	G3MKN ...		
12.00 ...	G3HVI ...	1920 ...	Stoke-on-Trent	21.00 ...	G3MXF ...		
12.00 ...	G3IVB ...			21.00 ...	G3AGX ...	1920 ...	Hull
12.00 ...	G3OGD ...			22.00 ...	G3HNI ...	1840 ...	Doncaster
12.00 ...	G3ONQ ...			21.30 ...	G3OFP ...		
12.00 ...	G3IGW ...	1900 ...	Halifax	22.00 ...	G3OMJ ...		
12.00 ...	G3IUR ...	1860 ...	Belfast	22.00 ...	G3NXQ ...	1850 ...	Warndon, Worcs.
22.30 ...	G3KWH ...	1900 ...	Welwyn Garden City				
Mondays				Thursdays			
18.30 ...	G3NC ...	1825 ...	Swindon	18.30 ...	G3NC ...	1825 ...	Swindon
18.30 ...	G3NCZ ...	1920 ...	Blackburn, Lancs.	19.00 ...	G3EEL ...	1960 ...	Peterborough
19.00 ...	G3EEL ...	1960 ...	Peterborough	20.00 ...	G3NBV ...	1910 ...	Southampton
19.00 ...	G3KTP ...	1850 ...	Heanor, Derby	20.00 ...	G3NHR ...	1900 ...	Hounslow
19.00 ...	G3MXS ...	1915 ...	Wirral	20.00 ...	G5XB ...	1890 ...	Reading
20.00 ...	G3KLT ...	1838 ...	Birmingham	20.15 ...	G2AYQ ...	1875 ...	St. Agnes, Cornwall
20.00 ...	G3GZE ...	1840 ...	Blackburn	20.30 ...	G3HZG ...	1870 ...	Redditch, Worcs.
20.00 ...	G3HJG ...	1825 ...	Manchester	21.15 ...	G3LKG ...	1916 ...	Ilkeston, Derbys.
20.00 ...	G3NIM ...	1910 ...	Southampton	21.30 ...	G3IRM ...	1981 ...	Bury St. Edmunds
20.30 ...	G3AGN ...	1875 ...	Felixstowe	22.00 ...	G3MWO ...		
20.30 ...	G3HZG ...	1870 ...	Redditch, Worcs.	22.00 ...	G2CZU ...	1820 ...	Bath
21.30 ...	G3IRM ...	1981 ...	Bury St. Edmunds	22.00 ...	G3LLM ...		
22.00 ...	G3MWO ...	1916 ...	Alvaston, Derbys.	22.00 ...	G3AWL ...	1980 ...	Wingate, Co. Durham
	G3PRM ...			22.00 ...	G3HZM ...	1825 ...	Manchester
				22.30 ...	G3KWH ...	1900 ...	Welwyn Garden City
Tuesdays				Fridays			
18.00 ...	G3GZE ...	1840 ...	Blackburn	18.30 ...	G3DMN ...	1880 ...	Ipswich
18.30 ...	G2FXA ...	1900 ...	Stockton-on-Tees	18.30 ...	G3FVP ...		
19.00 ...	G3ONB ...	1850 ...	Kirkby-in-Ashfield	19.00 ...	G3NCZ ...	1920 ...	Blackburn, Lancs.
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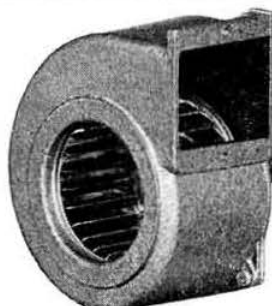
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0B2	6-6A6	5-6J6	3-12E1	20-28P7	3-30F5	6-6J6T	8-ATP4	5-6A8C91	4-6J3H35
0B3	6-6A8MG	7-6J7G	5-12J5G	3-30F5	6-9807	6-6J6T	15-AZ1	9-EAF42	8-6J442
0C5	5-6A8B4	6-6J6G	7-12K7G	7-30P11	9-6813	35-5702	15-AZ1	9-EAF42	8-6J442
0D3	5-6A8B7	4-6K7G	2-12K8	10-30L13	12-814	20-5718	7-6A8C21	7-6A8C21	7-6K7G
1A3	3-6A87	2-6K8	8-12Q7G	5-30P11	10-6813	40-5749	9-AZ41	9-EA41	7-6J6H3
1A3GT	5-6A65	3-6L3G	7-12K7G	7-30P11	10-6813	13-5751	11-CTC	8-6A8C81	7-6J6H3
1A7GT	10-6A67	7-6L6	9-12K7	4-35L6GT	8-828	12-5762	10-CL33	9-6A8C81	7-6J6H3
1A8	4-6A8H6	11-6L6G	6-12K7G	3-35W4	6-866A	12-5787	10-CV31	6-6A8C81	7-6J6H3
1B6GT	7-6A8K5	5-6L7	6-12K7G	3-35Z4GT	7-931A	60-9005	9-D30	10-6A8C81	7-6J6H3
1B6GT	9-6A8K6	7-6L8	8-12K7G	3-35Z4GT	7-931A	60-9005	15-D41	30-EBL1	11-EP87A
1L4	3-6A87	4-6N7	6-12K7G	7-642	5-950	3-6080	30-DAP96	7-6E121	12-EP89
1L6	4-6A8L5	4-6Q7G	6-12K7G	7-642	5-950	3-6080	30-DAP96	7-6E121	12-EP89
1L6S	5-6A8L5	3-6Q87	7-12K7G	5-33KU	9-958A	4-7193	2-DH63	6-6A8C81	7-6J6H3
1N3GT	9-6A8M6	4-6Q8D7GT	5-1487	14-75	5-950	8-7470	4-DK92	9-EP42	7-6J6H3
1R5	6-6A8Q5	6-6Q87	5-23L6GT	8-76	3-2050	10-9002	3-6A8C81	7-6J6H3	13-EP89
1R4	5-6A8Q6	6-6Q87	3-25Z4G	10-90	6-2051	6-9003	7-DL96	7-6A8C81	7-6J6H3
1R5	5-6A8Q6	6-6Q87	5-25Z5	8-183	8-5651	8-ARP3	3-DM70	4-6A8C81	7-6J6H3
1T4	4-6A8U6	7-6K87	5-6						
1T5GT	6-6A8V6	6-6L87GT	6-6						
1U4	7-6B7	5-6N87GT	4-6						
1U5	6-6B8	5-6N87	4-6						
1V	5-6B84	2-6B88	3-6						
2A3	5-6B86	6-6V6G	4-6						
2A3A	5-6B86	6-6V6GT	7-6						
2B4	4-6B16	8-6X4	5-6						
2B42	23-6B16	8-6X4	4-6						
2B42	12-6B16	8-6X4	4-6						
2B42	6-6B17	12-6Y64	3-6						
2B42	20-6B18	5-6Z4	3-6						
2X2	3-6B8W6	9-7B6	8-6						
2X2A	7-6C4	2-6B7	8-6						
3A4	4-6C5	8-747	3-6						
3A4	3-6A8G	7-725	3-6						
3B6	4-6C6	4-7H7	3-6						
3B4	7-6C8G	7-727	7-6						
3C4	6-6C8G	17-724	4-6						
3V4	6-6C8H6	6-10P1	4-6						
4-6A	6-6C8L6	10-11E2	20-1						
5B-258M	30-614	17-61E3	20-1						
5B-10Y	9-616	3-12A6	3-6						
5T4	8-616	6-12A8GT	3-6						
5V4G	5-617	6-12A8GT	3-6						
5V4G	8-618	6-12A8GT	3-6						
5V30	4-6P32	5-12A7	3-6						
5V30GT	4-6P32	4-12A7	3-6						
5Z3	6-616G	2-612A7	6-6						
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