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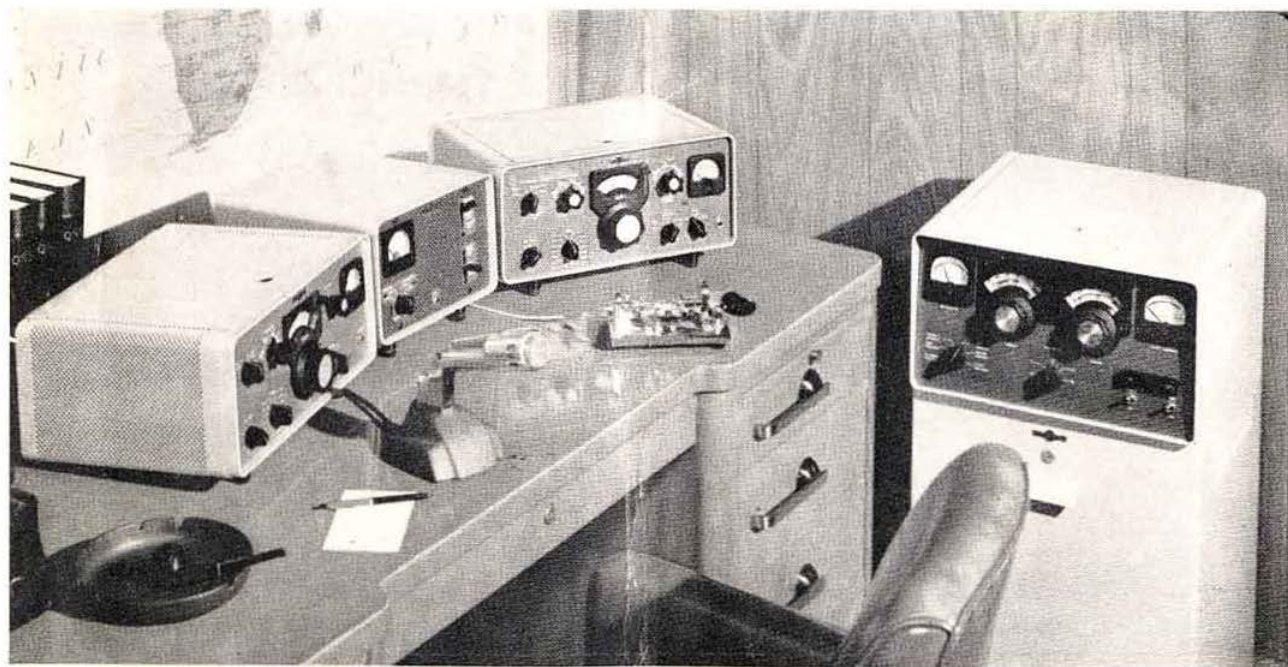
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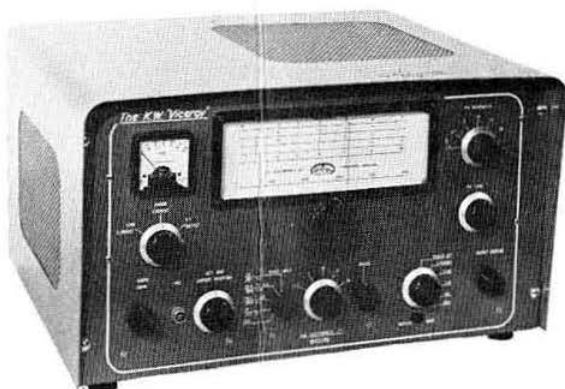
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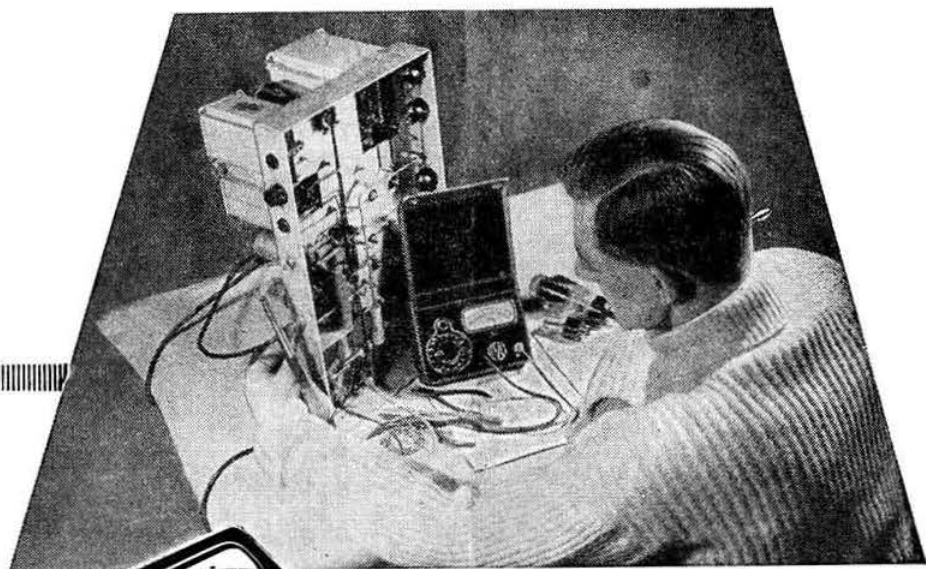
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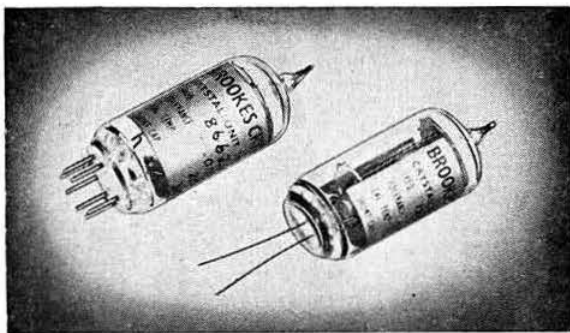
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October 1962

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R.S.G.B. BULLETIN

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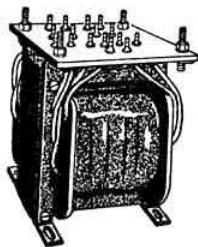
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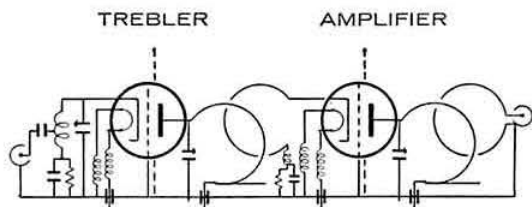
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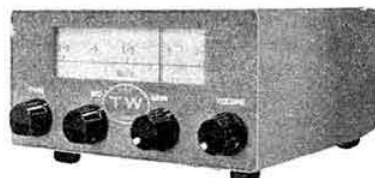
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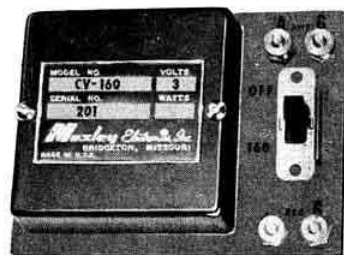
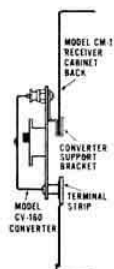
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Current Comment



discusses topics of the day

Articles of Association

FOR some years the Council of the Society have found that the present Articles of Association have given rise to certain difficulties in administration and interpretation and have felt that the Articles should be amended.

After considerable study and discussion the Finance and Staff Committee assisted by the Society's Solicitor have produced a draft of their suggested amendments to the Articles which the Council have now approved.

Under the terms of the Companies Act, 1948, a Company such as the Society may be permitted by licence to dispense with the word "Limited" in its name but still enjoy all the privileges of the Act. In granting such a licence, however, the Board of Trade may fix such regulations and conditions as the Board thinks fit in order that the members of the Company or Society may be protected.

One such condition is contained in paragraph 5 of the Memorandum of Association which lays down that no addition, alteration or amendment shall be made to any of the Articles of Association without the previous approval of the Board of Trade. Accordingly the suggested amendments have now been submitted to the Board and when approval is received the Members will be given full opportunity to examine the proposed new Articles.

N. C.

New Venture

IN 1947 an idea that almost matured in September 1939 was brought to fruition—when the first full-scale Amateur Radio Exhibition ever held in Great Britain took place at the Royal Hotel, London. The Exhibition, organized by the Society, was opened in the presence of a distinguished company by the late Col. Sir Stanley Angwin, who for many years had been Engineer-in-Chief of the G.P.O. and had only that year carried out the important task of leading the United Kingdom delegation at the Atlantic City Radio Conference.

For nine years in succession an annual R.S.G.B. Amateur Radio Exhibition was held at the same venue but with the passing of time came a demand for more commodious premises and a more comprehensive display of equipment. In October 1957 the first of a series of Society-sponsored exhibitions took place in the Old Hall of the Royal Horticultural Society, London. Known first as the Radio Hobbies Exhibition and later as the International Radio Hobbies Exhibition the annual show became a mecca for all interested in radio as a hobby.

And now, 16 years after the first R.S.G.B. Amateur Radio Exhibition extended a welcome to a waiting membership that had been "starved" for years—due to the war—of technical information, the curtain is about to rise on the most ambitious venture of them all—the International Radio Communications Exhibition, which will be opened on Wednesday, October 31, 1962, at the Seymour Hall, London by Captain C. F. Booth, C.B.E., Engineer-in-Chief of the G.P.O.

Some idea of the scope of the Exhibition can be gleaned from the announcement which appears in this issue but no announcement can describe adequately all that will be on show. There is but one way to appreciate properly its scope and that is to visit the Exhibition.

In addition to the exhibits arranged by manufacturers there will be a wide range of special displays put on by the Royal Navy, the Army, the Royal Air Force and the G.P.O.—to mention but some of the many who will provide much of interest to grip the attention of every visitor.

The International Radio Communications Exhibition of 1962 will be a memorable event in the history of the Society. Those responsible for its organization hope the membership, and the public generally, will give the new venture the support it so richly deserves.

J. C.

The 1963 Call Book

THE 1963 edition of the R.S.G.B. *Amateur Radio Call Book*, which will be on sale for the first time at the R.S.G.B. International Radio Communications Exhibition, contains more than 2,150 amendments and additions to the 1962 edition.

The Call-Sign Register itself was as near up to date as human effort could make it when the pages were passed for press on September 27, 1962—for which the Society is again indebted to the Radio Services Department of the G.P.O. for permitting the Society to make use of official records.

Bearing in mind that the 1962 edition recorded more than 1,700 amendments to the 1961 edition it should be apparent to all that an up-to-date *Call Book* is a must at every amateur station in the United Kingdom. Sales of the *Call Book* have been very satisfactory over the past ten years but undoubtedly a great many amateurs in countries outside the U.K. would be glad to have a copy. With the festive season only a few weeks ahead, members may like to consider sending a copy of the 1963 edition as a Christmas gift to those amateurs abroad with whom they are in regular contact by radio or correspondence.

Happy Thought—Why not post an order with gift cards to Headquarters who will despatch in good time for Christmas?

J. C.

Simple High Performance Converters for 70 and 144 Mc/s using Nuvistor R.F. Stages

By G. M. C. STONE, A.M.I.E.E. (G3FZL)* and E. W. YEOMANSON (G3IIR)†

DEVELOPMENTS in v.h.f. reception have progressed rapidly over the past ten years as improved valves have become available. Perhaps the biggest single change came with the introduction in 1960 of the Nuvistor valve by R.C.A. and a 144 Mc/s pre-amplifier using this valve was described in the R.S.G.B. BULLETIN for March 1961 and also in the R.S.G.B. *Amateur Radio Handbook*. The converters to be described are the result of a continuing development programme sponsored by the Technical Development Sub-Committee of the R.S.G.B.

Specification

The specification was simple. The converters should be easy to construct even by a beginner, give performance as near equal to the best converters available but not use any expensive valves. This has been achieved since the measured noise factor of the 144 Mc/s converter, using a CV2171 noise diode, is a little better than 3db. As many operators use the AR88D as a tunable i.f., it was decided to use a low frequency, 1.6-1.8 Mc/s for the 70 Mc/s converter and 2.4 Mc/s for the 144 Mc/s converter. This receiver has excellent bandwidth at these frequencies and is very stable. However, it is simple to arrange for a different i.f. if desired.

Special precautions have been taken to eliminate break-

through which can be troublesome at such low intermediate frequencies and these (which include the use of a screen over the oscillator crystal) have proved to be very effective. The designs have been well tested by the construction of both prototype and production models and can be strongly recommended to both newcomers and old v.h.f. hands alike.

Description—Basic Circuitry

Both converters use an earthed cathode, capacity neutralized, 6CW4 Nuvistor r.f. amplifier in a circuit both mechanically and electrically similar to that used in the pre-amplifier previously mentioned. This stage is inductively coupled into a triode mixer, in the anode circuit of which is connected a suitable i.f. tuning coil. To provide a low impedance for use with a coaxial cable, the output is fed to the main receiver through a triode cathode follower.

Whilst the converters are basically similar, the crystal oscillator/multiplier stages differ. In both instances the oscillator valve is an EF91 in a simple Colpitts circuit, this being a "sure-fire" arrangement and one which is to be preferred to the Squier oscillator which all too often is difficult to get going, particularly when using surplus crystals.

In the case of the 70 Mc/s converter, an 8575 kc/s FT243 crystal is used, the oscillator anode circuit being tuned to the fourth harmonic of the crystal frequency. The output of this stage is capacity coupled to the grid of the

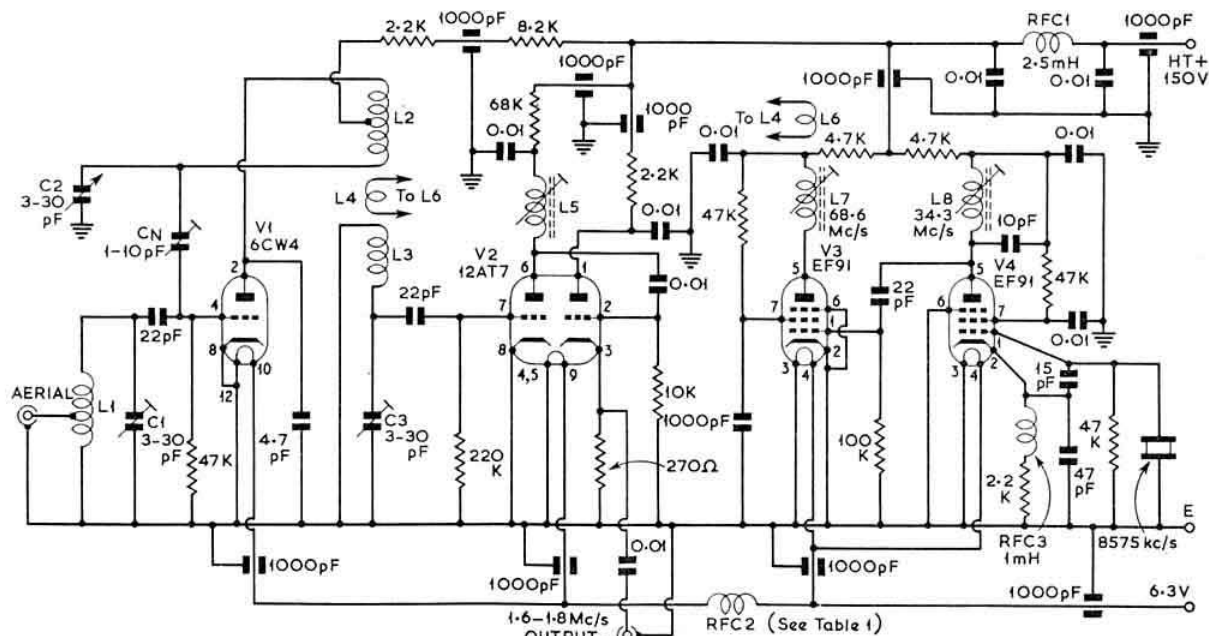


Fig. 1. Circuit diagram of the 70 Mc/s converter with Nuvistor r.f. stage.

EF91 doubler stage, the anode of which is tuned to a frequency of 68.6 Mc/s, hence producing an i.f. of 1.6-1.8 Mc/s.

For the 144 Mc/s converter, a 7100 kc/s FT243 crystal is used but the oscillator anode circuit is tuned to the fifth harmonic of the crystal. The subsequent 12AT7 double triode is connected in cascade and doubling in each half produces a final frequency of 142 Mc/s which results in an i.f. of 2.4 Mc/s.

In both converters the output from the local oscillator is link coupled to the mixer stage and more than sufficient output is available to ensure efficient mixing. No significant spurious responses from the crystal oscillator chain have been found within the tuning range of the converters.

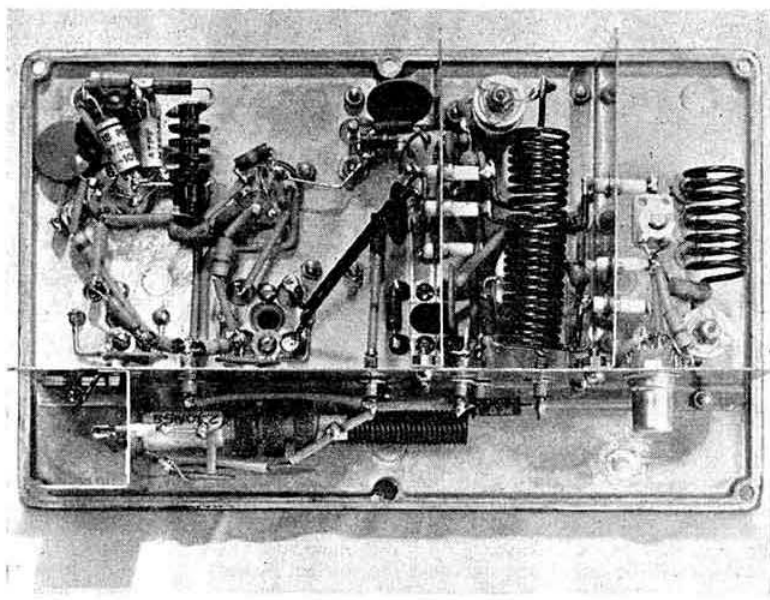
Mechanical Construction

Each converter is built on the lid of an Eddystone 7½ in. by 4½ in. No. 845 die-cast box. This ensures easy access for assembly and wiring. The construction of the interior screens together with dimensions are shown in Figs. 2 and 4. If solder-in type feedthrough capacitors are used, these, together with the Nuvistor holder, should be soldered into position before attempting to bolt the screen sections together and to mount the assembly on the lid.

The only component mounted through the body of the box is the Bulgin P360 three-way miniature power input socket, a flying lead from which carries the power to the heater and h.t. feedthrough capacitors mounted on screen "E." This screen also serves to support RFC1 and its associated 0.01 µF ceramic capacitors. RFC2 is soldered directly to the heads of the appropriate feedthrough capacitors. Other aspects of construction may be seen from the photographs.

Components and Wiring

Almost all the components used in both converters are standard types readily available. All valveholders should be of the low-loss variety, preferably p.t.f.e. A special holder, Cinch Type 133-65-10-001, is required for the Nuvistor; these holders are generally available from dealers stocking the 6CW4 Nuvistor. As this valve has a very low anode-



An interior view of the 70 Mc/s converter. Note the use of ceramic feedthrough insulators for supporting the air-spaced coils.

grid capacity, it is essential that the neutralizing capacitor CN should have a minimum capacity not greater than 1 pF. A Wingrove and Rogers or Plessey miniature 1-10 pF air-spaced trimmer is suitable, whilst the Philips concentric type should be avoided due to its relatively high minimum capacity.

All 0.01 µF capacitors are high K ceramic types. The 1000 pF feedthrough ceramic capacitors can either be the solder-in or nut secured types. All other fixed capacitors are ceramic types and Radiospares Ltd. market suitable types. All resistors are ½ W type except the 8.2 K ohms, the h.t. feed of V1, which has a ½ W rating.

A number of K.L.G. type feedthrough insulators are used both for support and feedthrough purposes resulting in a neat and rigid assembly.

All wiring associated with the r.f. circuitry should be kept as short as possible. Decoupling and earth returns associated with each valve are made to solder tags which are held under the securing bolts for the valveholder concerned. In the case of the Nuvistor, tags 8 and 10 are wired to the frame lugs of the holder. The earth lead from the Bulgin power socket is connected to a solder tag under one of the securing bolts of screen "E."

The 70 Mc/s Converter

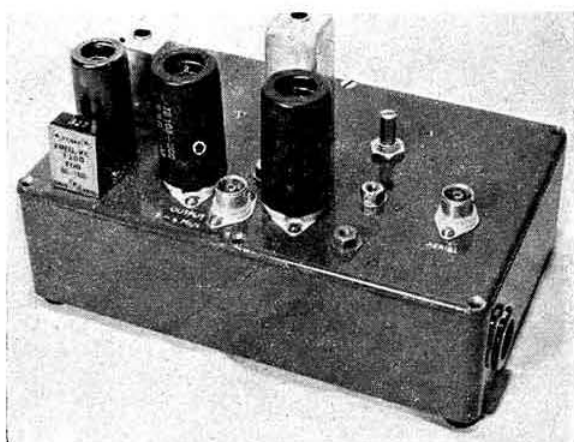
The circuit is shown in Fig. 1 and mechanical details in Fig. 2. These diagrams are self-explanatory and little more need be said. Coil details are given in Table 1.

To align the converter, disconnect the h.t. supply from V1, remove the cans from L7 and L8 and first adjust L8 for maximum indication on the r.f. checking meter—Fig. 3. Then adjust L7 in a similar manner. The tuning range of each coil is such that only the required harmonic should be selected but it is wise to check the actual frequencies with an absorption wave meter or g.d.o. if one is available. The cans should then be replaced on L7 and L8, and the two cores readjusted for maximum r.f. output from the coupling link L4. The output should then be connected to the communications receiver, tuned to 1.7 Mc/s. L5 will be

TABLE I

Inductor details for the 70 Mc/s Converter

L1,	8 turns 18 s.w.g. enamel wound on 7/16 in. mandrel, length 1 in., tapped 3 turns from earth end, air spaced.
L2,	13 turns 18 s.w.g. enamel wound on 7/16 in. mandrel, length 1½ in., tapped 5½ turns from CN, air spaced.
L3,	3½ turns 18 s.w.g. enamel wound on 7/16 in. mandrel, length ½ in., air spaced.
L4,	2 turns 18 s.w.g. enamel wound on 7/16 in. mandrel and placed between L2 and L3. Note: L2, L3 and L4 are all on the same axis.
L5,	Maxi-Q i.f. transformer type IFT. 11/1.6, one winding only used.
L6,	2 turns 22 s.w.g. p.v.c. covered tinned copper wire wound at h.t. end of L7.
L7,	10 turns 26 s.w.g. enamel wound on a ½ in. by 1½ in. former, slug tuned (Aladin type with can).
L8,	10 turns 26 s.w.g. enamel wound on a ½ in. by 1½ in. former slug tuned (Aladin type with can).
RFC1,	2.5 mH r.f. choke.
RFC2,	51 in. 18 s.w.g. enamel wound on ½ in. mandrel, close spaced.
RFC3,	1 mH r.f. choke.



The 144 Mc/s converter. The screening can for the crystal has been removed for this picture.

approximately correct. Adjust C3 for maximum hiss; two positions will be found, the one with the smaller capacity being the correct one. A strong signal is then required (from a local transmitter or signal generator) fed to the aerial socket. Adjust C1 and C2 followed by C3 and L5 for maximum output then adjust CN, the neutralizing capacitor, with an insulated screwdriver, for minimum output. (In practice this is usually found to be near the minimum

capacity of CN.) H.T. may then be reconnected to V1 and initial adjustments are complete. If there is a tendency for oscillation, CN is incorrectly adjusted; the minimum position referred to is very sharp and to a certain extent adjustment is inter-dependent with C2 and C1. No difficulty should be experienced, however, in obtaining the correct adjustment. For final adjustments a noise generator is desirable (see

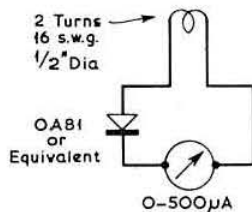


Fig. 3. R.f. checking meter.

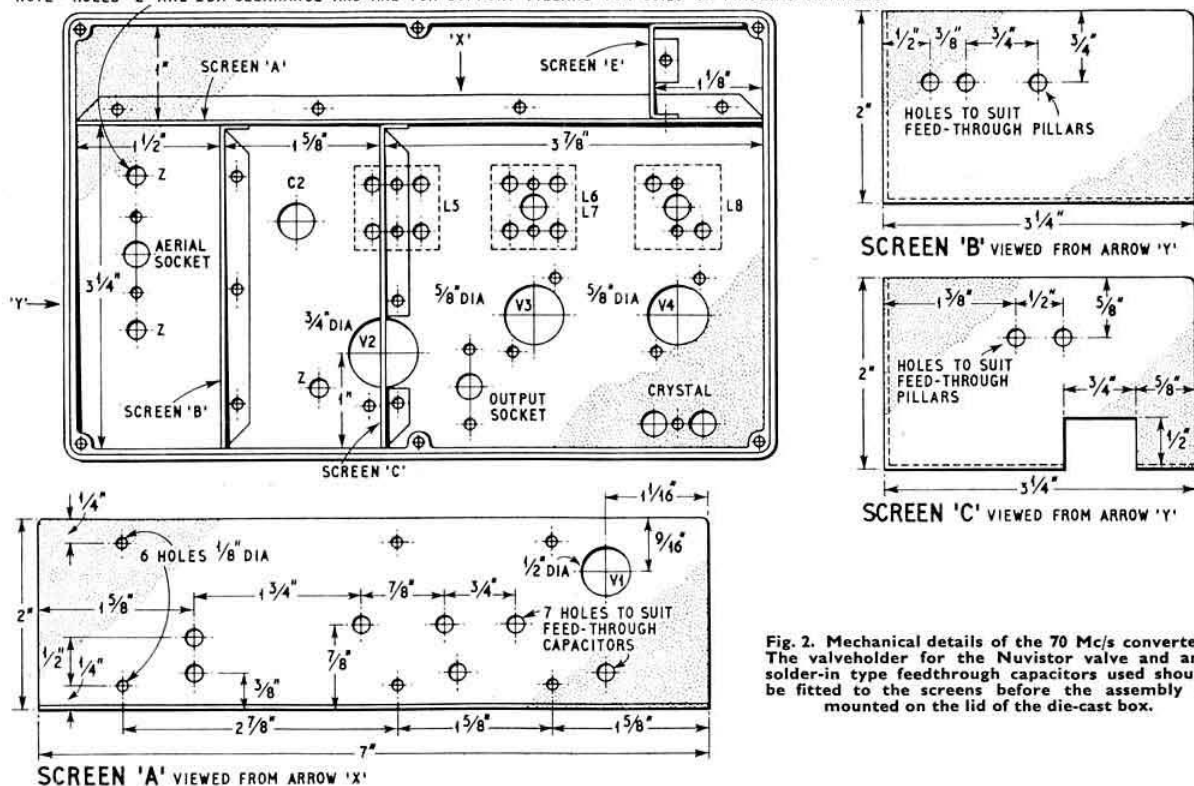
R.S.G.B. *Amateur Radio Handbook*, p. 480) but if this is not available, C1, C2, C3 and L5 (also L7 and L8) should be adjusted for maximum output on a local signal. The capacity of C1 should then be increased slightly so that the tuned circuit is detuned towards 70 Mc/s and the output just drops. This is near to the optimum position for the best signal-to-noise ratio. In practice a noise factor of better than 2.5db should be obtained.

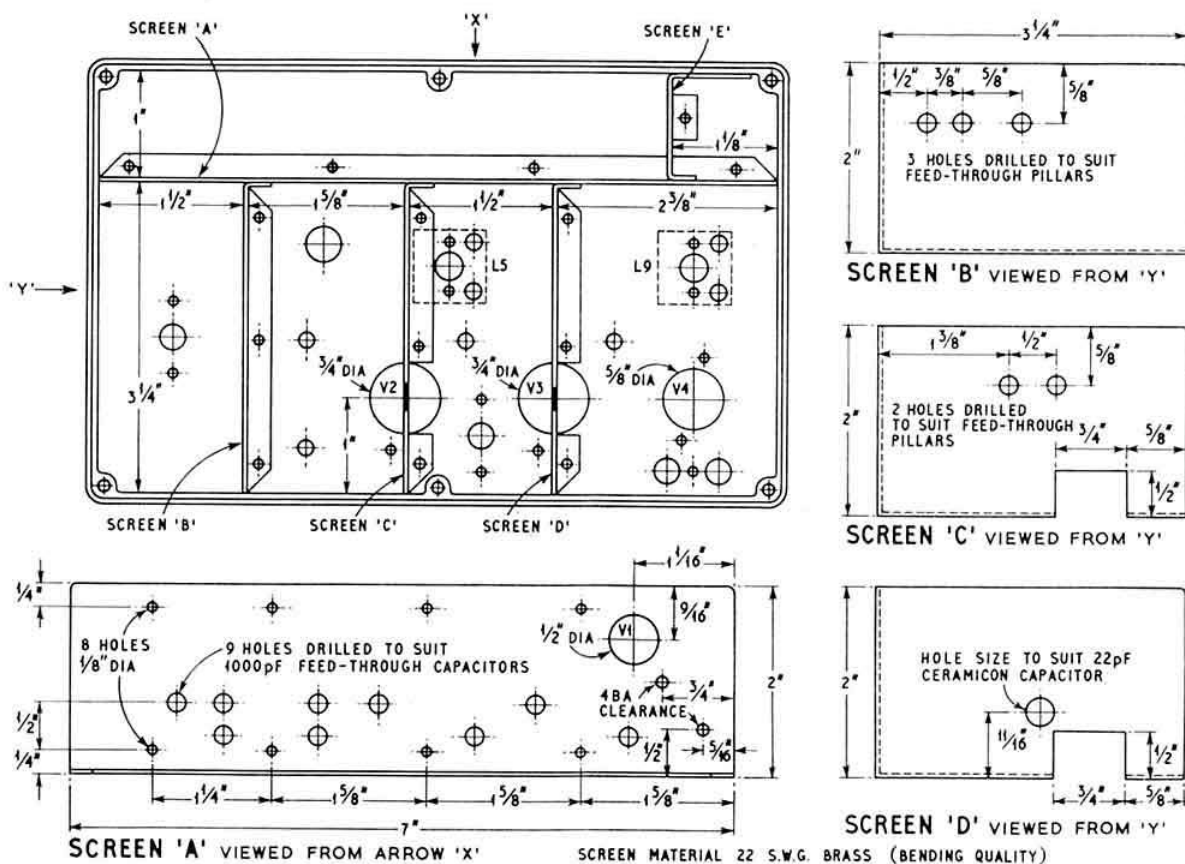
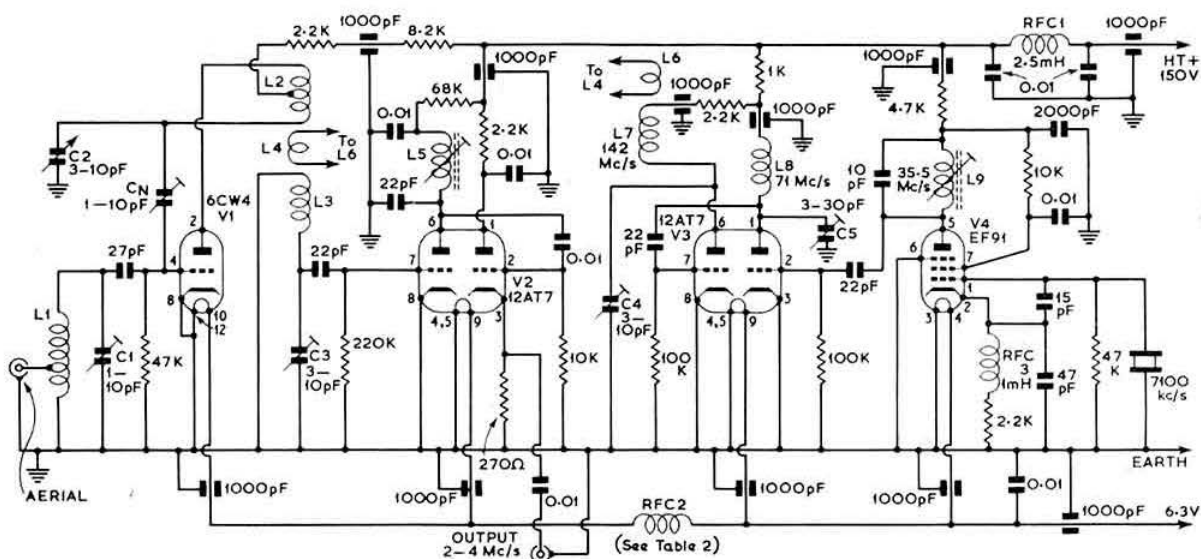
The 144 Mc/s Converter

The circuit of the 144 Mc/s converter is shown in Fig. 4 and mechanical arrangements in Fig. 5.

The adjustment of this converter is very similar to the 70

NOTE - HOLES 'Z' ARE 2BA CLEARANCE AND ARE FOR SUPPORT PILLARS FOR COILS OR PHILLIPS TRIMMERS





Mc/s unit except that the communications receiver is set to 3 Mc/s, corresponding to a signal frequency of 145 Mc/s. (If GB3VHF on 144.5 Mc/s is used as an alignment signal, the receiver should be set to 2.5 Mc/s.) First, power is applied and h.t. disconnected from V1. The can is removed from L9 and the slug is adjusted for maximum r.f. indication followed by C5 r.f. indication being observed at L8 and L7 respectively and then C4. Again, the tuning range of each tuned circuit is such that only the required harmonic should be selected but it is wise to check the actual frequencies with an absorption wave-meter or g.d.o., if available. L5, which is very flat in its tuning, should be centred on 3 Mc/s. C1, C2 and C3 are then adjusted for maximum output on a strong local signal. CN is adjusted for *minimum* output with an insulated screwdriver, the correct setting being very critical. H.T. should be restored to V1 and the converter is then ready for use. Final adjustment should again, if possible, be carried out with a noise generator. The aim should be to obtain a noise factor of better than 3db.

Power Supply

A power supply which delivers 6.3 volts at 1.5 amps and 150 volts at 30 mA is adequate. A suitable circuit is shown in Fig. 6. One of the photographs shows the general arrangements of a unit built into a 3½ in. by 4½ in. Eddystone No. 650 die-cast box. The smoothing capacitors and choke are mounted inside the box. A transmit/receive relay can be added if required to mute the converter whilst a transmitter is operating by removing the h.t. supply.

Cross-modulation

An undesired characteristic of many v.h.f. converter/communications receiver systems is that they are susceptible to cross modulation (i.e. the transfer of modulation from one carrier to another—see R.S.G.B. *Amateur Radio Handbook*, p. 81). There are a number of reasons for this: too much gain before the first mixer, sharp cut-off valves in the

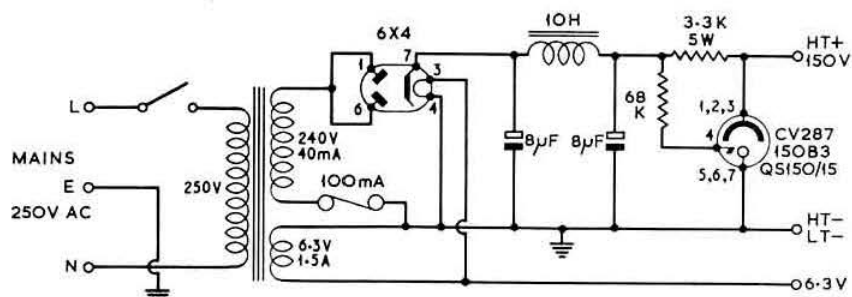
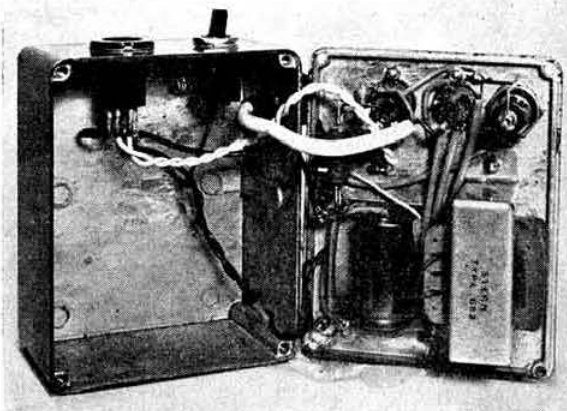


Fig. 6. A power supply suitable for use with either the 70 Mc/s or 144 Mc/s converter. A semiconductor rectifier of suitable rating could be substituted for the 6X4 valve.

communications receiver r.f. stage(s) and in the r.f. amplifier(s) of the converter. The 6CW4 is a sharp cut-off valve and some slight cross-modulation effects have been experienced. To minimize the risk, the communications receiver should be used with the a.f. gain set at maximum, the



An interior view of the power supply of Fig. 6 which is suitable for use with both converters.

desired volume level being set by the r.f. gain control with the a.g.c. switched off.

A semi-variable- μ Nuistor, the 6DS4, is now becoming available and tests are being carried out to see whether its performance is superior to the 6CW4 in this application. Results will be reported in a future issue of the BULLETIN.

A Dictionary of Electronics

A *Dictionary of Electronics* (7s. 6d.) by S. Handel is a new addition to the already extensive library of Penguin Reference Books. The dictionary has been prepared primarily for those professionally concerned with electronics but a great many other people—especially radio amateurs—will find it a most valuable source of information. The book runs to 384 pages and contains about 5,000 references, many of which are illustrated.

The author in his Preface states, with obvious truth, that the hardest part of writing the book was to decide which words to leave out; those omitted could fill another book!

By the way—what is an OR-GATE, a COMA, a CLUTTER and a SKIATRON? If you don't know, *A Dictionary of Electronics* will supply the answer.

TABLE 2

Inductor Details for the 144 Mc/s Converter

- | | |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L1, | 4 turns 18 s.w.g. enamel wound on $\frac{1}{8}$ in. mandrel, length $\frac{7}{8}$ in., tapped $1\frac{1}{2}$ turns from earthy end, air spaced. |
| L2, | 8 turns 16 s.w.g. enamel wound on $\frac{7}{8}$ in. mandrel, length 1 in., tapped $3\frac{1}{2}$ turns from CN, air spaced. |
| L3, | 4 turns 16 s.w.g. enamel wound on $\frac{7}{8}$ in. mandrel, length $\frac{3}{4}$ in., air spaced. |
| L4, | 1 turn 16 s.w.g. enamel wound on $\frac{7}{8}$ in. mandrel, interwound at earthy end of L3, air spaced. |
| L5, | 32 s.w.g. enamel wire wound on a $\frac{1}{4}$ in. by $2\frac{1}{2}$ in. former (Aladin type with can), 2 layers $1\frac{1}{2}$ in. long and 1 layer $\frac{1}{2}$ in. long, winding from bottom of coil former up for $1\frac{1}{2}$ in. and back to bottom, then up for $\frac{1}{2}$ in. Tissue paper interleaving is used and the winding secured with polystyrene cement. Tuning by two slugs. |
| L6, | as for L4 but mounted adjacent to the h.t. end of L7, air spaced. |
| L7, | $3\frac{1}{2}$ turns 16 s.w.g. enamel wound on $\frac{7}{8}$ in. mandrel, length $\frac{3}{4}$ in., air spaced. |
| L8, | 7 turns 16 s.w.g. enamel wound on $\frac{7}{8}$ in. mandrel, length 1 in., air spaced. |
| L9, | 10 turns 26 s.w.g. enamel wound on a $\frac{1}{4}$ in. by $1\frac{1}{2}$ in. former slug tuned (Aladin type with can). |
| RFC1, | 2.5 mH r.f. choke. |
| RFC2, | 26 in. 18 s.w.g. enamel close wound on $\frac{1}{4}$ in. mandrel, self-supporting, air spaced. |
| RFC3, | 1 mH r.f. choke. |

TECHNICAL TOPICS By PAT HAWKER (G3VA)

New Ideas in Entertainment Equipment • *Mains Supply for Transistors*
Complementary Symmetry • *Synchronous Detection* • *Q-multiplier*
Bandpass Crystal Filter • *S-meter* • *Voltage Regulator Tip* • *Silicon Rectifiers*
Low Noise A.F. Construction • *A.F. Bandwidth* • *Crystal Oscillators*
Screen-grid Modulator

RADIO amateurs visiting the National Radio Show tend to make a beeline for the first floor, considering the radio and television manufacturers' stands as just a "furniture show." But this can result in missing many technical innovations and developments of potential use in Amateur Radio. At the present time this is particularly true, what with radio turning over fast to transistors, with u.h.f. and colour television in the offing, and with many eyes fixed firmly on multiplex stereo broadcasting. Unlike valves and components developed for industrial electronics and commercial communications, those for "entertainment" are of necessity designed to meet normal budgets.

Several ideas in evidence in recent transistor broadcast receivers have wider application. For example, several makers now regard transistors as devices to be integrated with valves, and for mains as well as battery operation. Tape recorders often have a transistor pre-amplifier in front of the main valve amplifier; one stereo radiogram uses transistors for all stages up to the detector, with valves in the a.f. circuits. This type of integrated "transistors cum valves" design is equally logical for much amateur equipment; eventually we shall probably stop thinking in terms of "transistor" or "valve" equipment, rather each stage will use whichever is the more convenient and suitable for that particular application.

This year we were particularly interested in the first British mains/battery receivers using transistors. A mains unit for transistor work needs to be well regulated and of low impedance in order to take in its stride the fluctuations in current in class B output stages. Fig. 1 shows the arrangement adopted by one of the main groups, and could form the basis of a useful unit in the shack. The output from the conventional bridge rectifier is passed through a stabilizing transistor (TR1) which in turn is regulated by a d.c. base bias circuit using a crystal diode as a low-voltage rectifier. The output voltage can be accurately adjusted by means of R1. The use of transistors as diodes is quite popular these days and the same firm uses one to regulate the base bias current to the output stages of a number of its receivers in order to minimize cross-over distortion at low battery

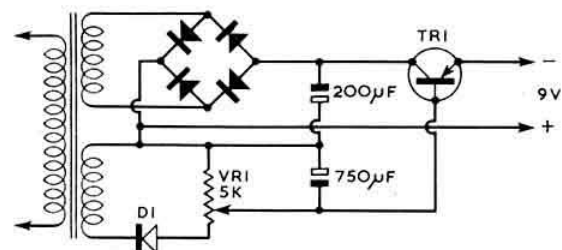


Fig. 1. Regulated mains supply used on mains/battery portable receivers. DI is NKT155, TR1 is NKT251.

potentials and to provide automatic temperature compensation.

Although *n-p-n* transistors have been widely used for some years in American and Japanese receivers, relatively few entertainment types have been readily available in the United Kingdom. Now Newmarket, Texas and Mullard have introduced special matched *n-p-n/p-n-p* audio transistors for use in complementary symmetry output stages in the smaller pocket receivers. Fig. 2 shows a typical arrangement, from

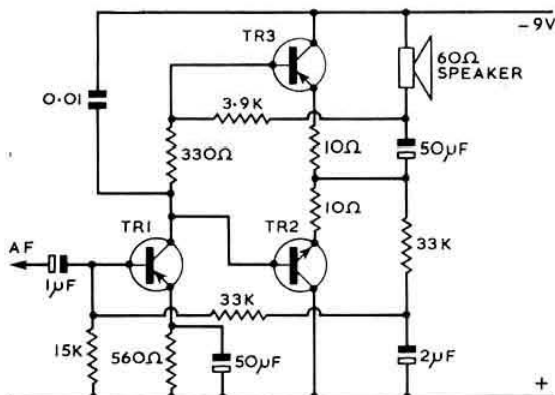


Fig. 2. Complementary symmetry output stage for portable receiver eliminates centre-tapped driver transformer. TR1 NKT258, TR2 (n-p-n) NKT751, TR3 NKT257.

which it will be noticed that no input or output transformers are necessary. A negative going input signal forward biases the *p-n-p* transistor and causes it to conduct; a positive-going one has the same effect on the *n-p-n* transistor. When one transistor conducts the other is cut off, since the signal which forward biases one, reverse biases the other. A single-ended push-pull circuit is thus possible without phase-inversion. This arrangement would be equally attractive for small amateur receivers or transceivers as apart from eliminating phase reversal transformers it reduces standing current.

Generally, it is noticeable how quickly the older alloy-junction r.f. transistors are being superseded by alloy diffusion types for all r.f. and i.f. stages, giving higher gain without neutralisation.

Many amateurs use their standard car radios with a converter for mobile work, and in this field one notes a marked trend to all-transistor models in place of the "hybrid" receivers using power transistors in conjunction with 12-volt h.t. valves, which have been popular for several years. An interesting use of voltage dependent resistors (v.d.r.)—see *Technical Topics* (April, 1962)—in recent car radios is for static protection; the v.d.r. is simply connected across the signal input to the base of the first trans-

tor. This technique might provide a convenient means of protecting amateur transistor equipment where static changes are likely to build up on the aerial.

But for technical ingenuity in the entertainment field, one inevitably feels that u.h.f. colour television and f.m. stereo multiplex—both now under test by the B.B.C.—take some beating. Both of these depend upon synchronous detection, requiring the generation in the receiver of a reference frequency (in other words an insertion carrier) equal in frequency and phase to that used at the transmitter. Amateurs who have been interested in d.s.b. systems will appreciate the apparent difficulty of meeting this requirement, and the elegant way in which it has been solved. In the Zenith-G.E. stereo system (officially adopted in the U.S. and Canada last year and now approved with minor changes by the European Broadcasting Union) the audio "difference" channel is radiated on a 38 kc/s sub-carrier by amplitude-modulated d.s.b. To provide the necessary reference frequency at the receiver, a c.w. sub-carrier is radiated at 19 kc/s. This 19 kc/s signal is passed through a frequency doubler and then used as the reference signal, either directly or by means of a locked oscillator. Members interested in the design of simple decoders for f.m. stereo in order to receive the experimental B.B.C. multiplex transmissions from Wrotham will find much useful information in *Mullard Technical Communications* (August, 1962) or *Wireless World* (October, 1962).

Transistor Add-on Units for Receivers

One of the most attractive ways in which the transistor can be integrated with valves is in the improvement of an existing communications receiver. Because of the small size and modest power requirements, several such units can usually be accommodated within the main cabinet, provided that this has a sufficiently low operating temperature. In *Technical Topics* (October, 1961) information was given on a 100 kc/s calibration oscillator showing how the voltage drop across the cathode bias resistor of the receiver output stage can form a useful transistor power source, and this technique could be equally applied to several other useful circuits which have appeared recently.

Fig. 3 is a transistor Q-multiplier by DJ3ZQ (*DL-QTC*, September, 1962) using an alloy-diffusion transistor. L1 tunes to the receiver i.f. frequency and should be of high-Q construction (preferably ferrite pot-core or wound on a ferrite rod).

The addition of a bandpass crystal filter is another possibility. In this connection an article *Crystal Filter Design* in *Electronic Technology* (April, 1962) gives a good deal of information on the type of bandpass curves which can be achieved using transistor stages. Fig. 4 shows a 100 kc/s filter arrangement using two suitably spaced crystals and a pair of OC44 transistors. Two transistors are used to

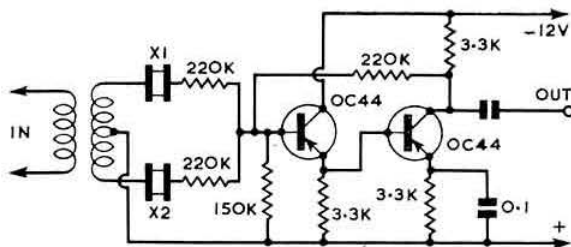


Fig. 4. 100 kc/s bandpass crystal filter.

increase input impedance, but it is stated that only one need be used with a lower value of feedback resistor.

Practical transistor S-meters are by no means common, but Fig. 5 shows the circuit used in a small American Citizens Band rig as described by W6TNS in *Electronics World* (September, 1962). This is basically a common collector class B detector stage followed by a d.c. amplifier. A

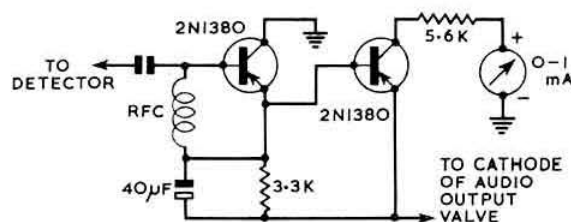


Fig. 5. Transistorized S-meter used in Citizens Band equipment.

small amount of signal at i.f. is coupled out by winding a few turns around the final i.f. transformer or the lead to it. The signal is rectified and the d.c. output amplified by the second stage whose collector current is limited to a safe value by the 5.6 K ohms resistor. Such a unit can also act as an r.f. output indicator and modulation meter for transmission by means of a small pick-up wire. Unfortunately to obtain a linear S-scale calibration requires a special 1 mA f.s.d. meter with compression characteristics.

One method by which linear meters can be given compression characteristics at either end of the scale—useful for a number of purposes—is by means of the voltage dependent resistors already referred to. A milliammeter shunted by a suitable v.d.r. will retain almost its normal sensitivity at low currents but become progressively less sensitive as current increases. On the other hand by connecting a v.d.r. in series with a milliammeter one obtains a voltmeter with progressive expansion of the scale. We do not know, however, whether this particular technique could be used with the low currents involved in the S-meter described above.

A more advanced add-on transistor unit for valved communications receivers is a gated a.v.c. system with fast attack, 0.12 second hold, and fast release in the absence of a signal, suitable for s.s.b., a.m. and c.w., described by W2PCJ (*CQ*, September, 1962). This unit, originally intended for use with a 75A3 receiver, requires two *n-p-n* and one *p-n-p* silicon transistors.

Voltage Regulator Tip

In *T.T.* (December, 1960), we included an ingenious circuit arrangement whereby a stabilized h.t. rail could be obtained from two series-connected VR tubes even when the

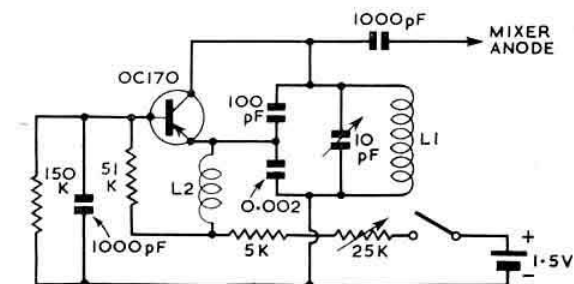


Fig. 3. Transistor Q-multiplier by DJ3ZQ using OC170 or similar alloy diffusion transistor. L1 tunes to i.f. L2 is air wound about 1 mH. Values given apply to an i.f. of 1415 kc/s.

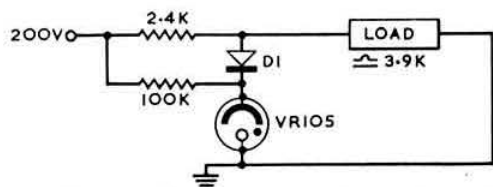


Fig. 6. VR-tube circuit for use when load prevents tube from striking. DI is a small silicon diode.

peak supply voltage is insufficient to ignite the two tubes in series. A somewhat similar idea is used in a circuit in *Electronic Design* (April 12, 1962) but for stabilized lines using a single VR tube. In this case, the application is where the VR tube is unable to fire because of insufficient potential with load connected, and where it is not wished to reduce the value of the voltage-dropping resistor. In Fig. 6 a small silicon diode D1 disconnects R1 and the load from the VR tube until after it has fired. Once this has happened then the circuit operates normally except for the fraction of a volt increase in output voltage because of the small volts-drop through D1.

More on Silicon Rectifiers

Since the publication of the article on *Using Silicon Power Rectifiers* (BULLETIN, March, 1962) further information has been published on how the power line transients arise which—because of the restricted inverse voltage capabilities and low thermal capacity—can cause avalanche breakdown of these diodes. An article in *Electronics* (June 1, 1962) states that in the U.S. thunderstorms are the most frequent destroyers of silicon diodes.

Lightning causes transients to appear on the power lines by direct strike or by induction, even where the normal lightning arrester has functioned correctly. Presumably because of the greater use of overhead lines, lightning transients are more severe and of longer duration in rural areas than in urban districts. Various methods of combating high transient voltages continue to be developed. In the United States silicon diodes have been developed with a transient p.i.v. of 10 kV. Transient suppression components have also been marketed, including the G.E. "Thyrector" and the Sarkes Tarzian "Klipvolt" which consist of small metal rectifiers connected across the supply. General Electric have also announced a "controlled avalanche" rectifier which has a carefully controlled non-destructive internal avalanche breakdown designed to protect the junction surface.

Low Noise A.F. Construction

The first stage of a high gain a.f. speech amplifier is

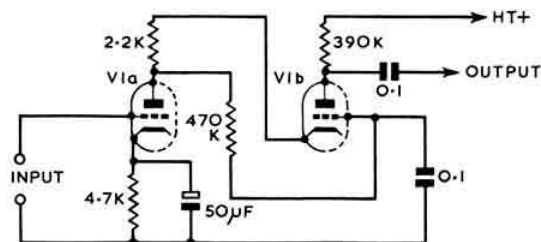


Fig. 7. Cascode a.f. stage as used in a commercial tape recorder.
VI 12AX7 (ECC83).

particularly susceptible to hum and microphony. Special audio valves such as the 6BR7, Z729 and EF86 have helped a great deal in this respect. But the benefits conferred by low noise valves can be lost unless reasonable precautions are taken in layout and construction. The following notes are based on suggestions in G.E.C. and Mullard publications on audio amplifiers. Valveholders for this stage should be low-leakage types (e.g. nylon-loaded phenolic) with skirts and a metal centre boss, with both spigot and skirts earthed. Heater supply wires should be twisted (see *T.T.* February, 1961) and arranged so that the current is as low as possible (this is achieved by making the first stage the end of the heater line so that the leads to the valveholder do not carry current for the other valves). The cathode bias resistor should be adequately bypassed (i.e. do not leave the resistor unbypassed in order to obtain negative current feedback), with the leads of the bypass capacitor as near as possible to the signal grid pin and the capacitor earthed at the signal input socket. Preferably, use a centre-tapped heater supply and fit high-stability resistors in the anode and grid circuits of the first stage. In layout, to avoid magnetic induction, keep all a.c. carrying leads (mains input, indicator lamps,

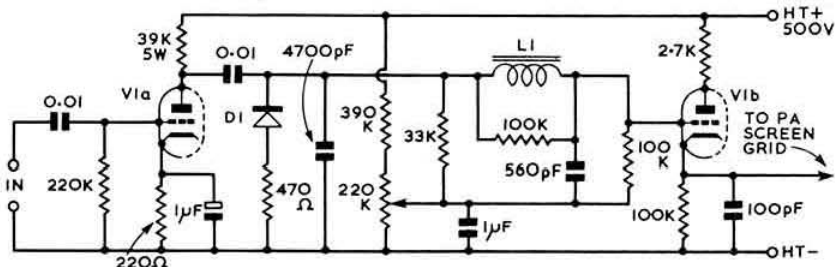


Fig. 8. PA0RG's screen modulator with built-in clipper-filter. L1 is smoothing choke about 6 H. DI is 6A210; VI ECC81.

etc.) well away from the valve. Care should be taken to avoid common impedance coupling to other stages, for example by having a separate earth return for the later stages taken direct to the h.t. reservoir capacitor, with the input stage connected to chassis at the input socket. The reservoir capacitor is then earthed by means of a separate lead taken to the input socket. The lower the output from the microphone, the more important becomes the design of the first a.f. stage.

In this respect, we notice that a number of tape recorders (and at least one high fidelity amplifier) have adopted the double-triode cascode circuit for low-noise a.f. work, though this is partly in order to improve high frequency response. A typical a.f. cascode circuit is shown in Fig. 7. A recent double triode for low noise audio work is the ECC807 (Brimar).

Transistors can be made relatively immune to hum pick-up and microphony; the AC107 has been specially developed as a low-noise pre-amplifier. This transistor is used alongside valves in a number of modern tape recorders.

Screen-grid Modulator with Clipper

The series-gate type of screen modulation is simple and effective but requires a low impedance negative bias supply which is not always available. Another form of screen modulation using a similar output arrangement but without negative bias was described by PA0RG in *Electron* (October, 1961). More recently (*Electron*, April, 1962) he has described an improved screen modulator of this type using an ECC81 and incorporating a clipper and low-pass filter: see Fig. 8. The a.f. input to the first triode stage should be of the order 6 volts, so that a simple pre-amplifier will be needed in front of the ECC81.

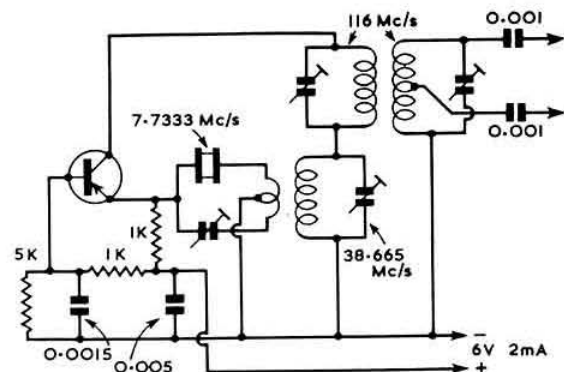


Fig. 9. DL6EG's crystal oscillator circuit for use in a crystal controlled converter for 144 Mc/s (circuit can also be adapted for self-oscillating mixer).

Crystal Oscillators

W2LCB presents, in *CQ* July, 1962, the results of a number of tests on various harmonic oscillator circuits and valves for this application. Using triet, Colpitts and modified Pierce (crystal connected between grid and screen grid) in turn with 12BV7, 6CL6, 6AG7 and 5763 he found that in terms of harmonic output (2nd, 3rd and 4th harmonic outputs were measured), circuits and valves lined up in the order we have listed them: in other words the 12BV7 triet tended to produce the best results, though with only a slight lead over the Colpitts, and with the modified Pierce a poor third. A direct relationship was apparently established between mutual conductance and the goodness of the valve for this particular application, and it would be illuminating to see similar tests carried out with some of the even higher slope frame grid valves.

A crystal-controlled local oscillator which provides output on 116 Mc/s from a single alloy-diffusion transistor (Fig. 9) is one of several applications for an overtone type crystal oscillator circuit described by DL6EG in *DL-QTC* (September, 1962). The 116 Mc/s output from an FT243 7.7 Mc/s crystal enables the 144-146 Mc/s band to be tuned over 28-30 Mc/s. The transistor is an OC171 or similar type.

Talking about Bandwidth

Most of us are by now resigned to facing several years of low maximum usable frequencies, with DX signals few and far between on 28 Mc/s and 21 Mc/s, and even 14 Mc/s practically dead during winter darkness. The inevitable result of such conditions will be more and more stations packing into the lower frequency bands. Already, one notices how much more crowded 14 Mc/s has become, compared with the days when activity was spread over several bands. This problem is not of course confined to amateurs; one writer with broadcast and commercial stations in mind has pointed out that the number of such h.f. stations and their total power has increased by some 50 per cent since the last sunspot minimum period. He believes that "one of the greatest challenges of the 60's will be the solution of the problem of radio spectrum conservation."

In terms of amateur telephony the optimum a.f. bandwidth is generally considered as about 3000 c/s (6 kc/s a.m. and 3 kc/s s.s.b. bandwidth). Certainly the utilization of the full audio spectrum up to about 15 kc/s must be frowned upon in crowded bands. But in accepting the need for a very restricted audio bandwidth, we should not forget that we are impairing intelligibility as well as making voices sound unnatural. It has been pointed out that loss of frequency response above 3000 c/s reduces the intelligibility of "s" sounds from 100 per cent to 40 per cent, "th" sounds from

100 per cent to 66 per cent, the American "z" sounds from 100 per cent to 80 per cent, etc.

All this seems to suggest that it would be a good idea if our modulators and speech equipment were designed to provide both communications quality and a wider a.f. bandwidth which could be used, for example, on the local 21 and 28 Mc/s networks. Around-town networks on these bands should surely be encouraged in order to maintain band occupancy. There are many effective tone control and a.f. filter circuits developed for audio work which could readily be incorporated in amateur speech equipment.

Printed Circuit Kits

IRVING ELECTRONICS CO. of P.O. Box 9222, San Antonio 4, Texas, U.S.A. now have available more than 100 different circuits in their range of printed circuit kits. Each kit consists of an undrilled etched circuit board together with the transistor or valve holder(s) required. In addition, a small piece of practice board is included, together with a circuit diagram, parts list and recommended construction procedure.

The types of circuit available range from simple units, with one transistor, to valved s.s.b. exciters and receiving adapters. The board for the well-known TNS noise limiter for mobile use is available at 7s. 6d., as is a kit which uses a transistor to convert a 0-1 mA meter into a microammeter. A transistorized keying monitor (and practice oscillator) to mount inside a speaker cabinet sells at 9s., whilst a board, holders, coil form and r.f. choke to construct a 9 Mc/s side-band generator using the McCoy filter can be obtained for 50s.

A full catalogue of the kits available may be obtained free and postpaid from the above address.

Sir Bernard Lovell to address Radar and Electronics Association

AT the meeting of the Radar and Electronics Association to be held at The Royal Commonwealth Society Assembly Hall, 18 Northumberland Avenue, London, W.C.2 (Craven Street Entrance), at 7 p.m. on December 6, 1962, Professor Sir Bernard Lovell, O.B.E., F.R.S., Director of the Nuffield Radio Astronomy Laboratories, Jodrell Bank, will lecture on "The Investigation of Space by Probes and Radio."

Admission of non-members of the Radar and Electronics Association will be by ticket only. A limited number of tickets will be available for R.S.G.B. members and early application should be made to the General Secretary, Radar and Electronics Association, 43 Grove Park Road, Chiswick, London, W.4.

Refreshments will be served at a small charge from 6.30 p.m.

Practical Radio Course at Redditch

A COURSE of instruction in practical radio and electronics is being held this session in the Engineering Department of Redditch College of Further Education, Archer Road, Redditch. The object is to encourage home constructors to build equipment for their own use. The facilities available include the use of first class test gear. Further details may be obtained from the College.

Enquiries Regarding Bulletin Articles

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

Single Sideband

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

IN a single sideband transmitter the initial carrier frequency is modulated by the output from the audio amplifier in a balanced modulator; balancing the modulator almost eliminates the carrier component in the modulator output circuit. The output from this stage is therefore a double sideband suppressed carrier signal. At the modulation crest, the two sideband voltages are in phase with the carrier voltage, i.e. the modulation process is exactly the same as

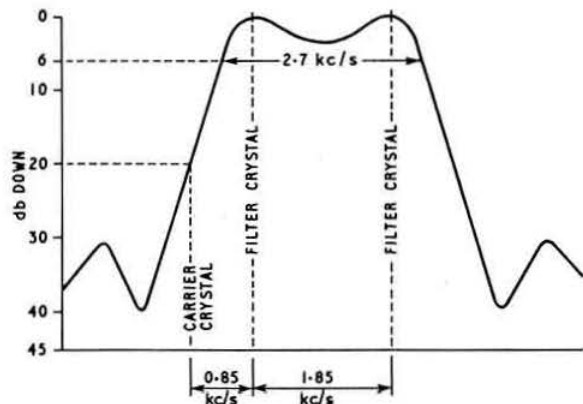


Fig. 1. Response curve of a single half-lattice filter with neutralizing. Note the side lobes just below the 30db level.

that of the conventional a.m. transmitter. Rather unfortunately a term that is a carry over from the early days of radio transmission when the process of modulation was imperfectly understood is used to define this method.

It is most important in order to understand clearly what is happening in the balanced modulator of a sideband transmitter to forget the misconceptions of 30 years ago and remember that when a carrier is "amplitude modulated" it does not in fact vary in amplitude at all. The output from the modulator stage, whether the balanced mixer in a s.s.b. transmitter, or the p.a. in an a.m. transmitter, contains three components. These are the upper sideband, the carrier and the lower sideband. The carrier wave F_c is heterodyned by the audio wave F_m and this produces sum and difference frequencies, $F_c + F_m$ and $F_c - F_m$. The modulation process is thus seen to be a frequency translation process and the modulator is therefore a converter or mixer and the terms "modulator," "converter" or "mixer" mean exactly the same thing.

The sidebands, $F_c + F_m$ and $F_c - F_m$, contain the voice intelligence, so the carrier frequency can be attenuated or balanced out in the modulator output without affecting the sidebands in any way. This can be done at high level in the a.m. transmitter p.a. stage,† or at low level in the sideband balanced modulator. In both cases the output from the modulator is exactly the same—a double sideband suppressed carrier signal. Since the objective is to transmit only a single sideband, it is necessary to select the desired sideband and suppress the undesired sideband. This is possible because the modulating wave is restricted to a band of audio fre-

quencies separated from the carrier by an appreciable amount.

Single Sideband Filters

Removing the unwanted sideband by the use of selective filters has the advantage of simplicity and good stability. The unwanted sideband suppression is determined by the attenuation of the sideband selecting filter, and the stability of this suppression is determined by the stability of the elements used in constructing the filter. This stability can be quite high because it is possible to use materials that have a very low temperature coefficient of expansion. Two commonly used materials are quartz crystal plates and small metal plates. A mechanical filter or metal plate filter requires a very high degree of precision in its manufacture, for instance the plates must be dimensioned within one ten thousandth part of an inch and it is hardly a practical proposition for home construction.

The crystal sideband filter is attractive to the amateur because it can be home constructed and the response characteristics and shape factor are under the constructor's control. Additionally, suitable crystals in the range 400-500 kc/s have been readily available on the surplus market at low cost. These are the FT241 series of 54th and 72nd harmonic crystals. All crystals whose marked frequency commences with the figure 2 are 54th harmonic types and all crystals whose marked frequency commences with the figure 3 are 72nd harmonic types. In each case the fundamental frequency of the quartz plate is the frequency marked on the box in Mc/s, divided by the harmonic series (i.e. 54 or 72).‡

Experience has shown that an audio frequency range of 300 to 3000 c/s is satisfactory for voice communication and gives acceptable speech quality. The filter pass band is therefore required to be 2700 c/s and in the perfect filter the "slope" of the sides of the filter response curve would be vertical so that the bandwidth 60db down would also be 2700 c/s. In practice this ideal is not practicable and the sides of the filter response slope outward so that the bandwidth 60db down is greater than the bandwidth at the 6db points. The ratio 6db bandwidth / 60db bandwidth is the shape factor of the filter. A shape factor of 2 is a good figure to aim for, and if the filter can be made better than this, so much the better—the sideband suppression will be further improved.

A simple half-lattice filter will give an unwanted sideband suppression of approximately 30db, and if a better performance than this is required the filter will need to be of two or three sections. As a guide, the response of a single half-lattice filter is shown in Fig. 1 and the response of the same filter with an additional shunt crystal is shown in Fig. 2. As

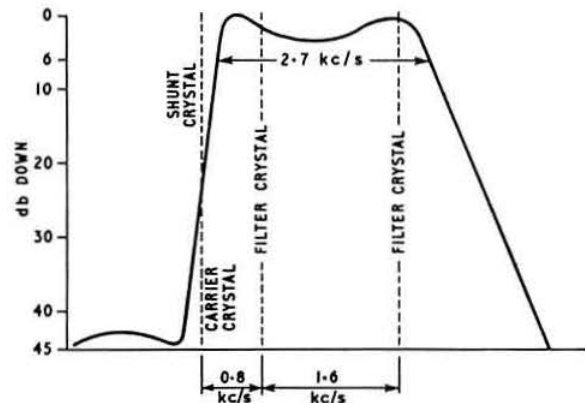


Fig. 2. Response curve of a single half-lattice filter with shunt crystal. Note how the shunt crystal steepens the passband on the carrier side and improves the sideband suppression.

* 5 Janice Drive, Fulwood, Preston, Lancashire

† This reference is to a d.s.b.s.c. transmitter using a push pull p.a. stage. A practical circuit is shown in the *Amateur Radio Handbook*, Page 333, Fig. 67.

‡ Tables showing the frequencies of all FT241 type crystals commonly used in s.s.b. filters are given in the *Radio Data Reference Book* to be published later this month.

a further guide to the home constructor the expected performance with different filter configurations is given in Table 1.

Before embarking on the actual construction of a sideband filter it is most important to realize that surplus FT241 crystals will not be in their original condition. These crystals are now likely to be 15 to 20 years old, to have deteriorated with time and may be several hundred cycles—in some cases more than 1 kc/s—off their original frequency. Additionally, the Q of the crystal may be very low and in some cases the crystal may fail to oscillate at all. All crystals should therefore be checked for frequency and activity by placing the crystal in series with the output from a BC221 frequency meter and the input to a diode probe valve voltmeter used on the 10 volt range. The BC221 should be *slowly* tuned across the required frequency range and at some setting the v.v. pointer will swing over. This is the series resonant frequency of the crystal and if the activity is satisfactory the v.v. will read full scale at 10 volts. Any crystals giving less than 7 or 8 volts should be discarded. If the filter comprises two or three sections those crystals on either side of the pass band centre should be matched in frequency within a few cycles of each other, either by edge grinding or by plating.

The most suitable type of i.f. transformers to use for coupling are the medium Q , high L/C ratio types; that is a Q of around 60 and a resonating capacity value of not more than 100 pF. The Maxi-Q miniature i.f.t. Type IFT 11/465 have been successfully used by the writer both for transmitter and receiver filters and are recommended. Equally recommended are the *standard* miniature i.f.t.s made by Electroniques (not the pot core type).

After alignment, the filter response should be plotted and the bandwidth measured at the 6 and 60db points to determine the shape factor that has been achieved. Normally the carrier crystal is placed at the frequency that is 20 to 25db down on the filter response curve. It should be appreciated, however, that its positioning is a compromise and it should finally be adjusted to obtain the best balance of audio quality as determined by "on the air" reports.

The G2DAF Communication Receiver

While on the subject of filters and filter alignment, this is an appropriate time to comment on certain difficulties that have become known to the writer in connection with the alignment of the sideband filter in the G2DAF receiver described in the March and April 1960 issues of the BULLETIN and in the R.S.G.B. publication *Communication Receivers*.

Many constructors of this receiver have purchased complete coil sets from Electroniques (Felixstowe) Ltd., and 7 of the 9 i.f. transformers supplied in this kit are of pot core construction with high Q windings and critical coupling between primary and secondary windings. It should be appreciated that these transformers are a standard production—specifically made for high performance—and are normally supplied for high class communication receiver use. Coil manufacturers cannot be expected to be crystal bandpass filter experts,

* Should the cores touch before going through the second resonance point, they will need to be shortened by grinding on emery paper or a grindstone.

and these transformers have been supplied in good faith that they were the best available for the requirement. It is clear from reports received, however, that some amateurs using these i.f.t.s have been unable to get a satisfactory filter pass band shape or sufficient gain in the i.f. amplifier stages and have finished with a mediocre receiver lacking in performance.

The writer is grateful for the information and filter characteristic curves supplied by G3LLJ who has built the receiver using Electroniques pot core i.f.t.s, and has carried out alignment experiments using a ganging oscillator and an oscilloscope. Also for valuable information on these transformers in the G2DAF receiver supplied by D. F. Elkington.

These pot core transformers are exceptionally high Q , and even when used without crystals give a very narrow 6db bandwidth. The pot cores are as a result very critical to tune and a loose core will ruin a perfect passband shape. The core slugs will tune from 440 to 480 kc/s, with no measureable change in performance, with *two* peaking positions. The outer of these two positions is absolutely unsuitable for half-lattice filter coupling as the critical coupling combined with high Q obliterates the two humps normally found. Neutralizing is too "touchy" and more than 1 pF causes large side lobes. The insertion loss is also high—of the order of 10db each section.

These defects can be overcome by the following alignment procedure:

(i) Shunt the output of each filter section by a 68 K ohms resistor (that is, the primary winding of IFT2, IFT3 and IFT5). The resistor can be conveniently connected between the junction of the two crystals and an earthing point on the chassis.

(ii) Resonate each winding with the dust core in the *inner* of the two positions.*

(iii) Plot the filter response and if the pass band is not sufficiently steep add a *small* amount of neutralizing capacity across the first two half-lattice sections only. The small capacity required can be made by soldering two pieces of 22 s.w.g., p.v.c. insulated connecting wire to the crystal holder lugs, twisting them together for half an inch and cutting off the remainder. Neutralizing capacity must be put across the h.f. crystals only.

The difficulty with these transformers is that they are actually too good for the job and the writer would like to make it clear that these notes are no reflection on the quality of Electroniques products. In fact the G2DAF Communication Receiver Mk. II version, with three signal frequency tuned circuits, uses Electroniques coils throughout and these coils were only adopted after extensive tests using other products. Finally, it is only in the crystal filter stages I.F.T. 1 to I.F.T. 5, where standard non-pot core i.f.t.s would be preferred; in all other stages they are just as suitable as the more usual type. In all cases of purchasers of complete Electroniques coil sets, where the constructor would prefer this, provided the transformers I.F.T. 1 to I.F.T. 5 are returned in new condition, the company are prepared to replace these with non-pot core types. In the opinion of the writer Electroniques products are of first class construction and performance, are fully approved for the G2DAF receiver and are recommended.

TABLE 1

	Single half-lattice filter with neutralising	Single half-lattice with shunt crystal No neutralising	Two half-lattice filters with neutralising	Two half-lattice with 2 shunt crystals. No neutralising	Three half-lattice. Symmetrical receiver filter
Crystal spacing for 2.7 to 3.0 kc/s bandwidth ...	1.85 kc/s	1.6 kc/s	2.4 kc/s	2.2 kc/s	2.2 to 2.4 kc/s
Carrier crystal spacing ...	0.85 kc/s	0.8 kc/s	0.5 to 0.6 kc/s	0.25 to 0.4 kc/s	0.35 to 0.4 kc/s
Suppression ...	30db	35db	40db	45 to 55 db	60 to 72 db
Type of response...	Symmetrical	Asymmetrical	Symmetrical	Asymmetrical	Symmetrical. Bandwidth at 6db points = 2.5 kc/s

THE MONTH ON THE AIR

A CHRONICLE OF EVENTS ON THE HF AMATEUR BANDS

By R. F. STEVENS (G2BYN)*

A RECURRING source of irritation to some DX'ers are the decisions of the A.R.R.L. in relation to the DX Century Club, which although a domestic award, claims world wide membership. The latest difference of opinion over *Bulletin No. 604* has prompted K6CQM, the editor of the North Californian DX Club journal, *The DX'er*, to suggest that the administration of the DXCC should henceforth be vested in "DXCC International." It is suggested that this body should remain under the administration of the A.R.R.L. who would be bound by the by-laws and constitution of DXCC International, the membership of which would consist of both individuals and clubs and societies. Committees would be appointed to determine policy matters such as new country status, international band usage, QSL manager qualifications and other side issues pertinent to present day operating. K6CQM offers detailed suggestions



9M2CR in his station at its home location. All the equipment was used at the Radio and Television Exposition held in Kuala Lumpur in August.

for the formation of the proposed body and these merit careful consideration for they could well provide the basis for a solution to the present dissatisfaction.

News from Overseas

The first Radio and Television Exposition to be held in Malaya took place in the National Stadium at Kuala Lumpur, the capital, between August 22 and September 2. Colin Richards, 9M2CR, agreed to set up his entire station inside the Stadium on the Telecommunications Department stand. The arena floor is of wood parquet blocks and the exhibitors were not allowed to drive in a single nail or screw, which presented some problems in as much as it was desired to set up a full size 14 Mc/s beam. The baseplate holding this array was weighed down with heavy lumps of metal and the aerial mounted on a 25 ft. telephone pole. Despite the fact that the Stadium is a shell of reinforced concrete and covered with a 300 ft. span roof using a network of high tensile steel wires and a steel truss it was found that a large

number of DX contacts (112 in all) could be made. These were invariably of the ragchew type, and a nightly schedule was maintained with 4U1ITU, the station located in the I.T.U. building at Geneva, the last QSO lasting two and a half hours. Operation was on s.s.b. and there were no cases of TVI or BCI reported. Special QSL cards have been sent direct to all stations worked and 9M2CR would like to express his thanks to all those stations who helped with many excellent QSOs.

5H3IW is the present call of G3MNB who will be operating from Tanganyika for the next two years. The station is located at Oyster Bay and will be active on most evenings and weekends. Although operation is possible on all bands, it will be concentrated on 14 and 21 Mc/s with special interest in QSOs with U.K. stations. A home-built transmitter running 150 watts and a HRO receiver are used in conjunction with a quad for 14 and 21 Mc/s and a G5RV multi-band aerial.

Operators who have been troubled by the activities of U.S. Navy stations carrying traffic and phone patches on the amateur bands will be interested to learn of the establishment of a *Navy Military Affiliate Radio System (M.A.R.S.)*, w.e.f. January 1, 1963. This should help to relieve the amateur bands of much military type traffic, and it is hoped that the M.A.R.S. frequencies, which are outside the amateur bands, will be utilized to carry the increasing number of phone patches now heard on 14 and 21 Mc/s. Complete information on the Navy M.A.R.S. is carried in the October issue of the *Directory News Letter* from K6BX.

ST2AR has returned to Khartoum after leave in the U.K. and hopes to be active on s.s.b. in the near future. Eric utilized part of his leave in constructing the Imp exciter and initially will be crystal controlled on 14,113, 14,250, 14,300 and 14,323 kc/s. Eric will probably make good use of the 14,113 kc/s frequency as a means of avoiding the North American QRM, and would appreciate hearing from any operator who has built the Imp and has discovered any worthwhile modifications to the original design. ST2AR also puts forward the idea of the possibility of a small group of responsible persons to issue guidance to those who would issue awards, laying down some basic rules in order to obviate the more ridiculous awards that have come forth recently.

ZD3P, ex-MP4BCR and now G3JHZ, accepted the offer of W7VEU to act as his QSL manager. It now appears that a number of operators who have sent cards to W7VEU have not received a reply, and to satisfy these demands G3JHZ is endeavouring to obtain the return of his logs. So far these efforts have been unsuccessful but directly the logs are received, outstanding cards will be acknowledged.

DXpeditions

Forthcoming trips include 14 days on *Marcus Island* by a party headed by KA2JL which is scheduled to commence during the last week of October; *Navassa Island*, which W0MLY hopes to visit during December or January, and a return journey to *Aves Island* (YV0), from where a group of

* Please send all reports to R.S.G.B. Headquarters to arrive not later than October 22.



G3JFF/M on board H.M.S. Cook from January 1961 to September 1962. The transmitter was a Panda Cub while a Geloso front end feeding a B40 was used for reception. The aerial was a 15m vertical.

Venezuelan amateurs hope to operate during the early part of 1963.

Any forecast of the probable route to be taken by W4BPD would be out of date before it could reach print, and operators are advised to watch the usual frequencies used by Gus. A six day period of operation in Burundi and Rwanda commenced on September 22, and a visit to Bouvet Island is believed to be on the itinerary, probably about October 20.

The trip to Kuria Muria Is. by the R.A.F. party from Aden has been set back owing to transport difficulties, and if the Expedition actually takes place it will probably not be until late November/December.

GW3PMR will be active at weekends from now until Christmas on Top Band from Bangor in Caernarvonshire. GW3PMR will be assisted by B.R.S.23248 and A.3088, all of whom are attending the University College of North Wales. It is hoped to make a trip to Anglesey, and whilst space for aeriels is restricted, operation on other bands between 3.5 and 28 Mc/s is also envisaged.

PX1RV (G5RV) and PX1GX (F7GX) were active between August 20 and 31, each station making about 450 contacts in 45 countries. There was, however, a lack of s.s.b. activity on 14 and 7 Mc/s, especially during daylight hours. Nevertheless many s.s.b. QSOs were made on 3.75 Mc/s after 22.00 with stations located in many parts of Europe. Apologies are offered to the North American stations who were eager to work Andorra, but the impossibility of moving a 7500 ft. mountain close to the QTH and to the West, limited W/K contacts to two! With the assistance of G3EIX, 134 s.s.b. QSOs were made on this band, and both operators express appreciation of the orderly pile-ups. 7 Mc/s provided a good number of c.w. QSOs while 14 Mc/s was the best band for DX working on c.w. and (limited) s.s.b. 21 Mc/s opened for an hour or so on a few days and provided some good s.s.b. contacts. PX1GX concentrated on a.m. and did well from a 7500 ft. mountain top site with a 50 watt mobile rig. Although both 7 and 14 Mc/s dipoles were erected, he claims to have achieved equally good results using the centre loaded whip on his car!

Both PX1RV and PX1GX wish to express their sincere thanks to F3DM, who did so much to make the DXpedition possible, and to his fellow Toulouse amateurs who turned out in force to welcome and help them on arrival at that fair city for an overnight stop. Also, thanks to Yves, PX1YR and his XLY for their hospitality. Both PX1YR and PX1PA, the only permanently licensed stations in Andorra, hope to resume activity this winter on a.m. PY1YR is contemplating s.s.b. All QSLs will be answered and these should be sent to G5RV for PX1RV, and to F7GX for PX1GX.

VQ9HB called at the Agalegas en route to Mauritius but it is believed that only half a dozen or so genuine QSOs were made. Unfortunately the call used for the shore based contacts was VQ9HB/MM which may produce DXCC complications. VQ8FBA and a second VQ9HB were active at about the time that genuine operation was expected, and at the time of writing it has not been determined which contacts were made with the weak minded operator(s) who had nothing better to do than pirate the genuine call. On his return from Mauritius the mainmast of the schooner was wrecked during a storm and VQ9HB proceeded to the Seychelles with all possible speed, where repairs will be put in hand.

W6CBE/KG6 will operate from Rota at the end of October using a portable 90 watt transmitter. QSLs via W6ZMW. (From K6CQM.)

DXCC News

At the recent South West Division Convention the following new countries were announced as having been approved by A.R.R.L.: Kuria Muria Is. (off the S.W. coast of Oman), possibly the scene of a trip by R.A.F. personnel later this year; San Felix Is. or San Ambrosia Is. about 550 miles off the coast of Chile, and Agalega Is. in the Indian Ocean, E.N.E. of Madagascar. At the present time TA4RZ QSLs are not being accepted for DXCC credit for Turkey, but cards from TAZAR are valid.

Contests

The results of the Sixth CQ World Wide S.S.B. Contest show that two U.K. stations appear in the Top Ten, which are: 4X4DK, 310,450 points; DL3LL (290,836), ZL3DX (211,391), G4CP (171,248), ZL1AIX (164,000), GB2SM (163,064), XT2Z (152,866), SM6SA (145,114), ZS5JY (143,748), MP4BBW (140,910).

Listings of the stations in the U.K. and Eire are:

England

G4CP*, 171,248 points total; 1232 points; 139 prefixes.
GB2SM, 163,064 points total; 1496 points; 109 prefixes.
G3DO*, 79,722 points total; 618 points; 129 prefixes.
G3NFV*, 41,664 points total; 448 points; 93 prefixes.
G3MEA, 36,252 points total; 342 points; 106 prefixes.
G3NMR*, 31,680 points total; 360 points; 88 prefixes.
G3FPK*, 14,976 points total; 192 points; 78 prefixes.
G2HFD, 1911 points total; 49 points; 39 prefixes.

Eire

E18P*, 50,685 points total; 545 points; 93 prefixes.

Northern Ireland

GI4RY*, 2156 points total; 77 points; 28 prefixes.

Scotland

GM3JDR*, 33,516 points total; 342 points; 98 prefixes.

GM3CIX, 6630 points total; 130 points; 51 prefixes.

* Power under 175 watts p.e.p.

Other high scores were the 128,250 of VK3AHO, the top Australian station; 107,255 of PJ2AA; 133,030 of PZ1AX, and 116,840 of TI2HP. The top scoring station from the U.S.S.R. was UA0KAR (operated by UA3CR), followed by UA2AO from Kaliningradsk and UB5WF from the Ukraine, their scores being 137,749, 110,654 and 110,400 points respectively. Certificates are being prepared for the top scoring stations in each country, and these will be sent whether or not there were other stations competing from that particular country. These results have been made available by the courtesy of K2MGE and K2HEA, the Sideband Editors of CQ, who deserve the thanks of participating stations for the work undertaken in the checking of logs and compilation of the scores.

Alterations in the rules for the 1962 CQ World Wide DX Contests were noted last month and a detailed résumé of the rules appears on page 192. Log forms will be available from G2BVN on receipt of a large s.a.e. and it is hoped that

competing stations will meet the organizers' request for more completed logs.

Attention is drawn to the *Contests Diary* on page 170 which contains dates of the major contests for the forthcoming season.

The **TOPS CW Club** will be holding three tests shortly:
Rednal Trophy: similar rules to the R.S.G.B. 1.8 Mc/s contest taking place on November 10-11 and during the same times. Entries will be sent to the R.S.G.B. as check logs.

TOPS v. HSC: an open contest on November 17-18, held on 3-5, 7 and 14 Mc/s only.

Eighty Metre Test on December 15-16, also an open event. Full copies of the rules for any of these tests may be obtained from G3IRM.

Awards

Applicants for **W.B.E.**, **B.E.R.T.A.** and the **Empire DX Certificate** should note that the qualifying date for contacts with the former Union of South Africa is before June 1, 1961. This, and other qualifying dates, is given on the awards leaflet obtainable from R.S.G.B. Headquarters. QSL cards submitted for awards and incorrectly dated involve the Certificates Manager and the claimant in unnecessary expense and correspondence.

Hitherto subscribers to the **Directory of Certificates and Awards** published by K6BX have received three quarterly supplements and news letters in addition to the original Directory. As members know the books are produced on a non-profit basis and in point of fact K6BX has sustained a loss of 5s. or so on each *Directory* distributed. In order to redeem this loss it has been decided that subscribers to the *Directory* after January 1, 1963, will not receive copies of the news letter (the last edition of which ran to 28 pages) but this will be available at an additional cost of 11s. 6d. It is emphasized that the cost of the *Directory* and three supplements will remain unchanged at 30s., with a three-ring binder available at an additional 7s. 6d. Subscriptions to the *Directory* and the *DX-QSL-NL* may be sent through G2BVN.

A display of awards and certificates has been arranged by the members of Chapter 8 of the **Certificate Hunters' Club** as part of the R.S.G.B. International Radio Communications Exhibition, and CHCers and others interested may rendezvous at this stand. Amongst the certificates to be shown will be the U.S.A. Counties Award obtained by G3DO, the first U.K. station to gain this attractive certificate.

The Northern Rhodesia A.R.S. announces the issue of the **Worked All Northern Rhodesia Award**. This is available to U.K. stations who have contacted 10 VQ2 stations in five different towns. Contacts may be post World War II and on any band or mode. A list of the QSL cards, duly certified by two licensed amateurs or an official of a Radio Society, should be sent, together with seven I.R.C. or a postal order for 3s. 6d. to the Awards Manager, N.R.A.R.S., P.O. Box 332, Kitwe, Northern Rhodesia. This certificate is also available to short wave listeners on the same basis. Contacts with the same VQ2 station in more than one town (fixed or mobile) count for separate contacts and separate towns. (From VQ2AT).

The **Pronto Award**, the custodian of which is SM6CLU, Box 814, Gothenburg 8, is available to U.K. stations who have contacted 60 SM6 stations, and not less than five stations in each of the four lans. The commencing date for this award is January 1, 1950. A list of the stations worked and QSLs received certified by two members of a radio club should be sent, together with six I.R.C. to SM6BLU. It is a condition of the award that a QSL card should have been received by each of the Swedish stations. (From G3IFB).

An attractive certificate offered by the **Lion's Head Radio Club** for contacts with three of their members is available to U.K. stations. Contacts should be dated after October 1, 1960, and a list showing the calls of the members contacted, date, frequency, and mode should be submitted to ZSIACD,

Max Adler, Box 1167, Cape Town. Certificates may be endorsed for any or all bands, c.w., telephony or mixed. The cost is 7s., and the award is available to short wave listeners on the same basis. One condition is that L.H.R.C. members must receive the applicant's QSL before the award is issued. Members are: ZS1s AB, ACD, BF, NE, OA, MW, JD, RJ, RZ, TP, TZ, VM, VW, KI, WW, CI, VK, CT and TTM. (From ZSIACD).

The **Virginia Civil War Centennial Award (VA-CWC)** is being issued to commemorate the four years of the war between the States, 1861 to 1865. The requirements are that U.K. stations should contact 10 Virginia stations, three of which must be Richmond stations. Henrico and Chesterfield County stations will be counted as Richmond stations. Contacts must be made during the period April 1, 1961, to May 31, 1965, and may be on c.w., telephony or mixed. Applications for this award shall be made to the Richmond A.R.S., Box 73, Richmond 1, Virginia. An alphabetical list of calls shall accompany the application giving the date, time (G.M.T.) and mode. This list shall be signed by two other licensed amateurs, or an officer of a radio club, certifying the applicant has the QSLs in his possession. There is a charge of four I.R.C. for the award, which should be sent with the application.

The first **Empire DX Certificate** to be obtained by means of contacts wholly on two-way single sideband was awarded to Chas. Boegel, Jr., WOCVU of Cedar Rapids, to whom congratulations are offered.

Around the Bands

It is expected that the coming winter will produce the best ever conditions on 1.8 Mc/s, and the first trans-Atlantic

QTH Corner

AP2IJ	via KH6JJ.
BVIUS	Box 13, A.P.O. 63, San Francisco, Calif., U.S.A.
CR6EI	Box 74, Benguela, Angola.
ET3LM	Box 1014, American Embassy, Addis Ababa, Ethiopia.
F2CC/FC	R. Grabot, Cargèse, Corsica.
FG7XG	Box 521, Pointe-à-Pitre, Guadeloupe.
FG7XJ	via W2CTN.
FP8AA	via K2CPR.
FP8BD	via G3LMD.
FP8CC	via W2HLL.
FS7GS	via K9KDI.
HH2CE	via K8BTR or Box 476, Port au Prince, Haiti.
HI8CLU	via K4BMS.
HL9KG	via K4GAC.
HL9KH	via W9VZP.
JT1KAC	via VE4OX.
KG4AM	via W2CTN.
KJ6BZ	via G5VT.
K3GAD/KJ6	Box 1, Bridgewater, Mass., U.S.A.
K1ECK/KJ6	Box 444, Navy 824, F.P.O., San Francisco, Calif., U.S.A.
KX6BU	via K4TJL.
MP4QBB	Bogota 4, Torshavn, Faroe Islands.
OY7ML	via SM7ACB.
SM5CBC/9QS	via K0UXU.
TF2WGT	via W2CTN.
T12CMF	via UA2AW, Box 7, Kaliningradsk Oblast, U.S.S.R.
UB5UG/UJ8	Box 321, St. Kitts.
VP2KZ	via G8VG.
VP5XG	VQ4GT, Box 584, Mombasa, Kenya.
VQ9HB/MM	O.I.C.C., c/o U.S. Embassy, Vientiane, Laos.
XW8AT	via W2CTN.
ZP9AY	Box 267, Walvis Bay, S.W. Africa.
Z33T	Box 4154, A.P.O. 231, N.Y., N.Y., U.S.A.
5A1TW	H. J. Benjamin, Police HQ, P.O. Box 9141, Dar-Es-Salaam, Tanganyika.
5H3IW	Box 6, American Embassy, Mogadiscio, Somalia Rep.
6OIWF	via W7EMU.
9M2GV	via ON4HK.
9USAS	via W4YWX.
9USJH	via W4ECI.
9USZZ	

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

QSO of the season took place on September 16 at 05.15 between G6BQ and W3GQF. Other North American stations heard by B.R.S.20317 (Bromley) were W2EQS (04.23), W3FBV (05.10), and W2IU (03.40). Signals from W3GQF averaged RST339 peaking to 459, and this station was the most consistent of those so far heard. From G8PA (Wirral) comes an account of the events on September 16, and this commences with a period of very heavy static from 03.45 to 04.45, dropping off at the latter time to allow the band to open between South England and the U.S.A. G3LIQ was heard calling a W2 at 04.57 and calling W3FBV at

05.10. At 05.24 G6BQ was in QSO with W3GQF and giving a report of RST359, and at this time W3GQF on 1801 kc/s was heard at G8PG/A, and a few minutes later called CQ DX being answered by G3LIQ and G8PG/A. No QSO resulted and W3GQF called CQ again at 05.45, but his signals were then down to RST229. It appears that the skip was moving from South to North with about a ten-minute difference for the 200-odd miles between Northern and Southern England. Taking into account the QSOs with VP8GQ during July, it looks as though only August will be a dead month this year. VP8GQ reports that on September 22

Propagation Predictions for 14 and 21 Mc/s

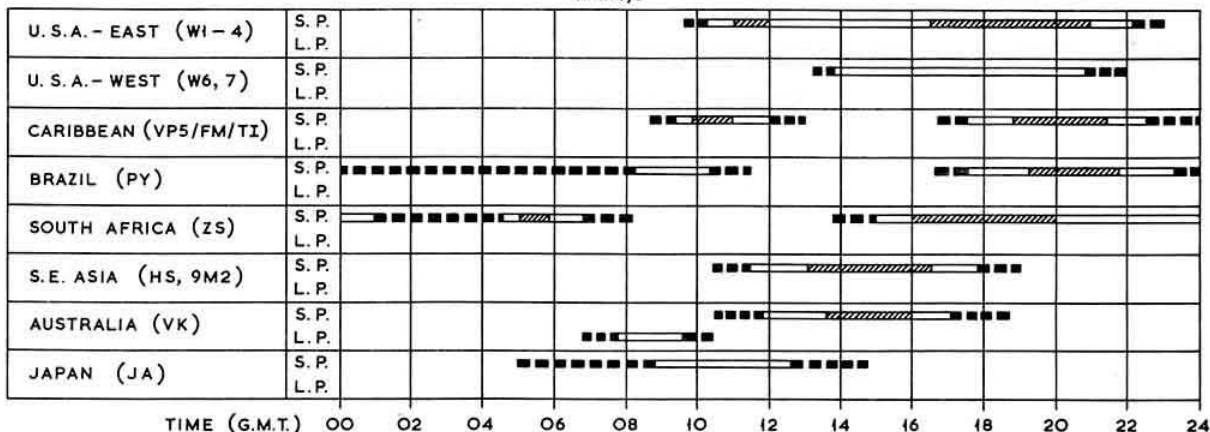
The seasonal change in propagation conditions has commenced and this will mean that the daytime m.u.f. will be higher, and the night-time m.u.f. lower, than during the summer months, giving better DX openings on the 28, 21 and 14 Mc/s bands during daylight hours, with the 7, 3.5 and 1.8 Mc/s providing best results during the hours of darkness. The first trans-Atlantic QSO of the current season has already taken place on 1.8 Mc/s and it is expected that the coming winter will provide optimum conditions on this band.

As will be seen from the prediction charts 21 Mc/s should produce better propagation than during previous months and contacts by auroral reflection should be possible on this band and on 28 Mc/s. Conditions on the latter band are also expected to improve and in addition to the openings on the Southerly paths to South America and South Africa, there may be limited propagation to Australia and South East Asia peaking at around 10.00Z.

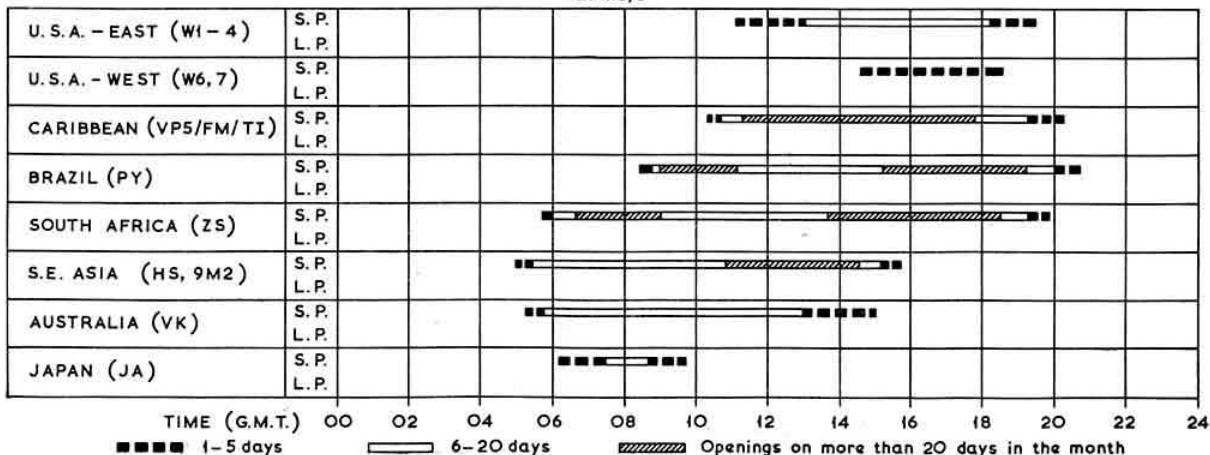
The current sunspot cycle continues its decline towards the expected minimum in late 1964 or early 1965 and the mean provisional number for August was 21, which is the lowest figure recorded since April 1955. Predictions of the numbers for the following three months are: November, 25; December, 24, and January 1963, 23.

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

14 Mc/s



21 Mc/s



he heard G6BQ on 1.827 kc/s at RST469 but that G6BQ did not return to his calls, and obviously it is only a question of time before a QSO results over the long path to Antarctica.

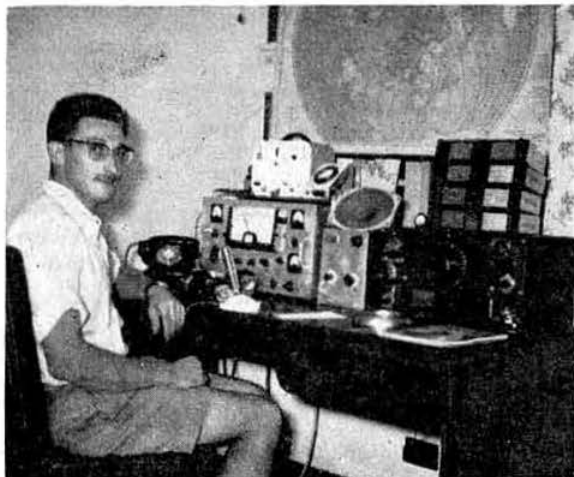
On 3.5 Mc/s conditions are moving towards the usual winter type with the band opening to North America around 23.00, the two outstanding signals being VE1ZZ and VE1AGG, both S6-7 at 23.20. Others heard by our reporter, B.R.S. 20317, were VE3HF, W1FVX and W3GQF, the latter peaking at half an hour before sunset local time. On other paths U.S.S.R. stations were prominent, and from Asia 4X4FU and 4X4DH provided good signals, whilst DJ1ZG/M1 and OH5TK/OH0 were European countries seldom heard on this band, the former giving our reporter his 111th country on 3.5 Mc/s.

The 7 Mc/s is a band which, if free from the sundry types of commercial QRM, would now be coming into increasing use in the declining stages of the sunspot cycle. G3LPS (Blackburn) records LU2ACH, PY7TJ, UA9DN, UA9DT, UD6KAB, UI8KAA, 4X4S DH, KK and NJ, whilst G3HDA (Stratford-on-Avon) worked PJ2ME (21.58), VP2MV (22.25) and VP5MJ (22.53). B.R.S. 20317 found the path to Asia open during the period of the All Asia Contest and logged VK3AZZ (15.20), JA6AK (16.45), 9M2FZ (17.25), VS1FJ (17.30), VU2BK (17.50), JA1BK and JA1AEA (18.15). All these, and other signals, were heard in the segment between 7000 and 7015 kc/s, and whilst there were a number of European stations participating very few U.K. stations were heard. In other directions our reporter found: Africa: SM5CBC/9Q5 (23.00), VQ9A (23.05) and ZE3JO (06.13). South America: FP8BD, VP5MJ, VP6GG, CO6XZ, HK2ADF, HK7YC and CX4IK, all after 22.00. In the mornings CP5EZ, CX2BT (07.25), HC1CU, XE1GGH (05.00) and XE1OK (05.50) were fair signals. Nothing was heard for the West Coast of North America and ZL1HY and VK2EK were outstanding between 06.00 and 07.00. Congratulations are offered to B.R.S. 20317 who registered his second success in the B.E.R.U. Contest in 1962. A.2493 (Stirling) concentrated on s.b. and logged OA4MX (06.27), PZ1AX (07.08), VK2ARR (06.42), VK2EX (06.30), VK3AC (06.58), VK3HG (06.54), ZL1AIX (06.18) and ZL3LE (06.34).

On 14 Mc/s s.s.b. continues to produce DX contacts and the Viceroy transmitter of OE1ME (Vienna) was heard at AP2IJ (16.30), BV1US (13.34), CE8AG (21.34), CR9AH (13.05), DU7IM (14.48), ET3LM (21.12), HL9KG (15.30), KC6BK (05.50) over the long path, K6SMY/KS6 (07.05), KJ6BZ (06.42) different operators give differing QSL destinations, W4LCY/KM6 (10.25), KX6BU (14.47), KP6AX (06.47), PJ5MB (19.35L), UA1CK/UH8 (15.40), UA0BP (10.20), UA0EK, UA0VQ (15.04 Zone 18), UA0SK (08.38 Zone 18), UD6KAR (17.11), UF6FB (17.39), UI8AG (17.12), VS1AU (14.29), VQ5IU (20.55), VR1G (13.20 14.104, his d.s.b.), VR3O (07.27), VP8GQ (20.46L), XW8AT (18.20), ZP5CF (20.44L) and ZS7R (18.05). Adding to this formidable list of DX worked, the following were heard: K1ECK/KJ6 (05.35), K5KLR/KS6 (06.50) and 6O1WF (21.30), whilst a.m. produced CE9AU (20.45 Greenwich Is.), and CE9AS (21.39 Deception Is.). G6XL (Leeds) worked KB6BZ (06.24), KJ6BZ (06.08), UI8AG (17.08), VR3L/VR1 (06.20), and VR5AA (08.05), whilst G3MWG (Mill Hill) records QSOs with AP2IJ, CX9BA, DU7IM, DJ1ZG/M1, EP2AC, HL9KG, KP4TL, OA4CV, PJ5MB, VE3FFW/SU, UA0SK, VS6EK, VR3L/VR1, ZP5CN and 9M2DL. A.2404 (Manchester) has heard most of what has already been recorded together with FG7XT (20.20L), HK3LX (21.15L), HZ1AB (17.35), K6CQV/KS6 (06.40), KG1CC (17.25), KG4AM (21.30), KR6MA (13.25), TI2HP (22.20L), VP2SH/P (21.50), VP9CP (21.40L), VQ2AT (18.55L), W4UAF/KH6 (07.35), WA6LFK/KJ6 (06.30), YS1MS (12.05), 4U1ITU (20.25), 9M2CR (16.15) and 9Q5US (19.45).

C.w. on 14 Mc/s continues to be popular with the DX chasers as the following will testify: G3HDA worked, AP2IJ (18.30), AP5SS (18.05), FG7XJ (20.30), FS7GS (20.23), KG4AM (20.23), PJ5MB (20.41), VR3L/VR1 (07.40), VR3O (07.32) and VQ9HB/MM (19.58). G2FFO (Burnley) worked KG4AM (23.15), FP8BD (21.53), FS7GS (19.10), PJ5MB (20.36), TT8AL (19.50), TF2WGT (19.10), VP4VP (21.20) and VP8GB (20.45). G3OLH (Whitton) QSOd FP8CD (18.15), HI8XAG (23.15), HK1QQ (11.00), KV4CI (21.00), PJ3AN (21.45), VU2SU (16.57) and 4S7EC (16.45), whilst G3LPS exchanged reports with AP5HQ (19.06), CT3AB (18.56), FP8CA (16.30), OX3BZ (10.17), VU2LNZ (16.25), VP8GQ (19.30), 5N2RDG (18.45) and 6O1MT (18.37). G3NXU/M (Bristol) contacted VK2LV at 07.15 on a.m. whilst mobile in his home area. G6XL worked VS1FJ (14.07), VQ9A (18.50) and ZK1AA (06.45) and heard PY1BCR (22.35), the Trinidad Is. DXpedition, with a poor note and a high frequency drift working nothing but North American stations, VR2BZ/VR1 (06.57) and VR4KK (09.08 on 14.047). G3AAE (Loughton) renders a composite list of DX heard and worked, which at this stage of the sunspot cycle, gives considerable encouragement: AP5CP (17.30), CP5EZ (21.30), DU1PAR (15.45), FG7XQ (21.15), FY7YF (21.30), FP8CC (19.30), HP1IE (21.30), HH2CE (21.25), KG4AM (20.55), K2QGC/KG6 (15.30), K5FOQ/KS6 (06.30), KV4CI (20.50), OA4FM (20.45), PZ1AH (21.20), SM5CBC/9Q5 (20.10), VE0NU (22.55), VP2MV (21.17), VP4VP (22.12), VP8GV (21.05), VR2DK (07.55), VR3L/VR1 (07.45), VR5AA (06.45), VQ8AI (15.30), VR3O (07.10), W4LCY/KM6 (07.50), ZK1BS (07.10), ZK1BY (07.55), ZP9AY (20.25), 6O1MT (18.00), and 9U5AS (20.15).

Reports on 21 Mc/s do not yet reflect the anticipated upsurge of conditions on this band but nevertheless there have been some limited openings. G3PTM (Solihull) worked LU8DB (20.00), PY7AKW (20.15 F. de Noronha), PZ1CE (16.45), VQ2BK (18.15) and 9Q5CK (19.30). These were a.m. contacts using an input of 50 watts to a 7 Mc/s dipole. A.2019 (Stafford) has again concentrated on this band and offers CE2LU (20.25), CR6JA (18.30), CX4BT (20.36), HC1WA (19.00), HH2DF (21.23), HI8MAH (21.30), HK7KP (20.55), KZ5GH (21.40), OA4IA (21.05), PZ1AC (19.30), TN8AD (18.15), VP2LS (21.00), VQ4KPB (18.10), 5H3IW (19.00), 5T5AD (18.25), 9Q5JE (18.40), and 9U5BB (19.46), all on a.m. A.3295 (Nettleham) heard



5H3IW at Oyster Bay, Tanganyika. The home-built transmitter for 80-10m is used with a quad for 15 and 20m and a G5RV aerial. The receiver is an HRO.

MP4BDC (13.23), PY7EC, VQ2JF (20.24), VS9ARC (13.00), ZD6RM (18.14), ZS6s, 5A3CR, 5A5s and 9G1EE (19.29), again on a.m. and using an HRO receiver, which equipment was employed by A.3086 (Worthing) to log MP4TAM (16.20), PY5AM (19.15), TN8AA (18.40), VQ5AU (18.00), 5N2JKO (18.00) and 9G1YL (17.45). B.R.S.24643 (Potters Bar) used an AR88 to hear CE2HW, CE3AGI, CR6JA, HP1CC, KZ5SS, TI2HK, TT8AM, ZD6HK, 4U1ITU/SU, 5H3IW, 9U5BH and 9U5JH, with EL6E on s.s.b. and VQ9A on c.w.

The only comment on 28 Mc/s comes from A.2019 who reports that the band is open almost daily to South America with LU, PY and ZP heard on a.m. and 5N2JKO at 18.15. It is hoped that the autumn will restore some life to this band.

DX Briefs

Arthur Tibbits, VP3MC, will be leaving British Guiana at the end of October and returning to Barbados, and therefore VP3MC will be QRT from mid-October, and it is hoped that VP6MC will be on the air after the settling down has been completed.

HB9SI is now operating 4U1ITU/SU and will be active using this call for about a year. The equipment in use is the new Hallicrafters FPM200 trans-receiver. (From G3NMH).

Now operating under the call of DL2DF is Sgt. D. F. Higgins, formerly VQ6ABI, 602ABI and MP4TAN. His address will be found in QTH Corner.

The present whereabouts of ZC5AF are of great interest to LA5HE who would like to obtain a QSL from this station, which was worked in October 1959. Any information would be appreciated and may be sent to G2BVN.

W4LCY/KM6, who is an R.S.G.B. member, is looking for U.K. contacts each morning at 06.00 on 14.080 kc/s. QSLs should go via the W4 Bureau, Box 20644, Municipal Airport Branch, Atlanta 20, Georgia, U.S.A. (From G3DO and G3MNV).

5B4PB will be operating on 1.8 Mc/s after October 6 and will be taking part in the Top Band contest in November. Most of the operating will be after 22.00, and it is expected that 5B4GF and 5B4CZ will also be active on 1.8 Mc/s. 5A3CJ hopes to be operating on this band also, but no definite dates are at present known.

VP6WD (ex-ZL2IS) is expected to be active on s.s.b. in the near future. A QSL from TAZAR has been received through PA0WWP (Olijekweg 12, Soest, Holland). (From G3MVG).

Ex-VQ1DR is now in Okinawa and has plans to activate some of the less popular spots in that area.

VE3BQP, the QSL manager for ZD1ES, reports that only a small proportion of the stations contacted have claimed QSLs, and that he will be happy to oblige on receipt of a card and reply postage.

W9FJY, the QSL manager for ZD7SA and ZD7SE, has recently moved and it is believed that he is now resident in Colorado Springs. Further and definite information would be welcomed.

OY7ML has recently had to move QTH and it seems that he will not now be able to erect the triband beam that he received from a group of U.S. amateurs. His new address will be found in QTH Corner.

OY7ML has received permission to operate on 1825 kc/s until March 31, 1963. Input will be 10 watts on c.w.

ET3RS (HB9RS) is returning Addis Ababa and will be active during the Telephony Section of the CQ W.W. DX Contest.

VK9LA should now be active with a new HT37 transmitter, and hopes to be operational on all bands. There is no doubt that there are many stations who would welcome a QSO with Cocos-Keeling Island.

VS1FJ hopes to have a spell of operation from Christmas Island (Indian Ocean) in the not too distant future. The problem is not the transport to the Island but the difficulty

of finding accommodation, and this will probably be solved by taking along some tents.

VP4VP is ex-GW3JGN; KP6AX is ex-K1AZA/KP6 and VQ1GDW is ex-VQ4IT.

G3OLH (Whitton) will shortly be proceeding to Nyasaland for a stay of two and a half years where he will sign ZD6AA. G3JUL will be dealing with QSL matters.

G3DAF, recently retired from the R.A.F., is now in the U.S.A. and assisted with the preparation of one of the recent issues of the West Gulf DX Club Bulletin. G3DAF, "Jumbo" to his many friends, is now on his way to New Zealand, accompanied by his wife and daughter.

The writer offers his thanks to the many correspondents, particularly to those who offered comments on the frequency predictions. Acknowledgment is made to the DX'press (PA0FX), the West Gulf DX Club Bulletin, The DX'er (K6CQM), DX (W4KVX) and Florida DX Report (W4CKB). Please send all items for the November issue to arrive at R.S.G.B. Headquarters not later than October 22.

CONTESTS DIARY

October 20-21 Second 420 Mc/s Contest (see page 85, August 1962).

October 20-22 World Wide RTTY Sweepstakes.

October 27-28 CQ WW DX Contest (Phone). (see page 192).

October 27-28 R.S.G.B. 7 Mc/s DX Contest (Phone).

November R.S.G.B. 7 Mc/s DX Contest (C.W.). 3-4 (For rules, see page 504, April 1962).

November Second 1.8 Mc/s Contest. (For 10-11 details, see page 192).

November CQ WW DX Contest (C.W.). 24-25

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

December 9- OK DX Contest.

1963

January 26-27 — CQ WW 160m Contest.
January 27 — 144 Mc/s C.W. Contest.
February 2-3 — Affiliated Societies' Contest.
February 9-10 — A.R.R.L. DX (phone) Contest.
February 16-17 — B.E.R.U. Contests.
February 23-24 — First 1.8 Mc/s Contest.
March 2-3 — 144 Mc/s Open and Listeners' V.H.F. Contests.*
March 9-10 — A.R.R.L. DX Contest (phone).
March 23-24 — A.R.R.L. DX Contest (c.w.).
March 23 — Pakistan Day DX Contest.
March 23-24 — A.R.R.L. DX (c.w.) Contest.
March 30-31 — CQ W.W. S.S.B. Contest.
April 6-7 — Low Power Contest.
April 6-7 — PZK (c.w.) Contest.
April 21 — D/F Qualifying Event.
May 4-5 — U.S.S.R. DX (c.w.) Contest.
May 5 — First 144 Mc/s Portable Contest.*
May 12 — D/F Qualifying Event.
May 19 — D/F Qualifying Event.
May 26 — First 420 Mc/s Contest.*
June 8-9 — National Field Day.
June 15-16 — 70 Mc/s Contest.
June 23 — 1250 Mc/s Tests.
June 30 — D/F Qualifying Event.
July 21 — D/F Qualifying Event.
July 28 — Second 144 Mc/s Portable Contest.
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.

Third Method Single Sideband

PART 3—Construction and Alignment of a Transmitter

By G. F. GEARING (G3JJG)*

In this final article, a practical "third method" design is presented with details of the alignment, using little or no test gear. As described, the exciter operates on 3.5-3.8 Mc/s only but standard heterodyning techniques may be used for other frequencies.

The transmitter will be described in two parts, the s.s.b. generator, delivering an output at 450 kc/s, and the heterodyning and amplifying stages, with a final output of 70-80 watts p.e.p. The equipment is capable of use on s.s.b., c.w. and a.m.

S.S.B. Generator Circuit

The circuit of the third method type exciter unit is shown in Fig. 1 overleaf. The two halves of V1 in cascade comprise the audio amplifier, being transformer coupled by means of T1 and T2 into the two ring modulators, MR1-4 and MR7-10. VR1, the A.F. GAIN control, is on the front panel, although it will be found that once the operating point has been selected the control will be seldom used. The action of VR2, AMPLITUDE BALANCE, is to divide equally the audio signal between the two signal channels.

The local oscillator signal, at 1650 c/s, is provided by V3a. T5/C9 determine the frequency of oscillation, additional capacity being added if necessary, as explained in the alignment details.

Phase shift is imparted to this signal by means of C7/R11 and R12/C8. S1b, by reversing the inputs to V2a and V2b, determines which sideband shall be radiated. The above four components must be of the highest quality and very close in value to that quoted. If operation on one sideband only is desired, such accuracy is not essential.

Balancing of the ring modulators, with VR4 and VR7, determines the amount of carrier suppression. Some 55-60db rejection is attainable.

The two filters may cause some difficulty, as eight fairly close-tolerance inductors are required. It is possible to wind them by hand on Mullard LA1 ferroxcube assemblies but the accuracy is not likely to be better than ± 3 per cent.

With reasonable care, using 5 per cent tolerance components and home-made filter inductors, the suppression of the unwanted sideband will not be less than 50db. Errors in the filters will cause an increase in the level of unwanted products in the wanted sideband, but in actual operation there will be negligible effect on quality and intelligibility.

The crystal oscillator, V3b, operates at 448.35 kc/s (lower sideband) or 451.65 kc/s (upper sideband), output being taken from the cathode through the phase-shift networks C16/R44 and C17/R24 to the grids of V4a and V4b (12AT7). The output is from the cathodes, coupled by means of the resonant circuits T6/C45 and T7/C46 into the second balanced modulators. The signal at crystal frequency is balanced out, the output of the modulators containing sum and difference products of this frequency and the signal appearing at the filter outputs. It should be noted that the crystal frequency is *not* the nominal carrier frequency.

The outputs of both signal chains appear between the tap of T8 and earth. Assuming that the phase relationships throughout are correct and that the amplitudes of the two signals are equal, only the required sideband will appear across C37. T8 and C37 are resonant at the nominal carrier

frequency of 450 kc/s. V5 (6AK5) is a class A amplifier producing approximately 500 mV R.M.S. s.s.b.

For c.w. operation, the cathode of V5 is keyed, the carrier having been re-inserted by means of S2 and the associated resistive network. The level is selected to be optimum for operation on a.m. (single sideband and carrier) and could be increased if only s.s.b. and c.w. operation is required. R47 and R48 could then become 56 K ohms.

Final Balanced Mixer and V.F.O.

The output of T9 is fed to the grids of V6 and V7 (both type 6BE6) in Fig. 2. VR6 is adjusted to give equal voltage on the screen grid of each valve. Each anode circuit consists of a balanced transformer with a coupling winding into the first signal frequency tuned circuit.

The heterodyning signal for V6 and V7 is provided by V8, the variable frequency oscillator, the tuning range of which is 3.050-3.350 Mc/s. The circuit values have been chosen to spread the required range across 170° of the tuning dial. Variable temperature compensation is provided, and after adjustment the oscillator will be found to be exceptionally stable. The components comprising the tuned circuit, C75, C76, C77, C78, C79, C80, C81 and L9 are contained in an Eddystone die-cast box, connection to the grid and cathode of V8 being by means of feed-through insulators. The signal from the cathode is fed in co-axial cable to V6 and V7. R50 is located at the valveholders.

Driver and Power Amplifier

The driver grid tuned circuit, L10, C51, C52, C53 is located in the rear portion of the die-cast box, C52 being ganged to the shaft of C81. The coverage of this circuit is 3.50-3.8 Mc/s. V9 (Z759) is an r.f. pentode having a slope of 15 mA/V. A type 6CH6 would be a suitable replacement having, however, a smaller slope and hence, less gain.

VR9 controls the gain of the stage and so the drive voltage to the p.a. valves. R53 prevents the screen rising to the full h.t. voltage under maximum drive conditions. Under receive conditions, a small positive voltage on the cathode virtually cuts off the valve.

The tuned circuit, L11, C60, C61, C62, is resonant at the final operating frequency. The purpose of C60 is to restrict the capacity swing of C61 to that required while R58 reduces the loaded Q of the circuit to avoid instability.

Bias to the p.a. is fed through R59 and the grid coil, L11. The earth return for all the above circuitry is by means of C63, which, with C66 and C85, forms two arms of the bridge neutralizing network. C66 must be capable of operating at high d.c. and r.f. potentials.

The pi-network tank circuit is quite conventional, although it must be stressed that a single sideband transmitter is critical of loading, only one optimum position existing at which maximum r.f. output is available consistent with linearity up to the peak signal level. This point must be found, otherwise an increase in the level of unwanted intermodulation products will result.

Anode voltage for the p.a. can be in the range 550-650 volts although as high as 800 volts may be used, with decreased reliability. The screen supply is 200 volts, stabilized by V14 and V15. Stabilized supplies of 108 volts and 258 volts are also available for other parts of the circuit.

Control circuitry must, of necessity, be left to the individual.

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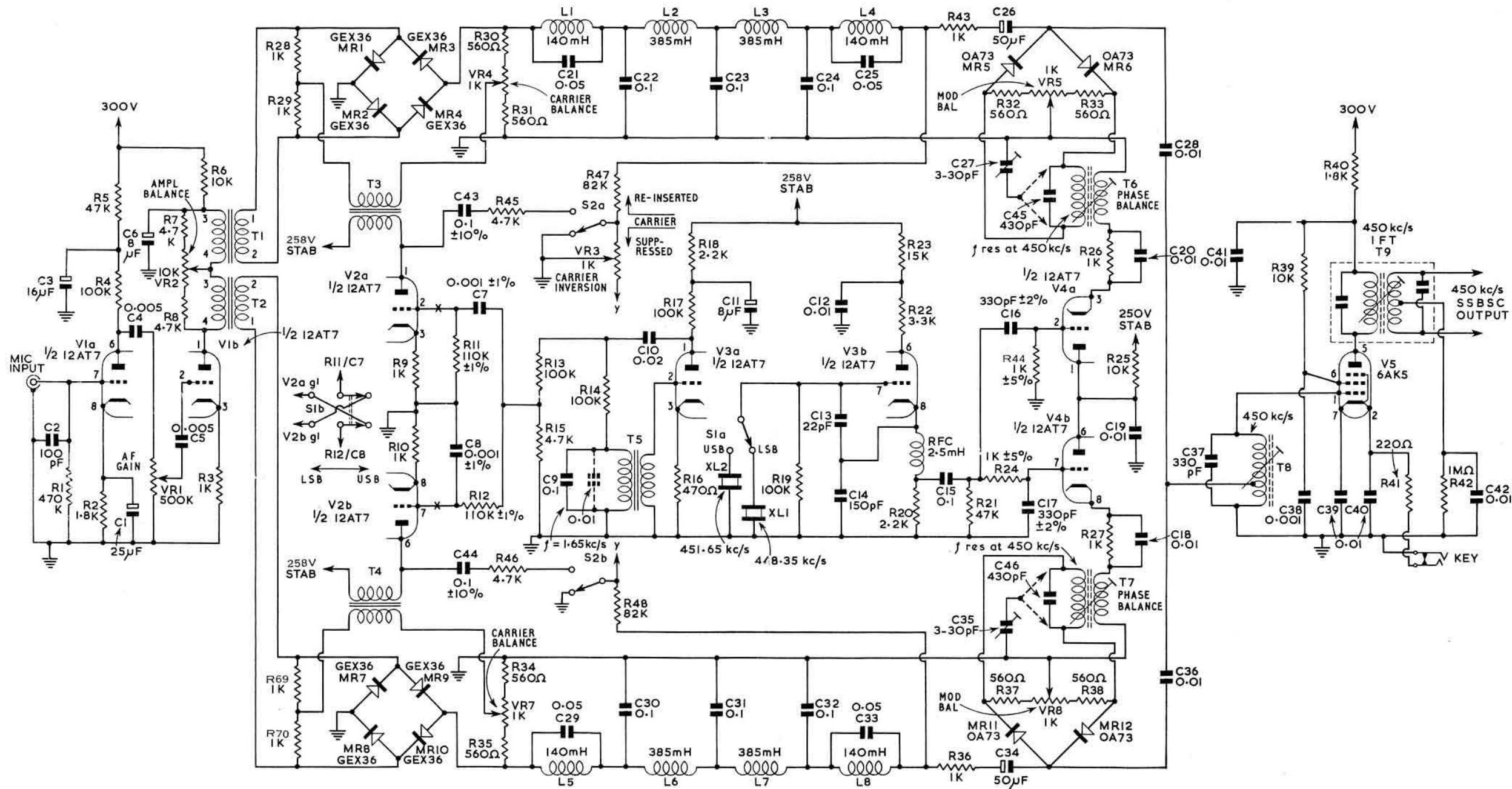


Fig. 1. Circuit diagram of the third method single sideband generator.

L1, 4, 5, 8, core assembly Mullard LA1: winding, 615 turns 36 s.w.g. enam. copper layer-wound. Inductance 140 mH ± 5 mH. L2, 3, 6, 7, core assembly Mullard LA1: winding, 1020 turns 38 s.w.g. enam. copper layer-wound. Inductance 385 mH. T1, T2, ratio 15 : 1 (Wearite type 210). T3, T4, ratio 3.5 : 1 (Wearite type 230). T5, core assembly Mullard LA1: primary, 475 turns 36 s.w.g. enam. copper (to resonate with 0.1 μ F to 1650 c/s); secondary, 120 turns 36 s.w.g. enam. copper. T6, T7, primary and secondary each 185 turns 9/46 Litz wire wound on Aladdin $\frac{1}{2}$ in. dia. former $1\frac{1}{2}$ in. long with dust-iron core. T8, 180 turns tapped at 15 turns 9/46 Litz wire wound on Aladdin $\frac{1}{2}$ in. dia. former with dust-iron core. T9, 455 kc/s i.f. transformer with centre tapped secondary. All coils except the p.a. tank coil may be obtained from Electronics (Felixstowe) Ltd. Details of other components are given in the Components List.

However, the screen supply to V10 and V11 must be disconnected on receive, and the driver valve must be biased to be non-conducting to avoid interference to the station receiver. When the transmitter is operational, the receiver must be disabled, either partly or wholly, and some arrangement made whereby the output is fed to the aerial and the receiver aerial input short-circuited to earth.

Mechanical Layout

The physical layout of the transmitter can be left to the constructor, who, no doubt, will have his own views on the best presentation. The prototype transmitter, requiring external h.t. and l.t. supplies, but with transmit/receive switching, is built on a chassis 14 in. \times 8 in. \times 2 in., with a front panel height of 7 in., the exciter section occupying exactly half of the space.

Fig. 3 shows the placing of the components. Three screens are used under chassis, one of which is primarily for thermal screening. The third method exciter is laid out symmetrically, with the signal paths on the outside and the 1650 c/s and crystal oscillators between them.

Care is necessary to keep the temperature around the balanced modulators (MR5/6 MR11/12) as constant as is possible, otherwise drift in the balance point will occur. The cabinet must be so designed that air is drawn in at the bottom, flows all round the chassis and out through the top.

Component

Considerations

Very few of the components require special selection. T1-4 are manufactured by Wright and Weare Ltd., T1 and T2 having ratios of 15 to 1, and T3 and T4 ratios of 3.5 to 1.

L1 to L8 are the filter

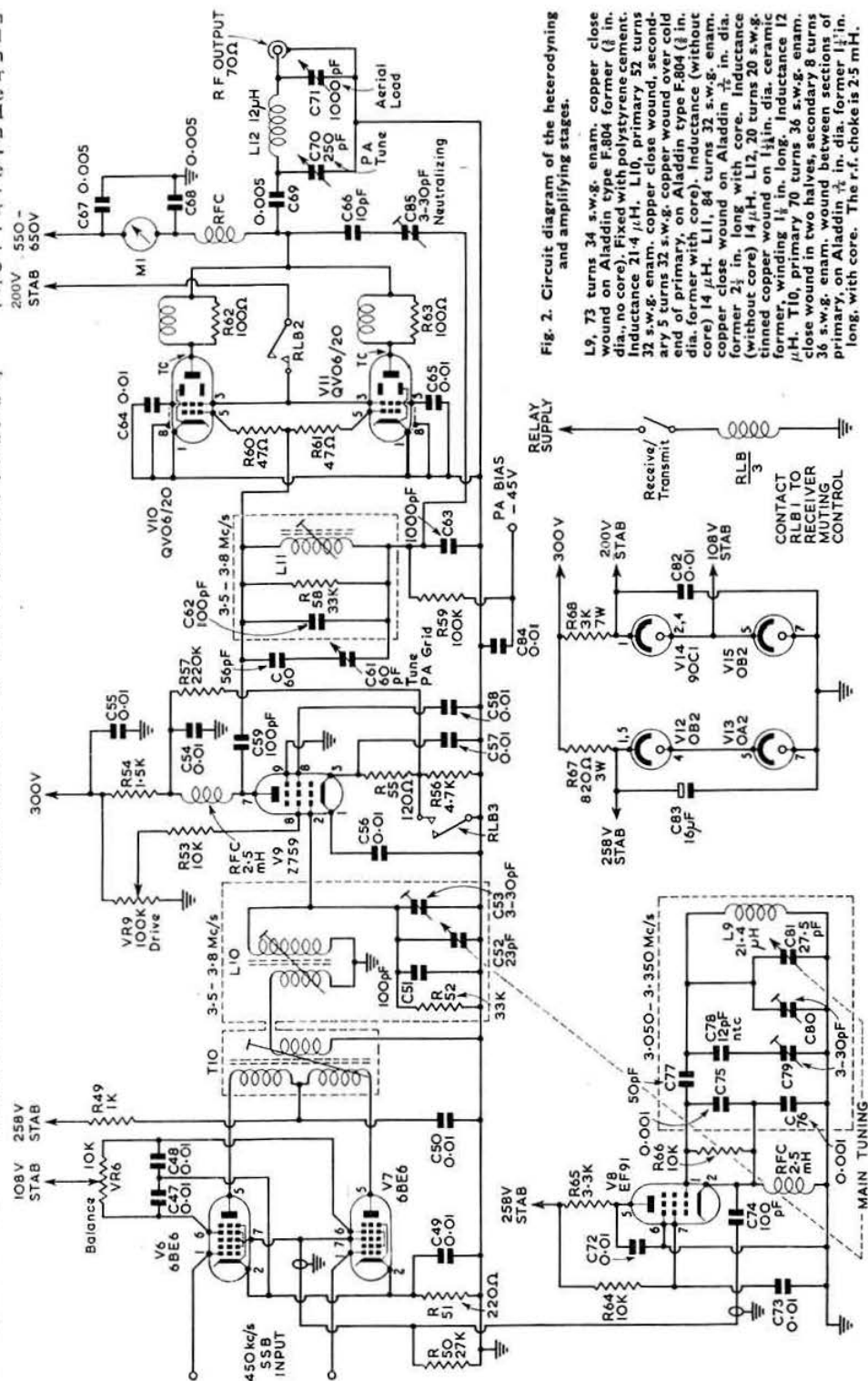


Fig. 2. Circuit diagram of the heterodyning and amplifying stages.

L9, 73 turns 34 s.w.g. enam. copper close wound on Aladdin type F.804 former (1 in. dia., no core). Fixed with polystyrene cement. Inductance 21.4 μ H. L10, primary 52 turns 32 s.w.g. enam. copper close wound, secondary 5 turns 32 s.w.g. enam. copper wound over cold end of primary, on Aladdin type F.804 (1 in. dia. former with core). Inductance (without core) 14 μ H. L11, 84 turns 32 s.w.g. enam. copper close wound on Aladdin 1 in. dia. former 2 1/2 in. long with core. Inductance (without core) 14 μ H. L12, 20 turns 20 s.w.g. tinned copper wound on 1 1/2 in. dia. ceramic former, primary 70 turns 36 s.w.g. enam. close wound in two halves, secondary 8 turns 36 s.w.g. enam. wound between sections of primary, on Aladdin 1 in. dia. former 1 1/2 in. long, with core. The r.f. choke is 2.5 mH.

inductors and may be wound on Mullard LA1 Ferroxcube assemblies. However, any former which will permit the required inductance to be obtained, with a Q of 30, is satisfactory. Using the LA1 formers, the filters may be contained in a space of $3\frac{1}{4}$ in. \times $1\frac{1}{2}$ in. \times $1\frac{1}{2}$ in.

Alignment

In any single sideband suppressed carrier transmitter, alignment is a major job. However, alignment of a third method exciter is quite logical and may be carried out with the aid of a pair of headphones, a fixed frequency audio tone source of about 1000 c/s with not more than 5 per cent harmonic distortion, a BC221 frequency meter and a communication receiver. It will be found better to align part of the generator, then the main transmitter, returning to complete the generator.

When construction is complete, the rig should be carefully inspected, heater voltage applied, and the voltage at the heater pins of V9-V11 measured as $6.3 \text{ volts} \pm 10 \text{ per cent}$. Then temporarily disconnect the supply to the screens of V10 and V11 (200 volts). Switch on the 300 volt h.t. supply and check the stabilized lines to V12-V15. All stabilizers should ignite. Loosely couple the input of the receiver to the p.a. grid connection. Switch to lower sideband (carrier suppressed), then proceed as follows.

(i) **1650 c/s Oscillator and Carrier Balance.** Check with the headphones from pins 2 and 7 of V2 to earth for the presence of the 1650 c/s (nominal) oscillator signal. Transfer the phones to the junction of R30/L1 and earth, adjust VR4 to null the signal. With the phones connected to the junction of L4/R43, little or no signal should be audible.

Repeat the procedure for signal path 2, checking at the junction of R35/L5, VR7 and at the junction of L8/R36. With VR1 at minimum, connect the audio tone source to the microphone input socket. Monitor with phones from pin 2 of V1 to earth. Increase the setting of VR1 until the tone is audible. Check at pins 1 and 2 of T1 and T2. Ensure that the tone level does not approach the overload point of V1.

Next monitor the signal at the junction of L4/R43 to earth and the junction of L8/R36. A single audio tone of about 650 c/s should be heard. Adjust VR2 to give an approximate aural balance in the signal levels. Remove the audio input signal.

(ii) **Alignment of the Variable Frequency Oscillator (V8) to cover 3.05 to 3.35 Mc/s.** Set to C79 to mid-capacity and C81 to minimum capacity. Locate the oscillator signal on the

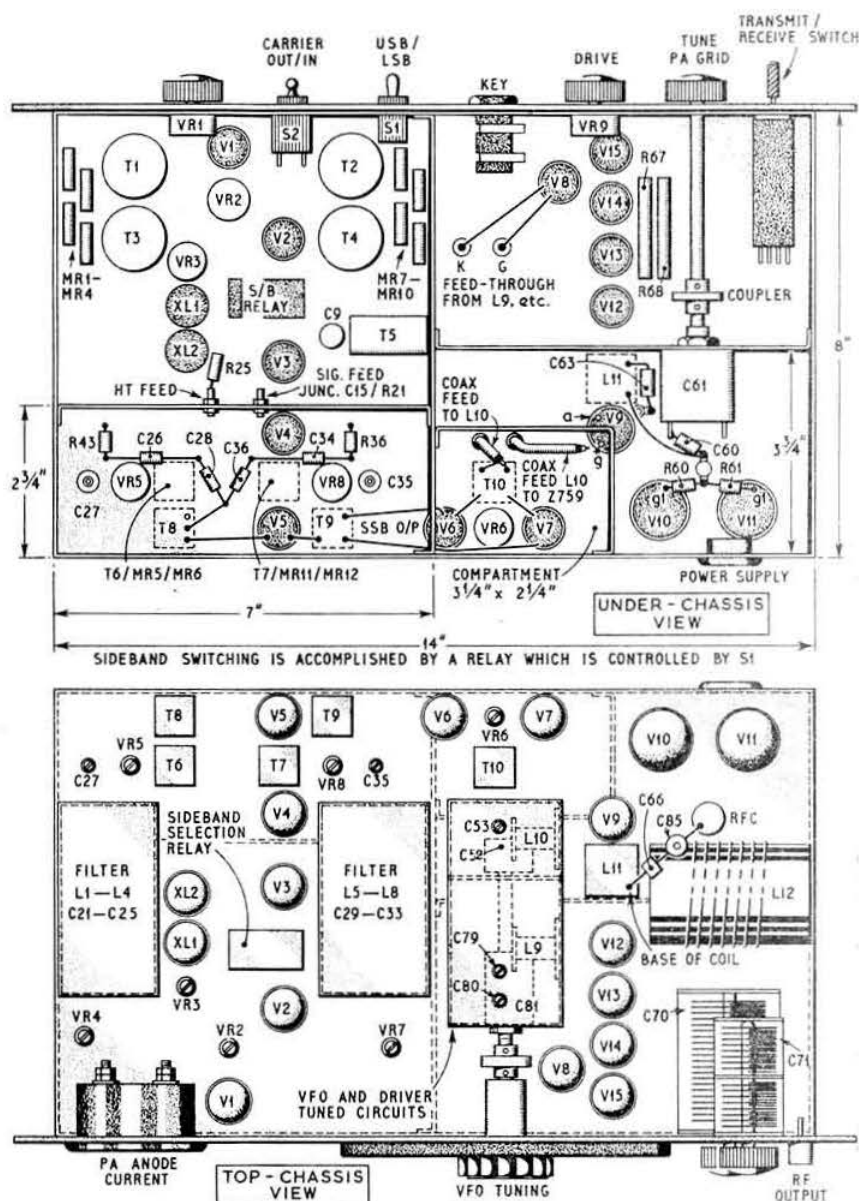
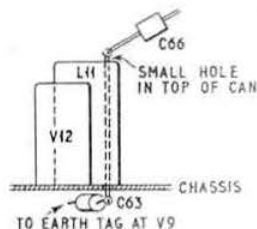


Fig. 3. Layout of the principal components below and above chassis in the third method single sideband transmitter. The detail, right, shows the arrangement of the components connected to L11.



Components List

- C1, 25 μ F 12 volt electrolytic.
 C2, C51, C59, C62, C74, 100 pF silver mica.
 C3, C83, 16 μ F 350 volt electrolytic.
 C4, C5, 0.005 μ F 350 volt tubular.
 C6, C11, 8 μ F 350 volt electrolytic.
 C7, C8, 1000 pF \pm 1 per cent silver mica.
 C9, C15, C22, C23, C24, C30, C31, C32, C43, C44, 0.1 μ F \pm 10 per cent 150 volt d.c. tubular (good quality).
 C10, 0.02 μ F 150 volt tubular.
 C12, C19, C41, C42, C47, C48, C49, C50, C54, C55, C56, C57, C58, C64, C65, C72, C73, C82, C84, 0.01 μ F disc ceramic.
 C13, 22 pF \pm 5 per cent silver mica.
 C14, 150 pF \pm 10 per cent silver mica.
 C16, C17, C37, 330 pF \pm 5 per cent silver mica.
 C18, C20, C28, C36, C39, C40, 0.01 μ F 150 volt tubular.
 C21, C25, C29, C33, 0.05 μ F \pm 10 per cent 150 volt tubular (good quality).
 C26, C34, 50 μ F 12 volt electrolytic.
 C27, C35, C53, C79, C80, C85, 3-30 pF air-spaced trimmer.
 C38, 0.001 μ F 150 volt tubular.
 C45, C46, 430 pF \pm 5 per cent silver mica.
 C52, 23 pF air-spaced variable (Jackson Bros.).
 C60, 56 pF \pm 5 per cent silver mica.
 C61, 60 pF air-spaced variable (Eddystone).
 C63, C75, C76, 1000 pF \pm 10 per cent silver mica.
 C66, 10 pF ceramic, high r.f. voltage type (T.C.C. HVD2).
 C67, C68, C69, 0.005 μ F 3000 volt disc ceramic.
 C70, 250 pF air-spaced variable (Eddystone).
 C71, two-gang 0.0005 μ F air-spaced variable.
 C77, 50 pF \pm 5 per cent silver mica.
 C78, 12 pF \pm 5 per cent N750L negative temperature coefficient.
 C81, 27.5 pF air-spaced variable (Eddystone).
 MR1-4, MR7-10, sets of four matched GEX36.
 MR5, MR6, MR11, MR12, OA73.
 R1, 470 K ohms, $\frac{1}{2}$ watt.
 R2, 1.8 K ohms \pm 10 per cent $\frac{1}{2}$ watt high stability.
 R3, R9, R10, R26, R27, R28, R29, R36, R43, R49, R69, R70, 1 K ohms, $\frac{1}{2}$ watt.
 R4, 100 K ohms \pm 10 per cent $\frac{1}{2}$ watt high stability.
 R5, R21, 47 K ohms, $\frac{1}{2}$ watt.
 R6, R25, R39, R53, R64, R66, 10 K ohms, $\frac{1}{2}$ watt.
 R7, R8, R15, R45, R46, 4.7 K ohms, $\frac{1}{2}$ watt.
 R11, R12, 110 K ohms \pm 1 per cent $\frac{1}{2}$ watt high stability.
 R13, R14, R17, R19, R59, 100 K ohms, $\frac{1}{2}$ watt.
 R16, 470 ohms, $\frac{1}{2}$ watt.
 R18, R20, 2.2 K ohms, $\frac{1}{2}$ watt.
 R22, R65, 3.3 K ohms, $\frac{1}{2}$ watt.
 R23, 15 K ohms, $\frac{1}{2}$ watt.
 R24, R44, 1 K ohms \pm 5 per cent $\frac{1}{2}$ watt high stability.
 R30, R31, R32, R33, R34, R35, R37, R38, 560 ohms, $\frac{1}{2}$ watt.
 R40, 1.8 K ohms, $\frac{1}{2}$ watt.
 R41, R51, 220 ohms, $\frac{1}{2}$ watt.
 R42, 1 Megohm, $\frac{1}{2}$ watt.
 R47, R48, 82 K ohms, $\frac{1}{2}$ watt.
 R50, 27 K ohms, $\frac{1}{2}$ watt.
 R52, R58, 33 K ohms, $\frac{1}{2}$ watt.
 R54, 1.5 K ohms, $\frac{1}{2}$ watt.
 R55, 120 ohms, $\frac{1}{2}$ watt.
 R56, 4.7 K ohms, $\frac{1}{2}$ watt.
 R57, 220 K ohms, $\frac{1}{2}$ watt.
 R60, R61, 47 ohms, $\frac{1}{2}$ watt.
 R62, R63, 100 ohms, $\frac{1}{2}$ watt overwound with 6 turns 22 s.w.g. enam.
 R67, 820 ohms, 3 watts.
 R68, 3 K ohms, 7 watts.
 S1, 1 wafer 3 pole 2 way Yaxley switch or relay with three s.p.d.t. contacts.
 S2, d.p.d.t. toggle.
 V1, V2, V3, V4, 12AT7.
 V5, 6AK5.
 V6, V7, 6BE6.
 V8, EF91 or 6AM6.
 V9, Z759.
 V10, V11, Mullard QV06/20.
 V12, V15, OB2.
 V13, OA2.
 V14, 90C1.
 VR1, 500 K ohms log law potentiometer (a.f. gain).
 VR2, 10 K ohms linear potentiometer (amplitude balance).
 VR3, 1 K ohms linear potentiometer (re-inserted carrier balance).
 VR4, VR7, 1 K ohms linear potentiometer (carrier balance).
 VR5, VR8, 1 K ohms linear potentiometer (sub-carrier balance).
 VR6, 10 K ohms linear potentiometer (final modulation balance).
 VR9, 100 K ohms log law potentiometer (grid drive).
 VR1-VR9 should have carbon tracks.
 XL1, 448-35 kc/s.
 XL2, 451-65 kc/s.

station receiver and adjust C80 to zero-beat at 3.40 Mc/s. Re-adjust C81 to maximum capacity. Check the frequency of oscillation to be slightly below 3.05 Mc/s. Adjust C80, if necessary, to get correct coverage, as above.

With the aid of a BC221 which has been switched on for several hours, check the drift of the oscillator to determine whether it is l.f. or h.f. and adjust C79 to give more or less capacity having a negative temperature co-efficient. (It must be admitted that this check is for the purist!) After completion, adjust VR6 and T10 for minimum break-through of the v.f.o. signal at the p.a. grid.

(iii) *Approximate Alignment of Drive Circuits (Coverage 3.5 to 3.8 Mc/s.)* Set the v.f.o. to 3.05 Mc/s, VR9 to maximum, the cores of L10 and L11 half-way home, C53 at mid-capacity, C61 at 95 per cent of maximum capacity and short-circuit R56. The receiver should be tuned to approximately 3.5 Mc/s. A signal should now be heard, disappearing when XL1 (or XL2) is removed. Replace the crystal and tune L10, T8, T9 and L11 for maximum signal.

Next set the v.f.o. to 3.35 Mc/s and the receiver to 3.8 Mc/s. C61 should be at nearly minimum capacity. Tune C53 for maximum signal, then C61. If it is found that C61 will not cover the whole band, C60 may be increased in value.

The alignment should now be checked at 3.5 Mc/s and then again at 3.8 Mc/s until the tracking of the tuned circuits is satisfactory. However, accurate alignment may be carried out at a later stage.

(iv) *Alignment of the Balanced Modulators MR5/6 and MR11/12.* Set VR5 and VR8 to mid-travel, C27 and C35 being disconnected at this stage. The cores in T6 and T7 should be at mid-travel. Remove V2.

Monitor the signal at the p.a. grid and reduce it to a minimum by adjustment of VR5 and VR8. C27 and C35 are connected to one side or the other (determined experimentally) of T6 and T7 respectively. It should be possible by means of the four controls to reduce the unwanted signal to a very low level.

Switch to the other sideband and make any compromise adjustment necessary to maintain the balance using either sideband. It must be noted that the frequency of the spurious signal will alter by the difference in the two crystal frequencies.

Replace V2. Other spurious signals, at nominal carrier frequency and at nominal carrier frequency plus or minus twice the frequency of the 1650 c/s sub-carrier may result. They are balanced out by VR4 and VR7, only slight adjustment being necessary.

(v) *Phasing-out of the Inversion Signal on S.S.B.* Listening to the station receiver, only low-amplitude signals will be heard, amounting to a buzz rather than separate signals. Inject the audio signal into the microphone input.

VR1 is then increased until the signal in the receiver is reasonably strong, without overloading. Two (possibly only one) signals will be heard. Zero-beat the receiver with the strongest signal. Adjustment of VR2 should result in a change of strength in the remaining signal and should be set for minimum. T6 and T7 are adjusted to eliminate this signal, VR2 finally being re-adjusted. Repeat the procedure for the other sideband, making compromise adjustments in the settings of T6 and T7 where necessary.

(vi) *Overall Test of the Exciter on S.S.B.* Replace the tone input by speech which should appear as excellent quality in both sidebands. The nominal carrier frequency should be exactly the same under either condition, any small errors being eliminated by slight alteration of the 1650 c/s oscillator frequency. If there is considerable change in the carrier frequency and the speech is inverted, reverse the connections to XL1 and XL2.

Switch S2 to CARRIER ON, the b.f.o. in the receiver off and tune in the carrier (this should be the point at which the receiver was tuned to receive s.s.b.). Reduce any residual

(Continued on page 179)

Mobile Column

By C. R. PLANT (G5CP)*

THOSE readers who were interested in the transistorized converter by VK2SG (Sydney, N.S.W.), published in the June issue, will be pleased to hear that he has now an improved version which incorporates an r.f. stage. In an interesting letter he surveys the work he has carried out and extracts interesting details to be passed on and also considers the problem associated with feeding the output of the converter into other than a car receiver: "If the

taken from the fifth turn the sensitivity will go down to 3-4 μ V and the image rejection rise to 43db. If the coil is tapped at the 15th turn the figures will be 0.5 μ V or better and 12-14db. Again, in moving the tap up the coil a greater load is put on the transistor and the broader the tuning becomes, thus bringing additional noise into the front-end of the receiver. It is therefore advisable to keep the tap as near to the "earthy" end as possible to ensure sharp tuning commensurate with adequate signal strength. For mobile working a figure of 3-4 μ V with a second channel 43db down is considered to be reasonable; this ensures that interference from unwanted signals is reduced as also is the local car noise. The sensitivity may not appear to be high but compared with an 1155 or BC348 the result is surprisingly good.

"All the tests were carried out with a car receiver tuned to

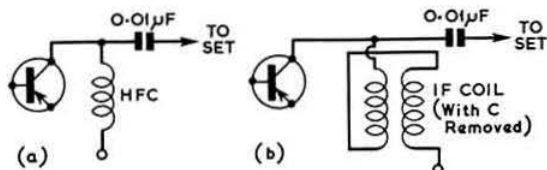


Fig. 1. Output circuits for a transistor converter.

converter is to be used with a BC453 or a unit tuning 455 or 175 kc/s, we run into some small difficulty, for now the output coil has to cover a much larger spectrum percentage and there will also appear a sharp peak on one frequency with a rapid fall off either side of this.

"To overcome the problem either use an r.f. choke in the output circuit or alternatively use the coils in series (see Fig. 1). Circuit of Fig. 1 (b) is the better of the two—with the slugs retained it is possible to obtain a slight gain. Another point raised on the subject of the coils is worth passing on—the coil data given is a compromise in that the unit may be made more selective, or on the other hand more sensitive, as desired, but the increase of either has a detrimental effect on the other. For example, the 7 Mc/s coil has 35 turns tapped at the 10th turn; this will give good sensitivity with fairly good selectivity, the sensitivity being 1.5-2 μ V with an image rejection of 28db. When the tap is

COIL, CAPACITOR AND CRYSTAL TABLE

Band	L1/L2	L3	C1	C2/3	Crystal
14 Mc/s	Main coil—23t 24 s.w.g. enam. copper wire tapped 6th turn from earthy end. Coupling coil 5 turns	26t 24 s.w.g. enam. Coupling coil 3 turns	15pF	15pF	4450 kc/s 3rd harmonic
7 Mc/s	Main coil 35t 28 s.w.g. enam. copper wire tapped 10th turn from earthy end. Coupling coil 6 turns	40t 28 s.w.g. enam. Coupling coil 4 turns	33pF	33pF	6350 kc/s
3.5 Mc/s	Main coil 58t 40 s.w.g. enam. copper wire tapped 16th turn from earthy end. Coupling coil 8 turns 33 s.w.g. enam.	80t 33 s.w.g. enam. Coupling coil 5t 35 s.w.g. enam.	40pF	40pF	2850 kc/s

L4 Standard Medium Wave slug tuned broadcast coil

750 kc/s as second i.f. The figures will vary if the i.f. is changed, i.e. 455 kc/s (BC453) but only so far as second channel interference is concerned, when the figures will be 32, 18 and 6db, the latter being useless unless a crystal gate or some such device is used. If the output were on 10 Mc/s the figures would be 68, 53 and 42db and it is now a proposition to go for real sensitivity if it is so desired, though this is influenced largely by the basic car noises present."

VK2SG has developed an r.f. stage to add to the original converter, the complete circuit of the new converter being shown in Fig. 2. The addition of an r.f. stage really makes a much more sensitive set-up the figures being 0.5-1 μ V on all bands. VK2SG uses a similar circuit on 144 Mc/s with 3 μ V sensitivity, but the normal BC receiver range only covers a portion of the 2m spectrum. Several mobile operators who visited the Derby Rally intimated that they had built the original converter—unfortunately the messages were received second hand due to the writer being away from the car at the time they made a call and it would be greatly appreciated if these operators would write to tell of the successes and any difficulties encountered.

Rally Reports

The weather looked threatening but it remained fine and at times sunny at the Aerial Radio Club Rally at Motspur Park on July 14. Cloudbursts in North and West London probably accounted for the small number of mobiles that

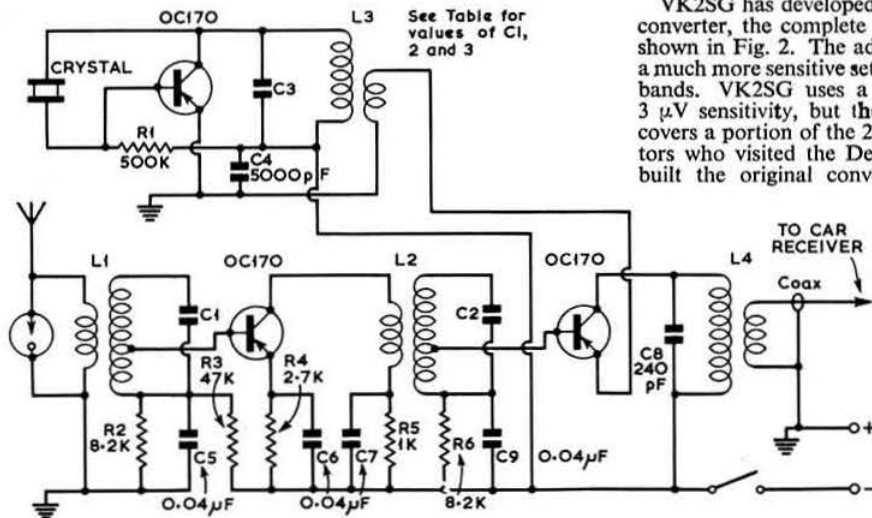


Fig. 2. Circuit diagram of VK2SG's improved transistor converter for the h.f. bands. Details of the coils, crystals, and unmarked capacitors are given in the accompanying table.

attended but many local amateurs and S.W.L.s were present. A feature of the rally was a Top Band aerial supported by a balloon for G3AYC/P; the 144 Mc/s station (badly screened by local gasholders) was G3GTD/P. The Club was fortunate in being able to borrow a mobile control room to house the /P equipment. In a nearby tent, home-constructed gear was displayed, together with the trophy presented by past President E. R. Radford (G2IM) for award annually to the section gaining the highest number of points in the Affiliated Societies' Contest. In all an interesting Rally put on by people whose business and hobby is radio—a good combination which should show results particularly on the constructional side.

The Derby Mobile Rally once again attracted visitors from all over the British Isles and even from at least two other Continents (Africa and America). The weather was inclined



Three old timers at the Derby Mobile Rally on August 19, 1962. From left to right, Freddie Miles (G5ML), Eric Martin (G6MN) and Sid Levings (G3AO). (Photo by G5CP)

to be blustery and this caused several of the radio-controlled model aircraft to crash—one landed in the car park, fortunately without hurt to cars or personnel, but the machine itself was extensively damaged. It is estimated that about 2400 people attended, there being 140 cars fitted with /M equipment. A novel method of presenting the prize in the mobile competition was used: an aerial photograph of the car park taken by a radio-controlled plane, the camera shutter being operated from the ground by impulse. The picture was printed on a full plate sheet on which an arrow had previously been marked. The car to which the arrow pointed was the winner, G3KEP (Bingley, Yorks.). The prize for the Longest Distance travelled on the day of the Rally went to G3PXD (Devizes, Wilts.). In the Grand Sweep, drawn by A. T. Lee Esq. (ex-XDB) a founder member of the Derby Society in 1911, a refrigerator went to S. W. L. Skilton and a Grundig Tape Recorder to G3DSA (York). G8ON (Worksop, Notts.) won an electric razor and G5CP a bag of coal; the humour of this was quickly seen by the people who knew that he was employed by a well-known nationalized industry!

Radio equipped cars and motor cycles were on view and the Derby Borough Police also put on a display by their dogs and handlers—this formed a highlight of the proceedings, mock purse snatching and attacks on policemen being very quickly dealt with by the dogs. The Littleover Archery Club also gave a fine display and visitors were invited to "try their hand" at the close of the demonstration. The Monster Junk Sale presided over by G3FGY created a great deal of interest—washing machines, TV receivers, table lamps and a host of other items were quickly sold. The Rally organizers have the proud boast that all the prizes were purchased

by the society and no charge of any kind was made to visitors. The Committee and workers at Derby are to be congratulated for what has been the most successful rally they have yet had—we look forward with keen anticipation to next year.

Houghton and District Radio Club, Co. Durham, held their annual Rally on August 25 in association with the local Agricultural and Trade Show. The day was fine and there was a good turn-out, the base stations being kept busy working mobiles en route to the rally. The Top Band equipment was loaned by G3KZZ and the operators were G3KQD and G3NSI. It is estimated that over 40 stations were worked but great difficulty was experienced due to heavy QRN from an adjacent fairground! Sixteen well-known manufacturers supported the rally as well as local colliery officials. Prizes were won by a large number of people amongst them being the following amateurs: G3JEY (Sunderland), G3ISV (Middlesbrough), G3NSI (Houghton-le-Spring), G3PDM (Durham), G3KQD (Barley Mow), B.R.S. 24744, G2CKF (Castle Eden), and G3AWL (Wingate). The rest of the Show covering flowers, vegetables, pets, handicrafts, etc., and pony jumping contests, displays by R.A.F. police handlers and dogs, balloon races, etc., made the day a very interesting one.

The Stockport Mobile Rally held at Buxton, on August 26 although well attended was unfortunate in having what was probably the worst weather conditions of any rally this year. Heavy and persistent rain and high winds prevailed for most of the day but despite this 350 people attended. There were 30 cars fitted with mobile equipment. The talk-in stations G6UQ/A, G3FYE/A, G6DN/M on Top Band and G3AYT/M on 144 Mc/s were kept busy. The Radio Treasure Hunt was won by G3GJV (Batley), the runner-up being G2AKR (Manchester). The winners of the non-radio Treasure Hunt were A. Evans and "The Granada Boys," followed by A. Royle (G3FOE) of Stockport. The Ladies' Competition was won by Mrs. J. Brogan of Stockport. A Trampoline Display by a company of the Stockport Boys' Brigade proved very interesting as did the visitors who afterwards tried their "feet" on the apparatus! The Derbyshire Police Department put on a display which showed how all road users should combine to keep down the number of accidents. In all a successful day despite the weather.

The Thames Valley A.R.S. Mobile Rally held at Polesden Lacey on September 2 was held in glorious sunshine in really beautiful surroundings. It was only considered to be an event for local amateurs but visitors from as far away as Leicester made the journey. The Top Band talk-in station G3AIU/A worked 52 mobiles and the 144Mc/s station G3JIP worked nine. A fine demonstration by the police handlers and dogs of the Surrey Constabulary was enjoyed by the large crowd of visitors—the Raffle also was a great success. A cake made in the form of a Mobile Car by Mrs. P. Cadman (XYL G3PCC), was won by G. Clark (A2309). Aveley Electric Ltd. presented a miniature transistor power pack for the best 6V rig and this was won by G3JEQ (Leatherhead, Surrey). The prize for the best all-round installation went to G3LTZ (Frimley, Hants.) and the longest distance travelled on the day to G3PJH (Leicester). The rally was a great success and the Committee under the able leadership of G3VK has already intimated that another will be held next year.

The Woburn Abbey Rally under the auspices of the R.S.G.B. Mobile Committee was held on September 9 under ideal conditions—from early morning the sun contrived to set the scene for a successful rally. About 350 cars and 800 people attended but the total was difficult to judge because quite a number of visitors used other than the official car park reserved for the amateur visitors, so the total may well have been as high as 500 cars and 1000 visitors

from as far afield as North and South Wales, Lincoln, Cheltenham, Warwick and many other distant places.

The East London Group of the R.S.G.B. headed by G3ERN went to the site the previous day to put up the tents and stayed overnight so as to be able to open up early the next morning—the amateurs who took part in this exercise were G3MVB, G3JMA and G3AGP. G3ABB arrived about 9 a.m. to set up stations on 160 and 2m which operated under the call-sign GB3RS.

The judging of awards was extremely difficult due to the high standard of equipment entered—however the certificates signed by the President of the Society were awarded as follows: V.H.F. Section, Best Home-Constructed Equipment—T. P. Douglas (G3BA); Best Commercial Installation—Angus McKenzie (G3OSS). L.F. Section, Best Home-Constructed Equipment—M. W. F. Bishop (B.R.S. 24,770); Best Commercial Installation—M. E. G. Augood (G3MML); Safest Installation—M. D. C. French (G3HSE). It was pleasing to see that the winner of the best home-constructed L.F. equipment was a B.R.S. member with a mobile receiver. The winner of an Avo H meter was G3OVV (Walsall, Staffs), while GW5BI (Cardiff) won an Acos microphone. A number of firms displayed equipment including Mini-mitter Co. Ltd., S. G. Brown Ltd., Aveley Electric Ltd., and T. Withers (Electronics) the latter providing the 144 Mc/s station. In all a very fine Rally—congratulations to all concerned.

A point of interest—next year's Wethersfield Rally will be held on Whit Sunday June 2—it will be the R.S.G.B. Golden Jubilee Rally—make a note of the date!

The Northern Radio Mobile Society held a very successful rally on September 2 at Harewood House, near Harrogate when about 600 amateurs and friends attended. The Lincoln Radio Society Mobile Rally also took place on the same day with similar attendance figures—both these events will be fully covered in next month's column.

Operating News

G3NXU's mobile installation comprises a K.W. Valiant transmitter and a K.W.76 receiver mounted neatly in a cradle underneath the dashboard. A transistorized power pack gives about 40 watts input on all bands from 3.5-28 Mc/s and 10 watts on Top Band. Loaded whip aerials are mounted at the rear of the car. A crystal microphone is mounted on a boom from the operator's neckband and a combined "S" meter and radiation monitor connected to the BC aerial combine to form an extremely efficient station. Many contacts have been made with the United States and Cyprus on 21 Mc/s and Top Band is used every day whilst running to and from work; an interesting daily QSO being made with G3LYW/M who travels in the opposite direction! These contacts have been regularly made since April 1960.

Mobile Safety Recommendations

The accompanying safety recommendations have been prepared by the Society's Mobile Committee for the guidance of members operating mobile equipment.

National Field Day 1962

IN the tabulation of results of National Field Day in the September issue of the BULLETIN, the entry for Norwich on page 120 should have shown G2YU (Norwich and District Radio Club) as having operated on 1.8, 7 and 21 Mc/s and G3LDI (Norwich Group) on 3.5, 14 and 28 Mc/s.

Receipts

RECEIPTS for subscriptions paid by cheque, bankers' order or postal order are not now issued unless specially requested. Receipts are drawn, however, and kept on file at Headquarters for six months.

MOBILE SAFETY RECOMMENDATIONS

1. All equipment should be so constructed and installed that in the event of accident or sudden braking it cannot injure the occupants of the car.
2. Mobile aerials should be soundly constructed, taking into account flexing at speed and possible danger to other vehicles or pedestrians. The maximum height must not exceed 14 ft. above ground.
3. Wiring should not constitute a hazard, either electrical or mechanical, to driver or passengers.
4. All equipment should be adequately fused and a battery isolation switch is desirable.
5. The transmit/receive switch should be within easy access of the operator and one changeover switch should perform all functions.
6. The microphone should be attached to the vehicle so that it does not impair the vision or movement of the driver.
7. A driver/operator should not use a hand microphone or double headphone.
8. All major adjustments, e.g. band change by a driver/operator, should be carried out whilst the vehicle is stationary.
9. Essential equipment controls should be adequately illuminated during the hours of darkness.
10. Logging must not be attempted by the driver whilst the vehicle is in motion.
11. All equipment must be switched off when fuelling and when in close proximity to petrol tanks.
12. A suitable fire extinguisher should be carried and be readily accessible.

Third Method S.S.B. (Continued from page 176)

whistle occurring around 3.3 kc/s by means of VR3. Check the quality of the transmission. Set S2 to CARRIER SUPPRESSED. Remove the sampling loop.

(vii) *Final Alignment.* Apply h.t. supplies to the power amplifier. The anode current under no-drive conditions should be such that the total anode dissipation is about 35 watts. The screen voltage should be 200 volts. Connect a 70 ohm 50 watt resistive load to the r.f. output socket. Set the v.f.o. to 3.05 Mc/s and C61 to maximum capacity. Inject a small amount of audio until the p.a. anode current increases to say 80 mA. Resonate the tank circuit with C70. Peak T8, T9, L10 and L11 on the anode current reading. Repeat at the h.f. end of the band, peaking C53 and C61.

Finally, adjust the p.a. tuning and loading capacitors to give maximum power output consistent with good linearity. The anode current should rise to at least 170 mA before limiting takes place. If the signal with speech applied sounds satisfactory, the rig is ready for use.

Results

In conclusion, it may be said that many problems arose during development of this third method equipment but reports received indicate that the quality of transmission is good with low distortion products in the unwanted side-band.

(Concluded.)

V.H.F. National Field Day 1962

FROM reports and letters received on the 1962 V.H.F. N.F.D. held on July 7-8, it would seem that the contest went off well. Conditions were reasonably good but not exceptional.

There were 39 entries compared with 40 for the old event last year but 139 operators signed the logs compared with only 66 listed last year. With more than twice as many people in the field the object of the exercise has been achieved and the position of the event in the calendar assured.

The winners by a clear margin were the Wolverhampton Group operating GW3KMT/P just over the border in Denbighshire near Oswestry. This site is about 50 miles from their home town. Second came the North West V.H.F. Group operating G3OHF/P near Leek in Staffordshire.

It is obvious that the greatest enthusiasm for v.h.f. is now centred on the Midlands with the South West of England running a close second. The position of the leading London area clubs (viz 10, 11, 12, 19, 20) is sufficient comment on the support they get from their area. Even on a points-per-contact basis the Midlands still have it, though it is often alleged that this system of scoring gives an overwhelming advantage to stations in the Home Counties.

As this was the first V.H.F. N.F.D. the Contests Committee has not been hard on those who did not operate strictly to the letter of the rules, but in view of the bigger event proposed for next year a few comments are called for. Some single operator stations, entered on behalf of local clubs,

have been accepted but such entries are not really in the spirit of the contest. It is surprising that a club should allow its representative to operate unsupported for 24 hours in what is quite a hectic event.

The Coventry V.H.F. Group had to move their station because of interference to a local police network—this cost them 10½ hours, including the small hours of the Sunday morning when conditions were quite good. Their combined score for the two sites has been accepted, but contestants should note that the police use frequencies near 146 Mc/s for point-to-point links and their stations may be vulnerable to interference from strong 2m signals.

The standard of log keeping and operating was not as good as usual in v.h.f. contests. Many errors of call-sign were made: such "contacts" are invalid and score no points for either station. Operators on phone should give the call-sign clearly using phonetics frequently; on c.w. allow a distinct pause between letters. One station in the South of England lost over 1000 points because of errors of call-signs while a fixed G2 in the same area was listed as G3 in several logs. Yet another station lost a 500 point contact with a Continental portable for the same cause!

Several entrants did not claim double points for mobile contacts (and one did not claim for the portables either); most increases in scores are due to this. As usual one group hit on the bright idea of working out the distance in kilometres.

A note on signing the entry: it is sufficient that the call-sign of the operator occurs against each contact (with ditto marks where appropriate) and there is no need to initial each contact. The operators are required to sign the cover sheet to show that they confirm their contacts but only the licensee, club secretary or other responsible person need sign the declaration. There is no need to write out the declaration for every operator and there is plenty of room on the back of the cover sheet for signatures.

Several queries were received concerning stations which operate both fixed and portable during the event. The rules state that only one such contact shall count for points (otherwise there is risk of abuse) but not which contact. So, if you work a fixed station and later hear it again as a portable, work it again, log both contacts, and claim points for the better one. Similarly for /M stations on the move.

Unfortunately many entrants do not log duplicates. Suppose G3XYZ and G4ABC work each other twice (quite often this is because one station requires a repeat or confirmation): G3XYZ then logs the first contact and G4ABC the second one so that neither entry checks and both stations lose the points. If either station had logged the duplicate contact there would be no problem and both would be credited with their claimed score. Of course there are some people who claim points for both QSOs, but they are not frequent in v.h.f. contests, though they are regrettably common in DX band events.

This year some strongly worded complaints of gross overmodulation were received and contestants are therefore reminded to read the terms of their licence and Rule 1 of the R.G.G.B. General Contest Rules. In some cases interference arises from an operator who is not familiar with the equipment and this is merely an unfortunate lack of co-ordination in the group concerned. Evidence is accumulating however of transmitters designed with a modulation capability well in excess of 100 per cent in the theory that the resulting transmission gets further. The study of any elementary text book will squash this theory but in any case such a transmission is illegal.

So much for the Committee's view of the contest, what of the contestants' opinions? Many wrote about the 1963

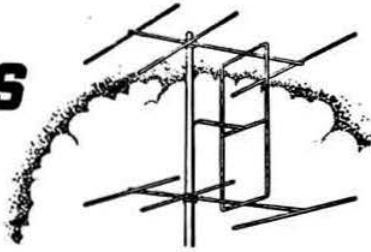
(Continued on page 184)

Posn.	Name	Call-sign	Oper- ators	Con- tacts	Points
1	Wolverhampton Group ...	GW3KMT/P	5	178	25891
2	Northwest V.H.F. Group	G3OHF/P	5	179	23505
3	Stamford and District				
4	R.S.G.B. Group ...	G2HOP/P	5	164	22641
5	A.E.R.E. (Harwell)				
6	A.R.C. (A) ...	G3PIA/P	4	169	19803
7	Severn Valley A.R.C. ...	G3ENY/P	3	157	19490
8	Midland A.R.S. ...	G3MAR/P	6	151	19101
9	...	G5ZT/P	2	106	18638
10	...	G3KEF/P	2	86	17121
11	Crawley A.R.C. ...	G3FRV/P	5	156	16117
12	Radio Soc. of Harrow	G3EFX/P	7	134	14971
13	Crystal Palace and District				
14	R.C. ...	G3COX/P	5	141	14286
15	S.R.D.E. (Christchurch)	GW3JZG/P	2	95	13489
16	A.R.S. ...	G3OBD/P	2	113	13252
17	Newbury and District				
18	A.R.S. ...	G2CPM/P	6	116	13246
19	Reading R.S.G.B. Group ...	G5HZ/P	3	132	13027
20	Derby and District A.R.S.	G3ERD/P	5	125	12795
21	Dundee (A) ...	GM4HR/P	1	49	11812
22	Surrey Radio Contact Club	G2RD/P	5	126	11760
23	Reigate Amateur	G3PNA/P	4	133	11736
24	...	G3MDH/P	4	96	11247
25	Pye (Telecommunications)				
26	A.R. Group ...	G3PYE/P	6	85	10971
27	Sheffield ...	G8NN/P	5	72	10771
28	...	G3LBA/P	6	125	10360
29	Gloucester R.S.G.B. Group	G5BM/P	3	97	10349
30	Enfield Group ...	G3FD/P	2	100	9825
31	Grimsby A.R.S. ...	G3NJP/P	2	58	9483
32	Albright and Wilson A.R.S.	G3OXD/P	3	91	8938
33	Dundee (B) ...	GM3KY/P	1	50	8864
34	Luton and District R.S.G.B.				
35	Group ...	G3CGQ/P	2	87	8368
36	...	G8LM/P	5	78	8144
37	A.E.R.E. (Harwell)				
38	A.R.C. (B) ...	G3GKD/P	3	89	8059
39	Coventry V.H.F. Group ...	G3LHA/P	1	65	6967
40	City and County of Bristol				
41	Group ...	G2HDR/P	2	56	6223
42	Basingstoke A.R.C. ...	G3PZN/P	5	48	3533
43	...	G3OSC/P	3	48	3470
44	Ravensbourne A.R.C. ...	G2DHY/P	1	45	3450
45	East Kent Amateur Society	G3EMU/P	2	38	3144
46	Verulam A.R.C. ...	G8TK/P	3	55	3097
47	Clifton A.R.S. ...	G3GHN/P	3	47	2810

Entrants without names are ad-hoc groups formed for the contest only. A.R.S., Amateur Radio Society; A.R.C., Amateur Radio Club; R.C., Radio Club.



FOUR METRES AND DOWN



By F. G. LAMBETH (G2AIW)*

THERE has been some criticism of the QRA Locator system based on experiences during the September Region I I.A.R.U. V.H.F. Contest, and it would be futile to deny that in the present circumstances the scheme has many shortcomings. For this reason the writer suggested, and it was arranged, that the Locator should not be obligatory this year. However, so many continental operators have adopted the device that nearly all those worked gave their locator code rather than QTH. This has led to much irritation among those who have no easy means of determining the overseas locations, and this will persist until the arrival of the promised European map which is being produced in Switzerland and which should be available soon at Sw.Fr. 5.

In the meantime, as QRA Locators are only required for Region I I.A.R.U. events, there is no need to worry until next year, by which time this rather vexed matter should have settled itself. One of the things noticed is that some QRA Locators given by continental stations when checked on their own maps prove to be in squares in which no place name is mentioned and the nearest town is sometimes a square or more away, making accurate measurement of local distance extremely chancy. Also working out latitude and longitude from the map under these conditions would be almost a labour of Hercules.

The Contest itself was a great success, being helped immeasurably by the coincidence of the first real 2m opening of the season, with DX spreading well over Western Europe (SM, OZ, DJ/DL, PA, ON, and F were all represented, with continental QSOs as far as the West Country and Wales). EI2W was hearing the continentals but made no continental contacts. He thinks this is because a lot of people do not tune the top end of the band (he is now going "fast to the lower end"). Some Midland stations could not hear the EDX, and little was heard in the Home Counties from the North, neither does it appear that the North and Scotland heard much of the EDX. Some totals of QSOs are near or even over the 200 mark, which has probably never yet been bettered.

Scores claimed by United Kingdom stations are as follows:
Two Metres (Fixed Stations)—G2JF (52584 points), G3IAS (25802), G3OXD/A (24992), G3LTN (14094), G5MR (10126).

Two Metres (Portable Stations)—G3OHF/P (43104 points), G5ZT/P (42641), G2HIF/P (38116), GW3KMT/P (37757), G5HZ/P (30341), G3LBA/P (28356), G3OSC/P (22697), G3EFX/P (20696), G2DHV/P (9374).

Seventy Centimetres (Fixed Stations)—G3LQR (1205 points).

G2BJY (Walsall) who reports for the first time on v.h.f. (although reports on h.f. topics were not unknown in the late 40s and early 50s) was prompted to write by the Contest, when he actually worked DJ4OB/P and F3LP, and conditions to the South were very good. Also heard were

ONs and PAs, all at S9. Conditions to the North appeared poor and nothing was heard North of Lancashire and Yorkshire. Likewise, although many GW stations were at great strength, nothing from further West was heard. Since April six countries (EI, GI, GW, G, F, and DL), 46 counties and 216 stations have been worked but only 21 QSLs so far received. However, the friendliness and enthusiasm of v.h.f. operators, especially those in the Midlands, is greatly appreciated by G2BJY.

G3EMU (Canterbury) welcomed the opening and fine weather of the contest, although the year has been the worst for conditions at Canterbury. A bright spot however has been the award by V.E.R.O.N. of the PACC V.H.F. Certificate, the first one issued to a G for 100 verified contacts with Holland. Many hours have been spent with the 3 watt rig /P this year, and in the contest attempts this year, the efforts involved were equally shared by G3LCK each time.

Moonbounce Experiments

G2HCG (Bill Sykes, of J-Beam Aerials Ltd., Westonia, Weston Favell, Northampton) is anxious to form a group of enthusiasts who would be willing to study the question of moonbounce operation and to get into the active side. If we are not to be left behind, it is obvious that something will have to be done to emulate the activities already under way in the U.S.A. and the mixed group in Germany and Switzerland. If any reader feels that he can materially assist this project, especially in the technical sense, would he please write to the above address. G2HCG thinks that the aerial side, or most of it could eventually be taken care of by him, and possibly a meeting could be arranged soon, either at Northampton or in London during the exhibition period.

Two Metre Reports and Contest News

EI2W (Dublin) found conditions very good on August 30 and 31, with many stations from London and the Southern area coming in strongly. These conditions were maintained during the Contest, September 1 and 2, and many EDX stations were called, including DL3AYJ (57), DL6AH (44), DJ5EK, F9RL, F2SO (YL operator). F3LP (Le Havre) was 59 in Dublin for nearly two hours. ON4AB/P and PA0LX/P were also heard. It is feared that most of these did not tune the high end of the band. Even many of the Gs were "tuning from 145.6 Mc/s down." EI3S (Dublin) is again active and was heard during the contest. Scottish stations were very strong in Dublin on the night of August 31, but were well down in strength during the Contest period.

G3OFT (Belfast) found conditions improving rapidly around September 20. The nightly "pile-ups" on the 2m band for the GM3IUB/P expedition were the biggest ever heard in Northern Ireland and presupposed a very successful trip for Birmingham University. Most GI stations have benefited by many new stations and counties. GM5UM/P has also been adding to the excitement with a good signal from Argyll. EI6X (Limerick) has been heard in GI at good strength and EI2A reports QSOs at 599. EI3S is again active after a long silence. A Belfast and District V.H.F./

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

U.H.F. Group has recently been formed and is actively engaged in (i) establishing a 146 Mc/s beacon station in Northern Ireland and (ii) building gear for 1963 V.H.F. N.F.D. More news is promised as time goes on. QSLs for EI4BC/M should be sent to G13KYP. Unless a s.a.e. is enclosed, all QSLs will be sent via the R.S.G.B. Bureau.

GM2UU (Stranraer) heard G15AJ, EI2W, G3BW, G3JYP, GW2HIY/M, GW3INW/A, GM3DIQ/M, GM2FNF, GM3KYI/P and GM3EGW during the Contest but conditions were poor otherwise and no DX was heard. This was disappointing as on the Friday evening signals were higher than they had been for some time. GM2UU suffers from an aerial (6-over-6 slot beam) which is only 75 ft. a.s.l. and thinks it will be necessary to go portable to get away from the low position and from a main street.

Several new stations are appearing on the band. GM3JFG (Invergordon) on 145.98 Mc/s, GM3ODP (Black Isle) on 145.89 Mc/s, GM3MUT (Black Isle), GM3NQB (Thurso), GM3LTJ (Aberdeen) and GM3HLQ (Strathaven) have all been noted. GM3DDE and GM3KPD are both on s.s.b.

G2JF (Wye, Ashford) says conditions were very good during the contest and he had over 200 QSOs which appear to be mainly DX (claimed score 52584). Among the QSOs were 79 Gs, 61 DL/DJs (!), 51 PAs, 26 Fs, 16 ONs, four GWs, one OZ and three SMs. The station was operated by G2QT, G8RK and G2JF.

F8VN heard weak c.w. signals from CTICO on the evening of September 24 but no QSO resulted.

G3LTN (Weyhill) had QSOs with DJ/DL, PA, F and ON and the DJ/DL stations were "as strong as locals."

G3OCB (Stithians, Truro) confirms that conditions have been poor on the average, with one or two good periods, but still pleads for beams to be turned in the Cornwall direction which, with the new stations, will pay dividends, he says. Many stations from the Home Counties are often audible on phone, even at times of lowish activity, but some do not turn s.w. or tune Zone 1 (or so it appears). It is hoped to run a pair of 4X150As in the near future. G2BHW has been running crossband tests, with the participation of G3OCB, with G2BAT (Salisbury, on 80m) and the 2m band has been open quite often over the distance; signals have always been audible although sometimes too weak for satisfactory communication. During the recent contest G3OCB had several good QSOs using inserted carrier (A3). Another new station on the band from Truro is G3EKM, at present using about 6 watts to an indoor three element beam. A 4-over-4 aerial will soon be erected outside. Local activity has been good, with G2BHW, G3OJY, G3XC, G3AET, G3EKM, G3JFS/M, G3CZZ/P, G3GYQ/A (St. Agnes Beacon), G3GHI/P (Goonhilly Down), all in Cornwall, G2DOT, G3LMG, G3JGJ, G5ZT, and G5ZT/P (in Devon), all worked. G5ZT is now using s.s.b. on 2m. More distance QSOs include G2BHN, G6GN, GC2TR, G3MDH/P, GW3MFY/M, G3LNX, G3LTN, F9RL, and F3LP using s.s.b. or inserted carrier. On c.w. G2MX, G6OX, G5ZG, G3LTF and G3GHO have been worked. Many stations have been heard and called without success, mostly on phone. Those heard and called several times without success include G6NB, G2JF, GC2FZC, GW8UH and GW3ATM. During a recent Sunday many of the above were heard consistently and called, but the only stations worked were two local

ones! Moral, please tune Zone 1, in fact please tune the whole band—the top end suffers as well!

G3OJY (Rosudgeon, Cornwall) says the past month was very little different from others this year, except for September 1 and 2. However, even this proved very disappointing as G3OJY was on all Saturday evening and Sunday afternoon but only managed to work 15 contest stations. It is worth mentioning that Penzance is further from London than some of the continental QTHs and G3OJY fears that many forgot this in their anxiety to work EDX. A strange phenomenon has recently been noted in that the 2m noise level seems to have been very much reduced. A suspected receiver fault was disproved, checks with local stations showing normal S meter readings. Then out of an apparently dead band on September 17 came a CQ from G6NB (559), which was answered at 22.06 G.M.T. but no QSO resulted. G3NUE was heard on one occasion at good strength, but not raised. Apart from G3EKM mentioned earlier, there is a likelihood of another 2m station locally soon.

The Cornish Radio and Television Club visited Goonhilly to see the G.P.O. installations on September 5 and had a very interesting tour of the station.

G3IAS (Warlingham) thought the Contest was a great success in the United Kingdom but gleaned that conditions were even better on the Continent. ON4TQ, who operated at ON4AB/P, told him that they had made 266 QSOs with a total score of over 60,000. They worked four SMs, four HBs and several OZs and heard an OK! Quite apart from all the DL/DJs, PAs, Gs, GWs etc. ON4TQ confirms this in a letter to G2AIW, but claims 75051 points.

G5MR (Hythe) is a welcome "visitor" to this feature again after a long time, and found Contest conditions very good, with many French QSOs (as he almost always does). Much new equipment is going in, including a Minimeter telescopic mast, an HRO-MX main receiver, and a 6CW4 Nuvistor 2m pre-amplifier to the G3FZL BULLETIN design, which gives a gain of about 2½ S points over noise level.

G3JR (Barnes) had phone contacts with G5ZT/P (Devon), (5/6 both ways), and GW3MST/P (Brecon, 5/9 both ways) and GW3OAF/P (Cardiganshire). On September 9 the Cornish beacon was audible for long periods at S3 on the indoor aerial at Barnes, but little other activity was noted from that region. G3OCB was heard shortly after 21.00 G.M.T. calling CQ (439) on 144.07 Mc/s but G3JR was apparently not heard at Truro.

G3AOS reports on activity during the Contest of the North West V.H.F. Group (G3OHF/P, 4m North of Leek, Staffs), with G3MAX, G8SB, G3EGK, G3MED, G3AOS, G3KMS, G2HCJ and SWL Ross who kept a really efficient log, despite overwork at times. G3MAX's OM again provided the food and "tea by the gallon." The weather was ideal, but heavy rain early Sunday morning certainly damped down the good conditions experienced earlier. It was obvious that there was a complete opening from the South to Europe, but although numerous Europeans were worked from Leek the conditions were nothing near those experienced during the last European Contest. However 218 contacts were made: eight countries, 45 counties, nine mobiles, 35 portables. The longest haul was DJ5FQ/P (877 km) with DL3FI/P (850 km) a close second. GM3DIQ/M (341 km) at the Mull of Kintyre was the only GM; no GIs or EIs were worked.

G3LTF (Galleywood) heard a burst from UR2BU during the Perseids on September 9, but so far has had no letter from UR2BU on the subject. With OH1NL, however, things were a little better, both calls were identified, but signals were very weak. Tests were made with OH1NL only on September 9 and 10; it might have been better on one of the later days. SP5SM came through quite well and a QSO was completed satisfactorily on the 11th and almost

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
September 4, 1962	11.05 G.M.T.	452 c/s high
September 11, 1962	10.55 G.M.T.	550 c/s high
September 18, 1962	11.15 G.M.T.	1260 c/s high
September 25, 1962	10.50 G.M.T.	1020 c/s high

another on the 14th. Language difficulty caused a misunderstanding of the QSO method otherwise a second QSO would have been made. An interesting point was that on every test a burst of reasonable information content was heard in the first 5 minute period. G3LTF's signals were also received by SP5FM, SP5ADZ, SP0VHF and SP5AEE, and Polish listeners SP9-8022 and SP9-8016. This was apparently the first G/SP meteor scatter QSO. Q57 mentions that the Leonids (November 16 and 17) should be good this year, so let's fix up skeds now. Coming back to more ordinary matters, G3OCB (Cornwall) was worked on August 30 with GM3GUI called. On the 31st G3JMA/P (Devon) was worked as were DL3FR, DM2ADJ, and DJ3YJA. September 1 found Dresden TV S8 at 20.00 G.M.T., and S9+ at 22.00. This heralded the opening which brought DX from North Germany and the Baltic area, including DL1LB (Emden), DJ5HG (Hamburg), DL1FF (Kiel), DM2ADJ, SM7BZX/P (Ystad, 589), SM7AED, SM7BAE (Malmo). All these and more were on c.w.; as fast as they could be logged they could be worked. On September 2 there was another QSO with SM7AED in the early morning. There were meteor scatter pings on his signal. On September 13, GM3IUB/P (Lanark) was called for several hours on and off without success (48/2 phone and S5 on c.w.). The most important event of the month was the birth of a second daughter on September 14 (Congratulations).

GW3MFY (Bridgend) worked several F stations in Normandy during the Contest, but once again, no DLs or PAs were heard. In fact they do not appear to have been heard much west of Cardiff. The new aerial (6-over-6-over-6 slot beam) made no difference, although GB3VHF is now heard at 539 on peaks most nights, whereas it was seldom heard previously on the 5-over-5 Yagis. On September 17, G3IUB/P (Cumberland) was heard and called for 55 minutes without success. The c.w. contest next January is awaited impatiently at Bridgend; which is merely another way of saying "please use more c.w.—weak DX carriers with phone are infuriating!"

The GM3IUB/P Expedition

The Birmingham University Radio Society's V.H.F. Expedition to Southern Scotland from September 17-26 was a great success and provided many operators with contacts in a number of "rare" counties.

GM3IUB/P could be worked from the London area every evening on c.w. and on September 19 on phone. The expedition's phone signals were also audible on September 20 and 26. By and large, conditions were only average during the period but there was a good spell over September 19-22. The use of c.w. was essential for stations in the Home Counties except during periods of very good conditions.

The station could be easily worked from the Midlands each night and even under average conditions phone signals were readable. The operators carefully adhered to the British Isles Two Metre Band Plan when searching for calls, but the number of skeds did not leave much time for general operating.

Undoubtedly, high power c.w. and a willingness to use it whenever necessary, was a major factor in the success of the whole operation. Closely allied was the very heavy programme of pre-arranged "skeds" which was honoured meticulously.

Seventy Centimetres

G3LTN (Weyhill) is now active on this band after TV shut-down. The receiver consists of a G3BKQ-type converter using an A2599-A2521 pre-amplifier. With this GB3GEC is always audible at S7-8. The transmitter is a self-contained unit comprising a low power 2m exciter to a QV06/40A tripler to another QV06/40A p.a. The input

LONDON U.H.F. GROUP

will meet at the V.H.F. Stand at the R.S.G.B. International Radio Communications Exhibition, Seymour Hall, London, W.C.1.
at 7.30 p.m. on Thursday, November 1, 1962
All v.h.f. and u.h.f. enthusiasts welcome.

is 90 watts, c.w. only at the moment. The aerial is a 6-over-6 slot at 35 ft. and the frequency 432.15 Mc/s. The first QSO on the band was with G3KEQ on August 18. It is hoped to enter for future 70cm contests.

G3EKP (Belthorn, Nr. Blackburn) is again active and receiving G3ILX (Barrow) at S9+ on his nightly schedule with G2OI (22.30 G.M.T.). G3EKP himself will be transmitting before the end of September and hopes to "make it" to Northern Ireland. Another station building a 70cm converter is G3MAA (Clitheroe).

G3LTF (Galleywood) worked G3ILD on this band on August 21. During the 2m opening 70cm tests were made with SM7AED and with DM2ADJ without success, but DL1LB (579) and DJ2YF were worked during conditions not so good as those on 2m. September 2 brought a QSO with PAOKPO, with G2CIW on the 3rd and 5th. G3ILD was again worked on the 4th.

General Notes

G5CP recently had a personal QSO with DL6WU who runs a pair of 4/65As (air cooled) on 2m and also a 70cm rig. He has worked many Gs including G5YV and G6XX, his best DX this way being GW2HIY (Holyhead). He is an electronics technician at the Darmstadt Technical College, and his /A location is in a tower on the top of the University Students' Hostel.

VU2CQ (Bombay) is one of our "very old" (his words) members, and is very interested in all things v.h.f. The 50 Mc/s band having been withdrawn after 11 years in January, 1962, was restored with a frequency change (52.5 to 52.75 Mc/s) after seven months, VU2CQ having taken the matter up with the Indian Ministry of Communications. The 2m band also has been changed, the new limits being 146-148 Mc/s. VU2CQ is active on v.h.f. bands and has not lost hope of working DX.

VE3E2P (ex-VE2BAI-G3HHY) writing from London, Ontario, says that even with a flea power rig (6AK5, with about 1/2 watt output) he found a goodly number of contacts on 2m from a not so good home base and even more when out /P with a six element Yagi. It was quite easy to work 100 miles during the Summer, and using Lake Erie as a "take off" aid towards W2 and W8. Once or twice during major openings W1s, 9s, 2s and the odd 0 would appear on top of one another. A /P rig now evolved (which is also used at home) has a QV03/20A in the final, giving 30 watts phone class B linear and 40 watts c.w. class C. Results on this have been very gratifying during a poor summer. Phone QSOs have been made with Chicago at 345 miles and with Belleville (210 miles). VE3E2P sends regards to G3JZG and says he has every sympathy. A car is used in Canada to climb mountains because over there it would be impossible to find an amateur prepared to climb 1,000 ft., plus gear!

To correct some misunderstandings readers are asked to note that the only open I.A.R.U. V.H.F. Contest is the one which takes place annually during the first week-end in September. All the others are national, or sub-regional contests which are not so far held as such in Great Britain and Northern Ireland.

There is more news of the 12cm and 8cm QSOs reported last month. For the 12cm contact GW3IUD/P was 500 ft. up the Great Orme near Llandudno and G3NLZ/P 750 ft. up the Cold Fell, Egremont, Cumberland, on June 11, 1960. Frequencies used were 2400 and 2355 Mc/s (i.e. difference 45 Mc/s). The distance was 80 miles. The same equipment

was used at each end. Output was $\frac{1}{2}$ watt (approximately) from a CV90 in the tunable cavity/co-ax unit. The converter used a cavity mixer. Phone signals were S8 both ways from 11.30 to 12.45.

For the 8cm contact on June 2, 1962, G3IUD/P was 1000 ft. a.s.l. on top of Mow Cop, South Cheshire, and G3NLZ/P 1000 ft. up Winter Hill, Lancs., a distance of 38 miles. Frequencies used were 3415 and 3460 Mc/s (i.e. difference = i.f. 45 Mc/s). The transmitter output was 100 milliwatts from a 726A klystron mounted in a polaplexer in a single paraboloid system. Signals strengths on m.c.w. were RS54/5 both ways. It is hoped to improve on this distance with modified or rebuilt equipment. G3NLR accompanied G3IUD on this expedition; G3NLZ was accompanied by his father on both expeditions. Both of these QSOs are believed to be records outside the United States.

Late News

A somewhat unusual opening on 2m and 70cm occurred on September 24 when EI2W and F8MX/A (St. Valery) made the first 70cm contact between France and the Republic of Ireland. F8MX/A used a 64 element beam aerial and a transmitter giving 30 watts output. EI2W has a 32 element array and a transmitter giving 3 watts output on 433.186 Mc/s. EI2W also worked G3LHA, G3LTF, G3JMA, G3KEQ, G2XV and G3NJO/T the same evening. On

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

September 21-22, 70cm contacts were made with G3KPT, G2CIW, G3MYV/P and G3BNL.

On 2m, September 24 brought QSOs with F9JY, F3XY, F8MX/A, F8MW, F3LP and F8VN. The following day GM3IUB/P in Selkirk was worked for a new county.

GW3MFY (Bridgend) worked several 2m stations during the opening on September 24, including F8VN (Chartres), F3XY (50 miles east of Paris), F8ME (St. Brieuc), F9AJ (near Le Mans) and F2NX (Granville), using his mobile gear comprising a 10 watt transmitter, transistor receiver and three element Yagi. Later, F8WN (Deauville) was worked from the home QTH.

V.H.F. National Field Day (Continued from page 180)

rules and these opinions will be carefully considered before the final rules are published.

Several stations in the east of England worked into Europe but conditions were not good enough for those in the west to get through. The appearance of four EIs, two of them portable, gave some consolation however and for stations in the Midlands there were five GIs to work. In addition 35 GMs were noted in the logs, of which five operated portable. Only six of these appeared in G logs. It would be interesting to get some check logs from Scotland listing stations heard but not worked! Welsh activity was not high, only 12 stations being logged including two "foreigners" from over the border. Three stations in the Channel Islands represent a very welcome resurgence of activity.

An unusually large number of check logs were received; these are always very welcome and are a great help in the checking. Many fixed stations benefit from portable events in their pursuit of difficult countries and counties; the portable events are not primarily arranged for their benefit of course but their support is appreciated nevertheless.

Check logs for V.H.F. N.F.D. were received from E14BC/M, G2CD/A, G2HCJ/M, G3XC/P, G3EHR, G3GMY, G3HWR, G3KKP/P, G3NNK, GC2FZC, GI3OFT, GM6XW/P, GW8UH/M and W. Brady.

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(THIRD EDITION)

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

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

RTTY

A Quarterly Review of Amateur Radio Teleprinting News and Views

By ARTHUR C. GEE (G2UK)*

PREVIOUS articles in this series have covered the basic requirements of RTTY operation but before going on to more general matters, one or two queries may well be answered.

A frequent question is "Where can I find amateur RTTY signals?" Most British activity takes place on 80m around 3755 kc/s. The reason for this frequency having been selected dates back to the first RTTY activity in this country in 1959, when it was selected because it came midway between two powerful commercial RTTY stations, GFL and GFA. It was thought, quite correctly, that our then unpopular activities would be missed by the critics, as they in fact were. This channel has of late become rather burdened with s.s.b., but the recently heard comment by one of the regular occupants, that "their channel" was being invaded by RTTY, was rather wide of the mark, as the above will indicate. Amateur RTTY activity will be found on this frequency on many Saturday and Sunday mornings, quite frequently in the evenings and occasionally at lunch time. German amateurs are limited by their licence conditions to using a narrow band in the region of 3600 kc/s, and activity will occasionally be heard there. "DX" activity takes place around 14,100 kc/s and, when the band is open, American RTTY activity is quite frequently heard. There is also some RTTY activity on 2m but this is "local" in distribution.

It must be admitted that RTTY activity is still fairly infrequent, particularly in Europe and some time may pass before hearing any. Many RTTY operators fix skeds, so that they can be assured of a QSO, and the writer particularly favours this type of activity. It really does pay to join up with other enthusiasts and membership of B.A.R.T.G. is to be strongly recommended. Regular News Sheets are issued which give details of the latest activity.

V.E.R.O.N. Headquarters Station

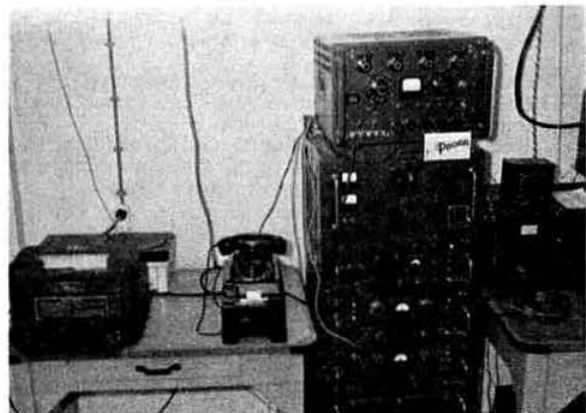
One of the most interesting of the RTTY amateur stations on the air is that at the V.E.R.O.N. headquarters station, PA0AA, near Leiden. In addition to c.w. and phone news bulletins and code practice exercises, this station transmits a weekly RTTY news bulletin on 3600 kc/s, thus providing

* East Keal, Romany Road, Oulton Broad, Suffolk.



The three operators at PA0AA: first op PA0YZ in front of the receiver; second op PA0LQ at the keyboard perforator; third op PA0MS checking some tape.

quite a unique RTTY service for amateurs in Europe. The photos show part of the station, the printer being a Klein-schmidt page printer, Type TT-4A/TG. The bulletins are, of course, sent by previously prepared punched tape running through an "auto-transmitter." This tape is prepared on a printer with a keyboard perforator attachment. RTTY enthusiasts owe much to PA0YZ, PA0LQ and PA0MS, for their devoted service to this station and newcomers to



A view of the RTTY gear at PA0AA.

RTTY will find PA0AA a fine, strong signal with which to try their hand at RTTY reception. At the time of writing, these bulletins are radiated at 20.30 G.M.T. on Fridays.

RTTY Sweepstakes

The Second Annual "World-Wide RTTY Sweepstakes" will be run from 02.00 G.M.T. October 20 to 02.00 G.M.T. October 22, 1962. Activity will be on all bands, and this Contest should provide plenty of opportunity for those who have found activity on the low side to get some RTTY QSOs.

Jamboree-on-the-Air

FROM midnight October 19 to midnight October 21, 1962, GB3RSS, operated by G3MMK, G3HPD, G3JWN, G3KKP and G8NF, will be active on a.m. and s.s.b. on all bands from 15m to 160m, at the Headquarters of the 1st Rastick Senior Scouts, Atlas Mill Road, Brighouse, Yorkshire. Special QSL cards will be used to confirm all contacts. Cards for GB3MSS may be sent via the R.S.G.B. QSL Bureau or direct to G3MMK.

Radar and Electronics Association Lectures

ON November 8, 1962, Mr. W. J. Bray, M.Sc.(Eng.), M.I.E.E., of the Post Office Engineering Department, will lecture on "Satellite Communication Systems" at the Royal Society of Arts Lecture Theatre, John Adam Street, Adelphi, London, W.1.

At the same venue on December 13, 1962, Messrs. R. A. Turrell and B. J. Rogers of Bush Radio Ltd. will lecture on "Colour Television Servicing."

Both lectures will commence at 7 p.m. Refreshments will be served at a small charge from 6.30 p.m. R.S.G.B. members are invited to attend.

Society News

Society Trophies and Premiums

THE Council has made the following awards for 1962:

ROTAB Trophy: to Mr. R. Barr (G15UR) of Belfast in recognition of consistent DX work over a period of many years.

Courtenay Price Trophy: to Mr. R. C. Hills, B.Sc. (Eng.), A.M.Brit.I.R.E. (G3HRH) of Welwyn, Herts, for outstanding technical development work in the field of Amateur Radio with special reference to a reflectometer for 145 Mc/s as described in the September 1961 issue of the Society's journal.

Founder's Trophy: to Mr. R. S. Biggs (G2FLG) of Ilford, Essex, for distinguished services to the Society, particularly in connection with his work as a member of the Contests Committee.

Wortley Talbot Trophy: to Mr. W. A. Browning (G2AOX) of Hendon, London, for outstanding experimental work in connection with the OSCAR projects.

Calcutta Key: to Mr. W. E. Nutton (G6NU) of Gillingham, Kent, for outstanding services to the cause of international friendship through the medium of Amateur Radio.

* * *

Acting on the advice of the Technical Committee the Council has made the following further awards for 1962:

Norman Keith Adams Prize: to Mr. D. T. Bradford, VQ4EV (ex-G3GBO) of Nairobi, for his article "An Experimental Transistor Communications Receiver" (December 1961 BULLETIN).

Bevan Swift Memorial Prize: to Mr. M. C. Hateley, B.Sc.(Eng.), A.C.G.I., A.M.I.E.E. (G3HAT) of South Harrow, Middlesex, for his article "Transistor Circuit Design Made Easy" (April, May and June 1962 BULLETINS).

* * *

It has been decided not to award the Ostermeyer and Varney Trophies as no contribution to Vol. 37 of the Society's Journal fell within the scope of the rules governing the award of the trophies.

* * *

1962 V.H.F. Committee Trophy. This trophy was awarded to Mr. C. S. Tucker (G5DT) for a selection of home constructed 23cm. receiving equipment exhibited at the Eighth International V.H.F./U.H.F. Convention. The presentation was made at the time by the President.

Arthur Watts Trophy

THE Council has awarded the Arthur Watts Trophy for 1962 jointly to Messrs. G. V. Farrance (G3KPT) and R. E. T. Dabbs (G2RD) in connection with the 1250 Mc/s tests.

Maitland Trophy

THE Council has awarded the Maitland Trophy to Mr. W. W. Peat (GM3AVA), who was the Scottish contestant with the highest aggregate score in the Second 1.8 Mc/s Contest, 1961, and the First 1.8 Mc/s Contest, 1962.

Golden Jubilee Mobile Rally

THE Council has accepted a recommendation of the Mobile Committee to organize a Golden Jubilee Mobile Rally at the U.S.A.F. Base, Wethersfield, Essex, on Whit Sunday (June 2), 1963.

The recommendation to the Council followed the receipt by the Mobile Committee of a formal letter of invitation from the Commander, U.S.A.F. Wethersfield (Col. R. N. Baker) to organize another Mobile Rally at that station during 1963.

Headquarters Staff

MR. JOHN CLARRICOATS, O.B.E. (G6CL) who has been Secretary of the Society since January 1, 1930, and Editor of the BULLETIN and other Society publications since January 12, 1937, will retire from the dual office of General Secretary-Editor on reaching his 65th birthday on January 12, 1963. Mr. Clarricoats will be re-employed by the Society thereafter as General Secretary until December 31, 1963, when he will retire after completing 34 years service, the first three of which were in an honorary capacity.

Mr. John A. Rouse (G2AHL), who has been a member of the staff since October, 1952, and Deputy Editor since July 1, 1959, will become Editor as from January 14, 1963.

As from January 1, 1964, Mr. Rouse will fill the new post of General Manager and Editor.

Canadian Licences

APROPOS *Current Comment* in the August issue of the BULLETIN, it is understood that the Canadian Department of Transport (the licensing authority in Canada) now marks licences issued to non-residents "For operation in Canada only." This precludes obtaining permission from F.C.C. to operate in U.S.A. At least six months' residence in the Dominion is required before application may be made for such permission.

Assistant Editor

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

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

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

Secretary-Accountant

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

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

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

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

Mobile Rallies

THE Council has approved the appointment of the following panel of local advisers to be called upon by the Chairman of the Mobile Committee as required:—

Messrs. A. M. Laidler, G3OJY (Cornwall), C. R. Plant, G5CP (Derbyshire), W. H. Allen, M.B.E., G2UJ (Kent), A. C. Dunn, G2ACD (Yorkshire), J. Etherington, G5UG (Somerset), F. J. Church, GW3HCH (Monmouthshire), A. D. Patterson, G13KYP (Northern Ireland), C. W. Davidson, GM3LAV (Scotland) and M. Brett, G3HBE (Birmingham).

Scientific Studies Committee

DR. W. E. D. PARKER (G6BY) has accepted an invitation extended to him by the Council to serve on the Scientific Studies Committee for the remainder of the year. Dr. Parker is the United Kingdom Co-ordinator for the Office of Satellite Scatter Co-ordination, which is a project group under Mr. R. Soiffer (K2QBW) within the Massachusetts Institute of Technology.

V.H.F. Committee

MR. R. G. FLAVELL (G3LTP) has accepted an invitation extended to him by the Council to serve on the V.H.F. Committee for the remainder of the year.

R.S.G.B. Scheme of Representation

AS announced in the June 1962 issue of the R.S.G.B. BULLETIN the Council has decided that, as from January 1, 1963, the office of Area Representative shall replace the office of Town Representative. Members holding office as Town Representative as at December 31, 1962, will automatically become Area Representatives from January 1, 1963.

In those areas where no Town Representative is at present in office, Corporate members are invited to make a nomination. Nominations should be supported by five Corporate members and should be addressed to the General Secretary, to arrive not later than November 26, 1962. The nomination paper should state clearly the area which the nominee proposes to represent. In the event of more than one person being nominated as A.R. for a particular area a ballot will be conducted.

As from December 31, 1962, the office of County (or District) Representative will disappear but prior to that date the Regional Representatives will be authorized to appoint Deputy R.R.s. In the case of the London Region the R.R. may appoint two deputies—one for North of the Thames and the other for South of the Thames. The other R.R.s will be authorized to appoint Deputy R.R.s as required.

Deputy R.R.s will assist the R.R.s in the administration of their respective regions.

Although the office of County (or District) Representative will disappear at the end of the current year it is anticipated that most, if not all, of the present C.R.s and D.R.s will be invited to take office as Deputy R.R.s.

Affiliated Societies

AS from January 1, 1963, it will be a condition that every club or society applying to the R.S.G.B. for affiliation shall be required to appoint an Affiliated Society Representative.

Affiliated Society Representatives 1963

IN accordance with the announcement published on page 418 of the March 1957 issue of the R.S.G.B. BULLETIN every society affiliated to the R.S.G.B. is entitled to nominate one of its members to serve as an Affiliated Society Representative for the year 1963.

Societies who wish to take advantage of this arrangement are requested to forward a nomination paper, duly signed by

London Lecture Meeting
Friday, October 26, 1962

"Satellite Communication"

By R. W. White

(Senior Controller of Experiments at
Goonhilly Telstar Station)

Buffet Tea 6 p.m. (Free)

Lecture 6.30 p.m.

five members of the society who are themselves Corporate Members of the R.S.G.B., to the General Secretary so that it arrives not later than November 26, 1962. In the event of more than one person being nominated as the representative of a particular society a ballot will be conducted, details of which will be published in the December 1962 issue of the R.S.G.B. BULLETIN.

Nominees for the office of A.S.R. must be Corporate Members of the R.S.G.B. A.S.R.s enjoy the same privileges and have the same status as R.S.G.B. Town (Area) Representatives.

Bulletin Contributors and the Copyright Position

THE Finance and Staff Committee wish it to be known generally that there has been a long standing arrangement between the Member Societies of the International Amateur Radio Union that material published in the Journal of one society may be reproduced in the Journal of any other society provided acknowledgment to source is given. It is not often that articles which have appeared in the R.S.G.B. BULLETIN are reproduced in the Journal of another I.A.R.U. Member Society but when that happens the Society is normally approached beforehand by the Editor of the Journal in question and permission sought.

The Society purchases the copyright of all articles published in the R.S.G.B. BULLETIN and other publications unless the author specifically asks for the copyright to be reserved.

Headquarters Fund—List No. 13

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

A. E. Prentice (ZL3TH/G3ECW), B. E. Greville (G3JCW), G. Ponting (B.R.S.22972), J. Stait (non-member), E. F. Jones (G3EUE), D. V. Newport (G3CHW), J. M. R. Sutton (G2NG), R. V. Hinchcliffe (G3KHA), H. G. Hughes (GW4CG), J. D. Pinchbeck (G5DF), M. J. Hitchman (G3HAN), Dr. T. McL. Galloway (G8CV).

Total amount contributed to date: £1,553 16s. 3d.

In List No. 8 a donation from Region 1 Fund via the R.R. (Mr. B. O'Brien, G2AMV) was omitted.

In List No. 12 published last month, the call-sign of Mr. P. J. A. Gowen should have read G3IOR.

The British Amateur Television Club

AT the Annual General Meeting of the British Amateur Television Club held at the Conway Hall, London, on Saturday, September 8, Mr. John Ware was elected Chairman, while Messrs. John Tanner, Alwyn Stockley and Donald S. Reid were re-elected as Editor, Treasurer and Secretary respectively.

Members paid warm tribute to Mr. Grant Dixon, retiring Chairman, whose association with the Club dates back to 1947.

The A.G.M. was held during the Annual Convention of the B.A.T.C. The Convention was once again a very successful event.

R.S.G.B. INTERNATIONAL RADIO COMMUNICATIONS EXHIBITION

October 31-November 3, 1962

For a successful display in the Home Constructors' section, the Exhibition Committee requires the loan of home-built equipment. Offers, together with full details, should be sent to the Committee at Society Headquarters.

V.H.F. National Field Day, 1963

THE V.H.F. National Field Day, introduced as an experiment in July 1962, will be extended next year to include all v.h.f./u.h.f. amateur bands. A draft set of rules based on those of National Field Day, with changes appropriate to the higher frequencies, has been prepared by the Contests Committee who invite comments on them from interested members. The final rules will be published early in 1963. A copy of the draft rules can be obtained on application to Headquarters. The date of the event will be announced shortly.

Members are urged not to wait until next year before sending in comments, as it will then be too late.

A Tribute to Basil Davis (G2BZ)

MANY of us were saddened to learn of the death of Basil Davis (G2BZ)—one more of the old timers of which fewer and fewer remain.

My first personal recollection of Basil Davis goes back to soon after the first World War when he transmitted weekly a gramophone programme from his station (2BZ) at the Marble Arch Pavilion. The transmissions were often heard on the lower frequency bands of those days.

The initial telephony contact from my own station in 1923 was with 2BZ and Basil's infectious enthusiasm did much to hasten my return to the air after the 1939-45 war. By mere coincidence G2BZ figured among my first contacts after recommencing operations.

A casual reference to some radio problem was enough to bring from Basil Davis a long manuscript letter and diagrams containing all the information available to him. His was indeed an ever helping hand and I for one have lost a valued friend.

Basil Davis was a member of the Institution of Electrical Engineers and also for many years a member of the Membership Committee of the British Institution of Radio Engineers. In business he was intimately associated with the Davis Theatre in Croydon until this was pulled down a few years ago to make way for modern development. He served in both World Wars and during the last war he was responsible for the "Davis Theatre" at the Radar Training School at Clinton, Ontario. G6DW

Silent Key

ALEX L. DONALDSON (G4WJ)

The death occurred suddenly on September 22, 1962, of Alex Donaldson (G4WJ), of Roker, Sunderland, whilst playing snooker with Stan Herbert (G3ATU), Thelma Orr (G3IV) and a friend. Alex, who was 56 years of age, was an Executive Telephone Engineer at Newcastle-on-Tyne. He had not been active on the air for the past three years but was planning a come-back this winter. A Dunkirk veteran, he served as a Major in Royal Signals during the war.

Condolences are offered to Mrs. Donaldson and her daughter in their great loss.

FOR YOUR BOOKSHELF

R.S.G.B. PUBLICATIONS

The Amateur Radio Handbook	-	-	-	36/6
Radio Data Reference Book	-	-	-	14/-
Radio Amateurs' Examination Manual	-	-	-	5/6
R.S.G.B. Amateur Radio Call Book	-	-	-	5/-
A Guide to Amateur Radio	-	-	-	4/-
Service Valve Equivalents (Fifth Edition)	-	-	-	3/6
Communication Receivers	-	-	-	3/-
The Morse Code for Radio Amateurs	-	-	-	1/9

AMERICAN PUBLICATIONS

Radio Amateur's Handbook, 1962 (A.R.R.L.)	-	-	-	38/6
CQ Sideband Handbook (Cowan)	-	-	-	25/6
Mobile Manual for Radio Amateurs (A.R.R.L.)	-	-	-	25/-
CQ Mobile Handbook (Cowan)	-	-	-	24/6
Diode Source Book	-	-	-	20/6
Antenna Book, 9th Edition (A.R.R.L.)	-	-	-	19/6
CQ Anthology (Cowan)	-	-	-	16/6
Single Sideband for the Amateur (A.R.R.L.)	-	-	-	14/6
Hints and Kinks, Volume 6 (A.R.R.L.)	-	-	-	10/6
Course in Radio Fundamentals	-	-	-	10/6
How to Become a Radio Amateur (A.R.R.L.)	-	-	-	5/-
Learning the Radioteletype Code (A.R.R.L.)	-	-	-	5/-

SUBSCRIPTIONS

CQ (Cowan) Monthly	-	-	(p.a.)	44/-
QST (A.R.R.L.) Monthly	-	-	(p.a.)	43/6
73 Magazine (A.R.P.Co.) Monthly	-	-	(p.a.)	30/-

FOR YOUR SHACK

Manual of Transistor Circuits (Mullard)	-	-	-	13/6
Wireless World Radio Valve Data (Iliffe)	-	-	-	7/-
Short Wave Receivers for the Beginner (Data Publications)	-	-	-	6/6
Log Book (Webbs)	-	-	-	6/-
Panel-Signs, Sets 1, 2, 3 and 4 (Data) per set	-	-	-	4/-
Radio Amateur Operator's Handbook (Data)	-	-	-	4/-
Guide to Broadcasting Stations (Iliffe)	-	-	-	4/-
QRA Locator Map	-	-	-	2/6
Countries List	-	-	-	6d.

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(Large) 9/- (Small) 6/6	-	-	-	
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Council Proceedings

Resumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, on Monday, August 27, 1962, at 6 p.m.

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

Apologies

Apologies for absence were submitted on behalf of Major-General E. S. Cole, Mr. P. H. Wade and Mr. A. C. Williams.

Membership

Resolved (i) to elect 93 Corporate members and 41 Associates; (ii) to grant Corporate membership to all Associates who had applied for transfer.

Council Nominations

In accordance with Article 55 of the Society's Articles of Association

Resumé of the Minutes of the Proceedings at Resumed Meeting of the Council held at New Ruskin House, Little Russell Street, London, W.C.1, on Monday, September 3, 1962, at 6 p.m.

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

Apologies

Apologies for absence were submitted on behalf of Messrs. H. A. Bartlett, F. K. Parker, G. M. C. Stone and A. C. Williams.

Applications for Affiliation

Resolved to grant affiliation to the Norfolk Amateur Radio Club and the Research—G.E.C. Amateur Radio Society.

Printing Costs

It was reported that printing costs for the BULLETIN and other Society publications were to be increased immediately.

Society Trophies and Certificates

Resolved (i) to award the Calcutta Key to Mr. W. E. Nutton (G6NU), the Founder's Trophy to Mr. R. S. Biggs (G2FLG) and the ROTAB Trophy to Mr. R. Barr (G15UR); (ii) to award a special certificate to the Cornwall R.S.G.B. Group and Cornish Radio and Television Club in recognition of services rendered to Amateur Radio in connection with the commemoration of the Sixtieth Anniversary of the first Trans-Atlantic wireless message.

certain Corporate members were nominated to fill the vacancies that will occur in that body on December 31, 1962. (For details see September 1962 issue of the BULLETIN, page 134.)

Staff Matters

Consideration was given to the Minutes of a meeting of the Finance and Staff Committee held on July 28, 1962.

After discussion it was

Resolved that (i) Mr. John Clarricoats, O.B.E., shall retire from his post as General Secretary-Editor upon reaching his 65th birthday and shall then be re-employed as General Secretary until December 31, 1963; (ii) Mr. John A. Rouse shall be invited to fill the post of Editor as from January 1, 1963 and the new post of General Manager and Editor as from January 1, 1964; (iii) the new posts of Secretary-Accountant and Editorial Assistant shall be established.

The meeting was adjourned at 10.30 p.m. until 6 p.m. on September 3, 1962

Reports of Committees

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

R.A.E.N. Committee	July 21, 1962
Mobile Committee	July 23, August 17, 1962
TVI/BCI Committee	July 25, 1962
Headquarters Committee	July 26, 1962
V.H.F. Committee	August 13, 1962
Exhibition Committee	August 14, 1962
Scientific Studies Committee	August 20, 1962
Contests Committee	August 23, 1962

The Minutes of a meeting of the Technical Development Sub-Committee held on August 2, 1962, were submitted for information.

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

The Recommendations dealt with, *inter alia*, the setting up of a panel of local advisers to assist the Mobile Committee in respect of Mobile Rallies, the acceptance of an invitation to hold a Golden Jubilee Year Mobile Rally at Wethersfield, U.S.A.F. Base on Whit Sunday 1963, Mobile Safety Recommendations, the establishment of a v.h.f. beacon station in Northern Ireland, various contest matters, including the results of the 1250 Mc/s Tests, N.F.D. 1962 and B.E.R.U. 1962.

Early Court Radio Show

It was reported that a total of 94 applications for membership had been completed on the stand and 70 copies of the Handbook had been sold.

The meeting terminated at 9.55 p.m.

The Merseyside Radio Society of Great Britain LECTURE FOR 1962

will be given by

Dr. R. C. Jennison (ex-G2AJV)

(Jodrell Bank Radio Astronomy Dept., Manchester University)

on Friday, November 16, 1962

at 8 p.m. for 8.15 p.m.

in the

Lecture Theatre, Radiant House, Bold Street, Liverpool

Tickets of admission and further details from the Regional Representative, Basil O'Brien (G2AMV), 1 Waterpark Road, Prenton, Birkenhead, Cheshire.

GB2RS SCHEDULE

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

Frequency	Time	Location of Station
3600 kc/s	9.30 a.m.	South East England
	10 a.m.	Southern Area
	10.30 a.m.	North Midlands
	11 a.m.	North East England
	11.30 a.m.	South West Scotland
	12.00	North East Scotland
145.3 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	Beaming north from Leeds
	11.15	Beaming east from Leeds
145.1 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.

To be published October 31, 1962

RADIO DATA REFERENCE BOOK

Compiled by G. R. Jessop, A.M.Brit.I.R.E.
(G6JP)

This new R.S.G.B. publication brings together in convenient form essential reference data for the radio designer, engineer and amateur. In general the data is presented in the form of curves, tables and charts with only sufficient text to permit its effective use.

136 Pages — stiff covers

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AVAILABLE OCTOBER 31, 1962

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R.S.G.B.

International Radio Communications Exhibition

Seymour Hall, Seymour Place, Marble Arch,
London, W.1,

Wednesday, October 31, 1962, to Saturday,
November 3, 1962.

List of Exhibitors

AMATEUR RADIO MOBILE SOCIETY

AVEL PRODUCTS LTD.

BRITISH AMATEUR TELEVISION CLUB

CITY AND GUILDS OF LONDON INSTITUTE

DAYSTROM LTD. (HEATHKIT)

ELECTRONIQUES (FELIXSTOWE) LTD.

ENTHOVEN SOLDERS LTD.

GREEN AND DAVIS

J-BEAM AERIALS LTD.

K.W.ELECTRONICS LTD.

MINIMITTER CO. LTD.

M-O VALVE CO. LTD.

NATIONAL TRADE PRESS GROUP (*British Communications and Electronics, Electronics Weekly, R. & D. Engineering News*)

GEORGE NEWNES LTD. (*Practical Wireless and Practical Television*)

E. J. PHILPOTT'S METALWORKS LTD.

POST OFFICE ENGINEERING DEPARTMENT

RADAR AND ELECTRONICS ASSOCIATION

RADIO SOCIETY OF GREAT BRITAIN

REDA RADIO LTD.

ROYAL AIR FORCE

ROYAL NAVAL RESERVE

SALFORD ELECTRICAL INSTRUMENTS LTD.

SELRAY BOOK CO.

SHORT WAVE MAGAZINE LTD.

SOUND VISION SERVICE (ELECTRICAL)

WEBBS RADIO

Wireless World and Industrial Electronics (ASSOCIATED ILIFFE PRESS LTD.)

T. WITHERS (ELECTRONICS)

WORLD RADIO CERTIFICATES DISPLAY

65TH SIGNAL REGIMENT, T.A.

RADIO SOCIETY



OF GREAT BRITAIN

**INTERNATIONAL
RADIO
COMMUNICATIONS
EXHIBITION**

SEYMOUR HALL

SEYMOUR PLACE, MARBLE ARCH, LONDON, W.1

OCTOBER 31 to NOVEMBER 3, 1962

10 a.m. to 9 p.m.

ADMISSION 3/-

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Features will include aerial masts, u.h.f. beams, valves and low noise converters, new communications receivers, overseas equipment and components, new transmitters and test gear, hi-fi equipment.

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Wednesday "U.H.F. Aerials" by J-Beam Aerials Ltd.

Thursday "Mobile Transistor Power Supplies" by Avel Products Ltd.

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CONTEST NEWS



— RESULTS — REPORTS — RULES —

Second 1.8 Mc/s Contest 1962

THE rules for this event are given below and it should be noted that they are considerably changed from those of recent years. This has been done to improve the scores which can be obtained by stations in sparsely populated areas.

When: 22.00 G.M.T. on Saturday, November 10, to 08.00 G.M.T. on Sunday, November 11, 1962.

Eligible Entrants: All fully paid-up Corporate Members of the R.S.G.B. resident in G, GC, GI, GM, and GV.

Contacts: May be made on c.w. (A1) only in the 1.8 Mc/s band.

Scoring: Three points for contacts with stations in the entrant's own county and those counties having a common boundary with that of the entrant and five points for all other contacts.

Contest Exchanges: RST reports followed by the contact number starting with 001. All reports must be acknowledged with "R."

Logs: (a) Must be tabulated in columns headed (in this order): "Date/Time G.M.T.," "Call-sign of station worked," "My report on his signals and serial number sent," "His report on my signals and serial number received," "Points Claimed."

(b) The cover sheet must be made out in accordance with R.S.G.B. Contest Rule 5. The declaration must be signed.

(c) Entries must be postmarked not later than **November 26, 1962.**

Power Input: The d.c. input to any stage of the transmitter shall not exceed 10 watts.

Awards: At the discretion of the Council, the **Victor Desmond Trophy** will be awarded to the winning station and certificates of merit to the stations placed second and third. In addition, the **Maitland Trophy** will be awarded to the Scottish member with the highest aggregate number of points in this contest combined with the First 1.8 Mc/s Contest 1963. A certificate of merit will also be awarded to the non-transmitting member submitting the best check log.

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

CQ World Wide DX Contest 1962

THE following is a résumé of the rules for this year's World Wide DX contest arranged by *CQ Magazine*.

Period: phone section; 00.00 G.M.T. October 27 to 24.00 G.M.T. October 28. C.w. section; 00.00 G.M.T. November 24 to 24.00 G.M.T. November 25.

Bands to be used: 1.8 to 28 Mc/s.

Type of competition: 1. **Phone Section.** (a) Single operator; (b) Multi-operator single transmitter; (c) Multi-operator multi-transmitter. 2. **C.w. Section.** (a), (b) and (c) as for Phone Section. 3. **Inter-Club** (DX Clubs affiliated to a national body).

Serial numbers: Phone stations will exchange serial numbers consisting of 4 numerals, the first 2 being the RS report and the last 2 their own Zone number. C.w. stations will exchange serial numbers consisting of 5 numerals, the first 3 being the RST report and the last 2 their own Zone number. Stations in Zones 1 to 9 will prefix their Zone number with 0.

Points: Contacts between stations on different continents will count 3 points. Contacts between stations on the same continent but not in the same country will count 1 point. Contacts between stations in the same country will be permitted for the purpose of obtaining a Zone and/or Country multiplier but no QSO points can be claimed. Only one contact with the same station is permitted per band. A multiplier of 1 for each Zone contacted on each band and a multiplier of 1 for each country worked on each band.

Scoring: The score of each single band is the sum of the Zone and country multipliers for that band, multiplied by the total contact points on that band. The total all band score is the sum of the Zone and country multipliers of all bands multiplied by the sum of the contact points on all bands.

Those sending in logs for a single band are eligible for a single band award only. If a log is sent in for more than one band, indicate which band is to be judged otherwise it will be judged as an all band entry. Single operator contestants must show a minimum of 12 hours operating time to be eligible for an award. If a contestant operates more than one band and wishes to be judged for a specific single band he must show a minimum of 12 hours on that band. Contestants using the 21 or 28 Mc/s bands will be required to show a minimum of only 8 hours. Multi-operator stations must show a minimum of 24 hours of operating time to be eligible for an award, and will be judged only on the basis of an all band score.

The log forms and report forms follow the pattern of previous years. Zone numbers and countries should be filled in on only the first occasion of a contact. All times to be in G.M.T. All logs must be postmarked not later than **December 1, 1962**, for the phone section and **January 15, 1963**, for the c.w. section, and should be sent to CQ, 300 West 43rd Street, New York, 36, N.Y., U.S.A. (Att: Contest Committee).

Log forms are available from G2BYN on receipt of a large stamped addressed envelope.

Second European "Fox Hunt" Championships

SPONSORED by I.A.R.U. Region I Division, the Second European "Fox Hunt" Championships, organized by the Yugoslav society, S.R.J., were held at Ankaron on August 10-11, 1962. Competitors from Austria, Norway, Poland, Sweden, U.S.S.R. and Yugoslavia took part.

The 3-5 Mc/s event, in which there were four "foxes" or hidden transmitters, attracted four teams and 16 individual entrants and was won by the Russian team who also won the 144 Mc/s event in which there were three "foxes."

Each fox hunt lasted three hours, a novel feature being that the hidden transmitters were in contact with the base area by v.h.f. mobile gear. Thus it was possible to report the arrival of competitors. The official results were declared at the Hamfest held after the events were over. Prizes were presented by the president of S.R.J. (Slobodan Nakicenovic, YUIA).

It is understood that the U.S.S.R. teams were specially trained in the Crimea for the championships. They were managed at Ankaron by the president of the U.S.S.R. Federation of Radio Sport (Mr. Ernest Krenkel, RAEM.)

Among the many other visitors was the president of S.S.A. (Capt. Carl Erik Tottie, SM5AZO). Mr. Janez Znidarsic (YUIAA) represented the Executive Committee of I.A.R.U. Region I Division.



Contestants in the D/F Qualifying Event organized by the Slade Radio Society and held on April 29, 1962. (Photo by D. Wilson)

Rules for the R.S.G.B. 21/28 Mc/s Telephony Contest, December 1-2, 1962

RADIO amateurs throughout the world are again invited to take part in the annual R.S.G.B. 21/28 Mc/s Telephony Contest to be held this year on December 1-2.

The rules are the same as in previous years but attention is drawn to the scoring system described in detail in Rule 8. Contestants are advised that in previous years many points were lost by those who did not read this rule carefully.

Rules

1. **Duration.** The contest will start at 07.00 G.M.T. on Saturday, December 1, and end at 19.00 G.M.T. on Sunday, December 2, 1962.

2. **Eligible Entrants.** The contest is open to licensed amateurs in all parts of the world. There will be two sections: (i) for single operators; (ii) for multiple operator stations. Entrants in the multiple operator section will not be eligible for awards under Rule 9 but will be eligible for certificates of merit.

3. **Licence Conditions.** Entrants must operate in accordance with the terms of their licences.

4. **Contacts.** Contacts may be made using any telephony system for which the entrant is licensed. Contacts with unlicensed stations will not count for points. Proof of contact may be required. Only one contact on each band may be made with a specific station, whether fixed, portable, mobile or alternative address. Duplicate contacts must be logged and clearly marked as duplicates without claim for points. Cross-band contacts may not be claimed.

5. **Contest Exchanges.** An exchange of RS reports followed by a three figure serial number starting with 001 for the first contact and increasing by one for each successive contact (for example, 58001, 56002, etc.) must be made before points can be claimed.

6. **Operators.** In the Single Operator Section only the entrant will be permitted to operate his station for the duration of the contest. In both sections all operators must be licensed.

7. **Entries.** Entries must (a) be clearly typed or written on *one side only of foolscap paper*; (b) log sheets must be ruled in columns headed (in this order) "Date/Time (G.M.T.)", "Call-sign of station worked", "My report on his signals and serial number sent", "His report on my signals and serial number received", "Band", "Leave Blank", "Bonus Points", "Points Claimed"; (c) be addressed to the **Contests Committee, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, England**, the name of the contest being clearly shown on the top left hand corner of the envelope which must be postmarked **not later than December 17, 1962**. Log sheets are available from R.S.G.B. Headquarters on receipt of a large stamped addressed envelope.

The closing date for posting entries is December 17, 1962.

Rules for the R.S.G.B. 21/28 Mc/s Telephony Receiving Contest, 1962

1. **Eligible Entrants.** The contest is open to short-wave listeners throughout the world. All entrants agree to be bound by these rules. Only the entrant may operate his receiving station for the duration of the event. Holders of amateur transmitting licences are not eligible to take part.

2. **Duration.** The contest will start at 07.00 G.M.T. on Saturday, December 1, 1962, and end at 19.00 G.M.T. on Sunday December 2, 1962. The R.S.G.B. 21/28 Mc/s Telephony Contest for transmitting amateurs will take place during the same period.

3. **Entries.** (a) To count for points, logs must show, in columns: (i) Date/Time G.M.T.; (ii) Call-sign of station heard; (iii) Report sent by station heard; (iv) Call-sign of the station being worked; (v) Band in Mc/s; (vi) Bonus points claimed; (vii) Points claimed. CQ or test calls will not count for points.

(b) Entries must be set out on *one side only of foolscap* or quarto paper, must be postmarked not later than December 17, 1962 and must be addressed to the **Contests Committee, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, England**. Log sheets are available from R.S.G.B. Headquarters on receipt of a large stamped addressed envelope.

(c) All entries must contain the following declaration:
I declare that this receiving station was operated strictly in accordance with the rules and spirit of the contest and I agree that the decision of the Council

8. **Scoring.** British Isles stations may not work each other for points. Overseas stations may only claim points for contacts with British Isles Stations (G, GB, GC, GD, GI, GM and GW). Scoring will be as follows.

British Isles Stations. Each completed contact will score 5 points. In addition, a bonus of 20 points may be claimed for the first contact with each new country on each band. For the purposes of scoring, the official countries list will apply, with the exception that VE, VK, W/K, ZL and ZS call areas will each count as a separate country.

Overseas Stations. Each completed contact with a British Isles station will score 5 points. In addition, a bonus of 50 points may be claimed for the first contact with each British Isles country-numeral prefix on each band, i.e. G2, G3, G4, G5, G6, G8, GB, GC2, GC3, GC4, GC5, GC6, GC8, GD2, GD3, GD4, GD5, GD6, GD8, GI2, GI3, GI4, GI5, GI6, GI8, GM2, GM3, GM4, GM5, GM6, GM8, GW2, GW3, GW4, GW5, GW6, GW8. A further 50 bonus points will be scored for each additional ten stations worked in each of the above categories of band.

9. **Awards.** In the Single Operator Section, the **Whitworth Trophy** will be awarded to the leading British Isles entrant. In addition, **certificates** will be awarded to the leading station in each of the other five British Isles country-prefix zones and to the runner-up in the Trophy winner's zone. Certificates will be awarded to the leading station in each overseas country, VE, VK, W/K, ZL, and ZS call areas counting separately as in Rule 8.

SAMPLE COVER SHEET

R.S.G.B. 21/28 Mc/s Telephony Contest Claimed Score

December 1-2, 1962. Call-sign

Name

Address

Transmitter..... Power Input.....watts

Modulation system(s) used.....

Receiver..... Aerial(s).....

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

Date..... Signed.....

Failure to sign the declaration may involve disqualification of the entry

of the R.S.G.B. shall be final in all cases of dispute. I do not hold an amateur transmitting licence.

Date..... Signed.....

4. **Scoring.** British Isles entrants may only log overseas stations working U.K. stations in the contest. Overseas entrants may only log British Isles stations in contact with overseas stations in the contest. A station whether fixed, portable, mobile or alternative address may be logged only once per band for the purposes of scoring. CQ or test calls will not count for points.

British Isles Entrants. Each complete log entry will score 5 points. In addition a bonus of 20 points may be claimed for the first station logged in each new country on each of the two bands (21 and 28 Mc/s). For the purposes of scoring the official countries list will be used, with the exception that VE, VK, W/K, ZL and ZS call areas will each count as separate countries.

Overseas Entrants. Each complete log entry relating to a British Isles station heard will score 5 points. In addition a bonus of 20 points may be claimed for the first station heard in each British Isles country-numeral prefix on each band, i.e. G2, G3, GM4 etc., as listed in Rule 8 for the transmitting contest. A further bonus of 50 points will be scored for each additional ten U.K. stations (in each of the categories in Rule 8 of the Transmitting Event) logged irrespective of band.

5. **Awards.** At the discretion of the Council, the **Metcalfe Trophy** will be awarded to the leading British Isles entrant. In addition, **certificates** will be awarded to the British Isles runner-up and to the leading entrant in each overseas country.

Forthcoming Events

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

DATES FOR YOUR DIARY

October 20-21.—Jamboree-on-the-Air.
October 26.—London Lecture Meeting at I.E.E.
October 31-November 3.—R.S.G.B. International Radio Communications Exhibition, Seymour Hall, London W.1.
December 15.—Annual General Meeting, Overseas House, London S.W.1.
March 29, 1963.—London Lecture Meeting at I.E.E.
June 2, 1963.—R.S.G.B. Golden Jubilee Mobile Rally, Wethersfield, Essex.

REGION 1

Ainsdale (A.R.S.).—October 24, November 7, 21, 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.).—November 13 ("Electronic Computers," by Jack Bennett), 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.—October 16, 30, November 13, 27, 42 Jordongate.
Manchester (M. & D.A.R.S.).—Wednesdays, 7.30 p.m., King George VI Club, North Road, Macclesfield, Manchester 10 (S.M.R.C.). Fridays, 7.45 p.m., Rackhouse Community Centre, "Rackhouse," Daine Avenue, Northenden.
Morecambe.—November 7, 125 Regent Road.
Preston.—October 23 ("On the air"), November 13 ("Tape lecture—Electronic Tubes"), November 27 ("Radio Interference," J. Hallatt, G3DBY), 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.—October 24, November 7, 21, 8 p.m., The Blossoms Hotel, Buxton Road.
Wirral.—October 17, November 7, 21, 7.45 p.m., Harding House, Park Road West, Cloughton.

REGION 2

Catterick.—Tuesdays and Thursdays, 7.30 p.m., Club Rooms, Vimy Road, Catterick Camp.
Halifax (Northern Heights).—October 20 (Jamboree-on-the-Air), October 23 (Mullard Film Show at St. George's Hall, Bradford), October 24 (Informal), November 7 ("S.S.B. by G3FQH), 7.30 p.m., Sportsman Inn, Ogden.
Heckmondwike (S.V.A.R.S.).—October 18 ("Noise Problems"), October 23 (Mullard Film Show), November 1 ("Tape Recorders"), 7.15 p.m., Grammar School.
Scarborough.—Thursdays, 7.30 p.m., Chapman's Yard, North Street.

REGION 3

Birmingham (M.A.R.S.).—October 16, November 20, 7.30 p.m., Midland Institute, Paradise Street. (South).—October 18, 7.45 p.m., Friend's Institute, Moseley Road, Birmingham.
Coventry (C.A.R.S.).—Mondays, 7.30 p.m., R.A.F. Club, Holyhead Road, Coventry.
Cannock (A.R.S.).—First Thursday in each month, 7.30 p.m., White Lion Hotel, Bridgton.
Dudley (D.A.R.C.).—October 26 (Demonstration and talk by Wolverhampton Model Radio Control Society), November 9 ("Two Metres" by G3BA), 8 p.m., Priory Hall, Dudley.
Stourbridge (S. & Dist. A.R.S.).—October 19 (Annual Dinner), 8 p.m., Bell Hotel, Stourbridge.
Stourbridge (S. & Dist. A.R.S.).—November 6, 7.45 p.m., Foley College, Stourbridge.

Sutton Coldfield.—October 25 (Club Night), November 8 ("Amplifiers and Modulators"), 7.30 p.m., 92 The Parade, Sutton Coldfield.
Wolverhampton (A.R.S.).—October 22, 8 p.m., Neachells Cottage, Stockwell End, Tettenhall.

REGION 4

Chesterfield (C. & D.A.R.S.).—October 24, November 7, 21, 7.30 p.m., Newbold Observatory, Newbold Road, Chesterfield.
Derby (D. & D.A.R.S.).—October 17 ("My Experiences at Cape Canaveral Space Exploration Centre," by J. K. E. Tunaley), October 24 (Open Night), October 31, November 3 (Trip to R.S.G.B. International Radio Communications Exhibition), November 7 (Surplus Sale), November 14 ("Electronics in Industry," by R. Moon), November 21 ("Model Control" by R. Cullen), 7.30 p.m., Room No. 4, 119 Green Lane, Derby. (D.S.W. Exp. Soc.).—Fridays, 7.30 p.m., Sundays, 10.30 a.m., Club Rooms, Nunsfield House, Boulton Lane, Alvaston, Derby.
Grantham (G. & D.A.R.S.).—Mondays, 7.30 p.m., Club Rooms, rear of Manners Arms Hotel, London Road, Grantham.
Grimsby (G. & D.A.R.S.).—October 25, November 8, 8 p.m., R.A.F.A. H.Q., Abbey Drive West, Grimsby.
Loughborough (A.R.S.).—Fridays, 7.30 p.m., Corporation Hotel, Wharnclyffe Road, Loughborough.
Leicester (L.R.S.).—October 15, October 22, 29, ("Single Sideband Techniques," by J. Lewis, G3MYI), November 5, 12, November 19 ("Fifty Years of Radio," by F. C. Ward, G2CVV), 7.30 p.m., Club Rooms, Old Hall Farm, Braunstone Lane, Leicester.
Lincoln (L.S.W.C.).—Wednesdays, 7.30 p.m., Lincoln Technical College, Cathedral Street, Lincoln.
Nottingham (A.R.C.N.).—Tuesdays (R.A.E.), Thursdays (Lecture), 7.15 p.m., Room No. 3, Sherwood Community Centre, Woodthorpe House, Mansfield Road, Sherwood, Nottingham.
Northampton (N.S.W.C.).—Thursdays, 7 p.m., Allens' Pram Works, 8 Duke Street, Northampton.
Peterborough (A.R.S.).—November 2 (A.G.M.), December 7 ("Transmitters"), 7.30 p.m., Room 14, Peterborough Technical College.
Retford & Worksop (N.N.A.R.C.).—Tuesdays (Beginners), Thursdays (Club), 7.30 p.m., Club Rooms, Victoria Institute, Eastgate, Worksop.

REGION 5

Cambridge (C. & D.A.R.C.).—Fridays, 7.30 p.m., Club Headquarters, Corporation Yard, Victoria Road, Cambridge (Special talk or demonstration on the first Friday of each month).—October 23, in conjunction with C.U.W.S., film This is the B.B.C. in University Lecture Theatre.
March (M. & D.A.R.S.).—Tuesdays, 7.30 p.m., Police Headquarters, High Street.
Shefford (S. & D.A.R.S.).—Thursdays, October 18 ("Cinema Amplifiers," by D. Stapleton), October 25 ("Relays," by J. Harper), November 1 ("A 160 Metre Transmitter," by D. Raby, G3IDR), November 8 (Preparation for Annual Dinner), November 15 ("General Electrical Engineering," by F. Pearce), 7.45 p.m., Digswell House, Shefford.

REGION 6

Cheltenham.—First Thursday in each month, 8 p.m., Great Western Hotel, Clarence Street.

REGION 7

Acton, Brentford and Chiswick (A.B.C.R.C.).—October 16 (Winter Programme Discussion), 7.30 p.m., A.E.U. Club, 66 High Road, Chiswick.
Bexleyheath (N.K.R.S.).—October 25, 8 p.m., Congregational Hall, Clock Tower, Bexleyheath.
Croydon (S.R.C.C.).—November 13, 7.30 p.m., Blacksmiths Arms, South End, Croydon.

Dorking (D. & D.R.S.).—October 23 "Single Sideband" by G3OV5, 8 p.m., Star & Garter, Dorking, November 2, visit to R.S.G.B. Exhibition, meet at R.S.G.B. Stand at 7 p.m. November 13, 8 p.m. Informal Meeting at Wheatsheaf.
East Ham.—Tuesdays fortnightly, 8 p.m., Leigh Road, East Ham.
East London.—October 21 ("Transistor Receivers," by J. Gazeley), 2.30 p.m., Lambourne Room, Ilford Town Hall.
East Molesey (T.V.A.R.T.S.).—November 7, Carnarvon Castle Hotel, Hampton Court.
Edgware & Hendon (E. & D.R.S.).—Second and fourth Mondays in each month, 8 p.m., John Keeble Hall, Church Close, Deans Lane, Edgware.
Gravesend (G.R.S.).—Thursdays, 7.30 p.m., October 11 (Demonstration by G8KW), R.A.F.A. Club, Overcliffe, Gravesend.
Harlow.—Tuesdays, 7.30 p.m., rear of G3ERN (G. E. Read), High Street, Harlow.
Holloway (G.R.S.).—Mondays, Tuesdays and Wednesdays (R.A.E. and Morse), 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 School, Twickenham Road, Hounslow.
Ilford.—Thursdays, 8 p.m., 579 High Road, Ilford (nr. Seven Kings Station).
Kingston.—Lectures alternate Thursdays, Y.M.C.A. Eden Street, Kingston. (Morse Classes weekly at 2 Sunray Avenue, Tolworth).

LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road.
 at 12.30 p.m. on Friday, October 19, November 16 and December 14, 1962.
 Telephone table reservations to HOL 7373 prior to day of luncheon. Visiting amateurs especially welcome.

Mitcham (M. & D.R.S.).—Lectures alternate Fridays (Morse Classes 7 p.m.), "The Canons," Madeira Road, Mitcham.
New Cross (C.A.R.S.).—Fridays, 7.30 p.m., 25 New Cross Road, S.E.14.
Norwood and South London (C.P. & D.R.C.).—October 20 (Joint Meeting with Clifton Radio Club—Hi-fi Stereo Lecture/Demonstration), 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.
Romford (R. & D.R.S.).—Tuesdays, 8.15 p.m., R.A.F.A. House, 18 Carlton Road, Romford.
Science Museum (C.R.S.).—First and third Tuesdays, 6 p.m., Science Museum, South Kensington.
Sidcup (C.V.R.S.).—October 20-21. Jamboree-on-the-Air with Royal Eltham Scouts, Avery Hill Road, S.E.9. November 1 (Talk on AVO by J. A. Thomas), 8 p.m., Congregational Church Hall, 1 Court Road, Eltham.
Southgate & District.—November 8 (G6QM), 8 p.m., Arnos School, Wilmer Way, N.11.
Slough (S.A.R.S.).—First Wednesday in each month, 8 p.m., United Services Club, Wellington Street.
Sutton & Cheam (S.C.R.S.).—October 16, "The Harrow," High Street, Cheam.

REGION 8

Crawley (C.A.R.C.).—October 24 (Film Show by H. J. P. Lees), 8 p.m. West Green Centre. November 14, informal, for details contact G3FRV.

Tunbridge Wells (W.K.A.R.S.).—October 26 ("Nucleonics" by W. H. Allen, G2UJ, illustrated with a film), November 9 (Film Show), November 23 (Audio Night), 7.30 p.m., K.C.C. Adult Centre, Culverden House, Culverden Park Road, St. Johns, Tunbridge Wells.

REGION 9

Bath.—October 24, 7.30 p.m., Committee Room, Bath Technical College, Lower Borough Walls, Bath.

Bristol.—October 19 ("Measuring Equipment" by E. C. Halliday, G3JMY), 7.15 p.m., Carwardine Restaurant, Baldwin Street, Bristol 1.

Burnham-on-Sea.—November 13, 8 p.m., Crown Hotel, Oxford Street.

Exeter.—November 6, 7.30 p.m., Y.M.C.A., St. David's Hill, Exeter.

Falmouth (C.R. & T.C.).—First Wednesday in each month, Y.M.C.A., Falmouth.

Plymouth (P.R.C.).—First Tuesday in each month, 7.30 p.m., Guild of Social Service Building, Plymouth. Other Tuesdays, Virginia House Settlement, St. Andrew's 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. (November meeting at Dorchester).

Torquay (T.A.R.S.).—November 10 (Lecture by G.P.O. inspector), 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., Grove House, Preston Road, Yeovil.

REGION 10

Cardiff.—November 12 ("The Principles of Transistors," by R. A. Stevens, GW3GQM), 7.30 p.m., T.A. Centre, Park Street, Cardiff.

REGION 13

Edinburgh (L.R.S.).—October 25 (Visitors Night with South Lanark, Fife, and Falkirk Groups: Film), November 8 ("Some Aspects of Transistors" by Dr. Colin Davidson, GM3LAV), November 22 (Surplus Sale), Y.M.C.A., South St. Andrews Street.

REGION 14

Motherwell.—October 19, 7.30 p.m., Carfin Hall, Motherwell.

REGION 16

Basildon (B. & D.A.R.S.).—For details of meetings in October, contact G3ORT or G3IFN.

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

Southend (S. & D.R.S.).—Alternate Fridays, 7.30 p.m., Canteen of E. K. Cole, Ltd., Priory Road, Prittlewell, October 19 (Quiz), November 2 (Club night on 144 Mc/s.), November 16 (Junk Sale).

REGION 17

Bournemouth (W.A.R.G.).—October 15 (Morse Class and Ragchew), 8 p.m., 47 New Road, Northbourne. November 5 ("London Transport," film and lecture), 7.45 p.m., "Cricketers Arms," Windham Road, Bournemouth.

Newbury.—October 26 ("Noise Generators," by P. Sterry G3CBU, and Annual Constructional Contest), 7.30 p.m., The Canteen, Elliotts of Newbury, West Street, Newbury.

Regional and Club News

Basingstoke.—Meetings are now held at the Immanuel Hall, Wote Street, on the second Saturday in each month. At the November meeting J. Fortnum will give a talk entitled "Kilowatts in Iceland." *Hon. Secretary:* P. Jackson, 11 Oaklands Way, Basingstoke.

Belfast and District V.H.F./U.H.F. Group.—The primary objects of this new group, which will work in affiliation with the Belfast R.S.G.B. Group, are (i) to establish a 2m beacon station in Northern Ireland, (ii) to operate a station in V.H.F. National Field Day, (iii) to stimulate interest in v.h.f. and u.h.f. in Northern Ireland. Further information may be obtained from the R.S.G.B. Town Representative for Belfast, P. G. Bower (G13OFT), 8 Richhill Crescent, Belfast 5.

Cambridge and District Amateur Radio Club.—The new season opened on September 7 with a sale of equipment from the stations of the late G5OV and G8SY. The club station, G3PKF, is active on all bands from 2m to 160m. Visitors will be welcome on Friday evenings.

Clifton Amateur Radio Society.—At the A.G.M. the following were elected: *Chairman*—W. Martin (G3FVG); *Hon. Treasurer*—N. Moore; *Hon. Secretary*—C. E. Godsmark (G3IWL), 211 Manwood Road, London S.E.4; *Committee Members*—J. Rose (G3OGE) and A. Gould (G3JKY); *Junior Committee Member*—P. Madagan. Three sub-committees were formed to organize participation in the Affiliated Society's, N.F.D. and V.H.F. N.F.D. events. Five stations were active during the society's low power all-band field day on September 16, two of them restricting their operation to 3.5 Mc/s in order to compete in Low Power Field Day at the same time.

Crawley Amateur Radio Club.—Recent events have included a lecture by G8RW on 23cm operation and a visit to Gatwick Airport. Four members passed the May R.A.E. On October 24 at 8 p.m. H. J. P. Lees will give his annual film show at the West Green Centre. Visitors and prospective members are always welcome at meetings and may obtain further information from the *Hon. Secretary:* R. G. B. Vaughan (G3FRV), 9 Hawkins Road, Tilgate, Crawley.

Cray Valley Radio Society.—A film show given recently by G2NK was well attended. Details of future activities may be obtained from S. Coursey (G3JJC), 49 Dulverton Road, Eltham, London, S.E.9.

Dudley Amateur Radio Club.—An exhibition station was operated under the call-sign GB3DAR at the Dudley Public Library on August 31 and September 1. About 40 contacts in 10 countries were made on 20m and 30 on Top Band. Equipment used comprised a K.W. Vanguard transmitter, Eddystone 840 receiver and 20m dipole, and a K.W. Valiant, AR88 receiver and 250 ft. end fed wire for Top Band. Visitors to the stand numbered approximately 260. The club publishes a regular newsletter, *The Local Oscillator*. *Hon. Secretary:* D. H. W. Pratt (G3MHS), 23 Kent Street, Upper Gornal, Dudley, Worcs.

Enfield R.S.G.B. Group.—At the invitation of the Borough of Enfield, the Group again took part in the Enfield Show last month under the call-sign GB3ENF. A special effort was made to present a wide and balanced picture of Amateur Radio for the benefit of the general public. Top Band operation was handled by G3DOO while G2DOJ loaned and operated a Mercury 200 transmitter, MR44 Mk. 2 receiver and FB5 multiband aerial for the h.f. bands. G3HGE loaned a 2m station comprising a TW2 transmitter and a Nuvisor converter feeding into a CR100 receiver. G3FD provided a 5-over-5 slot fed array. Despite



A display of portable gear by G3LXP at the Enfield Show.
(Photo by G3LXP)

poor conditions the h.f. station had excellent contacts with 11 countries and three continents. The Top Band station was kept very busy and 16 mobiles were taken in to the Show. A contest for the safest mobile, judged by G6LL, was won by G3BJR/M. A very fine display of portable gear was arranged by G3LXP. Other features included a display of v.h.f. transistor equipment by John Gazeley (B.R.S. 20533) and gear made by younger members. Recordings of *Oscar 1* were used to demonstrate the participation of radio amateurs in space research. *Area Representative*: John Gazeley (B.R.S. 20533), 192 Haselbury Road, Edmonton, London, N.9.

Harrow, Radio Society of.—Forthcoming arrangements are October 19 and November 2 (Practical Nights), October 26 (Junk Sale), November 9 ("Top Band Transmitter" by J. Wilkes, G3OKJ). Morse Practice is given on practical nights and the club station, G3EFX, is on the air. Anyone who requires confirmation of contacts with G3EFX or G3HAR should write to the QSL Manager, E. P. Parry (G3KOE), 22 Roseberry Avenue, South Harrow. *Hon. Secretary*: A. C. W. Biddell (G3GNM), 114 Kingshill Avenue, Kenton, Harrow, Middlesex.

London Members' Luncheon Club.—There was an attendance of 29 at the September meeting when Reg Pearson (G4DH) presided in the absence of Stanley Vanstone (G2AYC). Overseas visitors included JZ0ML, SM5DX, VP3HAG and VE3EWE. The dates of future meetings are given in *Forthcoming Events*.

Mitcham and District Radio Society.—Preparations are already being made for next year's contests including National Field Day. On October 19, VQ4EV will be showing some films while G8TB will give a talk entitled "Why be afraid of transistors?" on November 16. Meetings are held at "The Canons," Madeira Road, Mitcham. *Hon. Secretary*: M. Pharaoh (G3LCH), 1 Madeira Road, Mitcham, Surrey.

Norfolk Amateur Radio Club.—This new club already has 50 members and operates under the call-sign G3PXT. At the first meeting the following were elected: *Chairman*—W. Higgins (G3PNR); *Hon. Treasurer*—R. J. Shaw (G3NOJ); *Hon. Secretary*—J. D. Simpson (G3NJO). Meetings are held on Mondays at 7.30 p.m. in the headquarters of the 35th Norwich Sea Scouts. Plans are being made to take part in the Jamboree-on-the-Air on October 20-21.

Northern Heights Amateur Radio Society.—Recent events have included a demonstration under the call-sign G3OMM/A during Halifax Technical College Open Week and a visit to Wakefield C.I.D. Members will be taking part in the Jamboree-on-the-Air using the call-sign G3MVH. On November 7 J. Clegg is to give a talk on single sideband operation. *Hon. Secretary*: A. Robinson (G3MDW), Candy Cabin, Ogden, Halifax.

Peterborough Amateur Radio Society.—On September 2, the society held a Top Band D/F Contest, starting from its Alwalton Riverside site. The winners were F. Judd (G3QS) and D. Byrne (G3KPO), with Bill Yeomans, Martyn Judd and Michael Grierson as navigators. C. J. Guscott (G3HXR) operated the hidden transmitter, and W. Carter (G2NJ) the liaison talk-in station at the site. *Hon. Secretary*: D. Byrne (G3KPO), Jersey House, Eye, Peterborough.

Purley and District Radio Club.—Meetings are held regularly at The Railwaymen's Hall (side entrance), Whytecliffe Road, Purley. Recent events have included a film show arranged by G3NDF and a visit to B.B.C. Tatsfield. *Hon. Secretary*: E. R. Honeywood (G3GKF), 105 Whytecliffe Road, Purley.

Royal Air Force Amateur Radio Society.—The A.G.M. will be held at 11.15 a.m. on November 3, 1962, in a first floor office at the Seymour Hall, London, W.1, over the venue of the Radio Communications Exhibition. During this exhibition, the society will be operating a station on the R.A.F. stand under its new call-sign G3RAF.

Royal Naval Amateur Radio Society.—The A.G.M. of this society will also be held at the Seymour Hall on the last day of the R.S.G.B. Radio Communications Exhibition. Membership is open to all serving and ex-members of the R.N., R.M., W.R.N.S. and associated Reserves. Interested amateurs are invited to visit the R.N.R. stand at the Exhibition. The Headquarters station, G3BZU, at H.M. School of Signals, H.M.S. Mercury, near Petersfield, Hants., runs regular skeds on all bands, 2m to 80m, with members at home and abroad.

Reigate Amateur Transmitting Society.—Membership is rapidly approaching 50, including 24 with call-signs. The latest members to be licensed are G3RIM (age 16) and G3RIN (age 15). There is considerable interest in mobile operation and nine stations are active on 160 metres. A sale of surplus equipment will be held at The Tower, High Street, Redhill, on October 20 at 7.30 p.m. It is hoped that future informal meetings on the first Saturday in

each month will be as well attended as the first one in September. The society has obtained the call G3REI. *Hon. Secretary*: F. D. Thom (G3NKT), 12 Willow Road, Redhill, Surrey.

Sheffield Amateur Radio Club.—Members are engaged in various projects in connection with furnishing the Headquarters at 8 Sandbeck Place, Sheffield, 11, in the building of an all-band transmitter and the erection of aerials. The club station, G3RCM, is active on Top Band and contacts will be welcomed. A general meeting will be held on October 26 and a technical meeting on November 9. A newsletter entitled *The Long Wire* is being edited by G3PHO. The annual exhibition of amateur-built equipment will take place on November 23. Classes in preparation for the R.A.E. are being held and details may be obtained from the *Hon. Secretary*: D. R. A. Hill, 16 Tynley Road, Sheffield 2.

Shefford and District Amateur Radio Society.—An interesting and varied programme has been arranged and details are given in *Forthcoming Events*. Morse practice precedes each meeting.

South Birmingham Radio Society.—The A.G.M. is arranged for October 18 at 7.30 p.m. at the Friends Institute, 220 Moseley Road, Highgate, Birmingham 12, where meetings are held on the third Thursday in each month. Members will be taking part in the Jamboree-on-the-Air in association with the Rubery Scouts. *Hon. Secretary*: T. W. Legg, Flat 3, 80 Alcester Road, Moseley, Birmingham, 13.

South Dorset Radio Society.—Members of the Yeovil Amateur Radio Club were entertained at Dorchester in September. The N.F.D. film was shown, gear donated by members raffled and light refreshments provided. *Hon. Secretary*: C. E. Biggs (G2TZ), 54 Prince of Wales Road, Dorchester, Dorset.

Spenn Valley Amateur Radio Society.—Meetings are now held on alternate Thursdays at Heckmondwike Grammar School, commencing at 7.15 p.m. *Acting Hon. Secretary*: L. A. Metcalf, 1A Moorlands Road, Birkenshaw, Yorkshire.

Stratford-on-Avon and District Amateur Radio Club.—At the A.G.M. the following were elected: *President*—Dennis Flower (G8TO); *Chairman*—Bas Searle; *Hon. Treasurer*—Bill Schofield; *Hon. Secretary*—Peter Robinson (G3MGJ), 43 Loxley Road, Stratford-on-Avon. A series of lectures in preparation for the May R.A.E. is in progress. Details of other activities may be obtained from the *Hon. Secretary*.

West Kent Amateur Radio Society.—On July 6, a party of members visited the Crowborough works of Messrs. Feedback Ltd. On August 3, despite threatening weather, the society held a successful barbecue at the home of Mr. and Mrs. Laurie King (G4IB), who are thanked for their splendid hospitality. Details of future arrangements are given in *Forthcoming Events*. *Hon. Secretary*: H. F. Richards, 17 Reynolds Lane, Tunbridge Wells.

Worcestershire.—Members interested in the formation of a club or town group in the East Worcestershire area are invited to contact L. Hickingbotham (G3HZG), 95 Oakenshaw Road, Redditch.

Ex-G Radio Club.—Membership is more than 100 in 15 countries. Net meetings are held on Wednesdays at 00.30 G.M.T. (3810 kc/s, all modes, W3HQO controlling), Saturdays at 03.00 G.M.T. (14,010 kc/s, c.w. K6DCE), Saturdays at 21.00 G.M.T. (14,010 kc/s, c.w., K6DCE), Sundays at 19.00 G.M.T. (14,345 kc/s, all modes, WA6MAZ, K5QWZ and VO1DZ). U.K. and Commonwealth stations are always welcome to join in. *Hon. Secretary*: D. W. Rayner (G3CTR), 416 Burkhart Street, Johnstown, Philadelphia, U.S.A.

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COPY DEADLINE

TO enable the R.S.G.B. BULLETIN to be printed in time for bulk postings to take place by not later than the 14th day of the month, the closing date for editorial copy, the 22nd day of the preceding month, must be strictly adhered to. Society Representatives and Club Secretaries will greatly assist the Editorial staff by posting copy to reach Headquarters by not later than the 20th of the month whenever possible.

Copy received after the 22nd day of the month will be held over for future use if still topical.

Representation

THE following are amendments to the list of Town (or Area) Representatives published in the December 1961 issue.

REGION 1—LANCASHIRE EAST

BURY AND ROSSENDALE

C. TURNER (G8NL), 56 Sunnybower, Tottington, nr. Bury, Lancs.

REGION 7—LONDON EAST

CHINGFORD

R. LEVI (G3NQT), 9 Goldings Rise, Loughton, Essex.

Affiliated Societies

THE following are additions to the list published in the August 1962 issue:

"EX-G CLUB"—c/o Norman F. Thompson (W8YHO), 1368 Roslyn Avenue, Akron 20, Ohio, U.S.A.

G.E.C. RESEARCH AMATEUR RADIO SOCIETY—c/o C. H. Whibley, H24, G.E.C. Ltd., The First Research Centre, East Lane, N. Wembley, Middx.

NORFOLK AMATEUR RADIO CLUB—c/o J. Simpson (G3NJQ), 50 Vicarage Road, Norwich, Norfolk.

Amendments

The address of the Hon. Secretary of the Eccles and District Radio Club is now J. A. JENNISON, 20 Carr Road, Higher Irlam, nr. Manchester, Lancs.

The Acting Secretary of the Spen Valley Amateur Radio Society is now L. A. METCALFE, 1A Moorlands Road, Birkinshaw, Yorks.

Can You Help?

● W. J. C. Storeton-West (B.R.S.24967), 4 Old Nelson Street, Lowestoft, Suffolk, who requires details of the conversion of the R.F.26 unit to a 2 metre converter?

● H. Davies (G3JSG), 18 Harrow Avenue, Rochdale, Lancashire, who wishes to borrow the handbook for the DST100 Mk. II receiver?

● J. E. Hogkins (G3EJF), 24 Beryl Avenue, Tottington, near Bury, Lancashire, who wishes to borrow the circuit and layout diagrams and other relevant data for the transmitter-receiver Type B.44 Mk.2?

● Ian Goulding (A.2667), 34 Valley Avenue, Lightcliffe, Halifax, who requires winding details of a Top Band frame aerial, tuned by a 500 pF capacitor. He wishes to wind the aerial on a frame measuring 5½ in. x 7 in.

● A. J. Fishkin (A.1942), of 83 Bemersyde Drive, Jesmons, Newcastle upon Tyne, who requires the circuit of the B.F.O. unit of the BC453 receiver.

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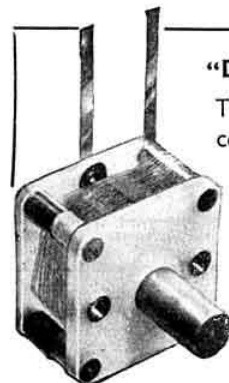
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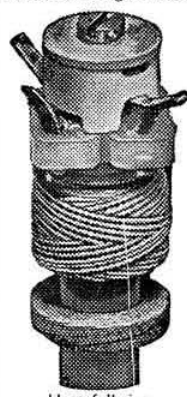
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TAYLOR OUTPUT POWER METER, Type 150A PCR RECEIVERS, one type with built-in loudspeaker and 2-100 Ohm jack sockets (2080-860m., 565-190m. and 5.8-18 Mc/s) ...	£6/10/-	(10/-)
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R206 RECEIVERS complete with power unit, (550 kc/s-30 Mc/s) ...	£22/10/-	(30/-)
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RIBBED GLASS, 3" aerial insulators, 1/9 each. P. & P. 1/6 up to 12.

CERAMIC FEEDER SPREADERS, 6" type F.S., 10d. each. P. & P. 2/- up to 12.

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2 METRE BEAM 5 ELEMENT W.S. YAGI. Complete in box with 1" to 2 1/2" mast head bracket. PRICE 49/- P. & P. 3/6

SUPER AERIAL CABLE. 75 ohm, 300 watts, very low loss, 1/8 per yard. P. & P. 2/-. 50 ohm, 300 watt coax, very low loss, 1/9 yd., P. & P. 2/-.

TOUGH POLYTHENE LINE, type MLI (100 lbs.), 2d. per yd. or 12/6 per 100 yds. Type ML2 (220 lbs.), 4d. per yd. or 25/- per 100 yds., post free. Ideal for Guys, L.W. Supports, Hal-yards, etc.

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This Parmeko-made transformer has the following conservative ratings. Primary: 230V. 50 c/s. Secondary: 620/550/375/0/375/550/620V. Rated at 275 VA. It will give 620 or 550 volts at 200mA simultaneously with 375V. at 250mA. All the H.T. you require for R.F. and Modulator. Also 2-5V. 3A. windings for suitable rectifiers such as 5R4G1, 5Z3, 83, 5U4, etc. Weight 24 1/2 lbs. Size 6 1/2" x 6 1/2" x 5 1/2" high. Worth at least £7. Our Price £3 only, car. paid. C.W.O. only. No C.O.D. We regret we cannot accept orders for these from Eire or abroad.

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2A 18-way, 8/6; 25-way, 12/-

4,300 @ 5mA, 4V @ 2A

4,000V @ 5mA, 4V @ 1.5A, 0-2-4V

2A

Packing and postage 5/- per transformer.

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