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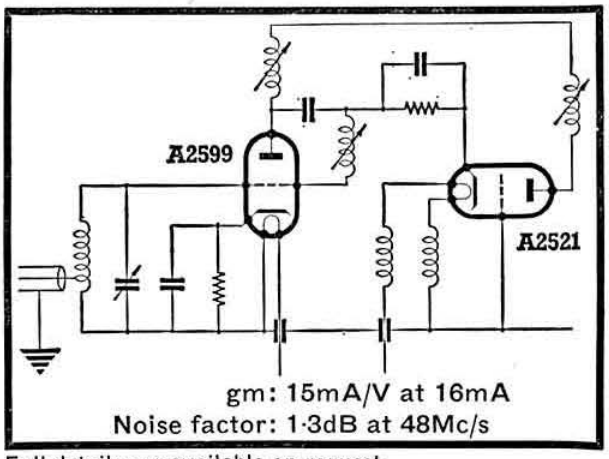

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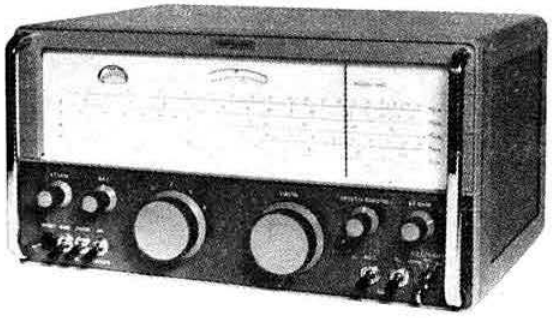

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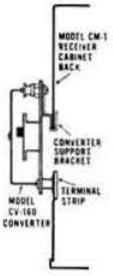

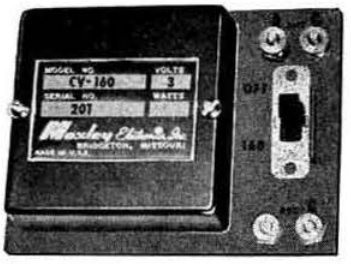

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A Christmas Message from the President

I will not cease from Mental Fight,
Nor shall my Sword sleep, in my hand . . .

ON taking office as President of the R.S.G.B. nearly a year ago I vowed my allegiance to the Society by quoting Blake's memorable words which I have used as a title to these few lines. I should like to think that I have honoured those words during the past eleven months but being a Scot I am dour and taciturn by nature and in any case for me to comment at this stage would surely be presumptuous. And yet. . . .

Mr. Edward G. Ingram, GM6IZ, President 1962

I am, of course, most happy to have been the chairman of your Council this year when so many important problems were posed for solution. I say this because the main problems were ones to which I have given a great deal of thought during the past few years. The decisions of Council—some of them you must now realize quite momentous—have always been taken with the ultimate well-being of our Society as a prerequisite to any agreement. Perhaps it is sufficient to say that while the present Council have been unanimous on the main points at issue, I am sure they feel as I do that the future of our Society will depend a great deal, firstly, on the implementation of their decisions, which I must reiterate have been made only after the very fullest and most careful consideration of all the various factors involved, and, secondly, on a gradual expansion by future Councils of the ideas behind the decisions.

* * *

It is a very happy coincidence that while a hundred years ago a countryman of mine, James Clerk-Maxwell, was developing the theory of electro-magnetic waves, fifty years ago the embryo of the Radio Society of Great Britain was showing signs of vibrant life. The year 1963 is our Society's Golden Jubilee Year and although the official celebrations have been arranged to take place during the first week of July it is hoped that during the whole year the " birthday " will be kept in mind in all corners of the land as and when the occasion arises.

Christmastide is the time-honoured period of peace and goodwill to all men and with this theme in mind could we as amateurs make next year a very special one by putting that little extra bit more into the contacts we make whether over the air or in person. It would be a wonderful memory to have and a priceless heritage to leave if we could say, and if others would say, of 1963 " It was the Jubilee Year . . . the Year of Friendship."

Then let us pray that come it may
As come it will for a' that
That sense and worth o'er a' the earth
May bear the gree and a' that
For a' that and a' that
It's coming yet for a' that
That man to man the warld o'er
Shall brithers be for a' that.

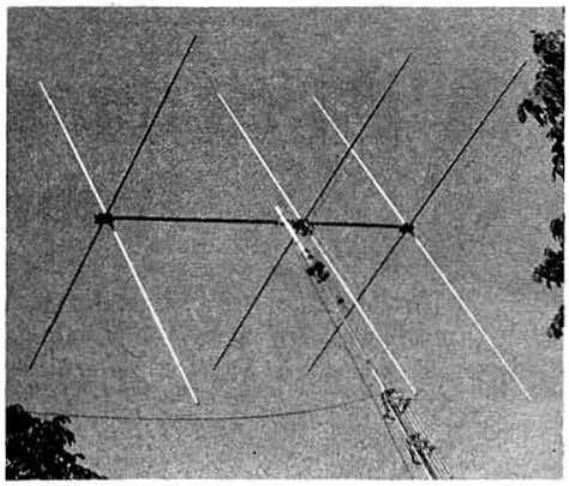
A Merry Christmas and a Good and Happy New Year to you all where ever you may be.

73, TED, GM6IZ

Polarization Diversity Aerials

Principles, Design and Performance

By GEORGE M. MESSENGER (K6CT)*



The polarization diversity aerial array at K6CT.

THE aerial design concept which is the subject of this article is the result of five years' observation of the ionosphere and extensive tests of a new aerial system under actual communication conditions. The tests were all performed on the amateur bands and on a world-wide basis. Because of wide variations in the equipment used, measurement accuracy was of a low order but the volume and uniformity of the data was so extensive that it made positive conclusions possible.

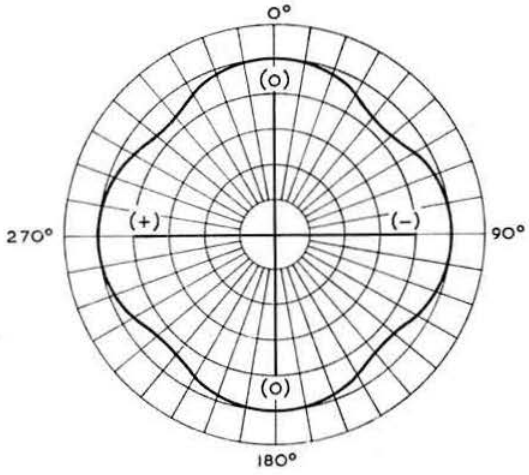


Fig. 1. Radiated power pattern of a turnstile aerial with both dipoles parallel to the ground, or aperture power pattern if one dipole is horizontal and the other vertical.

Aerials and the Ionosphere

The discontinuities, density variations and general lack of homogeneity of the ionospheric layers used in h.f. radio communication are some of the causes of fading. The relative motion between a transmitting aerial on the earth's surface and the erratic ionosphere causes changes in the signal path and wave polarization and interference with successful communication. It seems reasonable to suppose therefore that after ionospheric reflection a signal transmitted in a single plane (e.g. horizontal or vertical) will appear at a receiving site in the exact plane that it was transmitted for only brief intervals of time. Consequently, a single plane polarized receiving aerial will only provide maximum signal strength for the brief time that the received wave is identically polarized with it. Clearly the polarization of the signal is a matter of chance. Signal variations caused by the ionosphere occur in the horizontal direction (azimuth), the vertical direction (elevation—over and under skipping) and in the plane of arrival (polarization).

After a year of observations on the 28 Mc/s band it was concluded that 80 per cent of the fading experienced was due to polarization shift. Observations were made using two receivers, one with a horizontal beam aerial and the other with a vertical. Polarization shift fading was identified by opposite movements of the signal strength meters at the same time. It was found in practically all cases that readable signals could be produced by the combined output of both receivers when individually the signals were unreadable. Diversity reception, such as this, using separate receivers and separate aerials, has been practised for many years.

Aerial Design

The first design consideration was to provide an aerial that would be the least sensitive to polarization change. Ideally, this would have the aperture pattern of a circle, without polarization sensitivity. Second, the horizontal and vertical beam widths should not be so narrow that the aerial would have increased sensitivity to azimuth and vertical angle change. A third consideration, simplicity and economy was essential to prevent cost and complexity from exceeding that of earlier diversity methods. Fourth, the mechanical features of the design had to ensure strength sufficient to withstand the most severe operating conditions of winds and ice loading. Finally, as many features as possible had to be used from designs of known performance, so that the area of experimentation would be confined to the problem at hand and not confused by new unknown variables.

Some of the early experimental designs were explored by the crude approach of simple simultaneous feed of a horizontal and vertical aerial with separate transmission lines, coupled to a common feed point at the aerial changeover relay. The log of W.E.D. (" Bill ") Parker (G6BY) indi-

* *603 South Lark Ellen Avenue, West Covina, California, U.S.A.*

cates the success of these experiments by showing that signals from K6CT appeared 20 to 30 minutes earlier than any other Californian signal, were stronger and steadier, and continued to be heard after the others had faded out.

The turnstile aerial, widely used in the United States, appeared ideal as the driven element portion of the beam. Although normally used to attain nearly uniform horizontal radiation with the elements parallel to the ground, the turnstile presented a near circular pattern (Fig. 1). The

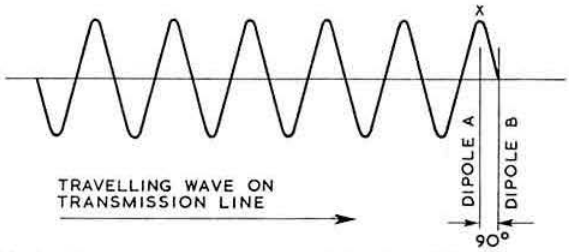


Fig. 2. Travelling wave on a transmission line. When the wave peak at X reaches dipole B, dipole A will be at zero potential.

simple expedient of rotating one element of the turnstile through 90° (one horizontal dipole and one vertical dipole crossing at their centres) provided the desired cross-polarization.

The two dipoles of the modified turnstile were fed 90° out of phase and an examination of a wave train demonstrates that when one dipole is at a power peak the other is at a power null (Fig. 2). The polarities shown at the element ends of Fig. 1 portray this instantaneous condition of one dipole with peak positive voltage at one end and peak negative at the other. The other dipole, at the same instant, is at zero voltage. It is this feature of the turnstile that produces the circular pattern. The dipoles, radiating independently and 90° out of phase, do not have conflicting polarities and there is therefore no cancellation of the signal to cause severe nulls in the aperture pattern.

The Polarization Diversity Array

The polarization diversity aerial (Fig. 3) that was developed from these experiments consisted of:

(i) Two conventional three-element Yagi aerials, mounted on a single boom, one aerial in the horizontal plane and the other vertical;

(ii) The driven elements of the beam fed 90° out of phase; with a gamma rod feeding system;

(iii) The centres of all elements earthed to the boom at the point of attachment.

Available sizes of coaxial transmission cable restricted the design somewhat and 52 ohm impedance feed line was used from the transmitter to the aerial The 125 ohm impedance feeder used by the writer for the 90° phasing section is not readily available in the United Kingdom but alternative arrangements suggested by G3HRH using cables commonly obtainable in the British Isles are shown in Fig. 4 (a) and (b). Other alternatives are given in Table 1.

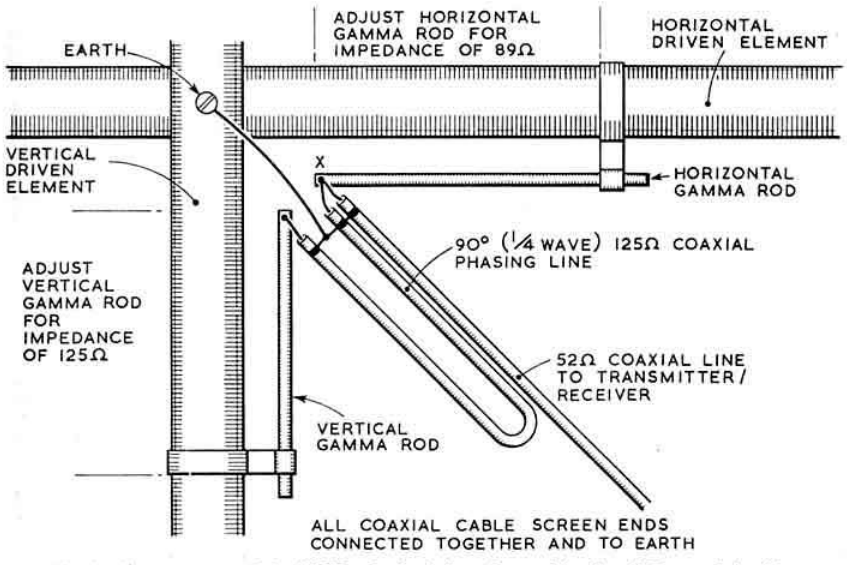


Fig. 3. Arrangement of the K6CT polarized diversity aerial using U.S. co-axial cables.

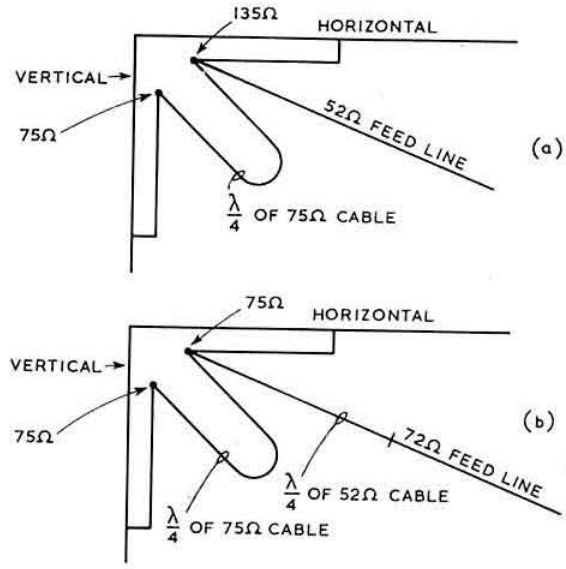


Fig. 4. Alternative arrangements of the polarized diversity aeria for use with co-axial cables commonly available in the U.K.

Spacing between the two aerials and the distance between the parasitic elements was arbitrarily established. Many experiments in element spacing of Yagi aerials have shown that for a given boom length and number of elements, there are many combinations that will produce the same gain on an aerial test range. (Line-of-sight transmission and reception.) It has also been found that two aerials producing the same gain on a test range do not necessarily show the same equality when tested under operating conditions. This is a design problem warranting further investigation.

It is not necessary that the polarization diversity aerial be mounted with the elements horizontal and vertical to the

TABLE I

Combinations of Feeder Impedances for the K6CT Array

Transmission Line Type	Transmission Line Z_o	Phasing Line Type	Phasing Line and Vertical Gamma Rod Z_o	Necessary Horizontal Gamma Rod Z_o
RG8/U	52	RG62/U	93	118
		RG63/U	125	89·4
		RG11/U	75	169·5
		RG59/U	73	180·7
RG11/U	75	RG62/U	93	387·5
		RG63/U	125	187·5
RG58/U	53·5	RG62/U	93	125·9
		RG63/U	125	93·5
		RG11/U	75	186·6
		RG59/U	73	200·2
RG59/U	73	RG62/U	93	339·4
		RG/63/U	125	175·4

ground. Personnel of the U.S. National Bureau of Standards, operating KC4AAE near the South Pole between December 1961 and February 1962, tried a 20m polarization diversity aerial in the horizontal-vertical position and then rotated the aerial so that the elements were presenting 45° angles to the ground. They detected no noticeable difference in performance. The original experiments were made in the horizontal-vertical position to reduce the number of variables to a minimum during the performance evaluations.

The mechanical arrangement used by the writer is shown in Fig. 5.

Performance

The tests performed at K6CT employed a transmitter delivering 100 watts output to a 52 ohm coaxial cable to the beam feed point. A changeover relay was employed to switch the aerial to the receiver when not transmitting. The two reference aerials could be selected by means of a coaxial switch. One of these aerials was a cubical quad at 40 ft. to the cross arms, and the other a vertical quarter wave ground plane, its base 33 ft. (one wavelength at 28 Mc/s) above the ground. The receiver principally used was a Hallicrafters SX-100.

The polarization diversity aerial was tuned with the aid of two field strength meters with pickup aerials in each plane.

Fading Characteristics of Received Signals. This was the simplest and easiest of the tests to make. Two receivers using the separate horizontal and vertical aerials were tuned to the same signal. Fading due to polarization shift was identified by opposite direction of movement of the signal strength meters and signal variations of 20 to 40 db were often noted. The receiver using the polarization diversity aerial was then tuned to the same signal and signal variations generally reduced to 5db. It should be noted that, when all three signal strength meters varied in the same direction at the same time, the fading was due to signal shift in azimuth or elevation, not to polarization shift.

Much of the time fading was of complex origin. When this occurred, removal of the fading due to polarization shift resulted in a much steadier, and practically always readable, signal.

Fading Characteristics of Transmitted Signals. These tests consisted of observations of signals transmitted on the polarization diversity aerial as compared to one or two reference uni-plane aerials. The observations were made by DX station operators.

It was first established by reception of signals from the DX stations that ionospheric conditions were causing polarization shift fading. Transmissions from K6CT were then made on one of the uni-plane reference aerials. The DX station operator noted the amplitude and period of the fade condition. The transmitter at K6CT was next switched to the polarization diversity aerial and the new period and amplitude observed. Generally, signals from K6CT, with variations of 30 to 40db using the uni-plane aerial, were held to 5db variation when the polarization diversity aerial was substituted. The performance characteristics of the aerial were thus found to be reasonably uniform in both the transmitting or receiving condition.

Forward Gain. The polarization diversity aerial consistently produced 5db greater gain than the cubical quad. This was true for both transmitting and receiving.

Front-to-back Ratio. Measurements of the front-to-back ratio ranged between 36 and 44db, generally closer to the latter figure. This was true whether the measurement was made on K6CT's transmitted signals or on a received signal.

One new phenomenon was noted during these tests. In directing the beam towards Japan from California, South America lies directly behind the beam. Generally, signals from Japan and South America are received at their best at about the same time. Using a uni-plane beam, off-the-back signals were of a fairly high level. Signal strengths did not decrease in proportion to " range established " front-to-back ratios but in using the polarization diversity aerial only a few (the very strongest) off-the-back signals could be copied. It is the writer's belief that the effectiveness of a reflector in rejecting off-the-back signals from a uni-plane beam is dependent upon the signal being in the same plane as the reflector. If the signal from the back is arriving obliquely, the reflector is diminished in efficiency. Using the polarization diversity aerial, which has rejection in two planes, the reflectors are less sensitive to polarity and produce a better result.

Off-the-side Ratio. The signal strength variation was greater than the variation observed in the front-to-back measurements. Signals measured at 500 microvolts with the beam directed for maximum signal disappeared into a 3 microvolt noise level when the beam was rotated 90° to the minimum signal position. Signals of over 500 microvolts were still readable in the null position, but developed a rapid flutter characteristic.

Beam Width. Beam width in the horizontal plane is approximately 30° to the half-power points. The contour pattern continues to fall off very gradually to the 90° null point.

Band Opening and Closing Observations. Prior to the time (often as much as three hours) before ionospheric conditions would support signals generally between California and other stations in North America, signals from K6CT were reported as readable and two-way communication was maintained. Similarly, when conditions had deteriorated to the point where no other Californian stations could make DX contacts, communication could be maintained for one to two hours after other signals were non-existent.

Performance under Most Adverse Conditions. From March 25 to October 15, 1961, conditions on 28 Mc/s were generally considered as unfit for long-distance communication. During that period, K6CT made contact with VK6QL, near Perth, Australia, on 110 separate occasions with an approximate average time per contact of 30 minutes. In over 30 per cent of these contacts, VK6QL reported K6CT's signal as the only U.S. signal readable.

Performance on Other Bands. The polarization diversity aerial was made commercially available* in September 1961.

* Space Raider Antenna Co., 1076 East Walnut Street, Pasadena, California, U.S.A.

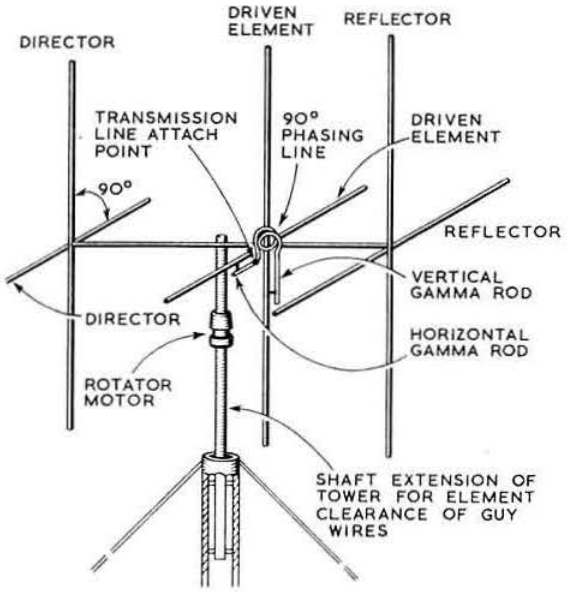


Fig. 5. Physical layout of an experimental polarized diversity aerial.

Models for the 50, 28, 21 and 14 Mc/s bands were marketed. Reports from users verify that similar performance is being obtained to that experienced by K6CT on 28 Mc/s. It must be emphasized that this performance is concentrated in the lowest vertical angle signal lobes (those used for longest distance communications). As higher angle lobes are used for shorter range communication, the polarization diversity aerial approaches the performance of a uni-plane beam.

Effect of Height on Performance. The aerial has been tested at heights of 12, 18, 20, 33, 40, 48 and 62 ft., ground to boom. The most marked difference was in the change from 40 to 62 ft. VK6QL reported hearing K6CT three hours before other Californian stations at the 40 ft. height, but the signal was not steady. When the aerial was raised to 62 ft. he reported the signal level was constant.

Conclusion

A mathematical analysis has been carefully avoided in preparing this article. This deliberate omission is due to a strong personal conviction that we are in danger of destroying our capacity for communicating new ideas by burying them under such a flood of mathematical terms that few are read and even less understood. The important message to be conveyed here is that the polarization diversity design is sound, its performance good, and its superiority over designs confined to single plane operation sufficient to warrant its widespread use.

The tests referred to could not have been performed without the co-operation received from operators throughout the world in making the observations of performance. In particular the following made outstanding contributions: G6BY, HC4CD, HC4RC, KA2EB, KA2GI, KA2JL, KR6IW, LU1DAB, VK0WH, VK2ADE, VK2AHM, VK3VL, VK3AMH, VK4HD, VK6QL, YV5AGD, ZE7JV, ZL1CA, ZL1AIX, ZL2AMH, ZL2BX, ZL2BZ, ZL2UD, ZL3BL, ZL3GC, ZL3WB, ZS1AB and 9M2GA. The patience and interest of the operators of these stations has been far beyond what might have been anticipated. To all of them the writer is extremely grateful.

Technical Review

The Airflow Developments Ltd. Blower Type 26BT

WITH the increasing availability of high power valves of the continuously forced air-cooled variety for use on v.h.f. and as s.s.b. linear amplifiers, the need has arisen for a small blower unit of adequate capacity. Various surplus units have been available from time to time, usually with limitations on supply voltages, but the range of small centrifugal blowers manufactured by Airflow Developments Ltd. now offers the possibility of a 230 volts a.c. unit at a reasonable price.

Of the wide range manufactured, the three smallest are likely to be of use to the amateur, and the 26BT tested is the middle size of these three. The maker's specification is as follows:

26BT

Motor: shaded poled induction. *Rating:* 2 watts at 2,600 r.p.m.

Voltage: 220/240 volts 50 c/s single phase.

Discharge: free 39 c.f.m. 0·25 in. water gauge 21 c.f.m.

The unit under test was run for 2½ hours continuously at free discharge. At the end of this period, the following heating had occurred:

Motor (yoke), hot, (*winding*), warm; *bearings*, warm; *fan casing*, cool. There were no physical signs of overheating on any part of the machine.

During the test, the disturbance of air was just detectable on the palm of the hand held 3 ft. 6 in. in front of the discharge orifice. The noise from the motor and fan was audible but not annoying, and was masked by receiver hiss under normal reception conditions.

In general the unit is well made and robust, but two features require comment. The motor is of the open frame variety with no mechanical cover or protection against dirt; the manufacturers consider that this is reasonable, as the unit will usually be built into an enclosed piece of equipment. The mounting of the unit is by means of two tapped 4 B.A. holes in the outlet flange of the die-cast fan housing: it might with advantage be mounted in a rather more robust manner. Apart from these two minor points it is a useful miniature blower of generous capacity, and certainly of great potential use in amateur-built transmitters. The 26BT retails at £3 12s. 6d.; also available are the 21AT (free discharge 12·5 c.f.m.) at £3 10s., and the 33BS (free discharge 54 c.f.m.) at £5 11s. All are manufactured by Airflow Developments Ltd., Lancaster Road, High Wycombe, Bucks. from whom an illustrated catalogue is available.

Installation of President

Mr. Norman Caws, F.C.A., G3BVG, will be installed as the 29th President of the Society during the course of a Social Evening to be held at the

Kingsley Hotel,

Bloomsbury Way, London, W.C.1

on

Friday, 25th January, 1963

Commencing at 7 p.m.

For further details of the arrangements see page 302.

A Transistor Converter for 430 Mc/s

By J. R. GAZELEY (B.R.S.20533) *

FOR portable or mobile work transistor converters have many advantages, chiefly because of the small power consumption that more than outweighs the less favourable noise factor.

The 2N1742 transistor manufactured by Philco (U.S.A.) was originally designed for use as an r.f. amplifier in transistorized TV tuners at frequencies up to 200 Mc/s. However, this transistor is capable of at least 8db gain at frequencies between 400 Mc/s and 500 Mc/s, although the noise factor, 5db at 200 Mc/s, deteriorates as the alpha cutoff frequency, about 520 Mc/s, is approached. Nevertheless a 420 Mc/s converter using the 2N1742 in the r.f. and mixer stages can give a performance equal to or better than a converter not using such valves as the A.2521 in the r.f. stage.

The unit to be described consumes 15 mA at 12 volts, measures 6 in. × 3 in. × 2 in. and uses six transistors and a junction diode (in fact the base-collector junction of a transistor). The output is somewhat greater than many of the conventional converters at present in use.

The Circuit

As may be seen from Fig. 1, a 2N1742 micro alloy diffused base transistor is employed as a grounded base r.f. amplifier (TR1). Its input circuit is tuned by a strip line inductance (L1) and trimmer (C1). There is no advantage from a signal frequency point of view in tuning the input of a 430 Mc/s converter, but doing so reduces the chances of i.f. breakthrough and second channel and other spurious responses.

Potentiometer type biasing is employed so that a current of 2·5 mA flows through TR1. This is the optimum value for best gain and noise factor. The collector circuit of TR1 is tuned and impedance matched into the emitter circuit of the mixer stage (TR2) by the network L2, C5 and L3. L2 is coiled so as to occupy 3 in. in a trough (see Fig. 2), the open side of which is adjacent to L15, the final multiplier strip line tuned circuit. Mutual inductance between L2 and L15 transfers the necessary oscillator injection to TR2.

L2 is not a helical resonator but a half-wave line coiled to accommodate its length in the space available. A conventional trough line of some 9 in. could no doubt be used equally effectively. C5 series tunes the line with L3 forming the low impedance coupling element to the mixer stage, at the same time further filtering unwanted lower frequencies from the input to the mixer. C3 is a very small capacitor made from a piece of insulated wire ⅜ in. long, one end of which is soldered to the collector lead and the other brought close to the emitter lead of TR1. The effect is to introduce a slight amount of positive feedback which in fact improves the gain and noise factor. This is contrary to valve practice where such feedback, whilst increasing gain, seriously degrades the noise factor. In the prototype transistor circuit it is believed that chassis currents or effects within the transistor itself cause degenerative feedback and that C3 neutralizes this effect.

A second transistor type 2N1742 is used as a mixer stage (TR2) and is potentiometer biased by R8 and R6, the bias being adjusted for the best mixer performance with the available oscillator injection. Due to the grounded base mode of operation the collector impedance is high and it is necessary to damp L4 by R9 and to overcouple the circuit to TR3 in order to realize the full 6 Mc/s bandwidth.

TR3, the i.f. amplifier, is an OC170 though any transistor capable of low noise amplification at frequencies up to 28 Mc/s could be used. It is necessary to damp or load the collector tuned circuit L6, C13 with R14 while stagger tuning of L4, C8 and L6, C13 is recommended to produce a reasonably flat response between 22·5 Mc/s and 28·5 Mc/s, the output frequency range.

In the local oscillator chain (Fig. 3), an OC170 is used in a fifth overtone crystal oscillator circuit. The crystal X1 (6825 kc/s) is an FT243 type and should readily work on its fifth overtone at approximately 34·125 Mc/s. The stage is potentiometer biased to achieve the greatest output consistent with reliability. TR5 (OC171) is used as a grounded emitter frequency doubler biased by the drive from TR4. R19 prevents this stage from being driven into thermal runaway by excessive drive. TR6 (2N1742) acts as a frequency

* 192 Haselbury Road, Edmonton, London, N.9.

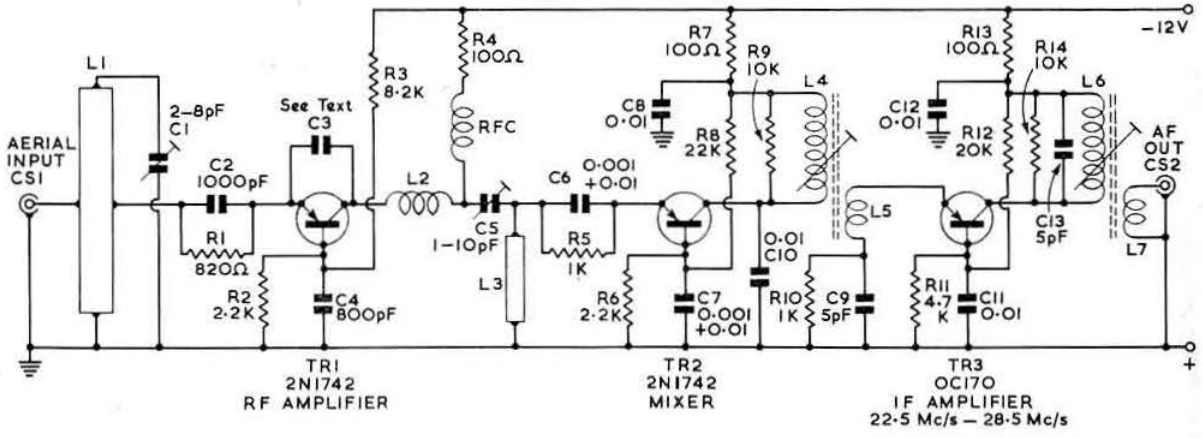


Fig. 1. Circuit diagram of the r.f., mixer and i.f. stages. In this diagram C9 and C10 should be transposed. Details of the inductances are given in the Coil Table.

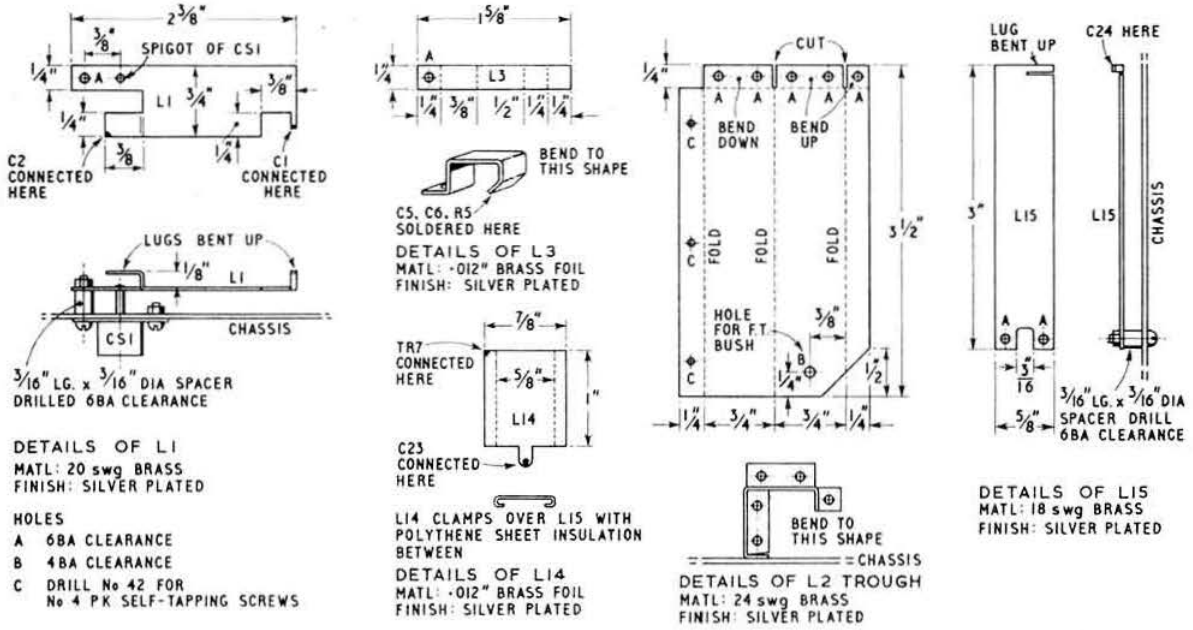


Fig. 2. Details of the strip lines and construction of the L2 trough.

doubler to 136·5 Mc/s in a similar circuit configuration, R21 preventing thermal runaway in this stage.

The original intention was to use a transistor to multiply to 409·5 Mc/s, but experiments with several different specimens of 2N1742 produced very little output. It was then suggested that a variable capacitance diode frequency multiplier stage should be tried. Suitable diodes were not available so various ordinary diodes were tried including the junctions of a number of transistors. The base collector junction of a 2N1742 was finally found to give 500 per cent more output than a conventional 2N1742 transistor multiplier circuit. R22, R23 provide automatic biasing to the correct operating point for multiplication, the 409·5 Mc/s circuit comprising L15 tuned by C24. L14 is a piece of brass foil clamped round L15 with polythene insulation to prevent contact between L14 and L15. The construction is illustrated in Fig. 2.

Layout

The general arrangement of the converter is shown in Fig. 4 and follows normal practice, i.e. short leads and in-line layout with the aerial socket remote from the i.f. output

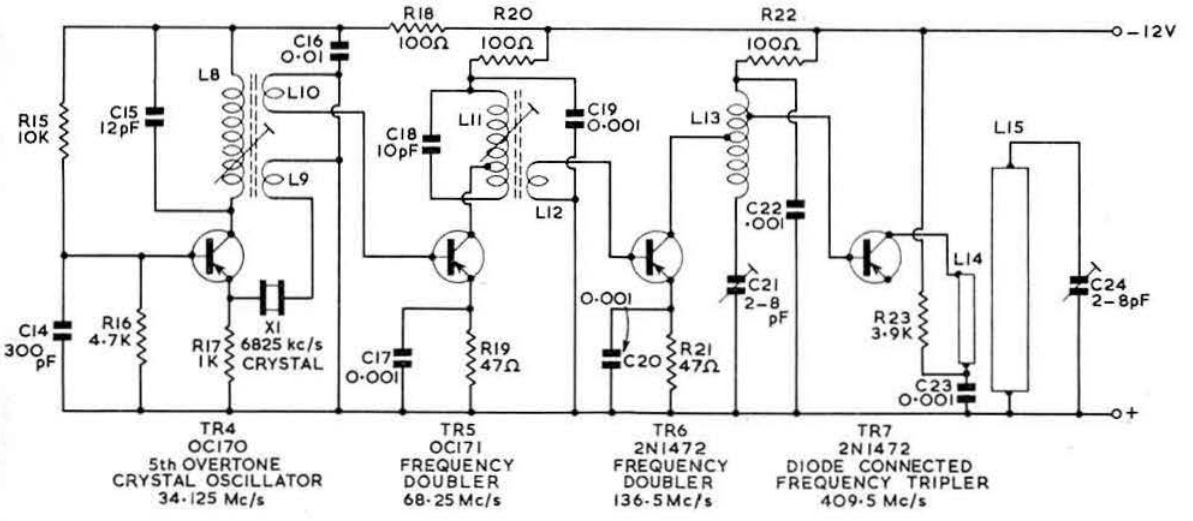


Fig. 3. The overtone crystal oscillator and frequency multiplier chain.

socket. The emitter and collector of the r.f. stage are screened from each other as are the emitter and collector of the i.f. amplifier stage.

The crystal oscillator chain is remote from the i.f. and screened from the input.

Adjustment

After the wiring has been carefully checked, 12 volts d.c. may be applied and the total current noted. It should not exceed 12 mA at this stage in the alignment procedure. Care must be taken to see that the *correct polarity of the battery is observed.*

The oscillator chain should be aligned first. The crystal is plugged in and the slug in the coil assembly L8, L9, L10 adjusted whilst monitoring the overtone frequency of 34·125 Mc/s until a point is reached where altering the slug slightly causes no appreciable change in the note received. The power should then be switched off and on again to check that the oscillator remains on the same frequency; if it does not some slight adjustment of the slug in L8, L9, L10 may be necessary. Should the crystal fail to lock to the overtone frequency or refuse to oscillate it may be necessary to adjust the bias on TR4 or vary the coupling between L8 and L9.

With a milliammeter connected across R20, the bias on TR4 and the coupling between L8, L9 and L10 should be adjusted to give the maximum reading consistent with reliability. A current of between 1·5 mA and 3 mA will be obtained when the circuit is oscillating and this should fall to zero when the crystal is removed. The milliammeter is next connected across R22 and the slug in L11, L12 adjusted for maximum current—some 5 to 6 mA. This current should fall to zero when the crystal is removed. An absorption wavemeter held near L11, L12 should cause a distinct dip in current when tuned through 68·25 Mc/s.

The milliammeter is now connected across R23 and C21 adjusted for maximum current reading. An absorption wavemeter held near L13 should cause the current to dip when tuned through 136·5 Mc/s while removal of the crystal should cause the current to fall to zero.

For the next step, a crystal diode can be connected to the junction of L3, C5 after temporarily disconnecting R5, C6. The other side of the diode is bypassed by a small capacitor and connected to a sensitive microammeter. With C5 set for maximum capacity, C24 is adjusted for maximum reading on the indicator. There are two settings of C24 that give this reading: the lowest capacity setting is the correct one as indicated by an absorption wavemeter held near L15 causing the current to dip when tuned through 409·5 Mc/s. The settings of the other multiplier stages can be adjusted for maximum reading on this indicator. The diode and indicator may then be disconnected and R5, C6 reconnected.

A grid dip oscillator is not recommended for the alignment of transistor circuits because the transistors impose heavy damping, making it difficult to obtain a clearly defined dip. Unless the g.d.o. is transistorized there is also the possibility of damage to the transistors.

The unit can now be connected to the main receiver via a short length of coaxial cable plugged into CS2. L4, L5 and L6, L7 should be adjusted for even noise response over the band 22·5 Mc/s to 28·5 Mc/s. There should be no peaks in the response. Attention to the values of R9 and R14 and to the direction of winding of L5 and L6 should overcome any difficulty experienced.

With no aerial connected the r.f. stage (TR1) can next be adjusted by tuning C5 until a noise peak is found. This will be fairly sharp and the stage may oscillate. Reducing the value of C3 will ensure stability. With some transistors it may be necessary to dispense with C3 altogether.

A suitable aerial is then plugged into CS1 and C1 adjusted for the noise peak. A strong local signal is now required, preferably a 430 Mc/s transmission. Failing this the driver stages of a 420 Mc/s or 144 Mc/s transmitter should provide sufficient harmonic output.

Care must be taken that the p.a. stage is *not switched on* and that the intermediate frequency is calculated prior to making any adjustments to the converter—it is all too easy to line up on the wrong harmonic.

The final adjustments to achieve optimum results are best made with the aid of a noise generator, particular attention being paid to the settings of C1, C3, C5, L11, L12, C21 and C24, and to the values of R3, R8, R15 and R23.

No claims as to the actual noise factor of the converter are made as different specimens may give vastly different results with transistors working so close to their alpha cutoff frequency. C3 is the most critical component and considerable experimentation in its value may be necessary for the best results.

It may be encouraging to members to know that the writer

(Continued on page 284)

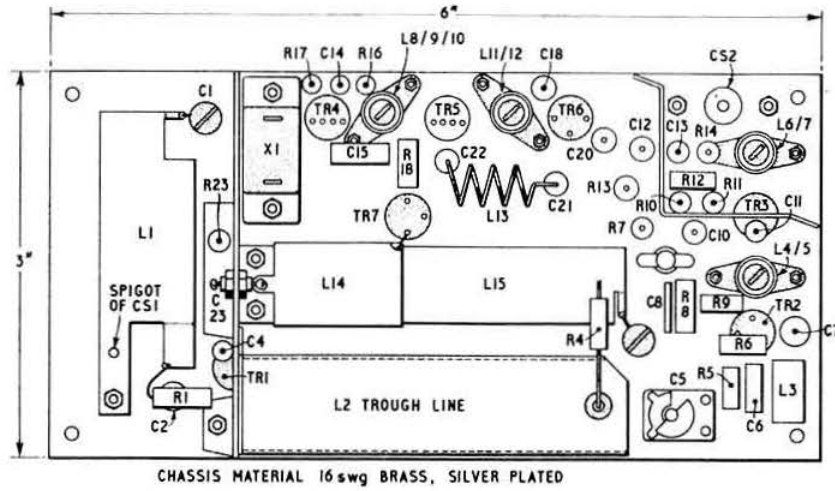


Fig. 4. Under-chassis layout of the converter showing the position of the principal components.

Coil Table

L1, L3, L14, L15, see Fig. 2.
L2, 6½ in. 18 s.w.g. tinned copper wire wound in helix 3 in. long ¼ in. internal diam. in trough 3¼ in. long ½ in. square, open side adjacent to L15 (see Fig. 4).
L4, L6, 32 s.w.g. enam. close wound on ¼ in. diam. former ¼ in. long, slug tuned.
L5, 4 turns 32 s.w.g. enam. wound over cold end of L4.
L7, 4 turns 32 s.w.g. enam. wound over cold end of L6.
L8, 15 turns 32 s.w.g. enam. spaced to occupy ⅜ in. on ¼ in. diam. former, slug tuned.
L9, 1½ turns 32 s.w.g. enam. on cold end of L8.
L10, single turn link over cold end of L8 (base lead of TR5 insulated with 1mm sleeving).
L11, 8 turns 22 s.w.g. tinned copper tapped 5 turns from cold end on ¼ in. diam. former, turns spaced wire diam., slug tuned.
L12, single turn link at cold end of L11 (base lead of TR6 insulated with 1mm sleeving).
L13, 6 turns 22 s.w.g. tinned copper ¼ in. diam. air spaced, turns spaced 2 wire diam. tapped 1 and 1½ turns from C21 end.

TECHNICAL TOPICS By PAT HAWKER (G3VA)

Semiconductors for Transmission . Parametric Frequency Multipliers
Transmitting Valve Trends . Cathode-follower Detector . Frequency Synthesizers
I.F. Attenuator . Close Talking with Ribbon Microphones . Equipment Galore
VS1AA Multiband Aerial . Super-Regens . Tunnel Diode Circuits

THE time is rapidly approaching for a new assessment of semiconductors in transmitters. After several years of milliwatt devices, we are currently passing through a phase in which it is possible to think in terms of 10-20 watts output on the h.f. bands—as represented for example by G3NWF's design in the BULLETIN (May, 1962) and a couple of watts or so on v.h.f. Now we appear to be on the brink of a further breakthrough with kilowatt transistors already in production.

In *CQ* (August, 1962) W6TNS reports on triple-diffused mesa transistors of up to 1200 watts dissipation being produced by Pacific Semiconductors for the American Air Force. A 125-watt type for use up to 50 Mc/s is marketed (though at a price exceeding £50!). VE3ABU (*QST*, September, 1962) describes a fully transistorized 3·5 Mc/s telephony rig running at about 130 watts with two 2N1899 silicon mesa transistors in the p.a. At the other end of the spectrum, an experimental 150 Mc/s transmitter using two PT657 transistors to give an output of 20 watts is described in *Solid State Design* of June, 1962 (this article and journal were kindly brought to our attention by a member whose call we have unfortunately mislaid).

None of these transmitters using r.f. power transistors is as yet cheap enough to compete directly with valves except for special applications. But this is likely to be only a matter of time. When prices drop it will be possible to contemplate using transistors for all normal mobile and fixed station purposes.

In this connection quite a spate of information is being published on the use of transistors for transmitting. Apart from the articles noted above, useful sources are "Transistors as R.F. Power Amplifiers" (*R.C.A. Ham Tips*, December, 1961) and "An Introduction to Transistor Transmitters" (*Electronic Engineering*, November, 1962).

One problem which arises with a.m. transistor transmitters is how to achieve anything like 100 per cent modulation without considerable distortion. This is by no means easy using collector modulation. To obtain linear modulation some authorities suggest the simultaneous modulation of both driver and p.a. stages. In *Electronic Design* (October 10, 1962) L. E. Geisler suggests an alternative system providing simultaneous modulation of both collector and emitter with audio signals 180° out of phase. Fig. 1 indicates the basic arrangement.

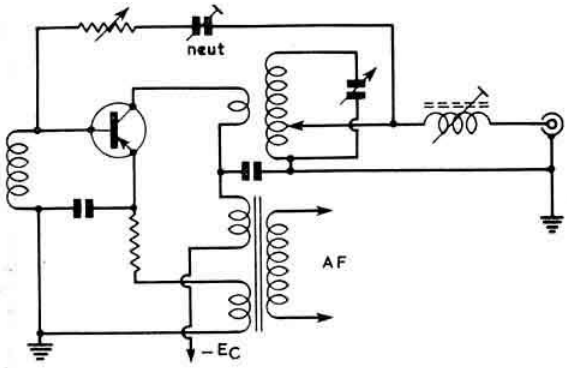


Fig. 1. Linear modulation of transistor p.a. stage by simultaneous modulation of collector and emitter.

Should transistor p.a. stages catch on, this will have a big effect on power supply design. It looks as though a typical collector voltage around 50 volts will be required, so a 100 watt stage would draw about 2 amps. Fortunately with silicon rectifiers, heavy-current, low-voltage power supplies are quite practical.

Another—possibly even more important—application of semiconductors for transmitting has made very rapid progress of late; we refer to high-efficiency frequency multipliers using variable capacitance diodes. These formed the subject of a R.S.G.B. lecture earlier this year by G3LAR while a practical design is given by W1OOP in *QST* (October, 1962) for a small unit capable of converting a 144 Mc/s, 20 watt transmitter into a 6-7 watt, 432 Mc/s unit without any valves or extra power supply. This technique (which depends upon the multiplication effect of a non-linear reactance) cannot readily be described in a sentence or two; but for those interested in this important development (which incidentally was used in the *Oscar I* satellite transmitter) *CQ* reports that a 16 page pamphlet "A practical approach to the design of parametric frequency multipliers" is available from Mr. Frank O'Brien, W6IAL, TRW Electronics, 12955 Chadron Avenue, Hawthorne, California. Although variable-capacitance parametric diodes such as Varactors provide highest efficiencies, with efficiencies up to around 70 per cent, G3LAR pointed out that promising results have been obtained using ordinary Zener diodes such as the SX11.

For those who want to look even further ahead, we draw attention to an article on "The space-charge-limited dielectric triode" in *Journal of the I.E.E.*, October, 1962. This describes some of the work being carried out at Birmingham University on a device which, it is suggested, could eventually replace the transistor, possessing low-noise, good high-frequency characteristics, low current densities as well as being immune to temperature variations.

Transmitting Valve Trends

Lest it be thought that semiconductor devices are having it all their own way, some notes on recent valve trends seem to be in order. After all we suspect that valves will be around for many years yet.

One new transmitting valve attracting attention in the States is the 7984 which is a "Compactron" version of the widely used 6146 but with 13·5 volt heater (a 6·3 volt type is under development). The Compactron valves, originally introduced a year or two back, are squat (2·5 in. high) and fairly fat (1·56 in. diameter), often with a number of electrode structures within the same envelope (for example a triple-triode is one of the popular types). Compared with the 6146, the 7984 provides better v.h.f. performance (45 watts output to 175 Mc/s) since it has less output capacitance and does not use a top cap connection.

Another trend is towards new electrode structures aimed at preventing electrons from returning from the anode to the screen region, and thus making possible valves with a very high anode/screen current ratio. One American firm (Penta Laboratories) fits a special vane-type suppressor grid for this purpose in what are called " beam pentodes." Over here we note that Mullard now have a PL500 line-output valve with what is termed a " cavitrap " anode which recaptures many of the secondary emission electrons which are produced by the electrons striking the anode and which would otherwise reach the screen grid.

Current-Limited Power Supplies

There can be few of us who have not at some time or other had painful reason to regret the effects of a short-circuit on the average power supply—and more particularly on the rectifier valve. How much better it would be if the output voltage simply fell away rapidly if the rated load were substantially exceeded.

In a most informative article, W3FQB (*QST*, October, 1962) points out that this can be arranged quite simply by always using a limiting capacitor in series with the transformer secondary winding. Fig. 2 shows his practical design

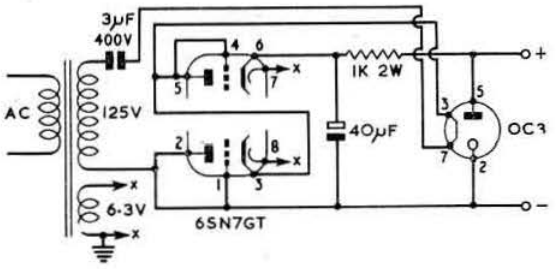


Fig. 2. W3FQB's current-limited power supply.

for a power supply which provides a stabilized 105 volt output for loads of 0-30 mA, shows a slight rise between 30-38 mA as the voltage regulator is extinguished, but then drops away rapidly to 0 volts at about 55 mA. It is claimed that the output can be short-circuited indefinitely without causing damage. The VR-tube jumper is connected so that there is no output unless the VR-tube is inserted. The key component is the 3 μF, 400 volt *paper* capacitor (polarized electrolytics are not suitable for this application).

Also in W3FQB's article is a novel method of obtaining improved regulation and reduced rectifier current in a voltage-doubler power supply (and such supplies are becoming more and more popular to obtain high transmitter voltages): Fig. 3. The only snag is the need for a centre-tapped or dual-wound choke. The system is akin to a choke input smoothing circuit but with the chokes on the a.c. side of the rectifiers.

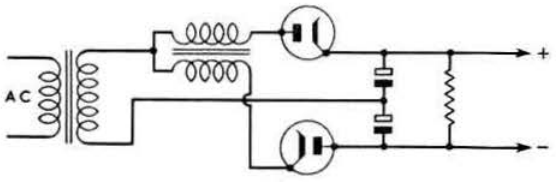


Fig. 3. Another way in which reactance can be used for current limitation and improved voltage regulation in a voltage doubler circuit.

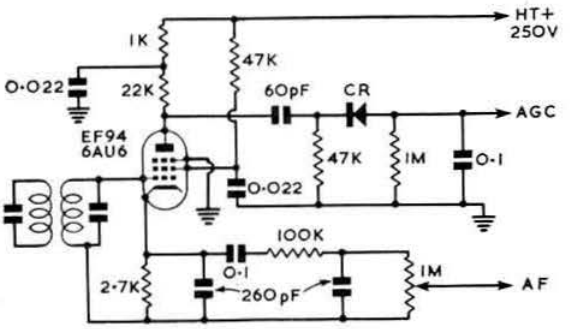


Fig. 4. DJ5FJ's cathode detector circuit.

Cathode-follower Detector with A.G.C.

A difficulty with the usual infinite impedance type of detector is that there is no simple means of obtaining an a.g.c. voltage unless a separate a.g.c. amplifier is used. In *DL-QTC* (October, 1962), DJ5FJ describes a cathode detector which overcomes this problem and provides a maximum of some 50 volts of negative control voltage: see Fig. 4.

Part of the i.f. input signal is demodulated but a portion is amplified and appears at the anode; this is rectified and used as the control voltage. Because of the high ratio of a.g.c. voltage to a.f. voltage it would seem that very good a.g.c. characteristics should be possible.

Frequency Synthesizers

The trend to s.s.b. for professional as well as amateur communications has reopened the whole question of oscillator stability. Without going all the way with Bernard Shaw who once said, " Science is always wrong. It never solves a problem without creating ten more," it must be admitted that techniques tend to become progressively more complex.

So it is that the straightforward v.f.o. is giving way to various forms of " frequency synthesizers." Though this may be a new term to some, most members will already be well acquainted with the basic techniques. Probably the simplest form of frequency synthesis is the mixer-type v.f.o. with the variable oscillator tuned to a relatively low frequency being heterodyned by a higher frequency crystal-controlled oscillator.

Another form of synthesizer is to use a single highly stable crystal oscillator (with the crystal in a temperature-controlled oven) at a very low frequency and then to multiply, divide and heterodyne the output to produce stable outputs in small discrete steps. Alternatively, a number of crystals may be used, with possibly a variable " interpolation " oscillator to fill in the gaps.

Commercial systems of considerable complexity and great stability have been produced. For example at a recent exhibition we noted a Solartron signal generator covering 50 kc/s-50 Mc/s based on frequency synthesis and having a stability of 3 c/s over periods of 5 minutes. Circuit details of a stable frequency sythesizer covering 2-30 Mc/s in 1 kc/s steps with a stability of the order of 1 in 10^8 appeared in *Electronics* of June 22, 1962.

Most of these commercial systems are too complex to appeal to amateur designers, but in *QST* (October, 1962), W1RF describes " The Ultimate Exciter "with 43 crystals and five mixers and a VXO interpolation oscillator to provide continuous coverage. Again, the new Barker and Williamson 6100 transmitter is being advertised as " the first s.s.b. amateur transmitter employing a crystal frequency synthesizer."

Thus although such units are unlikely to appeal to many constructors, a good deal more is likely to be heard in future of the various forms of frequency synthesis.

I.F. Attenuator

When operating a v.h.f. or other converter in front of a high-performance receiver, difficulty is quite often experienced from excessive output from the converter. This often shows up as an unduly high S-meter reading on noise. In *CQ* (October, 1962), W6TNS gives details of a variable i.f.

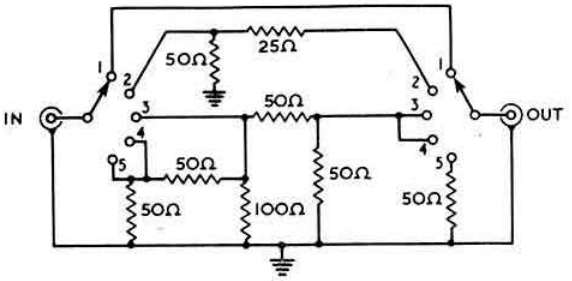


Fig. 5. W4OAB's attenuator suitable for installation between a v.h.f. converter and high-gain receiver. Position 1 provides nil attenuation; position 5 maximum attenuation.

attenuator (Fig. 5) designed originally by W4OAB. This can be set so that it not only cuts down excessive output from the converter but also reduces the effect of any spurious signal breakthrough.

Ribbon Microphones for Close Speaking

The ribbon microphone has long been recognized as one of the best types for high-quality work and is quite widely

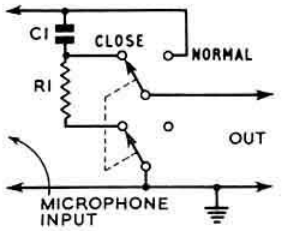


Fig. 6. Ribbon microphone bass attenuation circuit for "normal" and "close-talking" positions. For a 470 ohm impedance input circuit, C1 is 0.15 μF and R1 5 K ohms.

used in domestic tape recording and public address. Many such microphones give poor results when used for close speaking and are also very prone to pick up wind noise. Admittedly, there are some compact ribbon microphones which overcome these problems by inserting small pads at the back of the microphone.

However there are still many in which a " proximity effect " shows up on close speaking. This is in part due to shifting of the ribbon by sounds such as the explosive " p " and in part because of too prominent bass response under such conditions.

In *Electronics World* (October, 1962) it is suggested that these effects can be overcome by a dual prong attack. In the first place the microphone is enclosed by a piece of nylon stocking supported on a cage (fashioned from 20 s.w.g. wire). The bass effect is eliminated by a simple bass attenuator network at the input to the pre-amplifier. The filter should begin to cut off around 200 c/s and be around 16db down at 50 c/s. Fig. 6 shows a circuit used with a 470 ohm impedance transistor pre-amplifier.

Equipment Galore

Leafing through the autumn advertisement pages of the American amateur journals is always a thought-provoking operation, as it is at this time of the year that so many new items of commercial equipment are introduced. This year is no exception. The trend to compact transceivers is fast gaining ground. National have a new three-band (3·5, 7 and 14 Mc/s) transceiver with an output of 120 watts p.e.p. on s.s.b., 108 watts c.w. and 30 watts a.m. in a 6 in. × 13⅝ in. × 11⅝ in. cabinet with a 5200 kc/s s.s.b. crystal filter. Single band transceivers are available from Sonar and Swan. The Gonset G76 covers all bands from 3·5-50 Mc/s. The Hallicrafters FPM-200 transistor transceiver provides 150 watts p.e.p. from 3·5 to 28 Mc/s for those who can find something over £900—over twice the amount needed for a Collins KWM-2. There is also quite a flock of v.h.f. transceivers.

Hallicrafters have pin-pointed a new tendency—that of s.s.b. transceiver operators gradually to " walk " up and down bands; this is because no two operators tune exactly alike. Each " over " the receiving operator tends to retune slightly, to be followed next time by the other, and so *ad infinitum*. To overcome this problem Hallicrafters are fitting an incremental tuning feature on their new SR150 transceiver which allows the receiver to be tuned over a few kc/s without disturbing the transmitter frequency; presumably this is done by slightly tuning one of the i.f.s.—a technique found on some commercial communications receivers for fine tuning. The same firm has also a new triple conversion receiver (SX117) with a first i.f. tunable over 0·5 Mc/s and with provision for using the v.f.o. as a crystal locked oscillator.

As though to emphasize the wide range of equipment available to American amateurs and radio hobbyists, one of the main United States' mail order firms—Allied—recently sent us their 1963 catalogue. This runs to 456 closely packed pages and we can well believe their claim that it contains some 70,000 different items, including over 4700 semiconductor types. Comprehensive catalogues like this one are not only of enormous convenience but provide a great deal of information on the characteristics of modern components—for example there are some 15 pages on capacitors alone.

We note from a trade magazine the marketing of a Japanese-built communications receiver in the U.K., though the retail price of about £70 does not seem to compare too favourably with the position in the United States where what appears to be basically the same model is being offered at $99.95 (about £35).

To old-timers mention of the SW3, the " One-ten," Skyrider, and Comet Pro will bring back memories of the days when new communications receivers cost around £9 to £35. Such names jump out of an interesting two-part article in *Electronics World* (November, December, 1962) in which W3TRR traces the " Evolution of the Communications Receiver."

VS1AA Multiband Aerial

Recently in *T.T.* we mentioned a number of popular multiband aerials: to these we could well add the VS1AA which seems to be staging quite a comeback these days—particularly on the Continent. For those who are unfamiliar with this compromise Windom we would refer them to the *Amateur Radio Handbook* and to Fig. 7 which shows dimensions given in DM2ABK's *Antennenbuch*. The old trick for tuning Windoms and VS1AAs was to run a neon along the feeder and adjust for minimum change in brightness but presumably these days one should insist on measuring the s.w.r. with a meter!

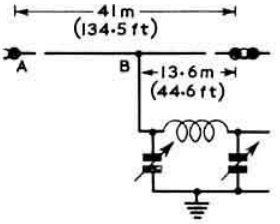


Fig. 7. The VS1AA multiband aerial: diameter of aerial wire about 2 mm. (say 14 s.w.g.); diameter of feeder wire (B) about 1 mm. (say 18-20 s.w.g.).

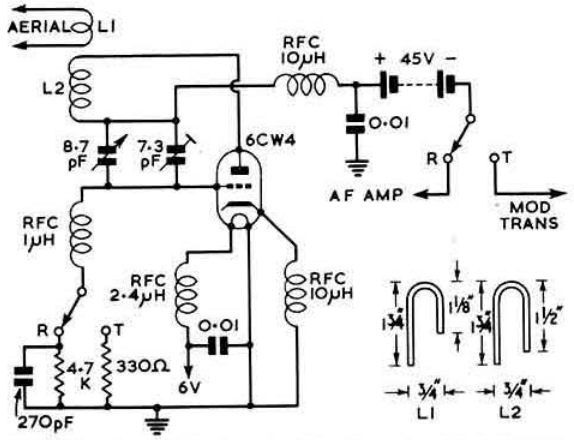


Fig. 8. Use of 6CW4 Nuvistor in a 420 Mc/s super-regen tranceiver. The hairpin-type coils are made from 12-gauge (B. & S.) copper wire.

Super-regens

Like some others who dabbled with super-regens in the 'thirties, we have always retained a soft-spot for these extremely high gain circuits which date back to Armstrong's developments in 1922. Today, they appear to be much more popular in the States than in the United Kingdom. A recent example is the " 3-Way VHF'er " by K9ODE in the May-June, 1962, issue of *G.E. Ham News* using 12-volt h.t. car-radio valves. An r.f. stage and super-regen detector forms the basis for either a complete receiver or by using the a.f. output to modulate a 12EK6 frequency changer to provide an output for feeding into a standard car radio. The idea of converting a.f. back to r.f. for this purpose seems a novel one, rather akin to the gramophone oscillators which used to be popular in the States.

An almost exact replica of the old style super-regen transceivers turned up in *QST*, May, 1962, up-dated by using a 6CW4 Nuvistor on 420 Mc/s in conjunction with two audio transistors for receiver a.f. and for modulation: Fig. 8 shows the 6CW4 stage.

One of the greatest drawbacks to the super-regen is the broad bandwidth, usually of the order of 500 kc/s or so. A new life may be given to the super-regen by the development by N. H. Brown (*Electronics*, September 21, 1962) of an entirely new circuit using a feedback loop to give much narrower bandwidth and high signal-to-noise ratio. Full circuit details are given of a 10 Mc/s super-regen detector having a 100db gain and a bandwidth of only 50 kc/s. This is appreciably more complex than the usual circuit and uses two *n-p-n* and one *p-n-p* transistor plus two crystal diodes in a Travis-type discriminator. Despite the extra complications, this new circuit still represents a relatively simple approach to a v.h.f. receiver by using it as i.f./second detector. Super-regens turn up again in our next item.

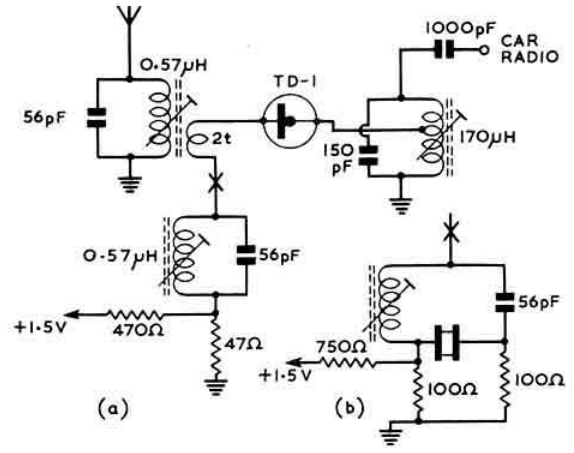


Fig. 9. Tunnel diode converters for 27 Mc/s Citizen Band: (a) with L-C oscillator; (b) modifications for crystal controlled oscillator. This type of unit could be readily adapted for amateur band operation.

Tunnel Diode Circuits

New applications and circuits for tunnel diodes are appearing all the time. Unfortunately these devices are still rather rare and expensive for amateur experiments, though we note that prices are steadily coming down (for example, Philco tunnel diodes are selling in the States around the £1 mark).

A feature of tunnel diode circuits is the extreme simplicity as well as the low power requirements. An article in *Solid State Design* (September, 1962) shows how simple tunnel diode converters can be used ahead of standard car radios for h.f. and 27 Mc/s Citizen's Band work. Fig. 9 shows a 27 Mc/s converter (either L-C or crystal controlled) in which the diode oscillates and simultaneously amplifies at the signal and intermediate (about 1 Mc/s) frequencies. This general type of unit is stated to have a sensitivity of the order of 60 μV at 27 Mc/s and about 20 μV at 4·5 Mc/s.

A number of circuits based on tunnel diode work at S.T.C. appear in *Radio-Electronics* (November, 1962). Fig. 10 shows one of these—an extremely simple synchrodyne-type f.m. tuner requiring a single tunnel diode rated at about 1 mA peak current.

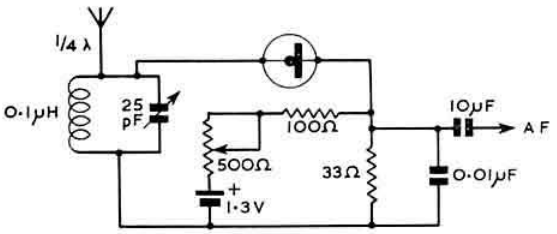


Fig. 10. Simple tunnel diode f.m. tuner.

A Transistor Converter for 430 Mc/s

(Continued from page 280)

used unselected transistors acquired through normal retail channels.

Results

The converter was tested at G3FD against a G2DD type with an A.2521 preamplifier. An AR88 receiver was used as an i.f. strip tuning within 50 kc/s of the same intermediate frequency range for both converters. The transistor converter had 10db more gain and produced more noise on weak signals than the G2DD type with a preamplifier. Without the A.2521 preamplifier the G2DD converter was slightly inferior to the transistor converter.

Acknowledgment is due to G3FD for giving up his time to make these tests and also to the many others who made helpful suggestions, especially G2BVN who loaned two transistors when the writer was waiting for supplies to complete the project.

High Slope R.F. Pentodes for Wideband Operation

BY G. R. JESSOP (G6JP)*

THE development of high performance valves, which in recent years has given us such well-known low noise receiver input valves as the E88CC, A.2521, A.2599, EC88 and 417A, has also produced several other valves which may well be in common use before long.

Some of the high slope r.f. pentodes designed for wideband operation at frequencies up to approximately 300 Mc/s

High Slope Wideband R.F. Pentodes

Type	E180F†	E280F‡	E282F	E810F§	D3A
V_f (volts)	6·3	6·3	6·3	6·3	6·3
I_f (amps)	0·3	0·315	0·315	0·34	0·32
Base	B9A	B9A	B9A	B9A	B9A
V_a (volts)	190 180	190 190	125	135	190
V_{g3} (volts)	0 0	0 0	0	0	0
V_{g2} (volts)	160 150	160 160	125	125	160
V_{g1} (volts)	+9 0	+8 0	+12	+12·5	+10
R_k (ohms)	630 100	370 500	300	360	400
I_a (mA)	13 11·5	20 15	35	35	22
I_{g2} (mA)	3·3 2·9	6 4·5	11	5	6
gm (ma/V)	16·5 15·9	26 23	26	50	35
μ, G_2-G_1	50	60	27	60	65
R_{eq} (ohms)	460	220	—	100	150
Max Ratings V_a (volts)	210 (400*)	220 (400*)	200 (400*)	200 (400*)	200 (400*)
W_a (watts)	3	4	4·2	5	4·2
V_{g2} (volts)	175 (400*)	180 (400*)	150 (400*)	200 (400*)	180 (400*)
W_{g2} (watts)	0·9	1·1	1·4	1	1
I_k (mA)	25	30	50	50	30
Capacities C in (pF)	7·5	9·3	9·3	16	10
C out (pF)	3·0	2·6	2·6	4·1	2·1
C_{a-g} (pF)	0·03	0·035	0·04	0·035	0·03
Frequency (Mc/s)	—	300	250	—	—

* *Maximum voltage at no current* † U.S. type No. 6688 ‡ U.S. type No. 7722 § U.S. type No. 7788

and of high sensitivity will undoubtedly find application in many equipments other than those for which they were originally designed. Typical valves are listed in the Table; all are available in the U.K. although they may not be actually manufactured here at present. The march of the transistor is likely to push the valve out of the earlier and low frequency stages of exciters and transmitters in the years to come although there seems likely to be some delay before these devices can take the place of valves in higher power, high and very high frequency stages for anything except essentially low power equipments.

It seems probable that of the valves listed above the E180F/CV3998, E280F and E282F will find their place as drivers or multipliers, especially as the final multipliers in equipment for 144 Mc/s where they should be capable of driving such power amplifiers as the QQV03-10 and QQV03–20A, TT20 valves. Unfortunately these valves are still relatively expensive, but like their predecessors they will probably be reduced in price in due course. Some may find their way on to the surplus market, so it is worth bearing the types in mind.

There appears to be little practical information on this type of application, but no doubt it will be forthcoming from the manufacturers eventually; in the meantime some of the more fortunate who have used these valves may care to come up with some operating data for the benefit of others.

The E180F, which will probably be the cheapest, is likely to supersede such valves as the CV138, QV04/7 and 5763 in the driver or last multiplier stages of 144 Mc/s transmitters. This valve may also be worth considering for the intermediate r.f. amplifiers of s.s.b. transmitters on the h.f. bands.

Two typical examples of the use of E180F valves in this type of application have been provided by G3HBW:

Trebler

Input Frequency 24 Mc/s, Output Frequency 72 Mc/s.
V_a = 215 volts.
V_{g2} = by series resistor from h.t. line.
I_k = 18 mA.
R_k = 100 ohms.
I_g = drive from previous stage, 0·4 mA.
R_g = 47K ohms.

Doubler

Input Frequency 72 Mc/s, Output Frequency 144 Mc/s.
V_a = 215 volts.
V_{g2} = by series resistor from h.t. line.
I_k = 23·5 mA.
R_k = 100 ohms.
I_g = drive from trebler, 0·5 mA.
R_g = 100K ohms.

Such a doubler, using a series tuned anode circuit feeding into a conventional push-pull coupling with centre-tap grid resistor will drive a QQV03/20A to 3 mA grid current with a 16·5K ohms grid resistor, and a standing bias of −12 volts.

* *Member, Technical Committee, 32 North View, Eastcote, Pinner, Middlesex.*

Did it Work?

MR. L. D. RICKABY (VK4VR) recently soldered together 65 empty beer cans in an attempt to produce a novel form of aerial. The cans were kept straight by placing them in a long wooden trough whilst solder, about a pound of it, was poured in the tops and bottoms. The finished job was then mounted on insulators and is now adorning Mr. Rickaby's garden at Cooper's Plains, Brisbane. The Beer Can Aerial is light enough to be held in one hand yet strong enough to stay up without guy wires. The aerial is equivalent to a piece of wire 33 ft. long.

Colin Grells (A.3034) who told us about this aerial has not yet been able to discover whether it has produced the DX results on 7 and 14 Mc/s expected of it.

New Mullard Technical Information Department Established

A NEW organization has been established to deal with the growing volume of published data and applications information on Mullard products. Known as the Technical Information Department, it assumes all the functions previously carried out by the Company's Data and Publications Section. These include the preparation of data sheets for the *Mullard Technical Handbook* (now grown to five volumes), the production of *Mullard Technical Communications* (of which the 50th issue was published last year) and the provision of applications information in various forms.

Manager of the Technical Information Department is Mr. H. P. White, B.Sc.

Notes on the Nuvistor 144 Mc/s Converter

By G. M. C. STONE, A.M.I.E.E. (G3FZL) *

FOLLOWING publication of the article *Simple High Performance Converters for 70 and 144 Mc/s using Nuvistor R.F. Stages* in the October issue of the BULLETIN, a number of points concerning the 144 Mc/s converter have come to light.

Firstly, a photograph of the underside of the 144 Mc/s converter has been requested by many members and is reproduced below. With reference to Fig. 5 on page 157 of the October issue, the valveholder orientation is as follows: V2, V3, pins 1 and 9 are on the screen A side, V4 pins 1 and 7 are on the screen A side. Earthing of the valveholder pins is important: all pins to be earthed are connected to the centre spigot of the valveholder (B7G and B9A). For V2 and V3, these are wired by as short a wire as possible, i.e., from the nearest earthed pin, to 6 B.A. solder tags under the valveholder screws nearer screen A. In the case of V4 the earth tag is mounted under the screw nearer the crystal holder. Screens C and D are also soldered to the centre lugs of their related valveholders.

It has been found more convenient to arrange the two spills from L9 to project parallel to screen A on the side nearer V4. The anode lead is connected to the spill adjacent to screen D. The 2000 pF decoupling capacitor is connected from the other spill to a solder tag mounted under the valveholder screw of V4 nearer screen A. It has also been found, in some cases, that with the 10 pF capacitor in parallel, L9 will not tune to 35·5 Mc/s; if this occurs the capacitor should be removed, thus enabling the correct tuning point to be found.

Certain important voltages and currents are shown in Table 1 as a guide to trouble shooting. These measurements were taken on the prototype using an AVO Model 8 (using the 250 volts and 250 μA ranges). Grid currents were measured by inserting the meter at the earthy end of each grid resistor—incidentally, a useful method of indication when tuning the oscillator section. If V4 fails to oscillate (evidence: Ig_1 zero) reduce the value of the 2·2 K ohms

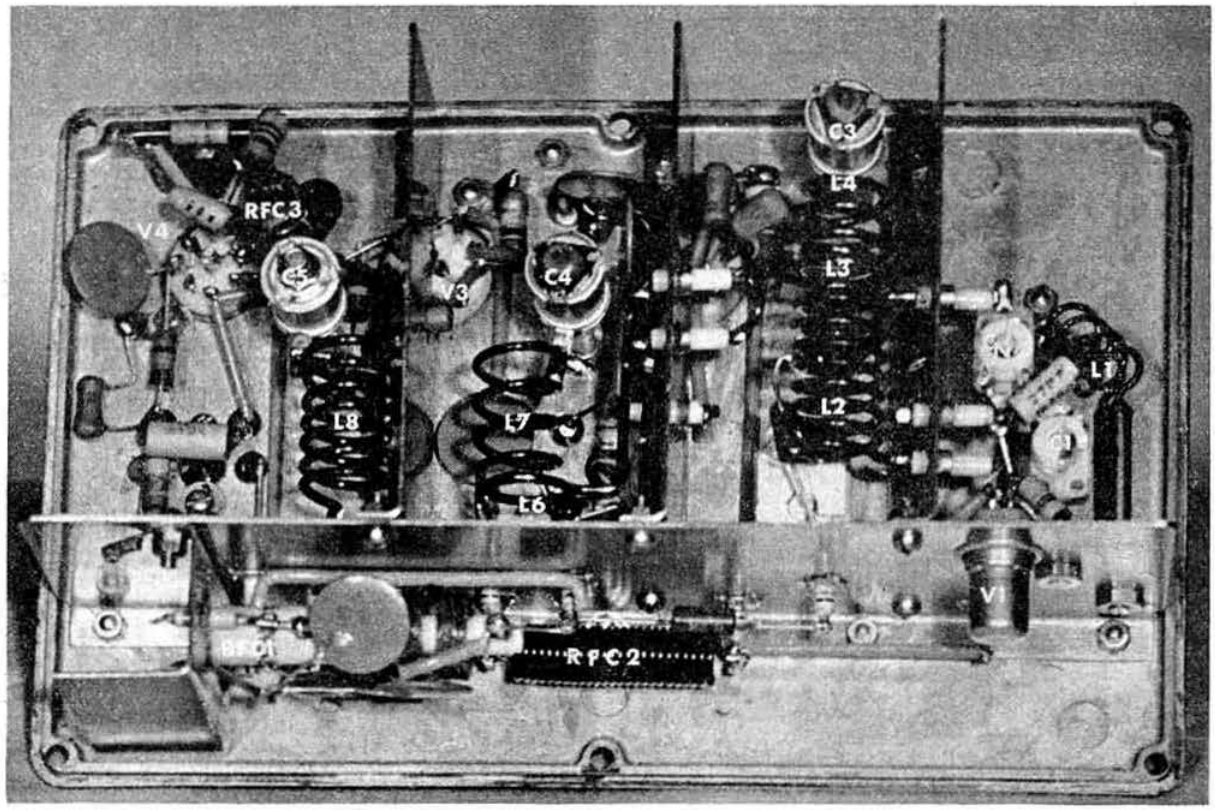
(*Continued on page 290*)

TABLE 1

	V1	V2a	V2b	V3a	V3b	V4
V_a	80	140	74†	140	130	136
V_{g2}	—	—	—	—	—	130
I_{g1}	—	25 μA	—	35 μA	74 μA	135 μA

V2a refers to the triode connected to pins 1, 2, 3. V2b refers to the triode connected to pins 6, 7, 8. Similarly for V3.
Measurements made with AVO Model 8.
†50 with no drive from the oscillator stages. Total h.t. drain 24 mA.

* *Chairman, Technical Development Sub-Committee, 10 Liphook Crescent, Forest Hill, London, S.E.23.*



An underside view of the 144 Mc/s Nuvistor converter described in the October 1962 issue of the Bulletin.

Highlights of the R.S.G.B. International Radio Communications Exhibition

The Society's stand at the R.S.G.B. International Radio Communications Exhibition held at the Seymour Hall, London, from October 31-November 3, 1962.
(Photo by Tella Photography Ltd.)

LISTENING to the comments of visitors to the Society's International Radio Communications Exhibition held at the Seymour Hall, London, from October 31-November 3, it was quite clear that the majority found the venue highly satisfactory and the show itself of considerable interest.

If any particular trends could be noted, they were a marginally smaller number of kits and an increase in the quantity of complete equipments, of which there was a more varied display than ever. On the other hand, evidence from those exhibitors dealing in parts confirms the view that home-construction is still a major activity with most radio amateurs. The popularity of complete sets is due no doubt to a desire to be able to get on the air at any time with equipment of proven reliability or to the familiar complaint of lack of time but even those who use what are often described as commercial amateur stations frequently use home built accessories of a wide variety. The disappointment expressed by a number of visitors to the Exhibition at the relatively small number of exhibitors who thought it worthwhile to display parts can therefore be appreciated.

Although the quantity of equipment displayed on the amateur stands was somewhat lower than at previous R.S.G.B. exhibitions, the standard of craftsmanship and ingenuity of design was again of an exceptionally high order.

Around the Commercial Stands

Last year comment was made that the trend of fashion in Amateur Radio seemed to be towards neater and more compact gear. That trend was certainly continued this year. No startling changes were noted amongst the commercial exhibits but rather a refining and improving of tried designs in much the same way that the motor car industry no longer brings out an entirely new range each year. In the radio sphere the days of rack-and-panel construction appear to be over and the table-topper—if that means covering a table top—will not be with us much more.

Toroids of many types were displayed by **Avel Products** together with Bang and Olufsen audio products, Bach-Simpson Canadian made multi-range meters and Dynaco high fidelity gear. The Dynakit amplifiers in the latter range have been modified from the standard U.S. design to incorporate Avel toroidally wound output transformers. D.c.-to-d.c. converters for mobile use included a 130 watt model capable of supplying 425 volts at 300 mA and 235 volts at 100 mA at an efficiency in the region of 80 per cent.

Daystrom Ltd. displayed a representative range of **Heathkit** products, such as the DX100U and DX40U transmitters the SB10U s.s.b. adapter, test gear and decade boxes. New items included the Model QPM-1 *Q* multiplier for improved selectivity and nulling of undesired signals. An integral power supply makes the unit suitable for use with almost any receiver with an i.f. in the range 450-470 kc/s. Another new product shown in prototype form was the type RA1 receiver for 1·8-30 Mc/s which uses a 1620 kc/s i.f. with a half-lattice crystal filter. The receiver employs six valves plus rectifier and stabilizer tube. Provision is made for the use of an external power supply, such as a vibrator.

Coils of many types for use in receivers and transmitters were displayed by **Electroniques of Felixstowe** who have already supplied more than 500 kits of coils for one of the most popular BULLETIN designs, the G2DAF receiver. Among new items on show were complete detector units comprising a final i.f. transformer with built-in audio and a.g.c. diodes, load and decoupling resistors and capacitors. The standard pattern is intended for communication purposes but, for use where high fidelity is the prime requisite, a push-pull audio detector unit is also available. A range of 12 pot cup coils for the *Q* multiplier described on page 113 of the R.S.G.B. *Amateur Radio Handbook* is available from this firm covering all standard i.f.s between 85 kc/s and 1·6 Mc/s. Other exhibits included "Stabquoil" coils with built-in trimmers, "Qoilpax" front-end units for communication type receivers and variable selectivity i.f. transformers.

Enthoven Solders again demonstrated the Superspeed low voltage soldering iron and a wide range of solders and fluxes.

Green and Davis, newcomers to the exhibition, showed v.h.f. equipment including Nuvistor converters and pre-amplifiers but perhaps the most interesting exhibit on this stand was the "Falcon" 144 Mc/s transmitter, the r.f. line-up of which is ECF80 (overtone oscillator and first multiplier), E180F (driver) and QQV03-10 (p.a.) capable of 15 watts input, modulated by EF86, 12AX7 and a pair of EL84 valves in push-pull. Switching is provided for three crystals, and there is an internal change-over relay. A key-operated on/off switch to the internal power supply prevents unauthorized operation. The r.f. section is also

The Exhibition Station, GB3RS, was active on Top Band, 80m and 2m.

available for use as a c.w. transmitter or driver for a high power p.a.

J-Beam Aerials, making a welcome return to R.S.G.B. exhibitions, displayed a wide range of slot-fed arrays for 144 and 420 Mc/s and a new 2m halo for mobile operation. For the projected new TV services on channels 23 to 44, 10-over-10 and 6-over-6 arrays fitted with baluns are available.

The KW77 receiver, which won the Silver Plaque for the most interesting item of commercially-built equipment for the amateur, was the centre of attraction on the **K.W. Electronics** stand but the latest version of the " Viceroy " s.s.b. transmitter, now available with an additional half-lattice section, was also keenly examined. Other K.W. products on display included the KW500 linear amplifier, the " Viceroy " s.s.b. exciter, the K.W. Valiant and Vanguard a.m./c.w. transmitters and K.W. trap aerials. Equipment from the U.S.A. included the Drake 2B and Collins 75S3 receivers, a number of Hammarlund and Hallicrafters receivers, Mosley and Hygain aerials. Among the small items were McCoy 9 Mc/s crystal filters, B. & W. phase shift networks, C.D.R. rotators, Geloso v.f.o. units and, from Japan, the Kokusai mechanical filter for receiver and s.s.b. exciter use. An inexpensive signal generator noticed on this stand was the Nombrex model 27 covering 220 kc/s to 220 Mc/s in eight bands. It operates from a standard 9 volt transistor receiver battery.

Minimitter featured a very compact all-transistor mobile receiver for 1·8-2 Mc/s measuring only 8¼ in. × 2 in. × 4½ in. This unit employs seven transistors and has a built-in *Q* multiplier. Power is derived from a standard 9 volt battery and the aerial input circuit is designed for use with a tuned mobile whip. Other products displayed included the Mercury 200 a.m./c.w. transmitter, the MR44/II receiver, amateur band converters, a 20 watt mobile transmitter, the G4ZU 10/15 beam, the X20 aerial, the Minimitter telsecopic mast and the F.B.5 multi-band wire aerial.

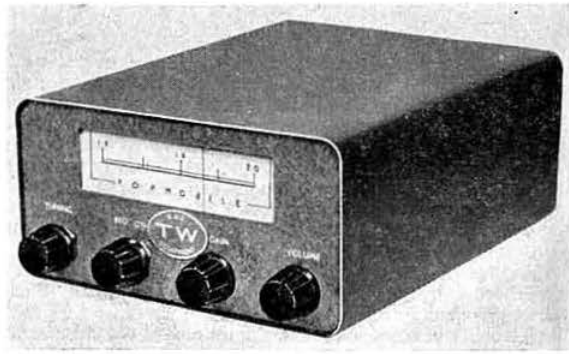
The **M-O Valve Co. Ltd.** displayed valves for use in amateur v.h.f. and u.h.f. equipment as well as typical examples of equipment using M-O valves, such as 430 Mc/s and 1300 Mc/s converters and transmitters giving 2·5 and 10 watts respectively at 430 Mc/s. There was also a model of a cavity resonator for a 4X150A or 4X250B as described in the November 1962 issue of the BULLETIN. Of purely academic interest to the amateur was a quadrupole or beam parametric amplifier with a noise factor of better than 2db at 460 Mc/s, and probably costing the best part of £1,000.

Well-finished metalwork can make all the difference to the appearance of a piece of home-built equipment and many fine examples of cabinets in traditional and contemporary patterns and panels and chassis were displayed by **Philpotts' Metalworks.** While standard sizes are available the firm is quite prepared to make special items to customers' requirements in a variety of finishes including stove enamel, wrinkle and hammertone.

Relda Radio exhibited a range of their Eagle brand products, many of which are of Japanese manufacture, ranging from an inexpensive transistor tape recorder kit to vernier dials and microphones. Two of the latter were of particular interest: the DM11 dynamic type, which is housed in an elegant cast zinc body finished in mist blue enamel, and the DM16HL dual impedance dynamic microphone. The latter is stated to be highly directional and should prove useful to s.s.b. operators who do not wish extraneous sounds to trigger their VOX systems. Japanese test gear included a range of miniature panel meters in clear plastic cases of very neat appearance and a transistorized signal injector for radio servicing. Amongst the hi-fi gear were the Calrad dual cone speakers and a stereo amplifier with six inputs to be marketed under the Eagle Products brand.

Webbs Radio exhibited Eddystone communications receivers ranging from the 870A for home or marine use to the Model 880/2 covering 500 kc/s to 30·5 kc/s in 30 separate ranges of 1 Mc/s and costing £515. Of particular interest was the Model 960 transistor receiver covering approximately the same range and employing 12 transistors and seven diodes. The Model 940 is an h.f. general purpose communications receiver covering 480 kc/s to 30 Mc/s in five bands and has an ECC189 cascode first r.f. stage which, it is claimed, gives exceptionally low noise factor, cross-modulation and inter-modulation figures. Separate detectors are used for a.m. and c.w./s.s.b. and the " S " meter is built-in. Among the moderately priced receivers for the amateur was the latest Model 840C, an 8 valve (seven plus rectifier) unit covering 480 kc/s to 30 Mc/s in five bands and equipped, like all Eddystone models, with a very fine geared reduction drive (with bandspread indicator) giving a tuning ratio of approximately 130 : 1. Webbs was another exhibitor displaying components, tools and other essentials which the home constructor all to often finds difficult to locate.

Withers Electronics again displayed a wide range of v.h.f. and mobile equipment such as the TW2 transmitter for 2 and 4 metres, the TW Nuvistor converter and pre-amplifier, the TW 2m and 70cm exciters, TW 10 watt modulator, the TW halo mobile aerial and the new Topmobile and Two-mobile transistor receivers. An interesting addition to the range was the TW2-50 high power 2 metre table top transmitter capable of 90 watts input on a.m. and 100 watts on c.w. The line-up of the r.f. section is ECF80 (overtone oscillator using 8 Mc/s crystals), ECF82 doubler (72 to 144 Mc/s) and clamper, QQV03-10 driver, with one of the new Mullard QQV07-50A double tetrodes in the p.a. The clamper protects both the driver and p.a. stages. Modulation, via



The Withers " Topmobile " transistor receiver for 1.8-2 Mc/s. A model covering 144-146 Mc/s is also available.
(Photo by courtesy of Withers Electronics)

Four amateurs closely associated with Project Oscar: left to right W. Browning (G2AOX), W. A. Brady (ed-W2ABP), Angus McKenzie (G3OSS) and W. H. Allen, M.B.E. (G2UJ).
(Photo by courtesy of U.S. Information Bureau)

a Woden UM2 transformer, is provided by a pair of KT77 valves driven by an EF86 and ECC83 in the voltage amplifier and an ECC83 driver. Features include a stabilized line for the oscillator and a three position crystal selection switch. An external power supply giving 600 volts at 200 mA for the modulator and 750 volts at 150 mA for the p.a. is required.

The tallest exhibits in the show were undoubtedly the very fine lattice masts on the **Sound Vision Service** stand and many envious eyes lifted up towards the roof of the hall to a v.h.f. array on a 45 ft. tower. In addition to the rather large and spectacular exhibits, this firm supplies all the hard-to-get hardware and accessories necessary for aerial erection.

Salford Electrical Instruments displayed Selectest multi-range test instruments, miniature contact cooled rectifiers, quartz crystals for frequencies up to 136 Mc/s and thermostatically controlled crystals ovens.

On the stage in the hall, the **Engineering Department** of the G.P.O. and the **United States Information Bureau** combined forces to present a special feature on satellite communication. Among the exhibits was a cutaway model of the *Oscar 1* amateur satellite as well as models of the steerable aerial at Goonhilly Down and the Telstar satellite. Examples of flexible waveguide, broadband polarizers and diplexers were also on show. Post Office Engineering Dept. staff were available to answer queries on amateur licensing problems.

The **Radar and Electronics Association** displayed a model to illustrate the basic principles of the Telstar satellite communication system. Equipment shown included a 7000-12,000 Mc/s test bench loaned by the Northern Polytechnic.

On the **City and Guilds of London Institute** stand, enquiries regarding the Radio Amateurs' Examination and other Institute examinations in radio and electronics were dealt with and copies of the relevant syllabuses were available.

The three Services were all represented. The **Royal Naval Reserve** displayed equipment similar to that in use at training centres for personnel of the Communications Branch. The **65th Signal Regiment, T.A.,** demonstrated teleprinting equipment and ran a daily Morse code contest. The **Royal Air Force** stand—possibly the most attractive one in the show—featured the activities of the R.A.F. Amateur Radio Society and the R.A.F. Tape Recording Society. In connection with the latter, visitors were invited to record messages for transmission to Air Force personnel overseas.

Books and Periodicals

The technical press was represented by the **National Trade Press Group,** publishers of *British Communications and Electronics, Electronics Weekly* and *R & D Engineering News*, **George Newnes Ltd.,** publishers of *Practical Wireless* and *Practical Television* and a wide range of books for the amateur and home constructor, and by **Associated Iliffe Press Ltd.,** publishers of *Wireless World* and *Industrial Electronics* and many text books on radio and electronics. **Selray Book Co.** displayed *Basic Electronics* and similar books in the same series. **Short Wave Magazine Ltd.** showed many foreign publications while the full range of Society publications was on sale on the **R.S.G.B.** stand.

The Amateur Stands

Although the quantity of home-built equipment displayed on the **R.S.G.B.** stands was somewhat less than in recent years, there were plenty of interesting items to be seen. G3PPI exhibited a neat and beautifully built 160 metre transceiver while G3MKS showed a well-made transistor phone and c.w. transmitter for 7, 14 and 21 Mc/s with an output of 0·1 watt and a 10 watt hi-fi transistor audio amplifier for mains or battery supply. Equipment built to BULLETIN designs included a utility version of the G3FZL/G3IIR converter on an Oxo tin, built by G2FOZ, with a measured performance as good as the prototype, a 420 Mc/s transistor converter by B.R.S.20533, a 70 Mc/s transistor transmitter by G2AIH, a G2DAF transmitter and receiver, both by G3KRC, while *Handbook* designs on show were a 35 watt 144 Mc/s transmitter using a QV06-20 and a 50 watt 70 Mc/s transmitter, both by G2AIH.

Transistor equipment included a transistorized television receiver using a MW31/74 picture tube by A.2916, transistor receivers for 144 Mc/s by G3EGV and GW3MFY, a transistor tester neatly built into an Eddystone diecast box by G2BP, a field day transistor power supply by G3DTB, and a miniature 144 Mc/s converter so small that the reviewer nearly missed it, as probably many others did. This was B.R.S.20533's transistor unit built on Verroboard and measuring 2¼ in. long × 1 in. wide × 1¼ in. thick. The r.f. and mixer stages both use AFZ12 transistors, while the crystal oscillator comprises an OC170 with a crystal marked 23 Mc/s oscillating on the 15th overtone of its fundamental. The power supply required is 7·5 volts Zener diode controlled.

The display of achievement certificates arranged by Chapter 8 of the Certificate Hunters' Club. On the right of the picture is Council Member Arthur Milne, G2MI, manager of the R.S.G.B. QSL Bureau.

Amongst other equipments noted with interest were an oscilloscope using a VCR138 by A.3393, a simple 10 watt modulator comprising an ECC83, 6C4 and 6N7 in class B by G3PCA, a valve voltmeter with a 4½ in. indicating meter by G8TL, a portable receiver with a frame aerial for 80 and 160 metres by B.R.S.22008, a valvetester by A.2452, a rig by G2MI for Top Band and 80 metres using a 5763 in the p.a. modulated by an EL84, the GB3BPH transmitter incorporating a Geloso v.f.o. by G2CAJ, a portable transistor transmitter-receiver for 420 Mc/s by G3EGY and a transmitter for 14, 21 and 28 Mc/s using a TT21 by G6JP.

One of the most attractive displays was of the many colourful **certificates of achievement** made available to transmitting amateurs and short wave listeners by societies and clubs throughout the world. The display was arranged by Chapter 8 of the Certificate Hunters' Club of which C. R. Emary, M.B.E. (G5GH) is Hon. Secretary.

The **Amateur Radio Mobile Society** displayed the "Courier" s.s.b. transceiver using a mechanical filter and currently being described in *Mobile News*. Two versions—one for single band use the other for multiband operation—have been designed. A companion linear amplifier was also on show. This equipment is of course intended for installation in a car and is therefore reasonably small. A suitable transistorized power supply is available from Avel Products.

The **British Amateur Television Club** featured a staticon camera with seven valves built by Don Goodyear. This unit, which requires only mains input for operation, was shown working and feeding a Band I r.f. signal to display monitors. Another demonstration showed a 9·5 mm telecine by Bob Tebbutt; this employs a 9·5 mm Pathé projector, the picture being scanned by a photo multiplier. The sync pulse generator is for 405 lines, synchronization between film speed and frame speed being achieved by locking the frame time base to the mains supply. The instrument uses a stabilised power supply and the time base from an old TV receiver. The output is a composite waveform of 1 volt peak-to-peak.

Acknowledgments

The organization of the Exhibition was again undertaken by Mr. P. A. Thorogood (G4KD). The Society's own stand was under the management of Mr. F. F. Ruth (G2BRH) who had the enthusiastic support of a number of Home Counties members.

Lectures on "V.H.F. Aerials," "Transistor Power Supplies" and "Communications Receivers" were given by J-Beam Aerials Ltd., Aveley Electric Ltd., and Council Member R. F. Stevens (G2BVN) respectively.

Planning for the show was undertaken by the Society's Exhibition Committee under the Chairmanship of Mr. C. H. L. Edwards, A.M.I.E.E., A.M.Brit.I.R.E. (G8TL).

Notes on the Nuvistor 144 Mc/s Converter

(Continued from page 286)

cathode resistor; poor activity crystals may require a resistor as low as 100 ohms.

The following errors have been found in the October issue: *Page 155*, Table 1: L3 should be 8¼ turns. *Page 156*: the photograph of the 144 Mc/s converter shows the power socket at the wrong end (the box had been removed and replaced by the photographer). *Page 157*: the dimension from the edge of screen A to the first of the nine 1000 pF feedthrough capacitor holes should be 1⅜ in. Screen C should contain a further feedthrough pillar (to connect the anode of V2b to the grid of V2a via 0·01 μF), mounted 1¼ in. in from the lefthand side and ½ in. up from the chassis (ref. Fig. 5).

Work to determine whether the cross modulation characteristics of the 6DS4 are superior to those of the 6CW4 is proceeding. Work is also proceeding to determine coil data to achieve an i.f. tuning range of 28-30 Mc/s. Results will be published in due course.

Forty Years of Radio Research

AN unusual autobiography has recently been published by Gordon and Breach of New York. Bearing the title *Forty Years of Radio Research*, the author, Dr. George C. Southworth, unfolds the background story behind many of the important radio developments of the past four decades.

To the invention and development of waveguide radio transmissions Southworth devoted most of the 40 years of his professional life and it is claimed that without his new kind of guided wave radio, the high definition radar systems of World War II, which brought success to the Allied cause, would have been impracticable. As far back as 1931 Southworth and his associates of the American Telephone and Telegraph Co. began looking into the possibility of propagating very short waves through hollow metal pipes and insulators.

Included in this unusual book are many photographs, never before published, of early waveguide transmission lines, components, directional aerials and receivers, early radar equipment and related subjects.

There is a fascinating story about how a transmitter belonging to a colleague who was an amateur radio enthusiast was hurriedly pressed into service for making important tests on short-wave skip distances during the historical opening up of the short waves in the mid-twenties.

The reader who seeks to learn more about the history of radio will find much to interest him in *Forty Years of Radio Research*.

The book sells for $6.50 in the U.S. and can be ordered through most U.K. booksellers.

Enquiries Regarding Bulletin Articles

MEMBERS who write to the authors of BULLETIN articles are asked to enclose stamped addressed envelopes if they require replies.

THE MONTH ON THE AIR

A CHRONICLE OF EVENTS ON THE HF AMATEUR BANDS

By R. F. STEVENS (G2BVN)*

IN this, the last *M.O.T.A.* for 1962, it is opportune to look back over the year and briefly mention some of the DXpeditions which have taken place during the past twelve months. The total effort is indeed formidable and it would be difficult to assess the travelling time and operating hours expended in the cause of providing the DX hungry operator with a new country.

In the early days of January a party from the Radio Club of Venezuela began operation from Aves Island using the call YV0AA and at about the same time Danny Weil commenced his stay at the Marquesas. After a period during which it seemed that the trip would be abortive, Angus Murray-Stone dispensed many contacts from Gabon with the call 5N2AMS/TR8. The record for March shows the first of several trips to San Marino, this time by I1SVZ, and British Honduras activity by a seven man group signing VP1WS. After an enforced stay at Dickson Island due to bad flying weather, UA3CR commenced his operation from Franz Josef Land (UA3CR/UA1) and subsequently deleted this spot from many "wanted" lists. UA1CK/0 gave a number of operators their first Zone 23 s.s.b. QSO during April, and the VU2US/AC5 group produced much appreciated activity from Bhutan, whilst the month ended with the Bajo Nuevo foray very much in evidence under the call HK0AB. This group moved on to Serrana Bank early in May signing KS4BF, whilst from the other side of the world G3JFF was engaging in his spree from YJ1MA and VR1M. Gus, W4BPD, having set forth earlier in the year with a long list of proposed visits, commenced his stint at the Aldabras signing VQ9AA. The month of June saw intense activity from Wallis Island with VK3AHO making his mark as FW8BH, whilst Lord Howe Island contacts with VK2VC/2 were possible. CR8AB operated from Portuguese Timor, mainly on c.w., and last, but by no means least, W0MLY commenced his African trip. The latter accounted for eight separate countries by the time Dick returned to the U.S.A., one fire and 16,000 QSOs later. August saw Pacific activity when Danny Weil commenced operation from Rarotonga as ZK1BY, and VR3L/VR1 was heard from the British Phoenix Islands. W4BPD came up from Chagos as VQ9A/8C and handed out many contacts in his own efficient style, and G5RV and F7GX went on a trip to nearby Andorra. Whilst K9KDI was activating PJ5MB and FS7GS (Dutch and French St. Martin Is. respectively) during September the newly independent countries of Burundi and Rwanda were attracting attention due to the emanations of W4BPD when signing 9U5BH and 9U5ZZ. CR8AC delighted many operators during October with a c.w. QSO and a prompt QSL, whilst at Suvarov Is. in the Manihiki Group ZK1BY, without his final amplifier, was only poorly heard in Europe. Conditions during November were hardly conducive to DXpeditionary activities but ZD9AM, alias W4BPD, was being heard from Gough Island on all bands from 3·5 to 28 Mc/s. Gus later left to conquer fresh fields from Bouvet Island using the call LH4C whilst the *Yasme* crew were engaging world wide attention as ZM6AW.

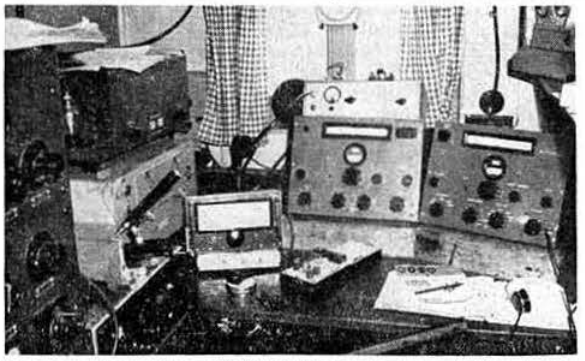
Almost without exception the operators concerned in the DXpeditions chronicled have further enhanced their popularity with a prompt QSL, although the sheer weight of numbers may have slowed down proceedings in some cases. Our appreciation is offered to all those concerned in the various trips, and to the eager operators on this side of the aluminium curtain, please remember that your omission to contact the rare one is not so disastrous after all, and certainly does not justify some of the behaviour heard on the air during recent months.

News from Overseas

The Dutch authorities have given permission for operation on **1·8 Mc/s** by **PA0** operators holding the Class A or Class B licence (150 and 50 watts respectively). The licences for Top Band must be specially applied for and will be granted for a period of one year, although the facility may be withdrawn at any time. The maximum input power allowed is 10 watts and only frequencies between 1825 and 1835 kc/s may be used.

Although there has apparently been some amateur activity from **Turkey** during past months such operation is definitely illegal. The Turkish Government will not licence any amateur stations as the prohibition is written into their defence regulations. In these circumstances operators should exercise discretion in the sending of QSLs to stations claiming to be in Turkey.

Operating from a QTH 2,000 ft. a.s.l., 70 miles from Bombay and 30 miles from Poona is **VU2GG.** The equipment at present in use comprises an Eddystone 888A receiver and a home-built transmitter with a 6146 p.a. covering 14, 21 and 28 Mc/s feeding a Mosley V4-6 vertical aerial. Operating hours are usually from 12.00 G.M.T. onwards on weekdays and from 08.30 G.M.T. on weekends, depending on conditions. In listing the stations heard in this



The operating position at VP8GQ. The microphone, standing on top of a G2DAF phasing type s.s.b. exciter, was presented by former colleagues at E. K. Cole Ltd. before G3LET departed for the Antarctic. The v.f.o. is to the left of the two CR100 receiver.

* *Please send all reports to R.S.G.B. Headquarters to arrive not later than* **December 17** *for the January issue. The latest date for the February issue is* **January 10.**

The quarters in which VP8GQ and eight others have wintered on Signy Island in the South Orkneys. Some idea of the bleak landscape is given by this picture.

part of the world VU2GG mentions the extremely heavy QRM from stations in the U.S.S.R. and also the very strong commercial stations on 7 Mc/s, all of which make operation rather difficult.

The **Boy Scouts Jamboree-on-the-Air 1962,** held during October 20 and 21, was highly successful despite the poor radio conditions. Some 70 Jamboree stations were operating in the U.K., in addition to at least 20 overseas countries. GB2OLT, operating on behalf of the 1st Olton Scouts, Solihull, was undoubtedly the leading British station in making contact with 60 Jamboree stations, 35 of which were operating on behalf of overseas Scout groups.

From Nigeria, **5N2JKO** send news of current activity: **5N2ATU** is occasionally active on 'phone on 28 and 21 Mc/s, whilst **5N2BCF** is expected to be on again shortly following U.K. leave. **5N2BRG,** now on his second tour, is not heard so frequently as before, and **5N2DCP** is heard mainly on c.w. on 7 and 14 Mc/s. **5N2EBL** and **5N2FEL** are both still on leave in the U.K., whilst **5N2HJA** is the only active s.s.b. station regularly putting in an appearance, and who is well heard in the U.K. on 14 and 21 Mc/s. 5N2JEB and 5N2LKA both stem from unlicensed operation by Americans. The present whereabouts of **5N2IJS** are shrouded in mystery. There are a number of cards for 5N2IJS held at the QSL Bureau, and 5N2JKO would appreciate hearing from this operator. **5N2IND** is back in Lagos, but at present inactive; **5N2JRG** is now back in Jamaica signing VP5JG, whilst **5N2JSC** is heard occasionally but it is apparently hard to extract a card from him. The equipment used by Jerry Connolly when he was in Mubi and signing 5N2KHK is still there, and the present Marconi engineer—an ex-VP6 amateur—is hoping to be on the air soon. **5N2LKZ** has now left Nigeria, after having broken several records as the most active c.w. station the country has known. Another overseas posting with International Aeradio is in the offing, but the destination is not yet known. **5N2PJL,** a new call, has not yet been heard very much, but is operating c.w. on 14 Mc/s; **5N2RDG** is awaiting spares for his DX40; **5N2RJO** is now in Zaria, about eight miles from 5N2JKO but at present inactive. **5N2RSB** is building a new beam, but in the meantime is heard on all bands using a G5RV aerial. **5N2JKO** himself will be on U.K. leave from December 14 until the beginning of May, and will be heard using the call G3JKO. During the past month 5N2JKO has been active on all bands from 3·5 to 28 Mc/s with varying results. On 7 Mc/s the E. European barrier is difficult to pierce, and not too much time has been spent on 14 Mc/s. 21 and 28 Mc/s have both been rewarding, particularly the former. It is obvious from the log extracts that radio conditions as between the U.K. and Nigeria are vastly different, particularly on 28 Mc/s where the U.S. stations come through most days between 15.00 and 18.00.

From Port Stanley in the Falkland Islands, G3PMO is now signing **VQ8HD.** Equipment in use comprises a R208 receiver with a LG50 transmitter feeding a dipole and a ground plane. Operation will be mainly on c.w. on 14 Mc/s between 17.00 and 23.00. QSLs should be sent to G3PEK, 3 Moelfre Drive, Cheadle Hulme, Cheshire.

LA9RG/P and **LA1IH/P,** operating from **Spitzbergen** (Svalbard), will be active until June using a KWM-1 loaned by LA6VC. LA9RG/P is frequently heard on Fridays and Saturdays after 15.00 around 14,250 kc/s. QSLs should go to LA5AD, Box 67, Ganddal, Norway.

ZL1ABZ is now active from Kermadec Island and may be found on 14 Mc/s s.s.b. Owing to a misunderstanding his beam aerial was not delivered but this will be coming along in the near future. Operation from Campbell Island has been resumed under the call **ZL4JF** which has now been allotted to John Washer who may be heard around 14,050 kc/s on c.w. QSLs from both these stations should go to ZL2GX.

DXpeditions

Following a successful period of operation from **Gough Island** as **ZD9AM,** W4BPD set sail for Bouvet Island where the call used was LH4C. The allocation of this call and the permission to operate were obtained for Gus by LA5HE. The stay of W4BPD at Gough Island was considerably longer than at first anticipated owing to the bad weather delaying the unloading of some 200 tons of cargo. High winds made the erection of aerials difficult, but despite this Gus was heard on all bands from 3·5 to 28 Mc/s.

ZM6AW was the call used by Danny Weil from the Republic of **Samoa,** but unfortunately poor conditions have prevented a great number of contacts with U.K. stations. Signals from ZM6AW broke through for about 30 minutes on November 21, the first occasion when he contacted stations in W. Europe. Since then he has been worked from the U.S.S.R. and also from Central Europe. Danny has been re-equipped with two Hallicrafters HT41 linears and will be operating from Samoa until after the Christmas holidays. During this time *Yasme* will be taken out of the water and renovation work carried out.

Given settled political conditions, it is hoped that **TI9CW** and **TI9SSB** will be active from the **Cocos Islands** during the middle portion of December.

IT1TAI and **IT1ZGY** hope to operate as **JY2TAI** only a short time after the necessary licence is received. Unfortunately no firm dates are available, but QSLs should go through W4VPD.

During their nine day stay on the Zomba Plateau in Nyasaland from where they operated as **ZD6JO** and **ZD6JJ,** Ivan Wood (ZE3JJ) and Mal Geddes (ZE3JO) accumulated a total of 1,400 contacts using bands between 7 and 28 Mc/s. The equipment used included a Viking

Ranger and an Eddystone 888 receiver on one station, whilst the second station employed a Heathkit DX40 and a CR100 receiver. The operators believe that they were able to give many stations a new country and QSLs should be sent via the S. Rhodesian Bureau, of which ZE3JO is the manager. The Bureau address is Box 2377, Salisbury.

G3PAI, in company with G3OVN and possibly GW3OUW, hopes to make a trip to **Sark** during the next summer for a 14-day period of operation. It is hoped to cover bands between 1·8 and 21 Mc/s. It is believed that G2HFD intends to revisit Sark and perhaps some liaison is indicated here.

AC4AX was worked by a number of U.K. stations on 14 Mc/s c.w. recently. The QTH was given as Lhasa, Tibet, and the QSL address as Box 534, New Delhi, all of which seems highly unlikely to the writer. The beam heading was correct for the claimed QTH, but this direction also covers parts of E. Europe. There are a number of operators anxiously awaiting news which will testify to the genuineness or otherwise of AC4AX.

VR3O on Christmas Island was scheduled to make an appearance on 1805 and 1995 kc/s between 04.00 and 06.00. According to unconfirmed information this station will be active on these frequencies on Sunday mornings.

4W1AA is heard frequently giving his QTH as Sana in the Yemen when operating c.w. in the region of 14,040 kc/s. There is no definite information regarding the status of this station, and various routes have been quoted for QSLs, amongst the latter being the Egyptian Bureau and W3CXX.

Contests

The **PACC Contest 1962** attracted the following entries from the U.K.:
c.w. G3EYN 41 QSOs producing 2091 points and G5GH with 35 QSOs and 1680 points. From Wales: GW3MRI with 24 QSOs and 648 points. The sole U.K. listing in the *telephony* section is GW3LAD with 36 points. The PACC Contest 1963 will be held during the last weekend of April (c.w.) and the first weekend of May (telephony).

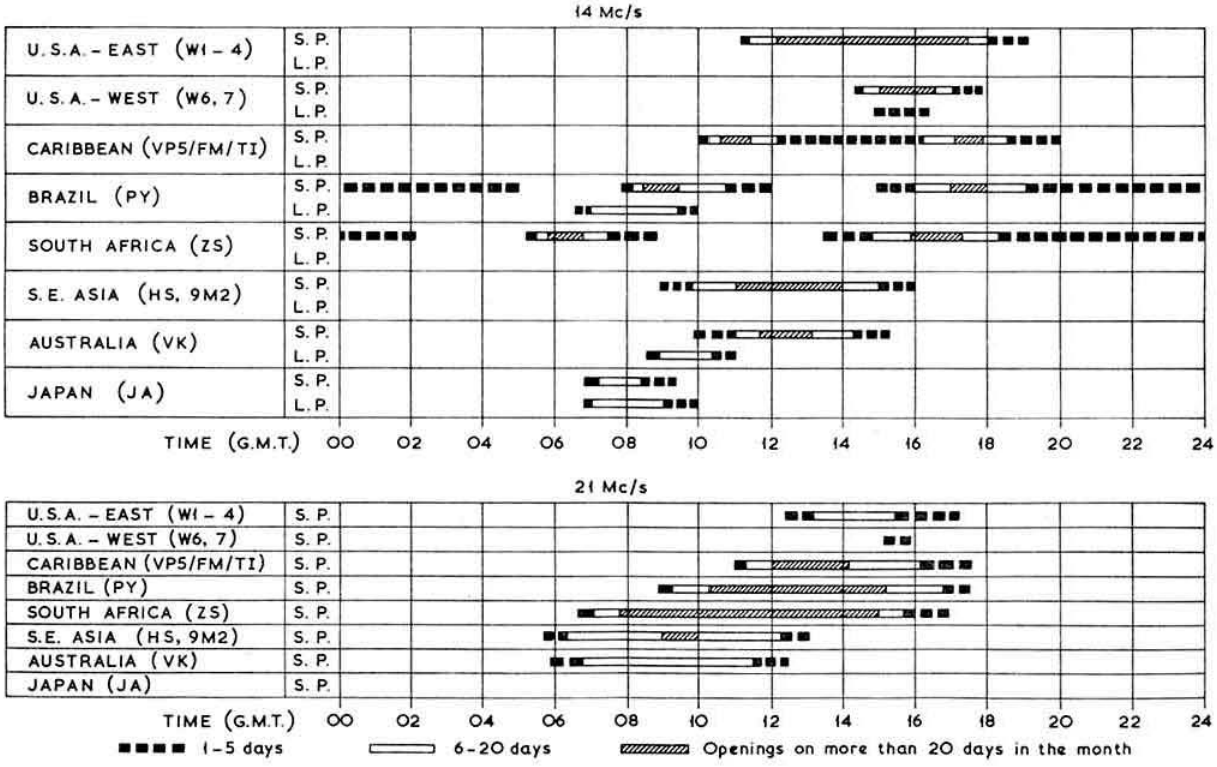
The results of the **OK DX Contest** show G3EYN way ahead of U.K. rivals with 144 contacts and 3576 points, the nearest to this being GI3ATH with 80 QSOs and 2040 points. The highest scoring station outside Czechoslovakia was UB5FJ with 22,401 points.

The French Society, R.E.F., in conjunction with the French National Broadcasting system, is organizing a contest in connection with the round-the-world voyage of the sailing ship *La Constance*, which is open only to radio amateurs who are members of national societies affiliated to the I.A.R.U. The contest requires making radio contact as many times as possible with the amateur station **F2FT/MM** on board *La Constance*. However, contact may be made

PROPAGATION PREDICTIONS

In comparison with the previous months, December and January will produce conditions less favourable for DX working. The m.u.f. will be lower than previously and the short winter days will permit only limited DX contacts on the h.f. bands. 28 Mc/s will be open for long distance contacts only on exceptional days, and short skip openings will be infrequent. The 21 Mc/s band should produce reasonable openings in the directions shown on the chart, but the short days will limit its usefulness, although unusual contacts may be possible through auroral reflection. 14 Mc/s will remain the most consistent DX band and the best time will be between 08.00 and 13.00, when the long path will frequently yield higher signal strengths. There is a possibility of contacts with Pacific stations over the long path around 17.00. In common with 21 and 28 Mc/s this band will close during the early evening, and little can be anticipated after 20.00. The 7 and 3.5 Mc/s bands will carry DX traffic, much of which will however suffer from strong interference. The best possibilities for DX on these bands will be when the path lies in darkness, and this factor apples particularly to 3.5 Mc/s.

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



only once each day on any band. Every contact must be confirmed by a QSL card sent to Radiodiffusion Television Français, " Cap a l'Ouest," 107 rue de Grenelle, Paris. To simplify this procedure each card can be used for up to five reports, which must include the call-sign, the full name and address of the operator, and the report giving the signal strength and a clear indication as to whether the contact was on 'phone or c.w. Prizes will be awarded to the leading stations in each continent.

The 'phone and c.w. sections of the *CQ* **WW DX Contest** produced a considerable amount of activity although conditions were far from good, with the 14 Mc/s band closing early in the evening. 5N2JKO took part in the 'phone section and claims a score of 304,799 points, resulting from 200 QSOs on 21 Mc/s, 140 each on 14 and 28 Mc/s and the odd few on 3·5 and 7 Mc/s. G3FXB concentrated on s.s.b. on 21 Mc/s and amassed over 80,000 points from 325 QSOs in 23 zones and 71 countries, which is an excellent performance bearing in mind the present stage of the sunspot cycle. It is regretted that a number of operators who wrote to G2BVN for *CQ* Contest log sheets could not be supplied owing to the very heavy demand which exhausted supplies on hand.

The **R.S.G.B. 7 Mc/s Contest** attracted a large number of participants with resultant heavy QRM in this restricted band. G3PSY comments on the large number of stations calling CQ and feels that better results would have been achieved by more attention to listening. G5GH, an experienced campaigner in the way of contests, reinforces this view saying that he never sends CQ during contests, and that careful attention to multipliers on various bands will always reap dividends.

Awards

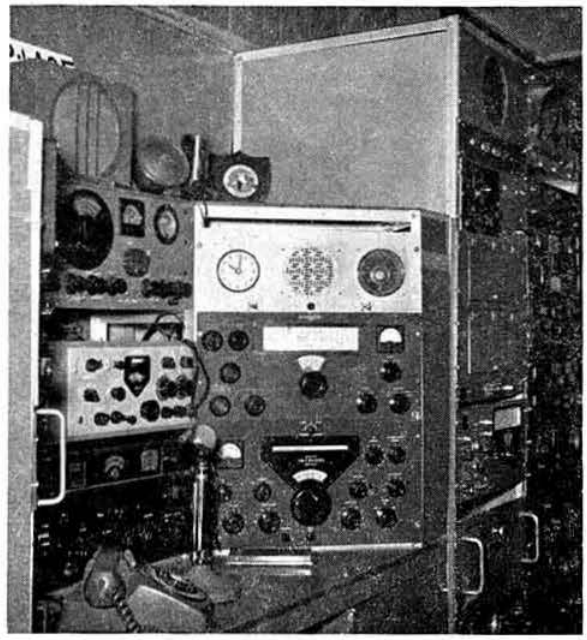
A certificate is being offered by the **Amateur Radio Friends of the Ockenden Venture** for contacting five of its members in contacts dated after January 1, 1960. Log extracts may be sent provided that these are certified by two other amateurs, and the fee for the award is 7/- ($1) or its equivalent in other currency or IRC. After the cost of issuing the certificate has been met, the balance will be donated to the funds of the Ockenden Venture. The Venture, which was founded in 1951, exists to provide home, health and education for displaced persons, and there are now 15 centres throughout the U.K. The name Ockenden is taken from the name of the first house used by the Venture. A list giving particulars of the members may be obtained from G3IFB by sending a s.a.e. Certificate applications should also go to G3IFB at 12 Elmsleigh Avenue, Kenton, Harrow, Middlesesx.

A new edition of the **R.S.G.B. Certificates and Awards** leaflet is now available from Headquarters. This contains the list of Commonwealth Call Areas for the Empire DX Certificate and other awards.

Around the Bands

Conditions on **1·8 Mc/s** are not improving as rapidly as had been expected in the light of previous events on this band but the advent of the Finnish and German stations has added interest to operation. It is believed that the first G/OH QSO was on November 13 and between G3MYI and OH2NB. Amongst the German stations known to be active are DL1FF, DJ1BZ, DL3GZ, DJ3KR and DL9KP, and these and others have permission to operate on this band for a period of five months.

B.R.S.20317 (Bromley) has not heard any U.S. stations during the period under review but was pleased to log OY7ML (23.55 on 1825 kc/s) and also a N. African station (02.00 on 1827 kc/s). **A.2461** (Torquay) reports 5B4PB at 03.07 and calling CQ without reply, but as G3OIT points out 03.00 is a bit much even for 5B4 on Top Band. A full report from **GW8PG** covers the return of the German stations to this band, and also notes the presence of W2FYT from 04.30 to 05.30 working VP8GQ and W9PNE. GW8PG



The home station of VE2AGF/W6, Communications Director of Project Oscar. VE2AGF is also G2CIN.

mentions that there appears to be two peaks on some mornings according to reports received from N. America which quote the peaking of signals at 05.00 and again at 06.00. It is felt that if contacts between Australia and the U.K. take place it will be between 18.30 and 20.30, as during these times there exists a possible path for at least 30 minutes. GW8PG bemoans the operation of military traffic at the lower band edge and the running of carriers for hours on end without the transmission of any intelligence. **G3OHK** (Workington) enquires the source of exceptional interference on this band which he believes is of local origin. Unfortunately due to the system of priorities there is nothing that can be done regarding the operation of fixed service stations on frequencies shared with amateurs.

Although conditions on **3·5 Mc/s** may not have been of the best, our reporters have a little to offer this month. **A.3053** (Finchley) reports HR3HH (02.25), PJ2AA (01.20), VP9CP (00.25), VP9DC (00.55) and VR3O (not heard) in QSO with VE2AUU and VO1DN at 06.05. **5N2JKO** reports a little success with GI3IVJ, the only U.K. station contacted at 04.15, although many E. European and N. American stations have been worked.

The number and quality of reports on **7 Mc/s** indicate that there has been a considerable amount of DX heard and worked. **G3HDA** (Stratford-on-Avon) contacted CN8MZ (17.57), HI3PC (22.53), KR6LJ (19.20), OX3BZ (02.08), ST2AR (21.24), UH8BP (00.30), UL7LA (19.10), VK3TL (19.26), VP8GQ (23.23), VQ4IV (19.54), W6YMD (14.44), ZL2GS (07.30) and 4S7WP (22.15), whilst heard were OA4FM (22.58), UA1KAE/2 (23.30), XE1OK (07.28), ZD6JO (20.28), and ZL5AI at RST589 (02.16). **G3JAG** (Rochdale) offers CO2TW (22.40), HI3PC (08.45), HK7YB (00.25), JA6AK (16.45), ST2AR (20.55), VP5MJ (02.00), VKs (19.30-20.00), XE1OK (07.40). ZD9AM (23.15) and ZS1BW (20.30), whilst **G3LPS** (Blackburn) worked HI3PC (09.05), KP4BIQ, OY2H, PY7ACS, UA1KAE/2, UA0SE, W7PQE (08.00), YV5AQD, ZB1CR and ZD9AM (00.30). **G3PSY** (Thorpe Bay) records QSOs with IT1AGA (00.11), YU2EW/MM (23.03), ZB1's BX (00.40), and CR (21.06),

and 4X4DH (21.11). **B.R.S.20317** concentrated on this band with the following results: Africa—5N2JKO often heard between 05.00 and 06.00; ST2AR (21.25), VQ4IV (20.00), ZD9AM (00.15), and from Antarctica, VP8GV (00.05), Asia—a very early opening to Japan commencing with JA1LIO at 14.18, followed by JA1ISB (14.55), JA1EUV (15.30), and from the same direction KR6UB who could not be positively identified at 16.07 on 7015 kc/s. VU2RX (16.45), 4S7WP (22.10), and several 4X4 stations working into the Western U.S.A. after 13.50. AP5HQ is active on this band around 15.15, but has not yet been logged. From Oceania New Zealand has been heard in the mornings, with ZL2GS outstanding between 07.00 and 08.25, and ZL1AV the firstcomer at 06.35. The earliest appearance of an Australian station was by VK3TL who was heard in QSO with W6WJ at 14.33 on 7006 kc/s, whilst VKs 2QL, 3YU, 4SS, 5LD and 5JE have been heard during the evening hours. From the N. American continent, results have been variable, as signals from Canada have not been consistent, whilst on 14 days out of 28 the afternoons produced signals from the West Coast of the U.S.A., the earliest time being 14.30. Consistent stations were W6ULS, W6UF and W6BYB, with strengths averaging S6. On several occasions the W6 stations were heard calling CQ Europe with no replies forthcoming. From the Eastern states results have been poor and not up to the standard of earlier months. The earliest and most consistent signal was W2CDJ, heard as early as 18.23, whilst K4BUR was logged at 09.45 when working G3JAG. Many operators tend to dismiss 7 Mc/s as being unproductive in the way of DX, but the above results achieved by an experienced s.w.l. show just what is on the band underneath the European top layer. To round off, **A.2461** logged EL3AF (01.30), HC1JU (02.00), KZ5MQ (03.00), PJ2AE (01.00), UH8BP (02.00), UI8AE (23.00), YV4BE (02.00) and numerous N. Americans in the 5, 7 and 0 call areas. It is probably unnecessary to add that all the calls listed have been heard or worked on c.w.

S.s.b. on **14 Mc/s** continues to be productive for the DX chasers and **OE1ME** (Vienna) records QSOs with CE9AS and CE9AU both on Greenwich Island at 22.25 and 20.55 respectively on 14,100 kc/s and using a.m.; DJ1ZG/M1 (08.16), ET3RS (15.21), HL9KN (07.00), KC6BK (13.25), KJ6BZ (11.13), KX6CG (12.20), KX6BU (17.00), LA8SE/P (Jan Mayen, 17.50), LA9RG/P (Spitzbergen, 17.40), LU8XR (21.35), VP2KP/A (17.54), VR2DS (10.18), W2GLM/KW6 (06.50), XW8AT (14.50), XT2Z (06.30), ZK1BY (06.28), ZD9AM (19.17, 14,125), ZS7R (16.48), 3V8CA (13.39), 5R8CM (16.16) and 5U7AH (17.38). Danny Weil at Samoa was worked on 14,275 at 06.45, and newcomer 9L1RO at 09.00. It was noticeable that when the C. European stations were hearing ZM6AW at S6/7, there was no propagation into the U.K. **A.2404** (Manchester) adds CX2CO (08.20), ET3LM (17.40), KG6AJZ (08.10), OX3KW (18.05L), TI2LA (12.00), UO5SA (07.45), VE3FFW/SU (15.55L), VR3O (07.30), VS6AE (13.30), XE1IU (08.40), XT2Z (08.05), 5N2HJA (17.17) and 9M2CR (15.30). It is noticeable that a number of the stations who used to be heard around 14,120 kc/s are returning to the high end of the band, and it is hoped that this is only a temporary migration.

C.w. on **14 Mc/s** continues to attract the DX as evidenced by **G3AAE** (Loughton) who worked AC4AX (15.45), AP5JA (13.05), DU1FM (08.30), EA0AB (16.20), FB8XX (15.40), HK0ZU (San Andres, 12.15), KG4AM (18.45), LU1ZL (20.15), VP8GU (19.45), VP8GR (20.30), VS4RS (12.50), VQ7KR (Aldabra, 16.35), VQ8AI (17.30), VQ8BC (15.40 and who is returning to the U.K. in January), ZD9AM (19.10), ZL2BAH/MM (off Indonesia, 15.40), 4X9HQ (17.20) and 5X5IU (18.00). **G3PSY** adds UI8FB (10.01), UV3TW (08.40 and a new prefix), ZL1AH (08.20) and 5B4PC (09.20), whilst **VU2GG** (near Poona) tells of heavy QRM from all the Soviet call areas, whilst the paths to Europe and S. Africa are open after 16.00. Australian stations are again now being heard in India, whilst N. America puts in an appearance after 14.00. **G8PL** (London, N.W.3) offers a worked/heard listing: *06.00/07.00*: EP2BQ, JA1BN, SM5CGK/9Q5, SP2AX/MM, UA0NG, UD6s, UF6s, UI8s, UL7s, ZL2AAR, 4X4s, 5A3BC, 5A4TN, 5B4CZ, 5U7AC. *07.00/08.00*: HL9KH, JA1KG, JA6CY, JA8BI/1, M1AA, PY1BTC, UA9s, UA0s, UI8s, UV3TW, VK2EO, VS9ARK, ZL2ASM, ZL3IS ZL4JP, 5A4TN, 5N2JKO. *08.00/09.00*: CT2AI, JA1BN, KR6MO, LA7RF/MM (off CR4), VK2VA, VK4NP, UA0s, all, be it noted on an indoor dipole. After attention to his beam **5N2JKO** contacted CE1AD (22.15), KG4AM (21.00), UI8AP (15.10), VQ9HB (17.40), 6O1ND (19.40), 9K2AD (15.30) and 9M2FR (15.00), whilst a.m. produced CT2AK (02.40), CX6AR (00.40), HK1QQ (01.20), PZ1CG (00.35), ZK1AR (04.00) and ZK1BY (Manihiki and using s.s.b., 04.25). Apologies are offered to **G3NXU/M** whose efforts of last month were wrongly credited.

Conditions on **21 Mc/s** have been variable but obviously there are a number of stations regularly active on this band, which should remain open even during the trough of the present sunspot cycle. **G3HDA** records c.w. QSOs with PY1BCR (Trinidade Is. 12.42), VP5GT (Grand Turks 14.55), 4S7NE (11.55) and 4S7WP (11.30). **G3PSY** keyed with IT1AGA (14.00), VE1JX (16.55), XL1PJ (13.25) ZE1AE (15.06) and 5A3CJ (14.17), whilst **G3AAE** worked on a.m.

QTH Corner

FG7XK	G. Gonmdadin, 5 Cit. Deboivieux, Pointe-a-Pitre, Guadeloupe.
FK8AZ	L. Chaumont, Box 40, Noumea, New Caledonia.
FP8EI	via WA2PVW
HK0ZU	via W4BJ
HL9KH	via W9VZP.
HL5X	F. Borsody, USOM-TC/PS, A.P.O. 301, San Francisco, California, U.S.A.
HM5BF	Box 4, N. Pusan, Korea.
KX6AA	Box 12, Navy 824, F.P.O., San Francisco, Calif., U.S.A.
LA9RG/P	via LA5AD, Box 67, Ganddal, Norway.
LH4C	via W4ECI.
LX3TA	via DL1TA.
LU8XR	L. Kuehlcke, Usuguoiya, Tierra del Fuego, Argentina.
PJ2ME	via W2CTN.
TN8AA	G. Delas, Boite Postale 574, Brazzaville, Rep. du Congo.
VK9BM	Father B. Madden, S. J. Capuchin Mission, Mendy SHD, Papua.
VK0VK	Heard Is. only via K5ADQ.
VP1 Bureau	R. Lopez, VP1RL, P.O. Box 487, No. 1 Market Sq., Belize, Brit. Honduras.
VP2KP/A	Box 161, St. Kitts, B.W.I.
VP2MC	via K8ONV.
VP2VL	Box 45, Tortola, British Virgin Islands.
VP3RS	R. F. Standley, Box 574, Georgetown, British Guiana.
VP4 Bureau	P.O. Box 756, Port of Spain, Trinidad.
VP8GB	via W5QK.
VQ8HD	via G3PEK.
VR5AC	via VS1DO.
ZD7SE	R. Donovan, W0GDX (ex-W9FJY), 3025 Garland Terrace, Colorado Springs, Col., U.S.A.
ZD8RN	Sub. Lt. D. Davies, *H.M.S. Caprice*, B.F.M.O., Singapore, 27, Malaya.
ZD9AM	via W4ECI.
ZL1ABZ	via ZL2GX, 152 Lytton Rd., Gisborne, New Zealand.
ZS2MI	via G. Coetzee, c/o Signals Section, Air Force Station, Ysterplaat, Capetown, S. Africa.
5N2HHT	via G3KDW.
5N2JKO	Dr. N. Dransfield, Institute for Agricultural Research, Ahmadu Bello University, Samaru, Zaria, Nigeria.
5N2LKZ	via G3LKZ.
5N2PJL	P. J. Linney, H.T.O. (Radio), c/o S.T.E., P. & T. Divison, Kano, Nigeria.
5X5IU	R. Roberts, Box 355, Kampala, Uganda.
6W8DE	Box 3033, Dakar, Senegal Republic.
9L1RO	R. Oxley, Pepel, Freetown, Sierra Leone.

* * *

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

DU1MR (10.25), FG7XL (12.10), FG7XS (13.15) and HI8MAH (13.05). **5N2JKO** concentrated on this band and his log includes 'phone QSOs with CE2HW (21.00), HH2CE (19.13), HI8JV (20.40), HP1AC (20.30), HR1SO (20.22), TG9SC (20.15), TT8AL (16.40), VP2GV (21.15), VP2LS (20.15), VP6WR (19.40), VS1GC (13.30), YA1AG (14.03), ZP5HG (21.00), 4S7BR (14.40), 6W8DK (18.00), 9M2FX (15.00) and 9U5JH (20.10). During the *CQ* Contest **A.3295** (Lincoln) heard CT2AK (08.55), EL2K (12.32), IS1GF (11.29) MP4BDC (12.34), VQ2MS (07.11), XT2Z (08.45), 5H3IW (17.40), 9K2AY (13.00), 9Q5FD (08.08) together with numerous N. American stations. **VU2GG** records the following U.K. stations worked: G3FTQ (11.30), G3FML, G3HIW, G3HSR, G3KVG (14.00), G5DQ and G6VC (13.40), together with a good sprinkling of DX from other areas despite the QRM from the North. **A.2461** offers numerous c.w. loggings which include: CT2A1 (16.30), HP1IE (16.00), PZ1CJ (17.00), VP7NQ (17.00), VP9UE (17.00), ZP5CN (17.00) and 9Q5AV (08.30).

Seasonal conditions and low sunspot activity combine to make **28 Mc/s** unproductive but **A.2340** (Plymouth) mentions UB5s between 10.00 and 11.00, UO5KSG (10.46), UT5GP (11.05), 5A1TW (10.59) and 5A2TS (10.54). **A.2461** recorded ZS2OM (15.00), ZS5KJ (15.00) and 5N2JKO (15.00), all on a.m. **A.2452** (Addington) logged signals from CR6BS (15.35), PY7MP (10.14), VQ2KF (14.30), ZS1s, ZS6s, 5A1, 5A2, 5A3, 9G1CC (15.35) and numerous Soviet stations. The pattern of propagation in Nigeria is obviously vastly different from prevailing U.K. conditions, and **5N2JKO** comments that the U.S.S.R. stations predominate from 08.00 until 15.00 and that, QRM permitting, Europeans, including Gs, can be worked from 10.00 to 17.00. Ws come through on most days between 15.00 and 18.00, with S. America heard up to 18.00 and peaking just before sunset. 5N2JKO offers a list of DX that we would be most pleased to hear in the U.K. at the present time.

DX Briefs

G5VT, who was asked to act as QSL manager for the European contacts of **KJ6BZ** and **K3GAD/KJ6,** has not received any logs which would enable him to deal with the ever increasing number of cards and letters that he is receiving. If logs are not soon forthcoming G5VT will return the cards and IRC, and in the meantime operators are asked to be patient.

GM3OEV will be leaving Kinloss in January for a tour in Singapore which is expected to last two and a half years. This period will take GM3OEV into the time when the present territories will be amalgamated into Malaysia, which will include VS1, 9M2, VS4, VS5 and ZC5. The interpretation of this situation in relation to the DXCC will be awaited with interest.

5N2NFS left Nigeria unexpectedly and is now on his way home by sea. (Tks G3WW).

The QSL manager for **ZD7SA** and **ZD7SE** is now **W0GDX** and his address will be found in *QTH Corner*. ZD7SA is now in the U.K., employed by Cable and Wireless, and does not envisage returning to St. Helena.

Kure Island (a separate DXCC country) is now again active under the call **KH6EDY** and has been heard around 14,270 kc/s on s.s.b., the operator's name being Bobo.

Several U.S.S.R. stations have been heard signing /K, and from the ensuing QSO it is gathered that these are in the nature of monitoring stations charged with the task of disciplining the bands in so far as the Soviet operators are concerned.

From **UA2AO** it is learnt that sideband stations in the U.S.S.R. are allowed to operate in the 3·5 Mc/s band only between 3·6 and 3·65 Mc/s.

S. Georgia is now represented on 14 Mc/s c.w. by **VP8E**, who usually operates around 14,060 kc/s.

A Soviet hamvention was held in Estonia during the first week of December and this was attended by the prominent DX'ers from all parts of the Union. There is no truth in the rumour that the convention station signed V0DKA.

Approaching his first century of countries **G3PSY** has been examining his QSL records and finds that he has received 267 cards for 700 QSOs, a return of 38 per cent. HA, OK and YO have 100 per cent. records, whilst Italy has not yet produced a single QSL. N. America has managed 25 for 78 contacts (21 per cent.) and the U.K. a fair record of about 60 per cent. G3PSY comments that it is noticeable that the rarer countries have the best record, and finds difficulty in blaming the QSL Bureau for the non arrival of cards, for obviously QSLs that do not arrive cannot be distributed.

OY7ML is now again active on the DX bands using a W3DZZ trap aerial, but hopes to have his TA33 beam in operation in the near future. Progress was delayed owing to a shift of QTH, and the present weather in the Faroe Islands is hardly conducive to aerial work.

VE4OX is *not* the QSL Manager for **JT1KAC** contrary to information now circulating in DX circles. The address of JT1KAC is: M. Novak, Francouzska 25, Praha 2, Czechoslovakia.

* * *

G2BVN offers his thanks to all those who have supported this feature during the past year, with special mention to the regulars who have arranged their reports in a most helpful way. The propagation charts made available by Dr. G. Lange Hesse (DJ2BC) have been favourably received, and this co-operation is gratefully acknowledged. The following DX journals are regularly received, often providing valuable information on forthcoming activities: *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 January issue to arrive at R.S.G.B. Headquarters not later than **December 17,** whilst the latest date for the February issue is **January 10.**

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:	**S. Marsh (G2CZU), 10 Vernham Grove, Odd Down, Bath, Somerset.**
G3, 4 and 5 two-letter calls & GC	**E. G. Allen (G3DRN), 65a Melbury Gardens, London, S.W.20.**
G6 and G8:	**A. J. Mathews (G6QM), 62 Ashlands Road, Hesters Way Estate, Cheltenham.**
G3AAA-BZZ:	**C. C. Olley (G3AIZ), 157 Wanstead Park Road, Ilford, Essex.**
G3CAA-DZZ:	**C. A. Bradbury (B.R.S. 1066), 13 Salisbury Avenue, Cheltenham.**
G3EAA-HZZ:	**W. J. Green (G3FBA), 790 Rochester Way, Sidcup, Kent.**
G3IAA-KZZ, B.R.S. and A numbers	**T. D. J. Miles (G3NXR), 7 Hampden Road, Wantage, Berks.**
G3LAA-MZZ:	**C. Harrington (B.R.S. 2292), 91 Brabazon Road, Hounslow, Middlesex.**
G3NAA-NZZ:	**C. R. Emary (G5GH), 133 Fairlands Road, Thornton Heath, Surrey.**
G3OAA-PZZ:	**J. H. Brazzill (G3WP), 43 Forest Drive, Chelmsford, Essex.**
G3RAA-RZZ:	**K. Walden (G3OLN), 1 Hawthorn Road, Cheltenham, Gloucestershire.**
GD:	**T. R. Moore (GD3ENK), "Glyn Moar," St. John's, Isle of Man.**
GI:	**W. H. Martin (GI5HV), "Swallow Lodge," Greenisland, Co. Antrim, Northern Ireland.**
GM:	**D. Macadie (GM6MD), 154 Kingsacre Road, Glasgow, S.4.**
GW:	**J. L. Reid (GW3ANU), 28 Waterston Road, Gabalfa, Cardiff.**
DL2:	**4027469 C/T Griffiths (DL2OX), 212 Hohenzollen Str., Munchen Gladbach, Germany.**

Cards must be sent to G2MI but envelopes may be sent to the appropriate Sub-Manager or to G2MI.

The address of the QSL Bureau Manager (Mr. A. O. Milne, G2MI) is 29 Kechill Gardens, Bromley, Kent.

The M1A Receiving Adapter

THE M1A adapter manufactured by the Miniphase Co. of Rome provides one solution to the problem of obtaining high quality receiving performance with the minimum of cost, for it is designed to be used in conjunction with a front-end r.f. converter with an output at 455 kc/s. The construction of such a converter should present no problems and there are many practical designs available for reference. Alternatively the input signal may be obtained from an existing receiver the i.f. stages of which do not provide the performance and selectivity required for the reception of s.s.b. and c.w. signals under present day conditions.

The block diagram (Fig.1) shows the circuit of the unit, from which will be seen that the selectivity necessary for single signal reception is provided by the latest type of mechanical filter. The specification calls for an input signal of between 30 mV and 3 volts, the audio output being a maximum of 3·7 watts.

The a.g.c. voltage is audio-derived and amplified by a 12AT7, the output of which is rectified by a 6AL5 double diode. The required audio signal is not controlled by the main audio gain control but a separate preset resistor is provided for adjustment of the input to the 12AT7 a.g.c. amplifier.

Semiconductor diodes are used in the power supply, so reducing the heat inside the cabinet to a minimum.

A printed circuit is used to ensure long stability and the s.s.b. and c.w. detector employs a beam deflection valve. The S meter functions on all modes and the fast attack, slow decay, a.g.c. gives a stable meter reading on c.w. and s.s.b. The M1A adapter is fitted with an internal power supply (110 and 220 volts, a.c.) and loudspeaker and has a rear terminal strip for connections for an external speaker, VOX and muting. The front panel of the unit measures 10 in. by 7½ in. and the depth is 9½ in. The complete adapter weighs 15 lb. Enquiries should be directed to the manufacturers at Via F. Dall' Ongaro 81, Rome, Italy. There is at present no distributor in the U.K. but it is hoped to publish a test report in due course.

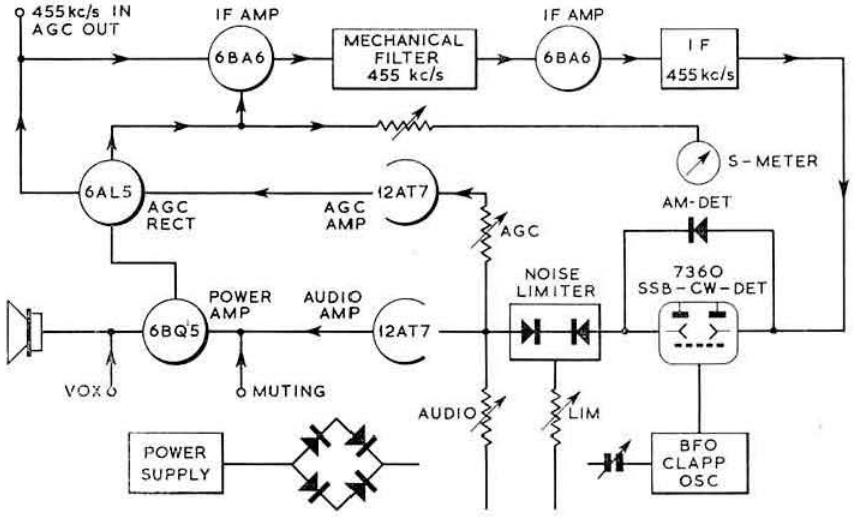


Fig. 1. Block diagram of the Italian Miniphase receiving adapter type M1A. Excellent selectivity is provided by means of a 455 kc/s mechanical filter, the overall response of the unit being shown in Fig. 2.

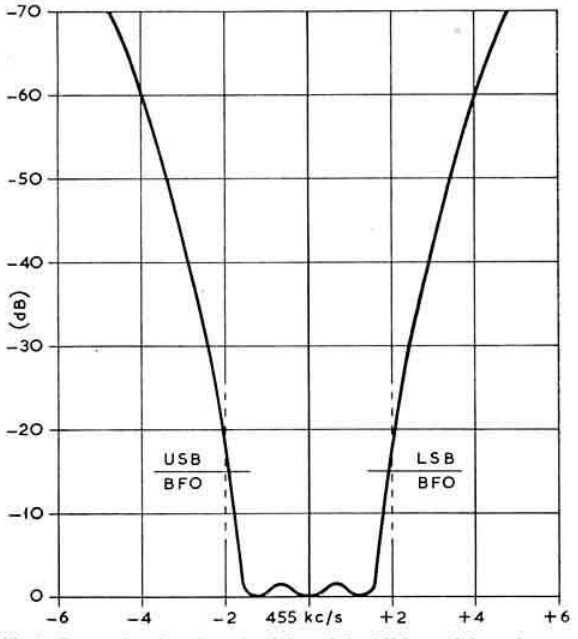


Fig. 2. Curve showing the selectivity of the M1A receiving adapter.

A front view of the Miniphase s.s.b. receiving adapter showing the positions of the various controls. The mode of reception is selected by the press button switches at the bottom right.

Single Sideband

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

THE theory and operation of quartz crystal filters is far too complex to be discussed in detail in this feature, but for those amateurs who desire more information and greater detail than can be given here, there is ample literature available and a visit to the local reference library is well worth while. Additionally, there are a number of excellent articles available in amateur publications.

Fortunately, from the point of view of a prospective constructor of a filter type single sideband exciter, it is sufficient to follow the recommendations given—in regard to crystal spacing and the number of sections—in the constructional article. Where the builder does need help, it is in the more practical applications of frequency measurement, crystal selection, crystal grinding, final alignment and the use of a ganging oscillator and oscilloscope.

Frequency Measurement

All crystals in a bandpass filter are oscillating on their series resonant mode. This applies irrespective of the function of the crystal (i.e. whether the crystal is in one of the series arms of the half lattice bridge or in shunt across it). The series resonant frequency is most conveniently measured by placing it in series with the output terminal of a BC221 frequency meter and the input to a valve voltmeter r.f. probe. The BC221 is used on its l.f. range and tuned *slowly* across the frequency of the crystal. A suitable range on the valve voltmeter is 10 volts full scale deflection. At some setting of the BC221 the indicating meter will sharply increase its reading; this is the series resonant frequency of the crystal, and is not affected by external shunt capacity. Because of this an elaborate test set-up is not required. Carefully tune to this peak and determine its frequency. About 200 c/s higher experimenters may be fortunate enough to detect the parallel resonant frequency as the frequency at which the valve voltmeter gives a sharp null indication. If this cannot be seen it is not of practical importance because the series resonance is the important frequency.

The deflection of the valve voltmeter indicates the activity of the crystal. A good crystal will give a full scale reading of 10 volts, an average crystal of six to seven volts. Any crystal giving a lower reading than this should be discarded as not suitable for filter use. It is always wise to purchase at least twice as many crystals as the number it is intended to finally use. At this stage those that have passed the activity test can be marked with the measured frequency. A convenient way of doing this is to make some small labels about $\frac{3}{4}$ in. long and $\frac{3}{8}$ in. wide, cut from ordinary writing paper, and held firmly to the side of the crystal holder "box" with Cellophane tape.

Assuming that a two half lattice filter is required, there will be a total of four crystals, arranged in two pairs, each crystal in the pair as near to the same frequency as it is possible to get them, and the spacing between pairs somewhere between 2·2 and 2·4 kc/s (assuming a pass band of 2·7/3·0 kc/s). In the FT241 54th harmonic series the channel spacing is 1·85 kc/s. This is not sufficient to give a wide enough passband and it is therefore necessary to edge grind the *higher* frequency pair to bring them out to the required spacing. In the FT241 72nd harmonic series the channel spacing is 1·389 kc/s (it is near enough to refer to this as 1·4 kc/s) but this is far too small even to allow edge grinding, because a shift of more than 0·5 or 0·6 kc/s (grinding one edge), usually results in a loss of crystal activity. The filter is therefore made up using crystals in two pairs with double channel spacing (i.e. 2·8 kc/s) and then the *lower* frequency pair are edge ground to bring them up to the required spacing. If the constructor is lucky enough to be able to select two pairs from his stock with double channel spacing and almost exactly matched in frequency he is indeed fortunate, and it is possible to dispense with grinding altogether. However, he must realize that the filter passband will be wider than the optimum and there is the further risk of a greater than normal dip in the centre of the passband response curve.

Many amateurs will wish to experiment with filters using one or more shunt crystals, and this is well worth while because it is the most effective way of obtaining a really good steep slope to the filter response on the carrier side and improving the available sideband suppression. For these workers, a word of advice: it is most important that the nearest shunt crystal is not *less* than 500 c/s from the adjacent filter crystal, i.e. assuming that the two highest frequency series crystals are Channel 33 on 458·333 kc/s the nearest shunt crystal would be a Channel 33 ground to 458·833 kc/s. Taking the alternative case where the shunt crystals are required on the low side, and assuming that the two lowest frequency series filter crystals are Channel 32.8 on 455·555 kc/s, the nearest shunt crystal would be a Channel 32·7 ground up to 455·055 kc/s. If it is required to "gild the lily," additional shunt crystals may be used up to any convenient value (in practice there is not much point in going beyond four) and these can be spaced in steps of 50 c/s—in all cases going away from the passband, i.e. the nearest shunt crystal is 500 c/s away from the nearest series filter crystal, the next shunt crystal 550 c/s away, the next 600 c/s and the next 650 c/s. A shunt crystal in effect cleaves a deep notch in the existing passband (the passband with the series crystals only) and this leaves the "root" of the previous response curve as a side lobe. The action of the additional shunt crystals is to depress this lobe and keep it down to 50 or 60db if possible. It will therefore be evident that the positioning is not critical and the suggestion of 50 c/s steps need not be rigidly adhered to.

Each half lattice section is in effect a bridge, the input to the two crystals in the bridge being in push-pull, whereas the output is taken from the parallel connection. Therefore the bridge is balanced to all frequencies outside the passband of the filter, and these are considerably reduced in amplitude. The centre tap that is required in the secondary of the i.f.t. feeding the filter does not have to be a tap on the inductance and in practice can be made up by removing the existing resonating capacity inside the can, and replacing with two capacitors of twice the value connected across the transformer leading out wires, underneath the chassis.‡

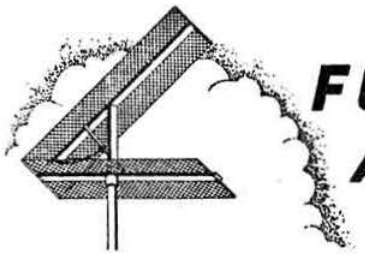
As already stated, each half lattice section is effectively a bridge that is balanced to all frequencies outside the passband. The available unwanted sideband attenuation in the filter can be degraded if there is leakage across the filter due to capacitive unbalance in the sections. This should be checked after the filter is constructed and all i.f.t.s have been peaked to the centre band frequency, using a BC221 fed into the grid side of the carrier crystal holder and a valve voltmeter connected across some convenient point in the transmitter as an output indicator. The modulator must be unbalanced to allow as much indication on the v.v. as possible. The series filter crystals are then withdrawn from their holders. Theoretically no signal of any kind can get across the filter and there should be zero reading on the output valve voltmeter. In practice there will be an appreciable reading indicating that there is leakage. This is reduced to zero by capacitively balancing each filter section in turn. The capacitive balancing is made possible by connecting a 4 pF

(*Continued on page 300*)

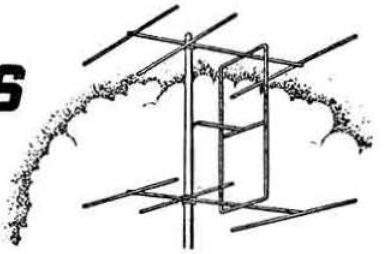
* *5 Janice Drive, Fulwood, Preston, Lancashire.*

† A convenient table showing the capacity required to resonate any standard i.f. transformer to a required frequency in the range 400-500 kc/s is given on page 85 of *Radio Data Reference Book*. This book also contains a list of FT241 crystals of both series for use in s.s.b. filters.

‡ These must be 1% tolerance silver mica capacitors of good quality.



FOUR METRES AND DOWN



Formation of R.S.G.B. Space Communications Group

By F. G. LAMBETH (G2AIW)*

THE formation of the R.S.G.B. Space Communications Group will be welcomed by the many interested in moon bounce in this country. A first meeting is to be held in London on January 3, 1963, in association with the London U.H.F. Group at the Whitehall Hotel, Bloomsbury Square, Holborn, when Bill Sykes (G2HCG), who first proposed the Space Group, will be the principal speaker. Members who would like to join the Group are invited to communicate with G2AOX who will be pleased to send particulars. The emphasis is on experiment in Space Communication from the amateur angle.

There is a rumour that efforts are being made on the Continent to build a European satellite for Amateur Radio. When some definite news is received it will be reported in *Four Metres and Down*.

R.S.G.B. 144 Mc/s C.W. Contest

The Contests Committee has asked that attention be drawn to the 144 Mc/s C.W. Contest, to be held on January 27, 1963. The value of c.w. on v.h.f. is well known and has been stressed many times. The object of this special note is to interest as many operators as possible and get a real bumper contest. Keep the date open—January 27!

Two Metre News and Views

The period under review appears to have been a fairly poor one, with very little in the way of interesting QSOs. Even in bad years this does not happen very often, thank goodness! However, as this issue went to press conditions became excellent and much continental DX was worked on 144 Mc/s.

G2JF (Wye, Ashford) reports that he and DL2XM (G6XM) of Munchen Gladbach have resumed their thrice weekly contact, after the summer break. This schedule is maintained under all conditions and has already been running over a year. G2JF also remarks that G3RND (Pontefract, Yorks) must have a very good site to enable him to project such a fine signal into the South East.

G3OCB (Stithians, Truro) has very little to report, conditions having been very poor and activity almost nil! After checking the band nearly every night he found even the locals usually absent—just an occasional contact with G5ZT, G3OJY or G2BHW. The promising omens around the middle of October did not seem to live up to expectations, apart from QSOs with GW3MFY, GW3CBY and GW3MOP which were all at 599+. The only other contacts were with G2CVY (Barnstaple) and G3IAS (Surrey), both at about S5-6. One or two other stations in the Home Counties were heard at that time but no contacts resulted. Since then, only three stations have been heard—G3OJY (after a sked fixed during a personal QSO), GB3CTC and the third harmonic of Hessary Tor TV (The latter two are, of course, consistent!)

The converter having been modified to follow the lines of that in the October BULLETIN, there is a slight increase (about ½/1 S point) in sensitivity over the old one, and the net result of the modification is quite pleasing. G3OCB ends by saying that he will still be checking the band regularly.

G3GVV (Haywards Heath) says that the best DX (at the very beginning of the period) was F2XO and ON4KJ. Apart from these two no overseas stations were heard, and generally conditions have been poor. Nevertheless, when stations up to 100 miles distance have come on they have been heard and worked. G3GVV listens at irregular intervals almost every evening, but there have been some evenings when the only signal has been GB3VHF.

G3OSS (London, N.W.) has been experimenting with transistorized equipment (running 20 milliwatts) with AF102s in push-pull on a frequency of 145·3 Mc/s. A.M. phone is provided by an OC83 and a Lustraphone " lavalier " microphone. Using a 3 ft. whip end-fed, held in the hand, a report of RS56 was received from G3OUO/T (Wembley) working cross-hand (G3OUO/T on 70 cm). The gear takes up about the space of 30 cigarettes. The best DX otherwise (using the external 6-over-6) was with G5MA (Bookham) who gave RS57. G3GIQ (Ealing) gave 56 and there have been reports from a dozen or so other stations. The receiver is a Perdio 102 with a Tiger transistor converter. During the Radio Communications Exhibition, G3OSS tested with GB3RS from streets adjacent to Seymour Hall, and kept in regular touch (G3OSS with a halo around his head!) A very praiseworthy " pedestrian " effort. More tests would be welcomed—they would be from the Hampstead Heath area.

G3LBA (Stoke d'Abernon) has been busy introducing simplified s.s.b. on 2m. The working prototype produces 180 watts p.e.p. and there have been QSOs with stations in Brighton, Basingstoke and North London. Apparently stations called on s.s.b. are either very pleased to work an

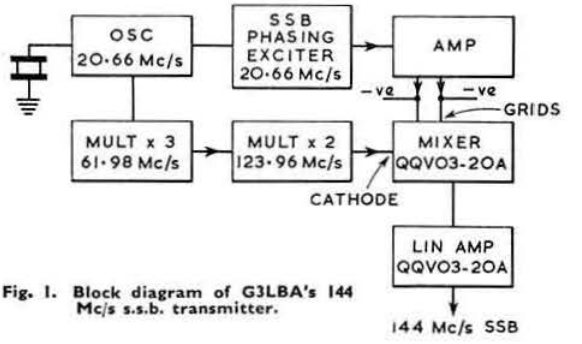


Fig. 1. Block diagram of G3LBA's 144 Mc/s s.s.b. transmitter.

** R.S.G.B. V.H.F. Manager, 21 Bridge Way, Whitton, Twickenham, Middlesex. Please send all reports for the January issue to arrive by December 18. Reports for the February issue must arrive by January 10.*

s.s.b. station or do not come back because they cannot cope or have a wobbly local oscillator.

The block diagram of G3LBA's transmitter is shown in Fig. 1 and is almost self-explanatory. The 123 Mc/s signal at the mixer cathode is balanced out at the anodes of the same stage by means of separate bias potentiometers in the " cold " side of the grid circuit. The s.s.b. exciter on 20·66 Mc/s is similar to the Heathkit SB10 which could in fact be used.

The advantages of the arrangement illustrated are that unwanted products are at least 20·66 Mc/s removed from the frequencies of the tuned circuits at the output frequency, and the 123 Mc/s signal is severely attenuated in the QQV03-20A balanced mixer stage. The difference frequency is 41 Mc/s removed and no trace of it has been detected.

GM2FHH (Aberdeen) is also now on s.s.b. (1·8 to 144 Mc/s except 70 Mc/s) and has been getting quite good reports on his signals around 145·8 Mc/s. No two way s.s.b. contacts yet, but he is looking for G3CCH, G3ILD and GI5AJ every night between 22.00-23.00 G.M.T. The s.s.b. rig uses a 39 Mc/s crystal × 3 = 117 Mc/s mixing with 28/29 Mc/s from a " home brew " exciter to produce 145·6 Mc/s, driving a QQV06/40 at approximately 200 watts p.e.p. New rotary gear has gone into the GM2FHH beam (8-over-8 slots at 45 ft. high). The HRO has been rebuilt with a half-lattice crystal filter using QCC evacuated type crystals —he finds they are much better than FT241 surplus types. Activity seems good in the Glasgow and Edinburgh areas. GM3ODP and GM3MUT (Black Isle) are quite active to say nothing of GM3GUI and GM2DRD on c.w. again. Conditions were good locally on November 11/12 with GMs all S8/9. No Gs were heard, however.

Opening on Two Metres and Seventy Centimetres

At the beginning of December a period of excellent v.h.f. conditions developed which provided stations in many parts of the country with good DX contacts. Possibly the only people who did not appreciate these good conditions were television viewers who suffered considerable co-channel intereference on Band 3.

On December 2, conditions on 144 Mc/s were so good GM stations were being heard on the South Coast. During the early evening of the following day, the band was again wide open for inter-G DX and to ON, OZ, and PA. G2JF was heard calling GI3PJY while G5YV worked DL. December 3 brought a further excellent opening with signals from DL, F, OZ, ON, PA and SM all audible. OZ5AB was heard calling EI2W. LA8RG was called by a number of G stations but it is not known whether any contacts were made.

G2DQ reports hearing I1BSR calling CQ YU on approximately 144·1 Mc/s at 10.55 G.M.T. on December 4 at RST559.

G3NOX/T successfully transmitted excellent TV pictures to PA0FB on 430 Mc/s on December 3.

On December 3, G3JMA worked OZ9AC for probably the first G-OZ contact on 430 Mc/s and the following day G3LQR worked LA9T (near Oslo) for what is believed to be the first LA-G contact on the same band. LA9T then worked G3LTF at a distance of 666 miles, only a little short of the present record for the band. During the opening signals from DL, OZ and SM and nearer European countries were heard all over the country on 430 Mc/s.

New 1296 Mc/s U.K. Record

During the spell of good conditions three London stations, G2FN, G2RD and G3FP, made contact on 1296 Mc/s with G3KPT in West Bromwich, Staffordshire. It is believed that these contacts represent a new record for this band in the U.K.

Seventy Centimetres

G3EKP (Blackburn) is on the band every evening running skeds with G2OI (Eccles) from 22.30 G.M.T. Other skeds would be welcomed. October 16 brought QSOs with G2CIW and G3KPT. EI2W has been heard, but so far not worked. Construction will commence shortly on a 20 element stack to details provided by G2OI. G3OTA is now active around 23.45 G.M.T. most evenings.

G3BIK (Newcastle-on-Tyne 3) has had contacts recently with G3BNL (150 miles), RS57, and GM3FYB (100 miles) RS58. The total counties score on 430 Mc/s since September 1962 is six worked.

GW3ATM (Chepstow, Mon.) reports that he does read (and enjoy) this feature, and is active at present on 430 Mc/s, running 25 watts to a QQV03-20 and a 12 element stack at 40 ft. The QTH is 80 ft. above sea level with a good take-off to the East, South and West; not too bad to the North and North East. There have been one or two good contacts in the Birmingham area. GW3ATM is ready to arrange skeds with anyone who would like GW or Monmouthshire. The most suitable nights are Mondays, Wednesdays and Fridays. While out portable during the Second 420 Mc/s Contest, 12 stations were worked, 11 of them on the Saturday evening. The following were not raised although heard: G2XV (59+ phone and c.w.), G2OI, G3FQR and one or two London stations. However G3PYE/P and G3LTF were worked. Skeds are still kept with G5QA on Mondays, Wednesdays and Fridays with signals peaking to 59+. GB3GEC is heard quite often but less frequently during the last few weeks.

* * *

A Merry Christmas and Happy New Year to all readers, with the hope that 1963 may be a general improvement on 1962!

V.H.F./U.H.F. BEACON STATIONS

Call-sign	Location	Nominal Frequency	Emission	Aerial Direction
GB3CTC	Redruth, Cornwall	144.10 Mc/s	A1	North East
GB3VHF	Wrotham, Kent	144.50 Mc/s	A1	North West
GB3GEC	Hammersmith, London	431.5 Mc/s	A1	East

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
November 6, 1962	11.45 G.M.T.	1170 c/s high
November 13, 1962	12.00 G.M.T.	1600 c/s high
November 20, 1962	12.00 G.M.T.	1800 c/s high
November 27, 1962	12.09 G.M.T.	1640 c/s high

Single Sideband (Continued from page 298)

mica capacitor across each of the low frequency series crystal holders, and a Philips 2-8 pF trimmer across each of the high frequency crystal holders. The two trimmers are adjusted a little at a time until the filter balance is complete—zero reading on the output meter. If there is still a reading on the v.v. that cannot be completely balanced out, this indicates carrier frequency leakage *around* the filter (i.e. in the wiring, common h.t. or heater feed lines and this will have to be removed by some additional bypassing with 0·01 or 0·05 μF capacitors). Try this—you might be surprised how much better you can get both your sideband and carrier suppression.

CLOSING DATE
FOR THE FEBRUARY 1963 ISSUE
JANUARY 10

Mobile Column

By C. R. PLANT (G5CP)*

THE end of 1962 is approaching and it is therefore a good time to "look over our shoulders" and review the year's activities in the mobile field. It has without doubt been the busiest one yet, the rallies have in general been more ambitious and as a result more successful than ever before.

The Mobile Rally scene opened in late April with the North Midlands event which attracted nearly 4000 people. Thereafter 25 rallies filled the weekends until the final one at Weston-super-Mare at the end of September, so in the 22 weekends available there was inevitably some duplication. However, as three of the rallies were held on Saturdays and the remainder on Sundays, this did not present too serious a difficulty. It may well be that as the interest in mobile operation increases—the latest figures indicate that nearly 1300 mobile licences have now been issued—the calendar may have to be extended further into the autumn. For the past few years the first two or three weeks of October have been ideal for this purpose and 1962 was no exception.

Already four dates for 1963 have been decided upon—who will be the next? Organizers are asked to inform the writer of dates selected as soon as possible so that duplication can be avoided.

Whilst comments of a complimentary nature are often paid to rally organizers, there have been a few complaints which may well be justified. It is easy for the casual visitor to a rally to "pick holes" in one or more of the activities—people's ideas of what is entertainment vary so very much that in every case an average vote must be taken—but if anyone feels strongly about it, the easy way is for a friendly letter to be addressed to the organizers, or better still join the committee the next year and so influence the programme proposed. One of the most frequent complaints is that the "Grand" draw often simply does not live up to its name—at one rally the first prize was a tape recorder valued at £30 or so, whereas at another the major prize was a transformer donated by a manufacturer. At some rallies the prizes very quickly reduce in value after the first two or three wins—it is very difficult to strike a balance in this matter; perhaps the fairest way would be for the organizers to publish a list of the prizes available giving a valuation and stating whether they were new or second-hand—in this way visitors could then make a decision regarding the purchase of raffle tickets and complaints could not be forthcoming.

Arrangements to entertain the children and lady visitors were sometimes lacking but this was not a general complaint. Organizers are becoming more and more aware of the importance of looking after the distaff side and the children, for this makes the rally a day out for the whole family instead of a "hamfest." The writer feels as though he is repeating himself when again urging members to stand by their local clubs and to offer their services either as committee members or as helpers on the day of the rally. It is quite astonishing to note the amount of work that goes on behind the scenes and it usually devolves on the few stalwarts who with devotion and cheerfulness always seem to be there. Mobile rallies are comparatively a new venture—it is only a few years ago that the first mobile licences were issued, but in this time it has added yet another absorbing interest to this fine hobby of ours, growing in strength from year to year. Up to the present, with few exceptions, the quality of the rally has steadily improved—let us resolve to maintain this trend in our Jubilee Year 1963.

The Derby and District Amateur Radio Society has announced that their 1963 Mobile Rally will take place on Sunday, August 18, at the Rykneld School, St. Albans Road, Derby.

During an 80 metre s.s.b. contact with G8FC (R.A.F. Locking, Som.) with G5UG at the microphone, it was learnt that Sunday, September 29, 1963, had been provisionally allocated for the South Western Mobile Rally to be held at Weston-super-Mare, Somerset.

Safety Precautions

Two further items which might well be added to the "Mobile Safety Recommendations" published last month concern the possible presence of gases, explosive and otherwise. It may not generally be realised that an explosion of considerable power can occur if a spark from a relay or other equipment ignites the gases given off by a lead-acid battery. The mobile police have had several incidents of this kind and now specify special ventilation arrangements for the boots of their cars.

Recently the writer had an alarming experience which took place when he was disconnecting an accumulator from a charging circuit. The power had been switched off and the vents firmly screwed into place when one of the large crocodile clips accidentally slipped and fell on to the top of the battery thus short circuiting two adjacent cells. A comparatively small spark occurred but this was immediately followed by a violent explosion which blew out the end of the battery and splashed sulphuric acid around. Fortunately, in this case, apart from the loss of the battery, no serious damage resulted—it could have been a very different story if somebody had been standing close to the end that disintegrated! Remember that as all lead-acid batteries give off an explosive gas mixture all the appropriate precautions should be taken.

Most people are aware that the fumes given out by a petrol engine are dangerous—the gas (carbon-monoxide) is highly lethal, has no smell and so can creep up unawares if simple precautions are not observed. Never run an engine in a garage or other enclosed building unless you know that an adequate ventilation system has been installed and that it is working satisfactorily at the time, or unless the car rear is outside the garage doorway so that the fumes are safely dispersed into the atmosphere. At least one mobile amateur has lost his life because he did not observe these simple rules; he was W6JKB whose Epitaph reads "W6JKB succumbed whilst working on his mobile radio equipment with the car engine running in an insufficiently ventilated garage." This is reported in the *A.R.R.L. Mobile Handbook*. Further comment is surely unnecessary.

VK2SG Transistorized Converter

In Fig. 2 on page 177 of the October issue of the BULLETIN, R4 and C6 should be connected to earth and not to the negative line as shown.

Top Band Calling Frequency

In the April issue a suggestion was made that a specific Top Band frequency might be arranged to be used by talk-in stations at mobile rallies and comments were called for. Not one letter on this subject has been received—are there any late offers, please?

Operating News

A very welcome letter has been received from K1IXG (West Hartford, Conn.) who makes flattering comments concerning *Mobile Column*. He has a Collins 32S1, 75S1 and a Healy whip aerial—the power supply is a d.c./a.c. inverter operating from the car battery. He says that his daily run to the office (he is a doctor) takes only twelve minutes and so there is little time for mobile working. On holidays however he uses it all the time and contacts include working a VR3 when arriving at a motel in New Mexico, and

(*Continued on page 306*)

* "*Lynton*," *12 Nottingham Drive, Wingerworth, Chesterfield, Derbyshire.*

Society News

The Society's Patron

MEMBERS will like to know that the Private Secretary to H.R.H. The Duke of Edinburgh, K.G. will be in a position to let the Council know next month whether His Royal Highness can accept the Society's invitation to attend the Golden Jubilee Year Dinner at the Connaught Rooms, London, on July 5, 1963.

Installation of New President

MR. NORMAN CAWS, F.C.A., G3BVG, will be installed as the 29th President of the Society during the course of a social evening at the Kingsley Hotel, Bloomsbury Way, London, W.C.1, on Friday, January 25, 1963. On that occasion the new President and Mrs. Caws will be pleased to meet as many members and their ladies as are able to attend. Mr. Caws hopes that members will also take this opportunity of meeting Council members personally.

The proceedings will start at 7 p.m. and the President will be installed at 8 p.m.

In order that suitable accommodation and light refreshments can be provided, admission will have to be by ticket only. A postcard to Headquarters stating whether a single or double ticket is required is all that will be necessary.

Prior to the Installation Ceremony it is anticipated that a number of members and their ladies will dine informally at the Kingsley Hotel, the restaurant of which is open from 6 p.m.

Provincial members who plan to visit London for the ceremony may like to know that the Kingsley Hotel has offered a preferential rate for those who stay for two nights and who mention the name of the Society when booking accommodation.

Mr. A. C. Williams (GW5VX)

BECAUSE of ill health the Society's Zonal Representative for Wales (Mr. A. C. Williams, GW5VX) has been prevented from attending recent meetings of the Council. Mr. Williams hopes to be able to resume his duties before Christmas.

Change of Publication Date

THE printing schedule for the R.S.G.B. BULLETIN is being altered early in the New Year to permit publication on the first Wednesday in each month, commencing with the March 1963 issue. The closing date for copy will therefore vary from month to month and will be January 10 for the February issue and February 7 for the March issue. Copy received after these dates will be held over for the next issue if still topical. Area Representatives and club secretaries are asked to send details for inclusion in *Forthcoming Events* to their Regional Representatives as much in advance of these dates as possible.

The January issue is scheduled to be published on January 15 and it is hoped that the February issue will be published on February 6.

R.S.G.B. Tape Library

MR. H. L. BRAHAM (G3OJS) has recently given a lecture specially for the Tape Library. Designed for the beginner it is entitled " Basic Transistor Principles " and has a running time of 45 minutes at $3\frac{3}{4}$ i.p.s. Applications by R.S.G.B. Groups and Affiliated Societies to borrow this and other tapes should be made to the Hon. Curator, Mr. N. C. Ta'Bois (G3HWG), 81 Snakes Lane, Woodford Green, Essex, from whom a list of Library recordings may also be obtained.

Build-It-Yourself Leaflets

THE following leaflets and pamphlets, originally produced for sale on the Society's stands at exhibitions, are available from Headquarters. Apart from the BULLETIN reprints, the text is in typescript. Please order by number and title.

No.	Title	Price
1.	A Simple Receiver for the Beginner	6d.
2.	Morse Sender	3d.
3.	One Valve, Two Stage Pick-up Amplifier	3d.
4.	A Home-made Crystal Set	3d.
5.	A Simple Transistor Amplifier	3d.
6.	Progressive Three Receiver	6d.
7.	Three in One Receiver	6d.
8.	Crystal Controlled Converter for 144 Mc/s	6d.
9.	Set of Four TVI reprints†	2/6d.
10.	Improving the War Surplus HRO Receiver†	9d.
11.	R.S.G.B. Two Metre Converter†	1/-
12.	Beginner's Amateur Bandspread Receiver	6d.
13.	All Band Grid Dip Oscillator†	1/-
14.	Simple T.R.F. Receiver using Miniature Valves	6d.
15.	Transistor Tester	6d.
16.	Maxi-Q Transistor Receiver	6d.
17.	160 Metre Transmitter using Miniature Valves and Series Gate Modulation	1/-
18.	Transistor Code Practice Audio Oscillator	6d.
19.	Transistor Crystal Marker Oscillator	6d.
20.	Radio Amateur Applications of the Transistor	2/6d.
21.	G5BJ Single Sideband Exciter	2/6d.
22.	Morse Practice Oscillator	6d.
23.	Morse Practice Oscillator (four valve)	9d.
24.	Progressive Four Stage Transistor Receiver for the Beginner	1/3d.
25.	144 Mc/s Mobile Transmitter	1/6d.
26.	Simple Mains Power Supply for a Receiver for the Beginner	6d.
27.	Mobile All Band Amateur Band Converter	1/6d.
28.	The Britannia Receiver†	2/-
29.	144 Mc/s Receiver with Converter and I.F. Strip, suitable for static or mobile use	2/-

All prices plus 3d. postage and packing.

† BULLETIN reprint

R.S.G.B. Morse Practice Tape

A MORSE code practice tape, recorded at $3\frac{3}{4}$ in. per second, is now available from Headquarters, price 17s. 6d. post paid. The speed of sending on the 450 ft. tape is approximately 14 w.p.m.

The exercises are not intended to teach the code but by running the tape at $1\frac{7}{8}$ in. per second useful practice is available for beginners. The recording can also be run at $7\frac{1}{2}$ in. per second for high speed practice.

R.S.G.B. Log Book

A WELL-BOUND 120 page log book is now available from Headquarters, price 15s., plus 1s. 6d. postage and packing.

Posting Certificate

ALL copies of the November issue of the R.S.G.B. BULLETIN were posted on Thursday, November 15, 1962, and the Society holds a certificate to that effect from the Letchworth, Herts, Post Office.

The President, Council and Headquarters Staff

send Christmas and New Year Greetings to all

Members of the Society

The 1962 Merseyside R.S.G.B. Regional Lecture

OVER 100 Region 1 members were at Radiant House, Liverpool, to hear Dr. R. C. Jennison of Jodrell Bank Radio Observatory deliver a lecture entitled " Electronics and the Universe".

The proceedings were opened by the Regional Representative, Mr. Basil O'Brien (G2AMV), who welcomed the President, Mr. E. G. Ingram (GM6IZ) and the Zone A Representative, Mr. P. H. Wade (G2BPJ). Short speeches by both were followed by a presentation by the President of the two Regional trophies.

The audience was then entertained by slides which included views of aerials of astronomical proportions! Amongst apparatus exhibited were a rocket nose cone, an aerial reel which had descended 500 miles without the aid of a parachute, and transistorized telemetry equipment for measuring micro meteorites.

A vote of thanks to Dr. Jennison was, most appropriately, proposed by Norman Kendrick (G3CSG).

Dr. R.C. Jennison (ex-G2AJV) holding the nose cone of a Black Knight rocket during the course of his lecture on November 16, 1962.

The event was the first of what is hoped will become an annual occasion. The attendance and obvious enjoyment of those present well justify a lecture on this scale each year.

G2AMV

London Members' Luncheon Club

OVERSEAS and provincial members may like to make a note of the dates as agreed with the Bedford Corner Hotel, Tottenham Court Road, London, for monthly gatherings of the London Members' Luncheon Club during 1963. The dates are as follows:—

January 18, February 15, March 15, April 19, May 17, June 21, July 19, August 16, September 20, October 18, November 15 and December 13.

The dates are all third Fridays except for December. In addition there will be a Special Golden Jubilee Week Luncheon on Wednesday, July 3, 1963.

Further details of L.M.L.C. activities can be obtained from the Hon. Secretary, Mr. Frank Fletcher (G2FUX), 11a Ickenham Road, Ruislip, Middlesex.

R.A.O.T.A. Reunion 1963

MEMBERS of the Radio Amateur Old Timers' Association are asked to note that the Golden Jubilee Year Reunion will be held at the Horse Shoe Hotel, Tottenham Court Road, London, W.1, on Friday, May 3, 1963.

Membership of the Association is open to any currently licensed radio amateur who has held a United Kingdom full transmitting licence for an unbroken period of at least 25 years, including the war years. Further details can be obtained from the Founder-Secretary (Mr. John Clarricoats, O.B.E., G6CL, 16 Ashridge Gardens, London, N.13).

The Association at present has 126 members.

"A Desk-top 160 Metre Transmitter"

IN the circuit diagram on page 222 of the November issue of the R.S.G.B. BULLETIN, J1 and J2 should have been shown as closed circuit jacks.

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.**

South Wales Pirate Network Broken Up

AS far back as April, 1961, the G.P.O. became aware that a good deal of unlicensed operation was taking place in South Wales. After protracted enquiries the Post Office engineers were finally successful in locating the operators of the unlicensed stations.

On September 25, 1962, at Tredegar Magistrates' Court, Michael Morris Charles Rackhan of 5 High Street, Ynysddu, Newport, Reginald Bevan of 38 Queen Mary Terrace, Dukestown, Tredegar, Charles Wilfred Draper of 106 Marine Street, Cwm, Ebbw Vale, and Arthur A. Hudson of 62 Hill Street, Rhymney, were each fined £3, ordered to pay £2 2s. costs and to forfeit their transmitting apparatus following prosecutions for using wireless telegraphy transmitting apparatus contrary to Section 1(1) of the Wireless Telegraphy Act without a licence.

On September 28, 1962, at Pontypool Magistrates' Court Frederick John Aubrey Black of 22 Caradoc Street, Pentwyn, Abersychan, Pontypool, was fined £10 and ordered to forfeit all of his equipment to the Postmaster General.

On October 12, 1962, at Bargoed Magistrates' Court Lionel Noel Tolley of 16 Mandeg, Trelewis, Treharris, was fined £5, ordered to pay £2 2s. costs and to forfeit his transmitter and receiver to the Postmaster General.

Bulletin Contributors

MEMBERS who are prepared to contribute articles to the Society's Journal are reminded that some notes are available to help them prepare manuscripts in a form that will assist in securing uniformity of presentation, simplify the work of the Society's printers and draughtsmen and help ensure that their instructions are easily understood. A copy of *Hints to Contributors* can be obtained on application to the Editor.

All contributions to the Society's Journal including those for the *Regional and Club News* and *Forthcoming Events* features should be typed with double-spacing between lines using one side of the paper only. Information for the R.S.G.B. BULLETIN should not be included on the same sheet of paper as material for news bulletins.

Photographs should be clear and sharply focused. Prints should preferably be glossy and should contain information of general interest to members. Captions should be written on a separate sheet of paper.

The amount of the copyright fee paid to contributors to the R.S.G.B. BULLETIN ranges from £2 2s. to £5 5s. per 1,000 words.

The Gerald Marcuse Memorial Award

AT the 1962 Reunion of the Radio Amateur Old Timers' Association it was decided to establish an Annual Prize Award in memory of the late Gerald Marcuse (G2NM).

The terms of the award are as follows:

(1) The Award will be made annually in April (beginning 1963) to the United Kingdom licensed radio amateur under 21 years of age on December 31 previously, who shall have submitted to the Radio Amateur Old Timers' Association the most meritorious article describing a piece of equipment which he shall have constructed and used in his station, or a journey which he shall have made during the previous twelve months to a Commonwealth or foreign country where he met and visited other licensed radio amateurs. Entrants must be Corporate members of the Radio Society of Great Britain.

(2) The manuscript of the article shall be either typed, using double spacing, or written legibly on lined foolscap.

(3) All manuscripts will be judged by a panel consisting of three members of the Association.

(4) The closing date for entries shall be January 31.

(5) The winner of the Award will be invited to attend the Annual Reunion of the Association as a guest of the Association.

(6) The Award will take the form of books or book tokens to a value of not less than two pounds.

(7) The winning manuscript will be offered to the Editor of the R.S.G.B. BULLETIN for publication.

More Pirates Fined

ON October 10, 1962, at Loughborough Magistrates' Court, Raymond James Rawlins of 13 Southdown Road, Loughborough, pleaded guilty to a charge of using wireless telegraphy transmitting apparatus contrary to Section 1 of the Wireless Telegraphy Act, 1949, without the necessary licence. He was fined £5 and ordered to pay £5 5s. costs. On October 24, 1962, at Loughborough Magistrates' Court, John Stanley Davis of 12 Avon Vale Road, Loughborough, pleaded guilty to a similar charge and was also fined £5 and ordered to pay £5 5s. costs.

On October 30, 1962, at Lancashire County Court, William Bentley of 18 Dorning Road, Swinton, Manchester, pleaded guilty to using wireless telegraphy transmitting apparatus without a licence. He was fined £10, ordered to pay £5 5s. advocate's fees and to forfeit the apparatus to the Postmaster General.

On November 1, 1962, at Strangeways Juvenile Court, Manchester, a 16-year-old youth pleaded guilty to using wireless telegraphy apparatus without a licence. He was given a conditional discharge for 12 months, ordered to pay £5 5s. advocates fee, 4/- costs and to forfeit the apparatus to the Postmaster General.

On November 2, 1962, at Wimborne Magistrates' Court, Geoffrey Bernard Wheeler of 22 St. Michaels Road, Verwood, Wimborne, Dorset, pleaded guilty to using wireless telegraphy apparatus without a licence. He was fined £10 and ordered to pay £5 5s. advocates fees.

On October 8, 1962, at Littlehampton Magistrates' Court, Edward Walter Peasey of 6 Bellscroft Close, Littlehampton, pleaded guilty to using wireless telegraphy transmitting apparatus without a licence. He was fined £10, ordered to pay £3 3s. costs and to forfeit the apparatus to the Postmaster General.

On October 31, 1962, at Worthing Magistrates' Court, John Richard Wuille of 82 Nutley Crescent, Goring-by-Sea, pleaded guilty to installing and using wireless telegraphy transmitting apparatus without a licence. He was fined £5 for installing the equipment, £5 for using the equipment and ordered to pay £3 3s. costs.

Deputy Regional Representatives

THE following have accepted an invitation extended to them by the appropriate Regional Representative to serve as Deputy R.R.'s:

REGION 9
CORNWALL
JOHN WATSON (G3AET), 24 St. Johns Terrace, Devoran, Truro.
DEVON
F. J. WADMAN (G2GK), 106 Warbro Road, Babbacombe, Torquay.
DORSET
A. A. BARRETT (G5UF), "Glenelg," P.O. Radio Station, Bridgport Road, Dorchester.

REGION 10
CARDIGANSHIRE, CARMARTHENSHIRE, PEMBROKESHIRE
P. COURTENAY PRICE (GW3LXI), 41 Main Street, Pembroke, Pembs.
GLAMORGAN
H. G. HUGHES (GW4CG), Clyne, Austin Avenue, Newton, Porthcawl.
MONMOUTHSHIRE
J. S. HAMMOND (GW3JBH), 23 Park End, Langstone, Newport.

Affiliated Society Representatives

THE following Corporate Members of the R.S.G.B. have been nominated and elected as Affiliated Society Representatives for the year 1963.

ACTON, BRENTFORD AND CHISWICK RADIO CLUB
W. G. Dyer (G3GEH) 188 Gunnersbury Avenue, Acton, London, W.3.
BARNET RADIO CLUB
K. R. Clarke (G3KRC), 24 Galley Lane, Barnet, Herts.
BURNHAM ON SEA AMATEUR RADIO CLUB
M. J. Lillington (G3JFY), 19 St. Mary's Road, Burnham on Sea, Som.
COVENTRY AMATEUR RADIO SOCIETY
A. J. Wilkes (G3PQQ), 141 Overslade Crescent, Coundon, Coventry, Warwicks.
CHILTERN AMATEUR RADIO CLUB
H. D. Coltman (G3PVJ), 301 Micklefield Road, High Wycombe, Bucks.
CRAY VALLEY RADIO SOCIETY
W. J. Green (G3FBA), 790 Rochester Way, Sidcup, Kent.
DERBY AND DISTRICT AMATEUR RADIO SOCIETY
B. Speakman (B.R.S.23256), Merrydown, Burley Lane, Quarndon, Derby.
ECCLES AND DISTRICT RADIO CLUB
J. A. Jennison (B.R.S.13999), 20 Carr Road, Higher Irlam, nr. Manchester, Lancs.
NORTHERN HEIGHTS AMATEUR RADIO SOCIETY
Mrs. Mary I. Shaw (G3OMM), 107 Norfolk Mount, Halifax, Yorks.
REIGATE AMATEUR TRANSMITTING SOCIETY
F. D. Thom (G3NKT), 12 Willow Road, Redhill, Surrey.
ROYAL NAVAL AMATEUR RADIO SOCIETY
Commander (AE) A. J. R. Pegler, R.N. (G3ENI), 7 Queen Annes Drive, Bedhampton, Havant, Hants.
SLADE RADIO SOCIETY
N. B. Simmonds (B.R.S.21873), 5 Bowling Green Road, Stourbridge, Worcs.
SOUTH BIRMINGHAM RADIO SOCIETY
S. F. Wheeler (G3MHM), 390 Green Lane, Birmingham 9, Warwicks.
SOUTHEND AND DISTRICT RADIO SOCIETY
A. C. Wadsworth (G3NPF), 2 Edtih Road, Prittlewell, Essex.
SOUTH MANCHESTER RADIO CLUB
M. Barnsley (G3HZM), 11 Cemetery Road, Denton, Manchester, Lancs.
STOURBRIDGE AND DISTRICT AMATEUR RADIO SOCIETY
F. A. Bills (G3CLG), 29 High Street, Kinver, near Stourbridge, Worcs.
THAMES VALLEY AMATEUR RADIO SOCIETY
A. Mears (G8SM), 4 Broadfields, East Molesey, Surrey.
YEOVIL AMATEUR RADIO CLUB
B. J. Clark (G3BEC), 107 Eastland Road, Yeovil, Som.

Representation

THE following is an amendment to the list of Town (or Area) Representatives published in the December 1961 issue:

REGION 1—CHESHIRE
WIRRAL AREA
J. P. G. JONES (G3IGG), 26 Hooton Way, Hooton, Wirral, Cheshire.

Resignation

Mr. F. F. Ruth (G2BRH) will resign as Town Representative for Ilford, Essex, on December 31, 1962.

Nominations for his successor should be made in the prescribed form and sent to reach the General Secretary by not later than December 31, 1962.

Town Representatives

REGION 7—LONDON SOUTH WEST
EAST MOLESEY
A. MEARS (G8SM), 4 Broadfields, East Molesey, Surrey.

Vacancy

MR. B. BRYAN (B.R.S.23035) has resigned as representative for Coventry North. Nominations for his successor should be made in the prescribed form and sent to reach the General Secretary by not later than December 31, 1962.

R.S.G.B. Amateur Radio Call Book 1963 Edition

THE following are amendments and corrections to the 1963 edition of the *R.S.G.B. Amateur Radio Call Book*.

G2DTO	4 Westbrook Road, Thornton Heath, Surrey.
G2DVD	Name is W. L. (not W. C.) Rimmington.
G3OQD	Number of house is 35 (not 34) Hartfield Crescent.
G3OUF	80 Argyle Road, London, W.13.
G3REZ	Name of road is Lindenthorpe (not Underthorpe).
G3RHH	Address is The Close, Boston Spa, Yorkshire (not Lincolnshire).
G4OU	Name is F. G. (not G. M.) Maynard.
GW3CJR	Address is 9 Old Pant Road, Newbridge, Newport, *Mon.* (not Pant, Newbridge, Newport, Monmouth).
GW3PPW	Shown as G3PPW. Correct entry is J. Whithill, 10 Channel View, Pontymister, Risca, Newport, *Mon.*

Mobile Register

G3CHW	Shown as G CHW.

Can You Help?

● I. D. Auchterlonie (G6OM), 147 Framingham Road, Brooklands, Sale, Cheshire who wishes to obtain a manual on teleprinter operating?

● G. V. Haylock (G2DHV), 28 Longlands Road, Sidcup, Kent, who requires information on the construction of a simple Biro pen recorder?

● P. Kaminski (GM3PIB), 5 Tytler Street, Forres, Morayshire, who requires the circuit diagram of the S440B transmitter and information on its modification for use on 144 Mc/s?

● J. V. Lay (B.R.S.23198), 96 Seymour Road, Leyton, London, E.10, who requires service data on the Philips mains receiver type 2000/15 M7956 and modification of either the shortwave range or medium wave band to cover Top Band?

● V. J. Reynolds (G3COY), 90 Princes Road, Hartshill, Stoke-on-Trent, who requires information on the Transmitter Unit 45A Ref. 10RB-6001 and on the Oscillator Unit Type 145 Ref. 10.V/561 using one 807?

● J. Slate (B.C.R.S.1124), P.O. Box 739, Bulawayo, Southern Rhodesia, who requires information on fitting a product detector to an Eddystone S750 receiver?

JANUARY 10, 1963

This is the closing date for all copy for the February 1963 issue of the R.S.G.B. BULLETIN.

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.

Headquarters Fund—List No. 15

THE following is the fifteenth list of those who had contributed to the Headquarters Fund up to November 30, 1962:

J. W. Booth (G2AJB), D. J. Andrews (G3MXJ), B. S. Farrow (G3FIR), Preston Radio Society, G. Halse (G3GRV),

Total amount contributed to date: £1,606 3s. 8d.

Slow Morse Practice Transmissions

IN the list of Slow Morse Practice Transmissions published in the November issue of the BULLETIN, the locations of G3PED and G3KGU are incorrect. G3PED is in Goodmayes and G3KGU in Theydon Bois, Essex.

"The United Nations of Ham Radio"

ONE of the principal articles in the December, 1962, issue of *Good Housekeeping* is " The United Nations of Ham Radio," by Ethel Williamson (VE3DTW). The article is one of the best on Amateur Radio to appear in a non-technical journal.

Headquarters Christmas Closing

SOCIETY Headquarters will be closed for the Christmas holiday from Friday evening, December 21, until Thursday morning, December 27.

Mobile Column (Continued from page 301)

speaking to friends and relations via phone patches whilst travelling at speeds in excess of 70 m.p.h. in the Western Desert.

G3OPW (Somercotes, Derbys.) now operates mobile on Top Band, 3·5 and 7 Mc/s using a much modified ZC1 Mk. 11. The final is an EL38 anode and screen modulated by a pair of 6V6s—a crystal microphone with preamplifier completes the picture. The input is 10 watts on Top Band and 25 watts on the other frequencies. The aerials are centre loaded whips on all bands. G3LHA (Coventry, Warks.) is mobile on 144 Mc/s using a halo located 4 ft. above the roof rack; with an input of 12 watts he has had two way phone contacts with G3KMP (Hastings), G3OSS (Finchley) and G4LU (Oswestry) at distances between 65 and 90 miles. The transmitter line up is EL91, EL85, EL85, QQV03/10 modulated by 12AX7 driving a QQV03/10 in class AB1. The receiver is a VQ4EV type cascode converter into a double superhet tuning 28-30 Mc/s. The power packs are home constructed transistorized units using OC16s, the drain from the car battery when transmitting being only 5·5 amps.

Weston-super-Mare Balloon Race

THE winner of the balloon race arranged in connection with the Mobile Rally and Regional Meeting at Weston-super-Mare, on September 22-23, 1962, was Mrs. A. R. Gilding (wife of G3KSH) who was awarded a Smiths gift voucher. Mrs. Gilding's balloon was found by Yves Cuichon, La Cabouaé, Lartilly, Marche, France.

Silent Keys

D. T. BRADFORD (VQ4EV, G3GBO)

It is with the deepest regret that we record the death of Don Bradford which occurred as a result of a mid-air collision near Reading, Berkshire, on Sunday November 4, 1962. Don was on leave from Nairobi and in the final stages of completing the examinations for his commercial pilot's licence when the tragedy took place.

To those who knew Don Bradford both in this country and East Africa the news came as a great shock for he was both well liked and respected in all the spheres of his Amateur Radio activity. He will, perhaps, be best remembered for his v.h.f. work, but this was by no means his only interest as he was recently awarded the Norman Keith Adams prize for 1962 for his article "An Experimental Transistor Communications Receiver" in the December 1961 BULLETIN. Don had also many other achievements to his credit including the office of President of the Radio Society of East Africa in 1959, and various honours in the world of v.h.f.

The funeral service was held at Denham, Bucks, village church, followed by cremation at Ruislip Crematorium on November 10, 1962. Those present at the ceremony included VQ4FB (President of the Radio Society of Eact Africa, who flew in from Nairobi for the occasion to represent the R.S.E.A., Kenya Police and Aero Club of East Africa), G3HBW, G3GWD (ex-VQ4CW) and XYL, G5LK and XYL. Amongst those who acted as pall bearers were VQ4FB and G3GWD.

Our deepest sympathy is extended to his parents in their great loss.

G3GWD

J. E. CORY (G5CY)

It is with regret that we report the death of J. E. (Ted) Cory (G5CY) of Sutton-on-Sea, Lincolnshire. Ted was a well-known DX operator before the Second World War and in recent years he had been active mobile on Top Band.

The funeral was attended by several local amateurs.

To his widow and two sons we extend our heartfelt sympathy.

A. H. L.

LEONARD W. HOOKE (G5XH)

It is our sad duty to record the death of Leonard W. Hooke (G5XH) on June 4, 1962, as a result of a heart attack. Mr. Hooke was well known to old timers, many of whom will recall his enthusiasm for 5m and the tests carried out on that band by him with the assistance of 2AUQ (now G5XW) from the top of Croydon Water Tower in 1932. Together with a number of other amateurs he helped to found the Surrey Radio Contact Club in 1934. Latterly he had had very little time for Amateur Radio although he retained his call-sign.

After a number of visits, he retired to live in New Zealand where he died so unexpectedly.

To his widow we express our sympathy in her great loss.

G5BT

G. F. KELLAWAY (G3BDL)

We regret to record the sudden death on November 11, 1962, of G. F. Kellaway (G3BDL), of West Coker, near Yeovil, at the age of 58.

Farmer, musician, astronomer and radio amateur, Geoff Kellaway commenced his radio activities while at school at Harrow in the 1920s when he was 6AY. In more recent years, after being active on most bands, he could be heard most days on 144 Mc/s where he kept a daily sked with G2JM. His advice and help to other members of the Yeovil Amateur Radio Club will be sadly missed.

At the funeral at St. Mary's Church, West Coker, on November 15, the R.S.G.B. and the Yeovil club were represented by Messrs. B. J. Clark, G3BEC (Town Representative) and D. F. S. Hayward (G3OMH).

To his widow, three sons and daughter we extend our deep and heartfelt sympathies.

G3BEC.

Wired Television

WITH the increasing use of wired television, members may like to know that where interference is caused to such services using carrier frequencies embracing the bands assigned for amateur operation, the Post Office refers complainants to the relay company concerned. The Post Office normally looks to the relay companies to attend to their systems in order to prevent the interference.

Council Proceedings

Résumé 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 Saturday, October 27, 1962, at 2.30 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, A. D. Patterson, 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 received from Major-General E. S. Cole and Mr. F. K. Parker.

Absent:
Mr. A. C. Williams (due to illness).

Letter from President of A.R.R.L.
A letter was submitted from the newly elected President of the A.R.R.L. (Mr. Herbert Hoover, Jr) in which he thanked the Council for extending good wishes for a successful term as President. Mr. Hoover looked forward to attending the I.A.R.U. Region I Conference in Malmo in June 1963.

Membership
Resolved (i) to elect 78 Corporate Members and 38 Associates; (ii) to grant Life Membership to Messrs. C. R. Burchell, ZB1CR (member since 1947), and J. A. Crux, G3JAG (member since 1952); (iii) to grant Corporate Membership to 10 Associates who had applied for transfer.

Applications for Affiliation
Resolved to grant affiliation to the following societies and clubs: Burslem Amateur Radio Club; Houghton Le Springs & District Amateur Radio Club; R.A.F. Technical College Cadets' Amateur Radio Society; St. Peter's School (Eltham) Radio Club.

Ballot Papers
Certain amendments to the wording previously adopted for the ballot paper used for Council elections were approved. The amendments were designed to assist members in completing and returning the ballot papers.

Council Elections
It was decided to defer consideration of a suggestion that the Business Reply Service should be used in respect of Council elections.

News Bulletin Service
It was agreed in principle to extend the R.S.G.B. News Bulletin Service to Northern Ireland.

Region 9 O.R.M.—Weston-super-Mare
Region 7 O.R.M.—London
Reports on the Official Regional Meetings held in Weston-super-Mare on September 23, 1962, and in London on October 6, 1962, were submitted and the information contained therein noted.

In connection with the Report on the Region 9 O.R.M. it was noted that a member had complained at the meeting about the performance of a receiver which he had purchased after reading a review on the receiver which had appeared in the R.S.G.B. BULLETIN. It was reported that the relevant correspondence had been sent to the Chairman of the Technical Committee whose full report was awaited.

Liaison with DX Managers
A discussion took place on a suggestion that there should be a closer liaison between the R.S.G.B. Contests Committee and the Contests Managers of other societies in respect of contests. It was suggested that the compiler of the Society's *Month on the Air* article (Mr. R. F. Stevens) should attend a meeting of the Contests Committee to discuss the question of liaison in greater detail.

B.E.R.U. Contest
It was agreed by seven votes to two to inform the Contests Committee that it is the wish of the Council that the name of the B.E.R.U. Contest shall remain unchanged (Mr. Swinnerton asked to be recorded as voting against the decision). The Contests Committee had proposed that the name be changed to BERU Commonwealth Contest.

Society Certificates and Awards
It was agreed in principle to authorize I.A.R.U. Member Societies to check claims for B.E.R.T.A. and DX.C.L.A. on a basis of reciprocity.

R.S.G.B. Amateur Radio Call Book, 1963 Edition
It was reported that the 1963 edition of the *R.S.G.B. Amateur Radio Call Book* contains more than 2150 amendments, additions and corrections to the 1962 edition. The new edition would be placed on sale on the opening day of the International Radio Communications Exhibition. (This date was kept.—Ed.)

Radio Data Reference Book
It was reported that the Society's new publication *Radio Data Reference Book* would also be on sale on the opening day of the Radio Communications Exhibition. (This date was kept.—Ed.)

Bulletin Publishing Data
It was agreed to accept an offer made by the Society's printers to bring forward the date of publication of the Society's Journal to the first Wednesday of the month commencing February 1963.

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

Committee	*Date—1962*
TVI/BCI	September 26
Contests/V.H.F. (Joint)	September 27
Finance & Staff	September 29
Exhibition	October 2 and 19
Mobile	October 5
V.H.F.	October 8
Contests	October 11
Scientific Studies	October 15
Technical	October 18

Resolved to receive the Reports and to adopt certain of the recommendations contained therein.

The recommendations dealt with the purchase of a photo-copying machine, Zonal Representatives expenses, the broadcasting of information about orbital times in respect of certain artificial Earth satellites, the publication of specimen answers to questions set in Radio Amateurs' Examinations.

Merseyside Lecture
It was reported that the first of the new series of Regional lectures would take place on Merseyside on November 16, 1962 and that the President had been invited to attend.

It was agreed to authorize the President and the Zonal Representative (Mr. P. H. Wade) to attend the lecture as representatives of the Council.

The meeting closed at 6.40 p.m.

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., D.S.I.R., Slough, and other places of technical interest.
Tuesday, July 2	Visits to B.B.C., 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.

Rules for National Field Day 1963

RULES for N.F.D. 1963 are as follows:

1. **Duration.** The Contest will commence at 17.00 G.M.T. on Saturday, June 8, and end at 17.00 G.M.T. on Sunday, June 9, 1963.

2. **Eligible Entrants.** Any group of members within the British Isles, which for the purposes of the contest comprise the prefix zones G, GC, GD, GI, GM and GW, may enter. The group may be a local R.S.G.B. group, a group of R.S.G.B. members, a club or an Affiliated Society.

3. **Operators.** Operators of portable stations competing in the contest must each hold a current British Isles (G.P.O.) Amateur (Sound) Licence or a valid P.O. Amateur Radio Certificate and must be fully paid-up Corporate Members of the R.S.G.B. at the time of the contest.

4. **Stations.** Each competing group will be permitted to place two stations ("A" and "B") in operation. The station operating on the lowest frequency employed shall be designated the "A" station. Each station must operate in not more than three of the bands 1·8, 3·5, 7, 14, 21 and 28 Mc/s; the other three frequency bands will be allocated to the "B" station, i.e., no group may operate two stations on any one frequency band. Both stations may operate from the same site or from different sites, provided that they are located within the agreed limits of the area covered by their Regional Representative. It will be permissible for two groups within a Region, or adjoining Regions, each operating a single station, to amalgamate for the purpose of scoring; if this is done, frequency bands must be allocated between the two stations as detailed above. Single-station entries will be accepted from stations operating on not more than three of the frequency bands listed above.

5. **Licences.** Each station must be licensed to use a different call-sign.

6. **Applications.** Each group intending to compete must notify the R.S.G.B. Contests Committee, 28-30 Little Russell Street, London, W.C.1, of the name of the group, location and the name and full postal address (in **BLOCK LETTERS** please) of the T.R., A.R., A.S.R., or member, responsible for their entry, not later than **WEDNESDAY, MAY 1, 1963.** Stationery and the latest information on the contest will be sent to this member.

Details should be set out as follows:
Call-sign station "A".....Call-sign station "B".....
The bands to be used by these stations are:

Band	1·8 Mc/s	3·5 Mc/s	7 Mc/s	14 Mc/s	21 Mc/s	28 Mc/s
Call-sign						

7. **Tents.** Stations must be operated from tents.

8. **Apparatus.** No apparatus may be erected on the site prior to 12.00 G.M.T. on June 8, 1963. This rule includes aerials and aerial fittings as well as tented accommodations for the stations, but does not apply to a tent to be used for storage purposes.

9. **Aerials.** Any aerials may be used, subject to the following limitations:
   (a) All aerials must be constructed from wire of total cross-sectional area not greater than 14 s.w.g. with the exception, however, that vertical radiators of any construction may be used.
   (b) No part of the aerials shall exceed a height of 45 ft. above ground level.

10. **Transmitters and Receivers.** Equipment at any "A" or "B" station must not exceed three transmitters and one receiver. Reserve equipment may be kept available, but not connected.

11. **Power Input.** Total d.c. input power to the anode circuit of the valve or valves energizing the aerial, or to any previous stage of the transmitter, **shall not exceed 10 watts.**

12. **Power Supply.** Power for any part of the station shall not be derived from supply mains.

13. **Type of Emission.** The contest is restricted to the use of c.w. (A1) only.

14. **Contest Exchanges.** An exchange of reports must be made and acknowledged before points may be claimed. In contacts made by competing stations the report must include a rising serial number commencing with 001 and increasing by one with each successive contact, irrespective of band, made by the station (e.g. RST579001, etc.), and such serial numbers, both incoming and outgoing, together with signal reports, must be entered on the log sheets. Proof of contacts may be required.

15. **Contacts.** Only one contact with each station, as defined by its basic call-sign, may count for points on each band during the contest. Duplicate contacts **must** be logged without claim for points.

16. **Group Contacts.** Points must not be claimed for contacts made by a competing station with other stations within its own town or area or with members of its own group, whether fixed, portable or mobile.

17. **Scoring.** Points will be scored on the following basis:

(a) Fixed stations in the British Isles	1 point
(b) Fixed stations in the rest of Europe including Eire ...	2 points
(c) Fixed stations outside Europe	3 points
(d) Fixed stations in the British Commonwealth ...	6 points
(e) Portable and mobile stations in the British Isles ...	*3 points
(f) Portable and mobile stations in the rest of Europe including Eire	4 points
(g) Portable and mobile stations outside Europe ...	6 points
(h) Portable and mobile stations in the British Commonwealth	12 points

*An additional 2 points may be claimed on **1·8 Mc/s and 3·5 Mc/s ONLY** for contacts with a portable or mobile station in any other British Isles prefix zone (e.g., GM-G, GM-GD, G-GI, GW-GC contacts on 1·8 and 3·5 Mc/s score 5 points). The six British Isles prefix zones are listed in Rule 2. HB1 is a Swiss portable prefix.

18. **Summary Sheets.** An entry will be accepted as valid only if the completed summary sheet has been signed by the T.R., A.R., A.S.R., or member whose name has been notified to the Contests Committee in accordance with Rule 6, who will be solely responsible for the conduct of the event within his group, however constituted.

19. **Operators' Signatures.** Contacts made by an operator whose personal signature does not appear on the cover sheet(s) of the appropriate log(s) will be disallowed. (See R.S.G.B. General Rule No. 7(a).

20. **Entries.** Each station's entry shall consist of a copy of the station log on the printed log sheet, **a separate sheet being submitted for each band worked,** together with a cover sheet for each band, and a summary sheet. The points claimed must be totalled for each band. Forms for this purpose will be supplied by Headquarters. Entries must be addressed to the R.S.G.B. Contests Committee, 28-30 Little Russell Street, London, W.C.1, **postmarked not later than June 24, 1963. LOGS MUST BE KEPT AND ENTRIES SUBMITTED IN G.M.T.**

21. In addition to the ***National Field Day Trophy*** and miniature replica, which will be awarded to the group obtaining the highest combined score, **miniature replicas** will be awarded to the groups with the highest score on each frequency band.

22. The ***Gravesend Trophy*** will be awarded to the runner-up.

23. The ***Scottish N.F.D. Trophy*** will be awarded to the Scottish group scoring the highest number of points.

24. The ***Bristol Trophy*** will be awarded to the group which, having entered only one station, shall obtain the highest number of points in comparison with other groups entering on a similar basis.

25. **A certificate** will be awarded to each of the following:
   (a) The chief operator of the overseas station whose check log shows that he contributed the most points to competitors.
   (b) The non-transmitting British Isles member whose check log is adjudged the most useful by the Contests Committee.

26. **Care of Trophies.** The Trophies will be handed to the representatives of the groups concerned, who will be responsible for their safe keeping until their return is requested by R.S.G.B. Headquarters.

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.	Severn Area
	10.30 a.m.	North Midlands
	11 a.m.	North East England
	11.30 a.m.	South West Scotland
	12 noon	North East Scotland
145·30 Mc/s	10.30 a.m.	Beaming north west from Sutton Coldfield
	10.45 a.m.	Beaming south west from Sutton Coldfield
145·50 Mc/s	11.00 a.m.	Beaming north from Leeds
	11.15 a.m.	Beaming east from Leeds
145·10 Mc/s	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.

CONTEST NEWS

RESULTS — REPORTS — RULES

National 144 Mc/s Open Contest 1962

FOR the second year running conditions were very good for the National 144 Mc/s Open and I.A.R.U. contests held on September 1-2, 1962. Continental stations were worked by most of the contestants but those in the Home Counties had the greatest successes.

It is disappointing to find that, although this contest is open to all members and conditions were so good, the number of entries was the smallest received for any 144 Mc/s event this year. This may, in part, be explained by the difficulty in scoring due to the QRA Locator system but nevertheless the entry is well below that which was expected.

It is unfortunate that the QRA Locator has to be used in these international contests but there appears to be little hope that a simpler and more accurate system will be used for some time as the continental societies appear to like the system. The Contests Committee holds the opinion that it is too complicated for quick calculation of distances and that the inherent accuracy of the four character system is insufficient for contest checking. The only merit of the Locator system is that, given the maps covering the whole of Europe which are now being prepared by a continental organization, the approximate location of a station can be quickly determined without a tedious search of a whole country to find some small town.

The QRA Locator will not be used in the National contests in the coming year, our normal system of distance and bearing continuing in contests where precise location is required. The Locator will only be accepted for distance measurement when received from continentals and should only be given to continental stations, many of whom will require it for their own contests.

Owing to the lack of suitable maps many contestants had difficulty in determining distances from the QRA received. The Contests Committee used a Bartholemews map of Western Europe, scale 1 : 3,000,000, upon which the locator grid was superimposed. This map, it has recently been found, has an inherent inaccuracy in some directions of nearly 4 per cent, but as all the contestants entries have been checked against this map no error in the contestants positions has resulted.

The Contests Committee would be grateful if all contestants would read the rules and conform to them. The reason for some of them may not be obvious, but keeping to them reduces the large volume of work with which the Committee has to deal. With no less than nine v.h.f. contests and nine lower frequency contests each year, there is sufficient work for a Committee of eight without having to deal with entrants whose entry is wrong, incorrectly calculated or incomplete, as were twelve in this contest.

The winner of the High Power Section, by a large margin, was J. C. Foster (G2JF) operating from near Ashford in Kent. In his 238 contacts he worked 61 DL/DJs, 51 PAs, 26 Fs, 16 ONs, 4 GWs, 1 OZ and 3 SMs, the remaining 79 being Gs, to give a total score of 69,971 points. The runner-up was H. Gratton (G6GN) of Bristol with 28,412 points.

The winner of the Low Power Section was A. M. Smith (G3IAS) with 25,612 points, the runner-up being G. C. Middle (G4CM) with 12,032 points.

The winner of the Portable Section was H. Jones (G5ZT) operating from near Okehampton in Devon, with 42,792 points. G5ZT has gradually been creeping up in position over the last few v.h.f. contests and deserves his win from a very difficult county. C. Sharpe (G2HIF) was the runner-up in this section with 37,697 points.

HIGH POWER SECTION

Position	Call-sign	Points
1	G2JF	69,971
2	G6GN	28,412
3	G3OXD/A	24,029
4	G3EDD	18,721
5	G2XV	14,189
6	G3LTN	14,112
7	G2BHN	11,672
8	GM3EGW	3,767

LOW POWER SECTION

Position	Call-sign	Points
1	G3IAS	25,612
2	G4CM	11,930
3	G3JXN	11,082
4	G2RD	7,768
5	G8TA	5,477
6	G3JKY	1,290

PORTABLE SECTION

Position	Call-sign	Points	Position	Call-sign	Points
1	G5ZT/P	42,792	10	GW3OAF/P	23,785
2	G2HIF/P	37,697	11	G3OSC/P	22,607
3	GW3KMT/P	37,369	12	G3EFX/P	20,594
4	GW3MST/P	36,972	13	G3EMU/P	18,399
5	G3MDH/P	34,624	14	G3FD/P	17,269
6	G3OBD/P	31,864	15	G3NJF/P	10,004
7	G5HZ/P	30,322	16	G2DHV/P	9,223
8	G3LBA/P	28,188	17	GW2HIN/P	6,303
9	G3MNQ/P	25,013			

The Contests Committee are of the opinion that the best check log submitted by a listener was that of D. A. S. Drybrough (B.R.S.22550).

GC3OBM, G6TS, G2UJ, B.R.S.15744, B.R.S.18572 and B.R.S.22550 are all thanked for their check logs.

Low Power Field Day 1962

THE decision to make this contest a "one band" affair seems to have been generally welcomed, and the Contests Committee is pleased to note an increased entry including several newcomers.

The leading station this year was D. G. Alexander, G3KLH/P, operated by G3KLH himself, assisted by D. White, G3JKA, and they established a clear lead over "L.F.D. stalwart" John Yeend, G3CGD, who had to be content with second place. Both stations used 1·5 volt battery valves, G3KLH's input being 3 watts to a DF91-DL93 v.f.o./p.a. combination, while G3CGD used a Hartley v.f.o./b.a./p.a. with 3S4s and 1·5 watts input. Dipoles were erected at all three leading stations, although some other stations favoured kite-borne aerials. These were found to suffer from the effect of charged rainstorms and their accompanying violent wind changes. Most competitors commented on the bad weather, but managed to find dry spots to house the equipment and operators.

Power inputs varied greatly, and ranged from 0.5-4 watts, but inputs bore no relationship to claimed scores, proving yet again that overall efficiency is the hallmark of the successful station. Superhet and "straight" receivers were in about equal favour, but it is noteworthy that only two stations used transistorized receivers, and *all* transmitters employed valves. There is an opportunity, it seems, for an all-transistorized station to show that economy in weight can be transferred profitably to increased battery capacity.

The entry of Geoff Haynes, G3CWL/P, deserves special mention, because in spite of a fruitless search for contacts he was still keen enough to send in an entry form duly completed and annotated. High winds and heavy rain, he says, "created such a noise on the polythene sheeting that was being used as a tent that it was very difficult to hear anything." As if this were not enough to contend with, he also had the misfortune to lose a valve filament (no spare available) and to discover on dismantling the aerial that there was an unrevealed break in a feeder. And all this after transporting his gear from Surrey to the Isle of Wight!

Most participants commented on the extra portable activity promoted by the Region 1 Field Day, but at least one Region 1 station came in for scathing comment from several entrants, because he refused either to acknowledge or to answer requests for QTH. Surely such bad operating manners are as much to be deplored in a local contest as in

an international one, and serve only to strengthen the arguments of those who would dispense with contests altogether. But this reservation apart, the 1962 Low Power Field Day was voted enjoyable by the competitors: both they and the Contests Committee hope that their efforts will be rewarded by an increased entry next year.

Check logs from G2SG and G3FOO are gratefully acknowledged.

Low Power Field Day 1962

Position	Call-sign	Contacts	Points
1	G3KLH/P	45	133
2	G3CGD/P	37	125
3	GW3GHC/P	38	110
4	G3JKY/P	34	105
5	G3BZM/P	29	104
6	G3KLT/P	27	95
7	G3GOX/P	19	84
8	G3PIF/P	29	75
9	G8NN/P	19	74
10	G3JVJ/P	18	69
11	G3HTI/P	20	63
12	G3LHJ/P	20	52
	G3BY/P	12	52
14	GW3IEM/P	15	51
15	G3GDW/P	10	42
16	G3CWL/P	0	0

144 Mc/s C.W. Contest 1963

RULES for the 144 Mc/s C.W. Contest to be held on January 27, 1963, are substantially the same as for previous events.

When: 10.00 G.M.T. to 22.00 G.M.T. on Sunday, January 27, 1963.

Sections: (*a*) High Power (up to 150 watts input to the p.a. stage); (*b*) Low Power (up to 30 watts input to the p.a. stage).

Eligible Entrants: All fully paid-up members of the R.S.G.B. resident in Region 1.

Contacts: May be made on A1 only.

Scoring: For each completed contact in the operator's own COUNTRY, 10 points may be claimed: for each completed contact with a station in any other COUNTRY, 25 points may be claimed. In addition a bonus of 25 points may be claimed for the first contact in each new COUNTY in accordance with the list on page 360 of the January 1962 issue of the *R.S.G.B. Bulletin*. The whole of the London Postal District will count as one county only.

Contest Exchanges: RST reports followed by the contact number, location of station and county (e.g. RST559001 Trebudannon, Cornwall or RST579002 Hendon, London). Since distances do not have to be calculated in this contest the restriction of QTH to one found on the 10m to 1 in. Ordnance maps does not apply: any convenient town or village may be given for the location.

Logs: (*a*) Must be tabulated in columns headed (in this order) " Date/Time (G.M.T.)," " Call-sign of Station Contacted," " My report on His Signals and Serial Number Sent," " His Report on My Signals and Serial Number Received," " Location of Station Contacted," " County," " Points Claimed."

(*b*) The cover sheet must be made out in accordance with R.S.G.B. Contests Rule 5 and the declaration signed. The address of the station must include the county.

(*c*) Entries must be postmarked not later than **Monday, February 11, 1963.**

Awards: At the discretion of the Council of the R.S.G.B., certificates of merit will be awarded to the leading station in each section.

The General Rules for R.S.G.B. Contests apply to this contest.

Affiliated Societies' Contest 1963

THE rules for the Affiliated Societies' Contest to be held on February 2-3, 1963, have been considerably modified and are as follows.

RULES

1. The contest is open to all Societies in fully paid-up affiliation with the R.S.G.B. at the time of the Contest.
2. The General Rules to be published in the January 1963 issue of the R.S.G.B. BULLETIN relating to R.S.G.B. Contests will apply except as superseded by the rules of this Contest.
3. The Contest will be in two periods, viz:
   19.00 to 23.00 G.M.T. February 2, 1963, and
   19.00 to 23.00 G.M.T. February 3, 1963.
4. Entrants must operate in the 1.8-2 Mc/s band on c.w. only, and operate in such a way as to minimise interference with other users. Contacts with telephony stations are not permitted.
5. Three points will be scored for contacts with Affiliated Society stations, and two points for all other contacts. The contest score will be the sum of the points obtained in both periods, and the combined log will be prefaced by a Cover Sheet made out in accordance with R.S.G.B. General Contest Rule 5.
6. Affiliated Society stations will send the letters AFS after the report serial number groups, e.g. 559004AFS. Serial numbers will advance throughout the entire contest.
7. Call-signs which have been issued to Societies must be used, but their use at an alternative address is not debarred. If no Society call is held, the call-sign of a member may be used.
8. Entries must be postmarked not later than **February 18, 1963,** and must be submitted in the following form:

Date/ Time G.M.T.	Call-sign of station worked	Our report on his signals and serial no. sent	His report on our signals and serial no. received	Enter AFS if received	Call-sign of operator	Points claimed

Cover sheets and log forms are available from R.S.G.B. Headquarters on request.

9. The declaration must be signed by an officer of the Affiliated Society, who will be held responsible for the conduct of the station.
10. At the discretion of the Council of the R.S.G.B., the **Edgware Trophy** will be awarded to the Affiliated Society submitting the highest total checked score.

Region 1 Field Day

WIRRAL (G3NWR) were the winners this year with 149 points. They were also the highest placed Region 1 group in National Field Day and thus qualify for the Regional Representative's Trophy.

Second in the North West event was G3NBN (Stockport) with 137 points, with Ainsdale in third position (130).

Scores were higher than ever before, the 3·5 Mc/s and 14 Mc/s bands yielding the most points. Nine entries indicates a reviving interest in the local event. G2AMV

CONTESTS DIARY

January 26-27	–	CQ WW 160m. Contest.
January 27	–	144 Mc/s C.W. Contest. (For rules, see this page).
February 2-3	–	Affiliated Societies' Contest. (For rules, see this page).
February 9-10	–	A.R.R.L. DX (phone) Contest.
February 16-17		B.E.R.U. Contests (For rules see page 254, November 1962).
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 13-14	—	PZK (phone)
April 21	—	D/F Qualifying Event.
April 21-22	—	Helvetia 22
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. (For rules, see page 308)
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.*

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.

Subscription Rates

DEAR SIR,—I agree with all that Mr. Fowler writes in the November BULLETIN, but I would like to add another viewpoint on our subscription.

Where and when did the idea arise that the cost of the Society to all members is that of the annual subscription? The R.S.G.B. makes virtually no cash allowance to its local branches, and the money needed to run them comes out of the pockets of those who attend their meetings. The active members of my local group pay, in hard cash, something over 30s. a year each to keep the group running, and this does not include help given in kind. Local activities are as much a part of the R.S.G.B. as are Headquarters and the BULLETIN, and the money needed to support them should equally be a charge on the annual subscription. At present, however, the local activities of the Society are paid for by a portion of the membership, whose actual annual cash subscription is already between three and five guineas.

This is grossly inequitable, whatever the cynical non-attender of local activity may say. It is time that the whole cost of the R.S.G.B. was paid for by the whole of the membership.

I agree that there should be an increase in the Society's subscription, and I suggest that an adequate capitation fee, based on local membership, should be paid to local groups out of the extra money. The difficulties, and the protests of those who are unwilling to pay their fair share of the Society's expenses, should not be made an excuse for inaction.

After all, many hundred members have paid that increased subscription for years!

Yours faithfully,

London, E.6. J. B. G. PARKER (B.R.S. 18384)

Is it Still *Amateur* Radio?

DEAR SIR,—The arrival of the November BULLETIN containing both the report of the Seymour Hall show and the letter of EI8J seems to me to contain both the question and the answer to the possible future of Amateur Radio.

The show, I found, apart from the opportunity to meet the face behind a well-known voice, was a dead loss.

Amateur Radio, I feel, means the desire to build one's own equipment, use it, modify it and improve its performance until one has something completely individual, however simple in concept. It does not mean spending hundreds of pounds on commercial gear—that is purely being an amateur R/T (or c.w.) operator.

Did the show contain anything to encourage the young man of under 20 not employed in the professional side of radio to want to take up radio as a hobby? I say no.

A large proportion of the home-built gear obviously owed a great deal to professionally equipped workshops and did nothing to encourage a beginner to attempt a copy.

From the ages of the visitors to the show, Amateur Radio is now a middle age to old age hobby.

I regret also that from the number of ancient AR88s, HROs and similar vintage receivers in use today, and what is more being talked of with reverence, the desire to improve must have died about twenty years ago!

How many amateurs in 1938 were using a World War I receiver?

The young people that do come on the air very occasionally also are not really amateurs in the hobby sense. Mainly they seem to be students of industry who are anxious to turn their new-found knowledge to practical use, but after a period of intense activity explaining to everybody the higher mathematics and theory of things (mainly wasted here, I'm afraid) they disappear for ever from our firmament.

I suggest we go back to those BULLETIN's of 1935 of EI8J's, the pre-war *Wireless Worlds*, re-write the articles using modern valves, etc., and attempt to make Amateur Radio a hobby instead of an elderly gentleman's R/T channel.

Yours faithfully,

Wraysbury, Middlesex. E. W. ELLIOTT (G3BYY)

DEAR SIR,—The letter from G2VV in the July issue and the subsequent letter from EI8J in the November issue (in which each is concerned about the highly technical trend in the BULLETIN during recent years) express opinions which I have held for some time.

Many articles are becoming increasingly more complex and while I appreciate the tremendous advances made in electronics since the days of the *T & R Bulletin*, I fail to see what possible use the average amateur can make of the pages of "mathematical considerations" to which we are being increasingly subjected. I would suggest that this is nothing less than a kind of technical snobbery or an opportunity for the writer to air his knowledge—a not uncommon failing amongst technical people! I personally know of new members of the Society who feel cheated and dissatisfied because the BULLETIN contains nothing which caters for their newness and inexperience.

Like G2VV and EI8J, I too would like to see a more human and friendly atmosphere in the pages of the BULLETIN and even an occasional humourous article. Are we becoming so stuffed with our own technical importance that we cannot laugh at ourselves? No doubt the question of finding contributors of articles is not easy but I feel that many more people would write for the BULLETIN but are afraid to do so because they feel that their contribution might not be considered good enough. One very well-known commercial radio magazine flourishes well on articles written by the average amateur and although they are not outstanding examples of "journalistic expertese," they are, nevertheless, interesting and entertaining reading. If they can do it, why not the BULL?

The suggestion by G2VV of a questionnaire is an excellent one and I think it would be extremely interesting and enlightening to read the members' views and opinions. I wish an ever increasing success to the larger BULLETIN and to the Society itself to which we owe our amateur lives but please, gentlemen, let us not become technical "big-heads."

Yours faithfully,

Bolton, Lancs. JOHN V. HOBAN (G3EGC)

The R.S.G.B. International Radio Communications Exhibition

DEAR SIR,—I visited the R.S.G.B. "International Radio Communications Exhibition" on Friday, November 2, 1962. It was the first I have been able to visit for some years and it will be the last for some years unless there is a substantial change in *content*.

Firstly, about one half of the exhibitors were non-manufacturing. Secondly, component manufacturers were generally conspicuous by their absence. Thirdly, just what was "International" about the exhibition?

Surely an exhibition of this kind can be of little real value unless component manufacturers are participants. No resistor manufacturer; no manufacturer of fixed or variable capacitors; no chokes or transformers, no valves (for surely one could not call what was visible on the G.E.C. stand that morning a display of amateur type valves!), not even a transistor manufacturer.

Can it be that these manufacturers, and others one could readily call to mind, rate this exhibition of too little value to be worth while exhibiting? Or were they asked to participate?

I believe that the majority of amateurs in this country still build their own equipment other than receivers and that for them an exhibition of such limited scope is a waste of time.

Dare I, can I, look forward to an exhibition next year which will be of considerable real interest to the majority of amateurs?

Yours faithfully,

Bedford. R. M. McROBB (G5LF)

DEAR SIR,—In the February 1962 issue you published a letter I had written under the heading "Exhibition Aftermath," in which I had made some critical comments on the Radio Hobbies Exhibition held in 1961 at the Royal Horticultural Hall. Now that this year's Radio Communications Exhibition has been staged at the Seymour Hall, I should like to say what I thought of that one and how it compares with last year's show.

Seymour Hall was a great improvement; the natural lighting and the artificial lighting were much superior. The newer building also seemed to brighten up the whole show. However, the Society stand still seems to prefer to tuck itself away in a corner. True, it was not a dark corner this year, but it had its back well and truly to the wall. Why not come out into the open air a bit, and spread it out in the centre of the hall?

As one who was on duty on a stand for two days I found the restaurant facilities a real boon with comfort, goods meals and service at prices which one certainly could not complain about.

If I might presume to "pat some backs," my congratulations would go to Phil Thorogood, G4KD, for putting on such an improved exhibition, and to G. R. Jessop, G6JP, for his excellently presented *Radio Data Reference Book*. The latter is a natural follow-up on the *Amateur Radio Handbook* and makes an admirable companion to it.

Yours sincerely,

St. Leonards-on-Sea, Sussex. W. E. THOMPSON (G3MQT)

The R.S.G.B. QSL Bureau

DEAR SIR,—I note that G3ORB (November BULLETIN) has brought up the hoary old question about QSL cards and the failure on the part of the majority of stations to send him one in return. He will in course of time appreciate that there is no answer. It is one of those problems of Amateur Radio. When he has worked his 100 countries for DXCC he may well find that he is 25 or 30 cards short and cannot make his claim. It is annoying to say the least, when one is waiting for a confirmation of a QSO, particularly when a certificate for W.A.C., W.A.Z., B.E.R.T.A. or some other such award is being aimed at.

If G3ORB can suggest a method to overcome this frustration whereby he can get a card for every one he sends, then many of us would be glad to know of it. Since the war I have had more than 17,500 QSOs and for all first contacts up till June, 1962 I sent a QSL card. The number I have received is pitifully small. Since my retirement in June I have sent cards to confirm contacts with new countries and to acknowledge cards received.

G3ORB overlooks several facts:

(*a*) The station who retains his outgoing cards in order to send a batch to the bureau and this may be up to a year;

(*b*) The station who has no outlet—not a member of a national society—and does not send cards because of the cost;

(*c*) The station who never QSLs and this unfortunately includes DX stations.

I must object to his assertion that the QSL Bureau needs overhauling; as an ex-sub manager I should like to point out the enormous amount of work undertaken by sub-managers and of course G2MI. I quote my own stint. I used to put the packets of cards aside until after lunch on Saturdays and almost invariably worked on until midnight and on occasions had work to continue on the following day—I was very keen at the outset but over the years (five of them) it dawned upon me that there were individuals who would not send envelopes and when being advised that cards were on hand either said they didn't want them or in other cases didn't bother to reply. There was of course the "comic" who sent a packet of ordinary letter type envelopes together with a book of stamps—the envelopes were not even addressed. Many cards, I regret to say had to be burned.

If a station doesn't want to take part in the QSL business he is in no way bound to do so and slating the Bureau still won't produce a card. Perhaps G3ORB would like to assist the QSL Bureau and thus get some idea of what really goes on.

For myself, and I feel that a great many support me, I offer a hearty vote of thanks to the QSL Bureau Manager and his sub-managers for the extremely efficient way in which they do a most difficult and thankless job.

Yours faithfully,

Dartford, Kent. BILL WINDLE (G8VG)

DEAR SIR,—I am not quite clear who G3ORB is getting at (in the November BULLETIN). Is he complaining that people do not QSL or is he having a crack at the QSL Bureau?

One thing is certain, the QSL Bureau Managers throughout the world cannot make people QSL. I should have said that, judging by my own experience, G3ORB's return of 29 per cent QSLs is not bad by modern standards.

I think there are many people who are under the misapprehension that QSL Bureaux are a means for the rapid exchange of cards. This is not, and never has been, so. The world's QSL services were established to facilitate the exchange of cards at *low cost*. If G3ORB is in a desperate hurry for his cards, he should try air mail and I.R.C.'s. Even this doesn't always work. Some year or two ago, we watched six cards, with I.R.C.'s attached, through and waited to see what happened. In four of the six cases, the recipient had obviously pocketed the cash for the I.R.C. and sent the card back via the Bureau system. I often wonder how many of the dollar bills which are sent with cards go the same way.

Many people do not QSL until they receive a card—if everyone did this, then there would be no further use for QSL Bureaux or cards!

Cards are sent between Bureaux by commercial paper rate—in bulk. To use any other method would be extremely expensive and involve Customs declarations, etc.

I am sure that G3ORB will find that a few more cards will trickle in. The thirty to forty thousand which pass through the R.S.G.B. Bureau each week surely must contain the odd one or two for him.

Yours faithfully,

A. O. MILNE (G2MI)

Bromley, Kent. *R.S.G.B. QSL Manager*

Safety in Mobile Operating

DEAR SIR,—Apropos recent correspondence in connection with the above, I would be the first to agree that meticulous attention must be paid to such matters by a /M licensee.

Ever since the inception of the mobile licence, I have been avidly aware that the tiniest blot on the "mobile copybook" could result in an immediate withdrawal of this fascinating facility of our hobby. For this reason, I have considered it my duty to see that my own installation is beyond reproach, and I believe it contains every possible aid and precaution to operating, with due regard to road safety, whilst in motion. Furthermore I have not needed instruction or inspection by a committee or other body—it's purely and simply a matter of commonsense.

But when I'm told by one of the officers at the Woburn Abbey Rally, having seen it confirmed in print later in the BULLETIN, that all microphones should be affixed to the interior of the vehicle, that's when I give up! For goodness sake, think again—let us suspend a miniature lightweight microphone in its right place, so that it can closely follow any movement of the driver/operator, *viz* on a small halter round the neck to which is linked a boom locating the microphone just underneath the mouth.

Yours faithfully,

London, W.1. REX TOBY (G2CDN/M-EI5B/M)

Northern Amateur Radio Mobile Society

DEAR SIR,—I refer you to a report that appeared in the *Mobile Column* in the November, 1962 edition of the BULLETIN which mentioned the Northern Amateur Radio Mobile Society Rally at Harewood House.

The committee of the Amateur Radio Mobile Society has instructed me to inform the R.S.G.B. that the A.R.M.S. has no connection whatever with any other organization. A letter was sent to the secretary of this Northern society many weeks ago pointing out the similarity of name, but this has never been acknowledged. As expected, there has already been some confusion since it has been assumed that it is a northern section of the A.R.M.S.

For example, one amateur called on the A.R.M.S. stand at the R.S.G.B. Radio Communications Exhibition stating he had paid seven shillings and sixpence to join the Northern A.R.M.S. but had heard nothing further and had not received his copies of *Mobile News*, the monthly journal of the A.R.M.S.

The name Amateur Radio Mobile Society and the publication *Mobile News* are in the process of being registered and we are advised that there is every reason to expect these registrations to be effected in due course in the usual way.

I would be grateful if you would publish this letter to clarify this matter to members.

Yours faithfully,

N. A. S. FITCH (G3FPK)

Honorary Secretary,

London, E.10. Amateur Radio Mobile Society

Bulletin Stencil Plates

IT occasionally happens that a stencil plate used for the preparation of a particular BULLETIN wrapper becomes worn or loses ink, with the result that the Post Office experience difficulty in tracing the address.

Members who notice that the address on the wrapper used for their copy of the BULLETIN is indistinct, or in any way faulty, are asked to advise Headquarters.

Forthcoming Events

Details for inclusion in this feature should be sent to the appropriate Regional Representatives by the 1st 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.

LOOKING AHEAD

December 15.—Annual General Meeting. Overseas House, London, S.W.1.
January 25, 1963.—Installation of Mr. Norman Caws as President, Kingsley Hotel, London, S.W.1. (See separate announcement).
March 29, 1963.—London Lecture Meeting at I.E.E.
May 3, 1963.—R.A.O.T.A. Reunion, Horse Shoe Hotel, London, W.1.
May 4, 1963.—Northern Ireland Golden Jubilee Year Celebrations.
June 2, 1963.—R.S.G.B. Golden Jubilee Mobile Rally, Wethersfield, Essex.
June 10-15, 1963.—Region 1 I.A.R.U. Conference, Malmö, Sweden.
June 23, 1963.—Bridlington Mobile Rally.
July 5, 1963.—R.S.G.B. Golden Jubilee Dinner.
August 18, 1963.—Derby Mobile Rally.
September 8, 1963.—G6UT's Ham Party.
September 15, 1963.—Lincoln Mobile Rally.
September 22, 1963.—Woburn Abbey National Mobile Rally.
September 29, 1963.—South West Mobile Rally, Weston-super-Mare.

REGION 1

Ainsdale (A.R.S.).—December 19, January 2, 16, 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.).—January 8, 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.
Liverpool (L. & D.A.R.S.).—Tuesdays, 8 p.m., Gladstone Mission Hall, Queens Drive, Stoneycroft.
Macclesfield.—January 8, 22, 42 Jordongate.
Manchester (M. & D.A.R.S.).—Wednesdays, 7.30 p.m., Newton House Community Centre, Droylsden Road, Newton Heath, Manchester 10 (Please note new address) **(S.M.R.C.).**—Fridays, 7.45 p.m., Rackhouse Community Centre, "Rackhouse," Daine Avenue, Northenden. December 21—Activity Night. No meeting on December 28.
Morecambe.—January 2, 125 Regent Road.
Preston.—January 8, 22, 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.—December 19, January 2, 16, 30, 8 p.m., The Blossoms Hotel, Buxton Road.
Wirral.—December 19, January 2, 16, 7.45 p.m., Harding House, Park Road West, Claughton.

REGION 2

Catterick Camp.—Tuesdays and Thursdays, 7.30 p.m., Club Room, Vimy Road.
Halifax (Northern Heights A.R.S.).—December 19 (Talk by Fire Brigade), January 16 (Informal), 7.30 p.m., Sportsman Inn, Ogden.
Heckmondwike (S.V.A.R.S.).—January 24 ("Communication System of British Railways," by S. D. Jones), 7.15 p.m., Grammar School, High Street, Heckmondwike.

REGION 3

Birmingham (M.A.R.S.).—December 18 (Auction of Gear), 7.30 p.m., Midland Institute, Paradise Street, Birmingham. **(Slade)**—December 28 ("Radio Fundamentals"), 7.45 p.m., The Church House, High Street, Erdington. **(South)**—December 20, 7.30 p.m., Friend's Institute, Moseley Road, Birmingham.
Coventry (C.A.R.S.).—Mondays, 8 p.m., Willenhall Scout H.Q., Littlethorpe, St. James Lane, Willenhall, Coventry.
Lichfield (A.R.S.).—First Monday and third Tuesday in each month, 7.30 p.m., Swan Inn, Lichfield.
Stourbridge & District (A.R.S.).—December 21, 8 p.m., Bell Hotel, Stourbridge. January 8, 7.45 p.m., Foley College, Stourbridge.
Leamington (Mid-Warwickshire Radio Club).—Fridays, 7.45 p.m., Oddfellows Hall, Leamington.
Wolverhampton (A.R.S.).—December 17 (Part 2 of "S.S.B. Techniques" by G3KFD), 8 p.m., Neachells Cottage, Stockwell End, Tettenhall. January 7, New Year Party at Rose and Crown, Wolverhampton.

REGION 4

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. January 9 ("Radio Control of Models" by F. W. Vale).
Chesterfield (C. & D.A.R.S.).—December 19, January 2, 7.30 p.m., Newbold Observatory, Newbold Road, Chesterfield.
Derby (D. & D.A.R.S.).—December 19 (Christmas Party), January 2 (Surplus Sale), January 9 ("Alignment of Receivers"), January 16, 7.30 p.m., Club Room, 119 Green Lane, Derby.
Derby (D.S.W. Exp. Soc.).—Fridays, 7.30 p.m., Sundays, 10.30 a.m., Club Room, Nunsfield House, Boulton Lane, Alvaston.
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.).—December 18, January 1, January 15, 8 p.m., R.A.F.A. Headquarters, Abbey Drive West, Grimsby.
Lincoln (L.S.W.C.).—Wednesdays, 7.30 p.m., Lincoln Technical College, Cathedral Street, Lincoln.
Loughborough (A.R.S.).—December 21, 28, January 4 ("BCI and TVI" by F. C. Ward, G2CVV), January 11, 7.30 p.m., Corporation Hotel, Wharncliffe Road, Loughborough.
Melton Mowbray (A.R.C.).—December 20 ("Transistors" by J. L. Bowley, G3FXP), January 10 (Shack Visit to G3NVK, 245 Asfordby Road), 7.30 p.m., St. John's Ambulance Centre, Asfordby Hill, Melton Mowbray.
Nottingham (A.R.C.N.).—Tuesdays (R.A.E.), Thursdays (Lecture), 7.30 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 (P.A.R.S.).—January 11 (Film Show), February 1 (Transmitters), 7.30 p.m., Technical College, Peterborough.
Retford & Worksop (N.N.A.R.C.).—Tuesdays (Beginners), Thursdays (Informal), 7.30 p.m., Club Rooms, Victoria Institute, Worksop, Notts.

REGION 5

Cambridge (C. & D.A.R.C.).—Fridays, 7.30 p.m., Club Headquarters, Corporation Yard, Victoria Road, Cambridge.
March (M. & D.A.R.S.).—Tuesdays, 7.30 p.m., Police Headquarters, High Street.
Shefford (S. & D.A.R.S.).—December 20 ("Amplifier Construction," by G. Brown), Digswell House, Shefford. No meeting on December 27.

REGION 6

Cheltenham.—First Thursday in each month, 8 p.m., Great Western Hotel, Clarence Street.
Stroud.—Wednesdays, 8 p.m., Arundel Mills, London Road, Stroud.

REGION 7

Acton, Brentford & Chiswick (A.B.C.R.C.).—December 18 (Field Day and other slides), 7.30 p.m., A.E.U. Club, 66 High Road, Chiswick.
Bexleyheath (N.K.R.S.).—December 27, 8 p.m., Congregational Hall, Clock Tower, Bexleyheath. January 5 (Annual Dinner).
Barnet (B.R.C.).—December 22, 7.30 p.m., Christmas Party at Hadley Memorial Hall, High Barnet.
Chingford.—For date and venue phone G3NQT (Loughton 7761) or G3YF (SILverthorne 1740).
Croydon (S.R.C.C.).—January 8 ("S.S.B." by G. F. Geaning, G3JJG), 8 p.m., Blacksmiths Arms, South End, Croydon.
Dorking (D. & D.R.S.).—December 18 (Xmas Dinner), 8 p.m., Star & Garter, nr. Dorking Station, Dorking.
East Ham.—Tuesdays fortnightly, 8 p.m., Leigh Road, East Ham.
East London.—December 16 (A.G.M. followed by talk by N. Caws, G3BVG, President-elect), January 20 ("H.F. Propagation Simply Explained" by J. D. Kay, G3AAE), 2.30 p.m., Lambourne Room, Town Hall, Ilford.
East Molesey (T.V.A.R.T.S.).—January 2, Carnarvon Castle, Hampton Court.
Edgware & Hendon (E. & D.R.S.).—December 24—No meeting. January 14 (A.G.M.), 8 p.m., John Keeble Hall, Church Close, Deans Lane, Edgware.
Enfield.—December 27 (Junk Sale), 7.30 p.m., George Spicer School, Southbury Road.
Gravesend (G.R.S.).—December 20 (Constructional Evening), December 27 (Valve Testing), 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.
Harrow (R.S.H.).—December 21 (Xmas Novelty Night), 8 p.m., Roxeth Manor County School, Eastcote Lane, Harrow.
Holloway (G.R.S.).—Mondays, Tuesdays and Wednesdays (R.A.E. and Morse), 7 p.m., Fridays (Club), 7.30 p.m., Montem School, Hornsey Road, N.7.
Hounslow (H.A.D.R.C.).—Mondays, 7.30 p.m., Isleworth Town Hall, Twickenham Road, Hounslow.
Ilford.—Thursdays, 8 p.m., 579 High Road, Ilford (nr. Seven Kings Station).
Kingston.—Alternate Thursdays (Lectures), Y.M.C.A., Eden Street, Kingston. Weekly Morse Classes 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 January 18, February 15 and March 15, 1963

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

Mitcham (M. & D.R.S.).—Lecture alternate Fridays (Morse Classes, 7 p.m.), "The Canons," Madeira Road, Mitcham.
New Cross (C.A.R.S.).—Fridays, 7.30 p.m., 225 New Cross Road, S.E.14.
Norwood & South London (C.P. & D.R.C.).—December 15 (Junk Sale & Xmas Supper), 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, W.12.
Purley (P. & D.R.C.).—First and third Friday in each month, Railwaymen's Hall (side entrance), Whytecliffe Road, Purley. January 4 (Constructional Hints).
Reigate (R.A.T.S.).—December 15 (Members Construction Contest), January 19 (A.G.M.), 8 p.m., The Tower, High Street, Reigate. January 20, Annual Dinner at Mill House, Salfords, Redhill.
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.).—December 18 (Xmas Party), January 1 (Hi-fi by Lowther Acoustic), 6 p.m., Science Museum, South Kensington.
Sidcup (C.V.R.S.).—January 3 (G3FWI on

" Audio Problems in TV Studios "), 8 p.m., Congregational Church Hall, Court Road, Eltham.

Southgate & District.—December 18, 8 p.m., Arnos School, Wilmer Way, N.11.

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

Sutton & Cheam (S.C.R.S.).—December 18, " The Harrow," High Street, Cheam.

Welwyn.—January 10, 8 p.m. (N.F.D. discussion), Conference Room, Bessemer Road, Welwyn Garden City.

REGION 8

Crawley (C.A.R.C.).—December 21 (A.G.M.). January 3 (Constructional Contest), 8 p.m., West Green Centre.

Tunbridge Wells (W.K.A.R.S.).—January 11 (" Amateur H.F. Transmitters " by G4IB), 7.30 p.m., K.C.C. Adult Centre, Culverden House, Culverden Park Road, St. Johns, Tunbridge Wells.

REGION 9

Bath.—December 19, 7.30 p.m., Committee Room, Bath Technical College, Lower Borough Walls, Bath.

Bristol.—January 18, 7.15 p.m., Carwardines Restaurant, Baldwin Street, Bristol 1.

Burnham-on-Sea.—January 8 (" Business Radio Communications " by E. H. Page of R.E.E. Telecommunications Ltd.), 8 p.m., Crown Hotel, Oxford Street, Burnham-on-Sea.

Exeter.—January 1, 7.30 p.m., Y.M.C.A., St. Davids Hill, Exeter.

Camborne (C.R. & T.C.).—First Thursday in each month, Staff Recreation Hall, South Western Electricity Board Headquarters, Pool, nr. Camborne.

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 (January meeting at Dorchester).

Torquay (T.A.R.S.).—January 12, 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.—January 14 ("Two Metre Transistor Converter" by Norman Bond). 7.30 p.m., T.A. Centre, Park Street, Cardiff.

Port Talbot (P.T. & D.R.C.).—December 18, 7.30 p.m., 8/10 Jersey Street, Velindre, Port Talbot.

REGION 13

Edinburgh (L.R.S.).—December 27 (Social Night), January 10 (" Machine Tool Control " by J. S. Sibbald), January 24 (Film Show), 7.30 p.m., Y.M.C.A., 14 South St. Andrew Street, Edinburgh 2.

REGION 14

Ayrshire.—Third Sunday in each month, 7.30 p.m., Royal Hotel, Prestwick.

REGION 16

Chelmsford (C.A.R.C.).—First Tuesday in each month, 7.30 p.m., Marconi College, Arbour Lane, Chelmsford.

Basildon (B. & D.A.R.S.).—January 1, 8 p.m., at Wickford, February 7, 8 p.m., at Billericay. Further details from Alan Carpenter, 472 Long Riding, Basildon.

Southend (S. & D.R.S.).—Alternate Fridays, 7.30 p.m., Canteen of E. K. Cole Ltd., Priory Road, Prittlewell. No meeting December 28. January 11 (A.G.M.).

REGION 17

Newbury (N. & D.A.R.S.).—December 28 (" Questions and Answers "), 7.30 p.m., The Canteen, Elliotts of Newbury, West Street, Newbury.

Reading (R.A.R.C.).—December 29 (" Transistor Receiver and Transmitter for 160m." by G3OLA), 7.30 p.m., Palmers Hall, West Street, Reading.

Area and Town Representatives and club secretaries are asked to note that information for inclusion in *Forthcoming Events* should reach Regional Representatives by the first of the month preceding publication.

Regional and Club News

Ayrshire.—At the November meeting Clark Bradford (GM3DIQ), gave a talk, illustrated by slides, on transistorized v.h.f. transmitting and receiving equipment. It is hoped to hold Junk Sale in the near future. Prospective members and visitors are always welcome at meetings. *Hon. Secretary:* W. A. F. Davidson (GM3NYY), 13 Irvine Road, Kilmarnock, Ayrshire.

Barnet Radio Club.—There was a good attendance on October 30 when Frank Fletcher (G2FUX) talked about his trip to U.S.A. Tickets for the annual Christmas Party to be held at the Hadley Memorial Hall, Hadley Highstone, on December 22 may be obtained, price 4/- each, from D. E. E. Purchese (G3LXP), 68 Hughenden Road, St. Albans. Meetings are held at the Red Lion Hotel, High Barnet, on the last Tuesday of each month except December. *Hon. Secretary:* F. E. A. Green (G3GMY), 48 Borough Way, Potters Bar, Middlesex.

Bridlington Amateur Radio Society.—Meetings are now held on Wednesdays at 7.30 p.m. at North Street, Bridlington. The winter programme includes lectures and Morse practice. Further details may be obtained from the *Hon. Secretary:* P. O. Cartwright (G3POC), 55 Hermitage Road, Bridlington, East Yorks.

Bristol.—Some 44 members and visitors attended the meeting on November 16 when D. V. Newport (G3CHW) gave a talk entitled " Receiver Tests and Measurements." An interesting programme is being arranged for 1963 and further information may be obtained from the *Hon. Secretary:* E. C. Halliday (G3JMY), 4 Parkside Avenue, Winterborne, Bristol.

Burslem Amateur Radio Club.—Meetings are held on the third Wednesday in each month at 7.30 p.m. at the Town Hall, Burslem, Stoke-on-Trent. In October G3UD gave a demonstration of the Harvey UHX-10 transmitter while a film by G3MGG entitled *Film Memories of the 1962 Trentham Mobile Rally* was shown at the November meeting. Visiting amateurs and short-wave listeners are always welcome. *Hon. Secretary:* W. Luscott, 36 Rothsay Avenue, Sneyd Green, Hanley, Stoke-on-Trent.

Cambridge and District Amateur Radio Club.—The highlight of last month was the Annual Supper Party held at Linden Brooke, Coton, on November 2 and attended by 30 members and XYLs who thoroughly enjoyed this pleasant social occasion. Thursday evenings are reserved for Junior Section activities, while members and visitors meet informally on Fridays. The Top Band Net at 10.30 a.m. on Sundays is very well supported. *Hon. Secretary:* H. L. Lowe (G3PEI), 34a Verulam Way, Cambridge.

Civil Service Radio Society.—Recent lectures have been on such subjects as radio interference, electronic computers and RTTY. At the meeting on January 1, a representative of Lowther Acoustic Co. will give a talk on hi-fi and stereophonic sound equipment. Visits have recently been paid to London Airport, ITV studios, B.B.C. Lime Grove and to the *Queen Mary* and *Canberra* at Southampton. On the third Tuesday of each month, the increasingly popular informal meetings continue at which GB2SM is in operation. The station is now active on Top Band. Other recent activities have included participation in the *CQ* World-Wide Phone Contest. Prospective members are cordially invited to contact the *Hon. Secretary:* G. Lloyd-Dalton, 2 Honister Heights, Purley, Surrey.

Clifton Amateur Radio Society.—On November 16 members enjoyed a quiz conducted by G3IWL, some of the answers leading to further discussions! A dinner and dance is to be held at the King's Arms, Peckham, on January 5. Tickets are available from W. Martin (G3FVG), 6 Tyrell Road, East Dulwich, London, S.E.22. The 5 element 144 Mc/s Yagi for the club station, G3GHN, has been raised to 50 ft. and fitted with remote control. *Hon. Secretary:* C. E. Godsmark (G3IWL), 211 Manwood Road, London, S.E.4.

Cornish Radio and Television Club.—The November meeting was held at the new venue, the Staff Recreation Hall at the South Western Electricity Board Headquarters, Pool, near Camborne, where meetings are now held on the first Thursday in each month. G3CZZ gave an interesting talk on the construction, operation and results of the GB3CTC beacon station at the Cornwall Technical College. In appreciation of his work in maintaining Slow Morse transmissions for 11 years, the president, Ted Bowden (G2AYQ) was presented with a tankard. Fifteen-year-old Ian Graham was congratulated on obtaining his call-sign, G3RNG. The Cornish certificate is now available to any amateur who has worked 15 Cornish stations on the h.f. bands or five on 144 Mc/s. *Hon. Secretary:* W. C. Pitman (G3PEP), Pendower Farm, Perranwell, near Truro, Cornwall.

Coventry Amateur Radio Society.—At the A.G.M., the following were elected: *Chairman*—L. W. Gardener (G5GR); *Vice-Chairman*—A. Whatley (G3CZS); *Hon. Secretary*—A. J. Wilkes (G3PQQ), 141 Overslade Crescent, Coundon, Coventry; *Hon. Treasurer*—H. Drinkwater; *Committee Members*—P. Hawkes (G3LNO), F. A. Noakes (G2FTK), P. Yardley and B. Andrews. Meetings are held on Mondays at 8 p.m. at the new headquarters at Little Farm Buildings, Littlethorpe, St. James Lane, Willenhall, where a new transmitter is being installed.

Crawley Amateur Radio Club.—The A.G.M. will be held at the West Green Centre, Crawley, on December 21 at 8 p.m. when the Committee for 1963 will be elected. The constructional contest

At the meeting of the Lothians Radio Society on October 25, 1962, Mr. E. G. Ingram, GM6IZ (President, Radio Society of Great Britain) examined a neat 2m transmitter built by GM3BCD. Others in the picture are GM5FT, GM3LNE, GM3DVX, GM3KGX, GM3JWS, GM3KIG, GM6SZ, GM3FYB, GM3LCP, B.R.S.-22359, GM3IQL, GM3DDE, GM3UM, GM3PFY and GM3GIC.
(Photo by Scotsman Publications Ltd.)

will be held on January 3. *Hon. Secretary:* R. G. B. Vaughan (G3FRV), 9 Hawkins Road, Tilgate, Crawley, Sussex.

Cray Valley Radio Society.—At the November meeting, L. A. Williams of Avo Ltd. gave a talk on the history and construction of Avometers. *Hon. Secretary:* S. Coursey (G3JJC), 49 Dulverton Road, London, S.E.9.

Dudley Amateur Radio Club.—At the first A.G.M. held on October 12, the following were elected: *President*—D. H. W. Pratt (G3MHS); *Hon. Treasurer*—D. A. Hancock (G3OMY); *Hon. Secretary*—R. W. Fisher (G3PWJ), 63 Swan Crescent, Langley, Oldbury, Worcs. S. Plumtree (G3OSP) continues as editor of the *Local Oscillator*, with J. Garratt (G3RFZ) as assistant. On October 26, G3PWJ and G3RFZ gave a talk on mobile operation. Meetings are held on Fridays at the Priory Hall, Dudley. The Christmas Dinner and Social is to be held at the Britannia Inn, Upper Gornal, on December 21 at 7.30 p.m.

East London.—At the October meeting, a very thorough survey was made by John Gazeley (B.R.S.20533) of the applications and uses of transistors in the v.h.f. field. Practical examples of 2m and 70cm converters were shown; one measuring only 2 in. × 1 in. aroused considerable interest. In November Mr. Drury explained the principle of Direction Finding, and spoke of the essential details of a suitable receiver. Local interest has undoubtedly been aroused, which should be a warning to would-be "pirates" in the area. *District Representative:* M. McBrayne (G3KGU), 25 Purlieu Way, Theydon Bois, Essex.

Enfield and District.—What is described as a Grand Junk Sale in the *Lea Valley Reflector* will be held at the George Spicer School, Southbury Road, on December 27 at 7.30 p.m. when there will be a discussion of future plans for the Group.

Grimsby Amateur Radio Society.—At the A.G.M. the following were elected: *Chairman*—M. Knight (G3NJF); *Vice-Chairman*—J. Reynolds; *Hon. Treasurer*—H. Watson (G3HTI); *Hon. Secretary:* B. J. Walster, 47 Richard Street, Grimsby.

Harrow, Radio Society of.—During 1962, membership has again topped the 100 mark; of these, 45 are licensed. Arnold Mynett (G3HBW), winner for the second year in succession of the Silver Plaque for the best piece of home-built gear at the R.S.G.B. Exhibition, will impart some of his know-how to other members in a programme of constructional work which is being arranged for Practical Nights under his supervision. *Hon. Secretary*—A. C. W. Biddell, 114 Kingshill Avenue, Kenton, Harrow, Middlesex.

CLOSING DATE
FOR THE FEBRUARY 1963 ISSUE

Owing to a rearrangement of the printing schedule, the February issue of the R.S.G.B. BULLETIN will close for press on JANUARY 10. Copy received after that date will be held over for use in the March issue if still topical.

Kingsbridge Amateur Radio Club.—Prospective members are invited to obtain details of the club's activities from Derek D. Wilson (B.R.S.25199), 11 Frogmore Terrace, Westville, Kingsbridge, South Devon.

London Members' Luncheon Club.—Both the October and November meetings were presided over by Stan Vanstone (G2AYC) who welcomed among the visitors, JA1AAK, K0MKD, VK2AMA, VK5KO, W1RF, 4S7IW, 5N2AMS and 5N2DMS. All overseas and out of town visitors are assured of a warm welcome at meetings, the dates of which are given in *Forthcoming Events*.

Lothians Radio Society.—There was an attendance of 58 at the Visitors' Night held on October 25. Among those present were Mr. E. G. Ingram (GM6IZ), President of R.S.G.B., and guests from Dunfermline Group, Stirling and Falkirk Group, Mid-Lanark Group and representatives from the Border towns. The visitors were made welcome by Mr. J. Hughes (GM3LCP), the society's President. Later Mr. Ingram addressed the meeting and was followed by Mr. M. Darke (GM3KGX) who described his recent visit to America and Mr. W. Roger (GM3JDX) who talked about his forthcoming period of duty with the British Antarctic Survey. A display of all past issues of *The Lothians Radio Amateur*, edited by Mr. L. Lumsden, and of equipment made by members made an interesting exhibition. *Hon. Secretary:* W. T. Sutherland (GM3JWS), 47 Great King Street, Edinburgh 1.

Norfolk Amateur Radio Club.—Meetings continue to be held on Mondays. The club station is active on the three l.f. bands using a Minimitter "Top 2-7" transmitter, principally at the weekends, and took part very successfully in the Jamboree-on-the-Air. O. J. Russell (G3BHJ) loaned a s.s.b. transmitter for this event. The future programme includes a film show and a talk by the local P.O. The club bases its success on the slogan "Don't join a radio club for what you can get out of it but for all that you can put into it." *Hon. Secretary:* J. D. Simpson (G3NJQ), 50 Vicarage Road, Norwich.

Northern Heights Amateur Radio Society.—This is another society which took part in the Jamboree-on-the-Air. More than 100 contacts were made and there were more than 100 visitors. The Annual Dinner was due to be held on December 12. Future plans are outlined in *Forthcoming Events*. *Hon. Secretary:* A. Robinson (G3MDW), Candy Caoin, Ogden, Halifax.

Peterborough and District Amateur Radio Society.—The A.G.M. was held at Peterborough Technical College on November 9, the following being elected: *President*—S. Hunting; *Chairman*—C. J. Guscott (G3HXR); *Vice-Chairman*—A. E. Barnes (G2BYI); *Committee Members*—D. Sylvester (G3RED), D. Gibbons (G3PDZ), W. Yeomans, M. Grierson and W. Taylor; *Librarian*—M. Grierson; *Auditors*—R. Houltby and W. J. Carter (G2NJ); *Hon. Treasurer*—A. Walker; *Hon. Secretary:* D. Byrne (G3KPO), Jersey House, Eye, Peterborough.

Plymouth Radio Club.—The "Ernie Hillyard Trophy" has been awarded to Colin Jones for his RTTY converter. Second in the competition was John Fallon with a stereo amplifier, followed by E. ("Ted") Fallon with a g.d.o. Members were due to visit Torbay Radio Club on December 9. A Dinner and Social Evening is to be held on January 19, 1963, and further details may be

obtained from the *Hon. Secretary:* R. Hooper (B.R.S.22861), 2 Chestnut Road, Peverell, Plymouth.

Reigate Amateur Transmitting Society.—Recent activities have included a successful Junk Sale and talks by members on their ideas for mobile equipment. Representatives of the Crawley and Dorking clubs will be judging entries in the Constructional Contest on December 15 at 7.30 p.m. The A.G.M. is arranged for January 19 at 7.30 p.m. at the usual venue, The Tower, Redhill. The Annual Dinner will be held at The Mill House, Salfords, on January 26, when the chief guest will be P. A. Thorogood (G4KD), Region 7 Representative. *Hon. Secretary:* F. D. Thom (G3NKT), 12 Willow Road, Redhill, Surrey.

South Dorset Radio Society.—At the November meeting W. Burden (G3EAT) lectured on single sideband. Members visited the Atomic Energy Authority's Establishment at Winfrith on November 10, the guides being licensed radio amateurs. *Hon. Secretary:* C. E. Biggs (G2TZ), 54 Prince of Wales Road, Dorchester, Dorset.

South Hants Group.—At the A.G.M. on October 13, Don Blake (G3EUQ) was elected Chairman and P. A. L. Shoosmith (G3MDH) Hon. Secretary. A film show will be held in the Engineering Lecture Theatre of Southampton University on January 12. The Annual Dinner and Dance is being arranged for February 16.

South Manchester Radio Club.—Meetings are now held at the club's new headquarters at " Rackhouse," Daine Avenue, Northenden, Manchester. Details are given in *Forthcoming Events*. There will be no meeting on December 28. *Hon. Secretary:* M. Barnsley (G3HZM), " Greenways," 11 Cemetery Road, Denton, Manchester.

Stourbridge and District Amateur Radio Society.—The society has been allocated the call-sign G6OI and a station is to be established at Foley College, Stourbridge. Constructional classes are to be held. *Hon. Secretary:* A. K. Davies, 48 Church Avenue, Amblecote, Stourbridge.

Stroud Radio Club.—The A.G.M. was held on October 10 at Arundel Mills, London Road, Stroud, where meetings take place on Wednesdays at 8 p.m. An all-band station is being installed and it is hoped it will soon be operational. Recent events have included a film show and an enjoyable club visit to the R.S.G.B. Radio Communications Exhibition. *Hon. Secretary:* A. Skinner, Landsdown, Stroud.

Thames Valley Amateur Radio Transmitting Society.—The 29th Annual Dinner and Dance of the Society held at the Carnarvon Castle Hotel, Hampton Court, on Saturday, November 10, 1962, was supported by 64 members and friends. Visitors welcomed by the President (Leslie Cooper, G5LC) included Stan Vanstone, G2AYC (President, Sutton and Cheam Radio Society), Frank Fletcher, G2FUX (Hon. Secretary, London Members' Luncheon Club), Fred Lambeth, G2AIW (R.S.G.B. V.H.F. Manager), G. A. Bird, G4ZU, Dr. H. (Rik) van Kets, ON4IZ, and Chief Inspector Lake of the Surrey Constabulary. Regrets were expressed at the absence of the principal guests, the General Secretary of the R.S.G.B. and his wife, due to the illness of Mrs. Clarricoats. The Dinner-Dance was organized by Messrs. Alan Mears, G8SM, Graham Leicester, G3IKC, and other members of the Committee who were warmly congratulated by the President for providing an excellent evening's entertainment. The carbaret was provided by Ming Chow, DX?

Torbay Amateur Radio Club.—The November meeting was the last to be held at the Y.M.C.A., meetings now taking place at the new club headquarters in Belgrave Road, Torquay, on the second Saturday in each month, with the exception of December, which will be on the 15th. *Hon. Secretary:* Mrs. Gee Western (G3NQD), 118 Salisbury Avenue, Barton, Torquay.

Yeovil Amateur Radio Club.—Meetings are now held on Wednesdays at 7.30 p.m. at Park Lodge, The Park, Yeovil. New equipment is being installed to permit the club station, G3CMH, to operate on all bands from 1·8-28 Mc/s. *Hon. Secretary:* D. McLean (G3NOF), 9 Cedar Grove, Yeovil.

Ex-G Radio Club.—On Sundays on 20m, members are asked to follow the net procedure: W/K/VE members followed by DX members. VR3O is looking for G contacts on 3795 kc/s at 07.00 G.M.T., and 7095 kc/s at 07.00 G.M.T. QSL cards should go via WA6MAZ. *Hon. Secretary:* D. W. Rayner (W3CTR), 416 Burkhart Street, Johnstown, Pa., U.S.A.

Can You Help?

● Lt. Col. G. W. Briffa (G3ECO), King Edward VII Sanatorium, Midhurst, Sussex, who would like information about the use of solar cells and miniature batteries? He is anxious to acquire literature on these subjects.

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