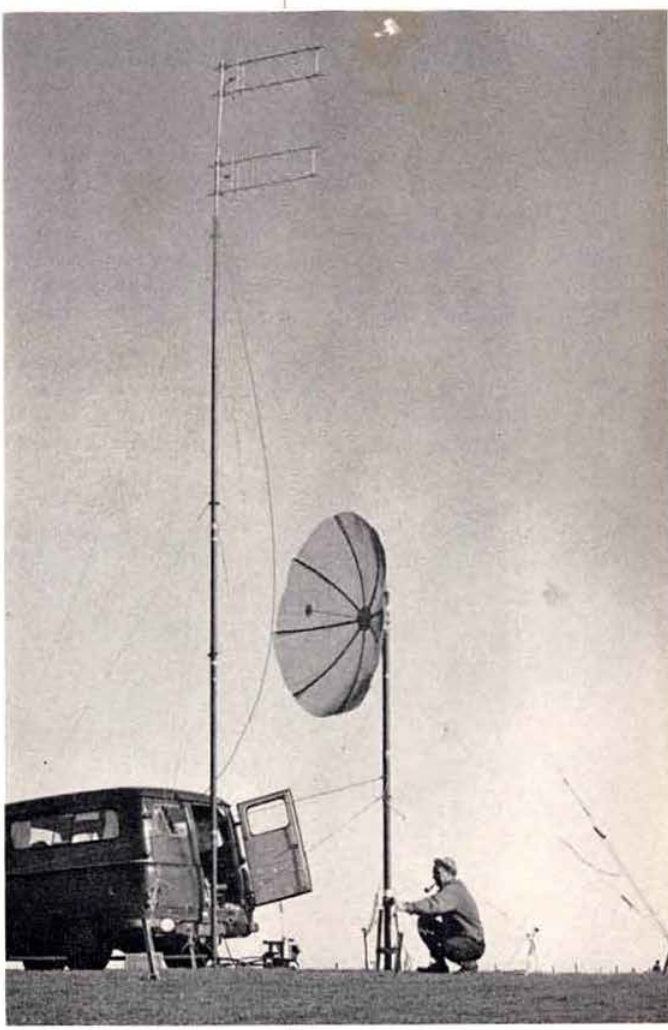
# RSGB

# BULLETIN

JULY 1966
VOL. 42, No. 7



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**Volume 42 No. 7**
**July 1966**
**4/- Monthly**

# RSGB BULLETIN

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*The RSGB Bulletin is published on the first Wednesday in each month by the Radio Society of Great Britain as its official journal and sent to all members.* 
*The closing date for copy for the August issue is 8 July.*

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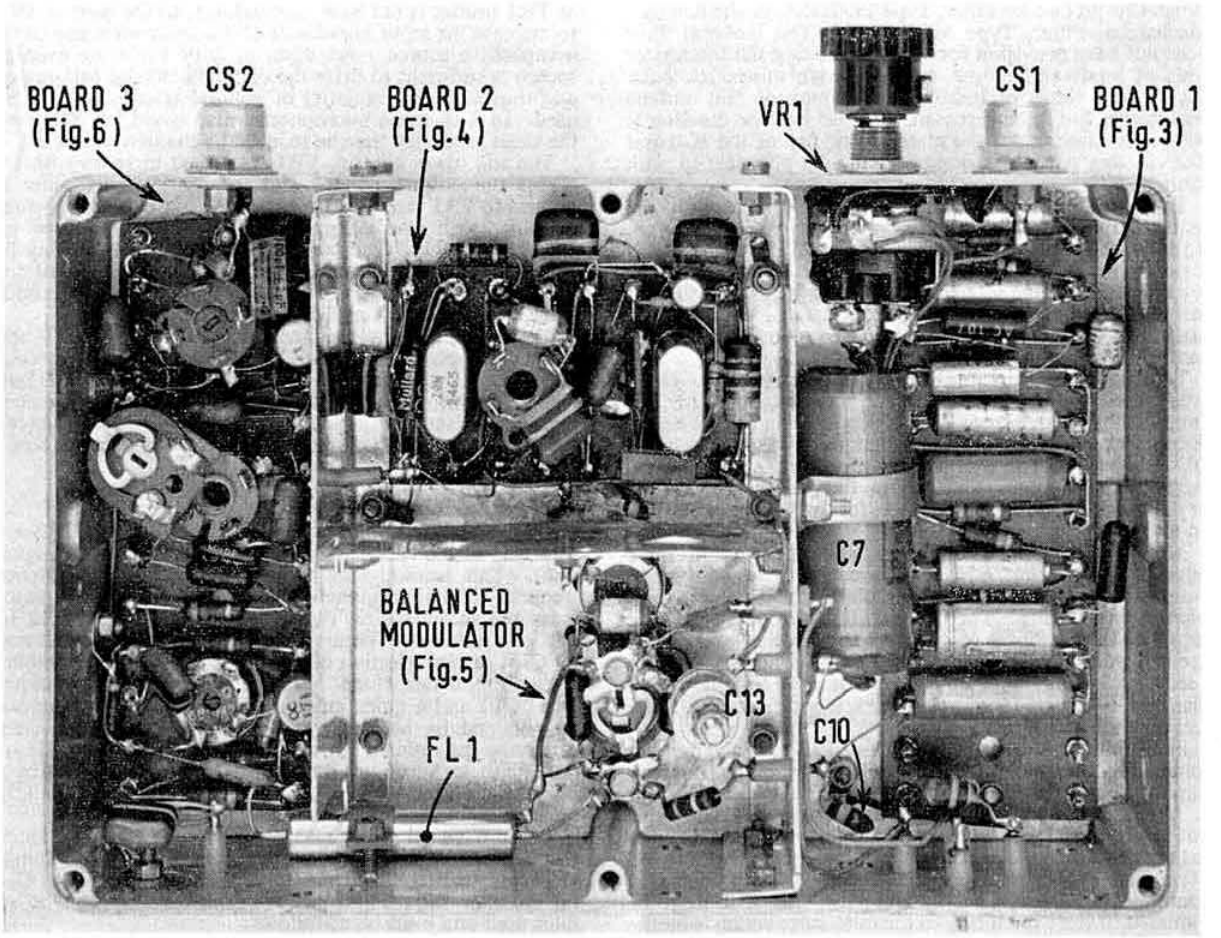


# The G3JJG S.S.B. Exciter

*Part 1*

By G. F. GEARING, G3JJG *

IN July and August 1964, the RSGB BULLETIN contained a two-part article describing the Princess transmitter. This transmitter operates on the amateur bands from 3·5 Mc/s to 28 Mc/s and features a Class AB1 linear amplifier which, for telephony, is driven from a low-power anode-and-screen modulated stage. The maximum power input is 150 watts on c.w. and the equivalent of 75 watts on a.m. (A3). All power supplies are included and the overall dimensions of the equipment are 19 in. wide, 10 in. high and 12 in. deep.

From the outset, conversion of the transmitter to s.s.b. was borne in mind, and the mechanical layout was designed to allow the complete exciter to be removed and replaced by an s.s.b. exciter of similar size (10 in. by 5 in.), driving the original linear p.a. and using the original power supplies. The panel layout of the Princess could remain unaltered and the modified transmitter would be capable of handling 300 watts p.e.p. input on all bands, radiating the lower sideband on 3·5 Mc/s and 7 Mc/s and the upper sideband on the remaining three bands.

* 65 Ringwood Close, Furnace Green, Crawley, Sussex.

Some time after the Princess had been completed and thoroughly air-tested, serious consideration was given to the idea, and a design for a sideband exciter which would occupy the allotted space, or possibly less was developed. As size was of primary concern, thoughts were directed to the possibility of containing the complete exciter within three die-cast boxes; it would necessitate the use of transistors and a ready-made filter, but this is no disadvantage. The exciter evolved as planned, within the space afforded by the Eddystone die-cast boxes, and performed well on test and on the air. Despite spreads in transistor characteristics, by virtue of the design there should be no problem in successfully duplicating this exciter, although it would be advisable to follow the component layout and wiring to aid in this respect.

### The Transistor S.S.B. Exciter

Suppression of the unwanted sideband, which is the first design consideration, can be achieved using the Collins Mechanical Filters, Types F455-Z-5 or F455 FA-21, the

Brush Clevite Ladder Filter, Type TL-2D5A, or the Kokusai Mechanical Filter, Type MF455-10K. The Kokusai filter does not have provision for series-resonating the transducer coils at input and output so that severe mis-match must occur. The result of this mis-match may or may not be prohibitive, but for this reason, and also because the filter is physically larger than the alternatives, use of the Kokusai filter in this particular design should be approached with caution.

The selection of heterodyning stages to attain each of the required bands follows the recommendations of G2DAF. Initially, the s.s.b. signal is generated at 455 kc/s and this is translated to the first neutral frequency of 2 Mc/s. The second heterodyning stage converts the 2 Mc/s signals to the second (variable) range of 5·0 to 5·5 Mc/s and signals in this range are translated finally to each band using a crystal-controlled signal.

Transistors are used in all stages described so far. However, after the final heterodyning process, the signal is amplified by a valve stage in class A and this stage drives the output stage of the exciter, which uses a type 6146 or QV06-20 valve. The exciter load must be resistive, in the range 70 to 100 ohms, and may be the passive grid resistor of the following linear amplifier or, for low-power operation, an a.t.u. feeding a suitable aerial.

Mechanically, the new exciter is constructed in three separate units using Eddystone die-cast boxes and these units are mounted on a chassis plate which contains the exciter output stage. The first two units, in particular, are complete in themselves (except for d.c. supplies) and can be used as part of other designs if desired. The d.c. supplies needed are +300 volts, 80mA (approx.), −45 volts 10mA bias and −12 volts 150mA stabilized, together with 6·3 volts a.c. for the valve heaters.

Each unit or section will be described in detail but, to summarize, the first unit translates the amplified speech signal to 2 Mc/s s.s.b. (upper sideband) at a level to suit unit 2. Suppression of the unwanted sideband and carrier is not less than 40db. Unit 2 contains the v.f.o. and associated mixer to take the signals up to the range 5·0 Mc/s to 5·5 Mc/s, and unit 3 completes the heterodyning process and contains the valved class A amplifier; this unit must be mounted in close proximity to the 6146 stage which is on the chassis plate.

No expensive transistors or diodes are used and those specified are all available from regular advertisers in the RSGB BULLETIN. The external controls of the exciter are V.F.O. TUNING, BAND and TUNE P.A. GRID, together with a pre-set MIC GAIN control, but this is not extended to the panel in the prototype.

## UNIT 1, A.F. TO 2 MC/S

### A.F. Amplifiers

The a.f. input from a crystal microphone drives the low-noise transistor, TR1, and this transistor is directly coupled to the base of emitter-follower TR2. A portion of the signal at TR2 emitter is fed back, through C3, to the base of TR1 to increase the input impedance of the stage when used with a capacitive source. An input of 3mV r.m.s. on average speech is sufficient to drive the complete unit to full output and thus allow the majority of popular microphones to be used. In fact, some microphones may overdrive TR1 and the stage gain must then be reduced by the removal of C2.

The MIC. GAIN control, VR1, is placed in series with C4 across the output of TR2 and the signal at its slider is applied to TR3 base. TR3 is connected as a common-emitter amplifier with conventional d.c. stabilization afforded by R7, R8 and R10. The base response of this stage may be reduced, if required, by changing the value of C6 to 10$\mu$F; as shown, the response of the a.f. amplifiers at 100 c/s is about 12db below the 1000 c/s level.

Supplies to the whole unit are decoupled to a.f. by C7 and the d.c. supply to TR1 and TR2, which must not exceed −5 volts, is decoupled by C9. The MIC. GAIN control is best located inside the unit and preset to give a convenient microphone sensitivity but, if necessary, it can be extended to the front panel and connected to unit 1 by screened leads.

### 455 kc/s Balanced Modulator

The germanium point-contact diodes CR1 and CR2 are arranged in the half-Cowan configuration across the signal path. The heterodyning signal, at the nominal carrier frequency of the modulated signal, is applied to the modulator from the secondary of T1, which is resonated by C12 to 455 kc/s nominal. The modulator is balanced by VR2 and by C13; carrier rejection of at least 25db should be attained by the modulator alone. C13 may be connected to either side of T1 and a quick guide to the correct connection can be obtained by balancing the circuit with VR2 and then, observing the residual carrier output, touching each side of VR2 with an insulated screwdriver. This will result in a fall in the output when touching one side of VR2 and C13 must be connected to this point.

The a.f. signal from TR3 is applied to the modulator through R35 and the composite signal, after heterodyning, is passed to FL1 through C11. The values of C11, C14 (at the filter output) and R35 are dependent on the type of filter used and must be as follows:

| Filter | R35 | C11, C14 |
|---|---|---|
| F455-Z-5 | 3·9K | 140pF |
| F455 FA-21 | 3·9K | 140pF |
| TL-2D5A | 3·9K | omit capacitors, connect filter direct |
| MF455-10K | 1·5K | 0·1$\mu$F |

### Sideband Filter

After the process of modulation, sum and difference products of the a.f. and carrier signals will be present in equal strength at the input of FL1, together with residual components at the a.f. and carrier frequencies. The filter must pass

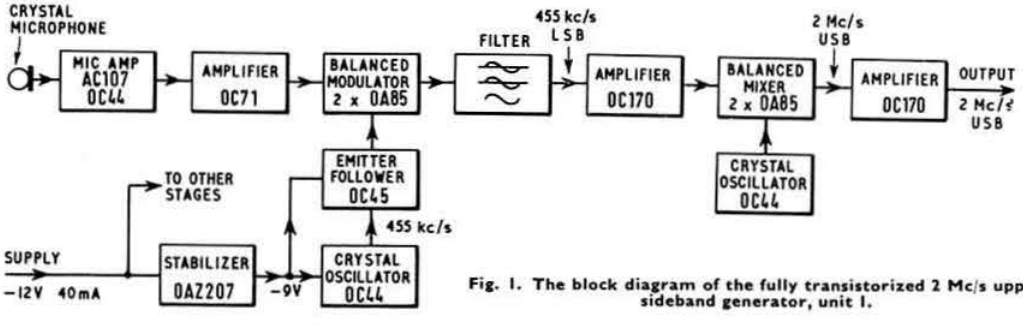


**Fig. 1. The block diagram of the fully transistorized 2 Mc/s upper sideband generator, unit 1.**

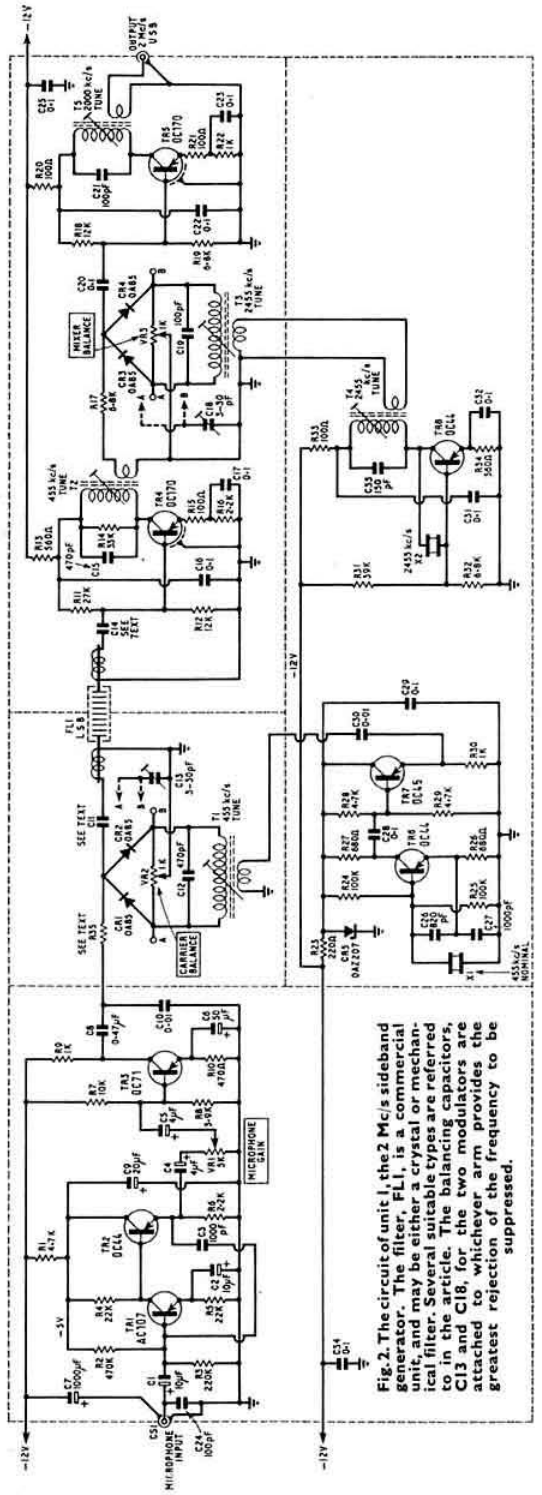

Fig. 2. The circuit of unit 1, the 2 Mc/s sideband generator. The filter, FL1, is a commercial unit, and may be either a crystal or mechanical filter. Several suitable types are referred to in the article. The balancing capacitors, C13 and C18, for the two modulators are attached to whichever arm provides the greatest rejection of the frequency to be suppressed.

**THE G3JJG S.S.B. EXCITER—COMPONENTS LIST**

C1, 2, 10 μF 12 volt elect.; C3, 27, 1000 pF s. mica; C4, 5, 4 μF 12 volt elect.; C6, 50 μF 12 volt elect.; C7, 1000 μF 15 volt elect.; C8, 0·47 μF polyester; C9, 20 μF 12 volt elect.; C10, 30 0·01 μF min. foil; C11, 14 (see text); C12, 15, 470 pF s. mica; C13, 18, 3-30 pF trimmers; C16, 17, 20, 22, 23, 25, 28, 29, 31, 32, 0·1 μF min. foil; C19, 21, 24, 100 pF s. mica; C26, 820 pF s. mica; C33, 150 pF s. mica.

CR1, 2, 3, 4, OA85; CR5, OAZ207 (9 volt Zener).

FL1 Lower sideband filter (see text).

R1, 28, 29, 4·7 K; R2, 470 K; R3, 220 K; R4, 5, 22 K; R6, 16, 2·2 K; R7, 10 K; R8, 3·9 K; R9, 22, 30, 1 K; R10, 470 ohms; R11, 27 K; R12, 18, 12 K; R13, 34, 560 ohms; R14, 33 K; R15, 20, 21, 33, 100 ohms; R17, 19, 32, 6·8 K; R23, 220 ohms; R24, 25, 100 K; R26, 27, 680 ohms; R31, 39 K; R35 (see text).

Resistors are all rated at ½ watt carbon, 10 per cent tolerance.

T1, Primary, wound first in centre of former, 20 turns 32 s.w.g. enam., followed by secondary, 50 turns 32 s.w.g. enam., to resonate at 455 kc/s with 500 pF total parallel capacity. The transformer is wound on ferrite pot core obtained from stripped transistor type i.f. transformer. The prototype used a Siemens-Halske AL100 assembly.

T2, Similar to T1, but with a 4 : 1 turns ratio. Using the same former, the smaller winding becomes 12 turns 32 s.w.g. enam.

T3, 4, Primary, 85 turns, 40 s.w.g. enam., secondary, 9 turns, 40 s.w.g. enam., wound on primary winding. Polystyrene former, $\frac{5}{16}$ in. diam., with iron-dust adjusting core. 4-way tag ring at top of former.

T5, 90 turns, 40 s.w.g. enam. Secondary 40 turns 36 s.w.g. enam., wound on top of cold end of primary winding. Former as for T3 and 4.

TR1, AC107; TR2, 6, 8, OC44; TR3, OC71; TR4, 5, OC170 or OC171; TR7, OC45.

VR1, 5 K carbon, log law, with spindle; VR2, 3, 1 K carbon, preset, skeleton type.

X1, 455 kc/s nominal crystal (to suit FL1); X2, 2455 kc/s crystal. Both crystals in style D (HC6/U) cases.

the lower sideband only and may be selected from the following types:

| | |
|---|---|
| Collins Type F455-Z-5 | 6db bandwidth 3·0 kc/s; 6/60db shape factor 2 : 1. Dimensions are 0·44 in. diam. cylinder, 2·5 in. long. |
| Collins Type F455 FA-21 | 6db bandwidth 2·1 kc/s, 6/60db shape factor 2·6 : 1. Dimensions are 2·55 in. long, 0·57 in. wide, 0·6 in. high. |
| Brush-Clevite Type TL-2D5A | 6db bandwidth 2·0 kc/s; 6/60db shape factor 2·6 : 1. Dimensions are 0·32 in. diam. cylinder, 1·6 in. long. |
| Kokusai Type MF-455-10K (see opening remarks) | 6db bandwidth 2·0 kc/s; 6/60db shape factor 3·5 : 1. Dimensions are 1·32 in. diam. cylinder, 2·5 in. long. |

Output from the filter contains components in the lower sideband only, and components in the upper sideband (for a.f. signal inputs above 500 c/s) will be attenuated by at least 40db. Placing of the carrier frequency in relation to the filter passband is arranged to give a further 20db carrier rejection and to give an audio passband to the transmitted signal of 500 c/s to 2500 c/s (or 300 c/s to 3300 c/s with the F455-Z-5).

Overall carrier rejection can be adjusted to at least 50db but this will vary from the optimum setting over a long term. In fact, many commercial transmitters which are offered to the amateur have a front panel carrier balance control which means that the problem is not unknown.

Both the Collins F455-Z-5 mechanical filter and the Brush-Clevite TL-2D5A ladder filter have been fitted in the prototype with excellent results. The major difference is the lower insertion loss with the ladder filter (about 6db better). The 6db points of the transmission with the F455-Z-5 filter are at 200 c/s and 3300 c/s and with the TL-2D5A, at 550 c/s and 3000 c/s; both give excellent speech characteristics.

### Carrier Oscillator

The frequency of the oscillator is chosen so that the nominal carrier is 20db down the h.f. slope of the filter response (for an l.s.b. application). If the F455-Z-5 filter is used, this frequency can be taken as 455·0 kc/s; using the F455 FA-21, it is 456·65 kc/s; using the TL-2D5A, the filter is obtainable with a crystal cut to suit the individual filter (456·10 kc/s in the prototype). Each Kokusai filter is supplied with the correct frequency specified within the packing.

TR6 is connected as a Colpitts-style oscillator with the crystal, X1, operating at parallel resonance. The feedback path is between base and emitter from the capacitive divider formed by C26 and C27. The degree of feedback is closely controlled so that, when the oscillator is loaded, the transistor operates near class A. Signal output at TR6 collector is passed through the emitter-follower, TR7, to the primary of T1.

The d.c. supply to TR6 and TR7 is stabilized at −9 volts by a Zener diode, CR5. This is a refinement but it does avoid carrier balance being dependent on supply voltage to the unit. If the d.c does vary then so also does the amplitude of the carrier signal to the balanced modulator; this alters the inherent capacitance of CR1 and CR2 and so degrades carrier rejection.

### 455 kc/s Amplifier

TR4 is a common-emitter class A amplifier with the d.c. working point of the transistor determined by the base potential divider R11, R12 and by R13, R15 and R16. R.f. negative feedback is applied to the stage across the undecoupled portion, R15, of the emitter resistance. The collector tuned circuit is resonated to the centre of the required band by C15 and is damped by R14.

Earthing of this stage is important otherwise it will become unstable. One earth point only is used, and note that the internal screen connection of TR4 and the metal frame of T2 are earthed. In the prototype, the signal level at TR4 collector can reach at least 3·5 volts r.m.s. before limiting of the waveform is visible on an oscilloscope.

### Balanced Mixer 1

Signals from the secondary of T2, in the lower sideband spectrum based on 455 kc/s, are fed through R17 to the balanced mixer CR3 and CR4. The circuit configuration is identical to that used for the carrier modulator but in this case the secondary of T3 is resonated by C19 to 2·455 Mc/s. Mixer balance is achieved by VR3 and C18 (connected to one side of VR3).

Output from the mixer contains products at the sum and difference frequencies of the two input signals. The difference product at 2 Mc/s is selected by the following amplifier, TR5, and because of the subtractive process, the sideband is inverted to give the upper sideband. This inversion occurs because the nominal carrier frequency becomes 2·455 Mc/s-455 kc/s = 2·000 Mc/s and, if a 1 kc/s input is applied to the unit, giving a 454 kc/s input to the mixer from TR4, this signal becomes 2·455 Mc/s −454 kc/s = 2·001 Mc/s.

### 2·455 Mc/s Conversion Oscillator

X2, 2·455 Mc/s, is connected between the base and collector of TR8; the collector load is a tuned circuit which is resonated by C33 to the approximate frequency of oscillation. This circuit will oscillate readily even with low-activity crystals. R31 and R32 give protection to the circuit if oscillation stops and R33, C31 decouple the −12 volts supply. Signal output from the secondary of T4 is applied, through T3, to the balanced mixer.

### 2 Mc/s Amplifier

TR5 is a common-emitter class A amplifier with a parallel tuned circuit, T5 and C21, in the collector circuit, resonated at 2·0 Mc/s. The high-impedance signal output at CS2 is at least 1·4 volts r.m.s. in 4·7 K ohms (to suit unit 2). In all other respects, the circuit of TR5 is identical to that of TR4.

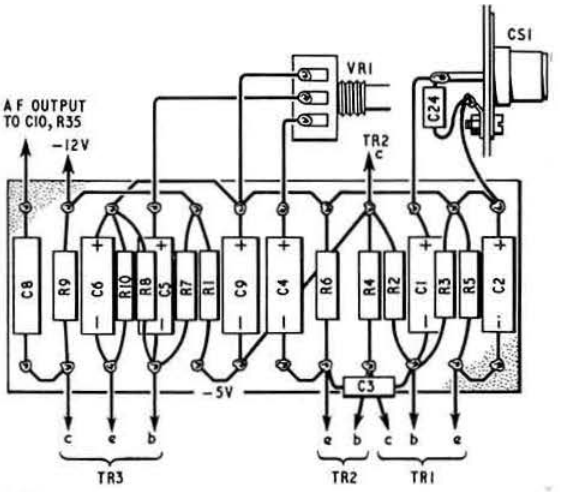


Fig. 3. The layout of components on tagboard 1, the audio amplifier.

### Construction

The unit is constructed in an Eddystone die-cast box, Cat. No. 845, 7½ in. by 4½ in. by 2 in. The photograph shows the layout of the unit and Figs. 3 to 6 show the detail of the component boards and of the balanced modulator. The TL-2D5A filter was fitted in the unit at the time of the photograph.

The screens are made from 20 s.w.g. aluminium and they divide the area inside the box into four separate compartments. Two screens are 4⅜ in. long by 2 in. high overall and the third screen is 3½ in. long by 2 in. high overall. Each screen has ⅜ in. lips at the bottom and at each end for fitting to the box.

Measuring from the right-hand end of the box (to become the a.f. end), the first large screen is fitted at 2⅛ in. and the second large screen at 5 11/16 in. The third screen is then fitted to divide the centre compartment into two equal parts. P.t.f.e. feed-through insulators are fitted across the compartments as follows:

−12 volt into the unit, at base of box in two places (at a.f. and r.f. ends).

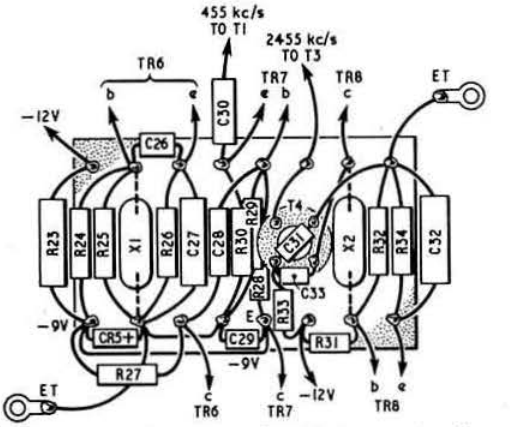


Fig. 4. The component layout on tagboard 2, the crystal oscillators.

—12 volts between a.f. and oscillator compartments.
Positive pole of supply, at base of box.
455 kc/s between oscillator and balanced modulator compartments.
2455 kc/s between oscillator and r.f. compartments.

The sideband filter, FL1, is mounted between the balanced modulator and r.f. compartments and the appropriate screen is cut away sufficiently to allow clearance. If the Kokusai filter is used then the layout of the complete unit must be altered to suit because this filter has both input and output connections at the same end of the cylinder.

Each component board is $1\frac{1}{2}$ in. wide, with pillar tags at $1\frac{1}{8}$ in. by $\frac{5}{16}$ in. centres, and the maximum length of 4 in. allows up to 13 pairs of tags to be used for the a.f. and r.f. boards and eight pairs for the oscillator board. Spacers hold each board clear of the box. Countersunk screws must be used throughout the unit because the second unit will be mounted flush against it on the exciter plate.

Details of the earth connections can be gained from the illustrations; the positive pole of the supply to the unit is earthed to the same tag as C10 and C7. The earth tag for the balanced modulator is mounted under a four-way stand-off insulator and the slider of VR2 is soldered directly to it. C13 is added afterwards and, in the prototype, is supported by a further insulator screwed to the fixing bolt of VR2. When using the TL-2D5A filter, no earth connection is necessary at the output end. Since the unit was photographed, VR3 has been relocated on board 3 rather than wired direct to the tag ring of T3.

If required, holes can be made in the lid of the die-cast box to reach each preset adjustment, but experience shows that the tuning positions of the controls are not altered with the lid on or off and therefore holes to reach only VR2 and C13 are essential.

## Alignment

The unit requires a well-smoothed 12 volt d.c. supply which, for initial testing, can be obtained from two 6 volt Ever Ready batteries, Type PP1, connected in series. As the unit takes 40mA total, it is wise to be sparing in the use of the batteries and connect a milliameter in series with the supply when first switching on the new unit.

Initially, disconnect C13 and C18, set VR1 to maximum gain, VR2 to one end of its travel and VR3 to the centre. Do not insert crystals X1 and X2. Apply —12 volts to the a.f. and oscillator stages and, using a voltmeter of at least 10,000 ohms per volt, measure the d.c. voltages on all transistors except for TR4 and TR5. Investigate any large

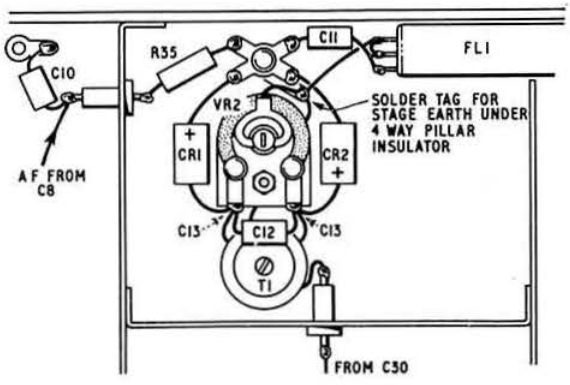


**Fig. 5. Assembly details for the balanced modulator. The positive supply is taken to the earth tag for C10, which also retains C7.**

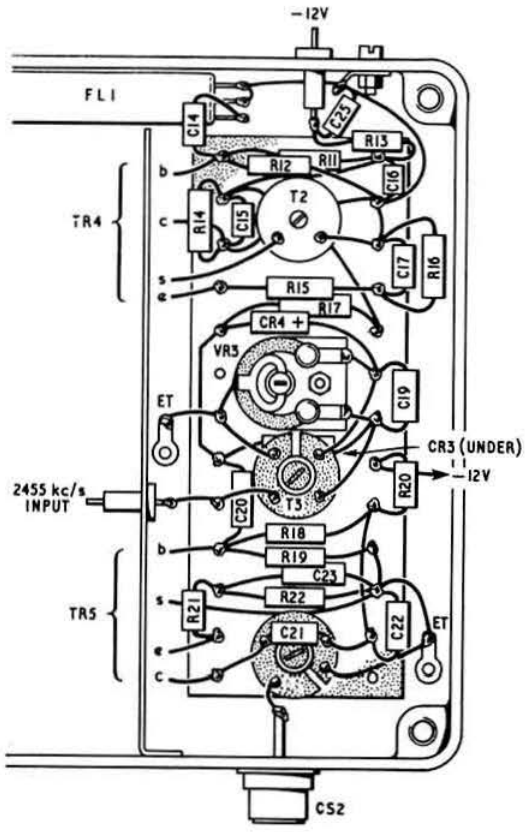


**Fig. 6. The component layout for the final mixer/amplifier stages of unit 1.**

discrepancies between these measurements and the voltages listed below:

| | | | | | |
|---|---|---|---|---|---|
| TR1 | e | —1·1 | TR6 | e | —2·6 |
| | b | —1·2 | | b | —2·7 |
| | c | —3·5 | | c | —6·7 |
| TR2 | e | —3·3 | TR7 | e | —4·1 |
| | b | —3·5 | | b | —4·3 |
| | c | —5·0 | | c | —9·2 |
| TR3 | e | —2·7 | TR8 | e | —1·2 |
| | b | —2·9 | | b | —1·4 |
| | c | —6·6 | | c | —11·8 |

Fit the crystals X1 and X2 and check for oscillation on the station receiver; if necessary adjust T4 until TR8 oscillates satisfactorily. Both signals should be stable and free from burble. With a crystal microphone connected to CS1, monitor the amplified a.f. signal by means of a pair of headphones clipped across C10; the speech signal should be clear and undistorted.

Apply —12 volts to the remaining r.f. stages and measure the d.c. voltages which will be as follows:

| | | | | | |
|---|---|---|---|---|---|
| TR4 | e | —3·0 | TR5 | e | —3·2 |
| | b | —3·3 | | b | —3·4 |
| | c | —9·8 | | c | —9·8 |

Tune the station receiver to 2 Mc/s and connect it to CS2. With no a.f. input to CS1, the carrier signal should be heard; tune T1, T2, T3 and T5 for maximum signal output. Retune the receiver to 2·455 Mc/s, adjust VR3 for minimum signal output and connect C18 so as to complete the balance of the mixer.

*(Continued on page 448)*

# 100 kc/s Crystal Marker for V.H.F.

By CLIFF SHARPE, G2HIF *

DURING the development of a transistorized v.h.f. receiver, the occasion arose when 100 kc/s markers through the 2m band were required for accurate calibration purposes. The shack frequency standard—a home brew version of the BC221—failed to produce other than weak harmonics of the 1 Mc/s oscillator within the required spectrum, and thus it became a matter of urgency to make something which would do the trick. As it was also the ultimate intention to include 100 kc/s markers as a built-in feature of the receiver, it was essential that the circuit should (i) be transistorized, and compatible with the rest of the receiver circuitry which used only silicon semiconductors; (ii) contain the absolute minimum of transistors and other components, and (iii) make use of a standard parallel resonant 100 kc/s crystal without requiring an expensive series resonant crystal as is usually the case in transistor designs.

Experience in another field suggested that a possible solution lay in the use of a tunnel diode as a harmonic

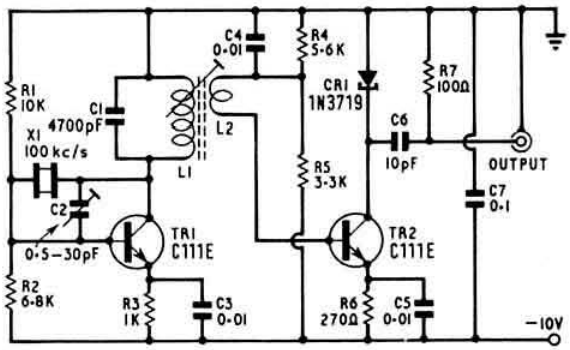


**Fig. 1. The 100 kc/s crystal marker. Alignment should begin with adjustment of L1 for maximum oscillation of TR1, and the crystal can then be brought on to the correct frequency by C2. L1 is wound to resonate with C1, and is approximately 500 μH, while L2 is one quarter of the number of turns of L1. X1 is a 100 kc/s parallel resonant crystal.**

generator/amplifier. Basically, there appeared to be no fundamental reason why a single transistor 100 kc/s crystal oscillator suitably coupled into the tunnel diode should not be satisfactory, but subsequent development showed that it was difficult to trigger a 10 mA diode from the crystal oscillator directly. To overcome this, it was thought preferable to include an additional transistor trigger amplifier rather than risk using a far more delicate 1 mA or 2 mA diode, and in any event, such a tunnel diode was not readily available.

A possible alternative, which would not require a tunnel diode for generating the higher order harmonics, was to use the second transistor in the avalanche mode. Harmonics of the fundamental frequency can be detected easily beyond the 2000th by this method, but as operation in the avalanche mode requires a supply in excess of 100 volts, this solution was rejected for this application in favour of the tunnel diode circuit.

## The Circuit Adopted

The circuit finally developed is shown in Fig. 1. It has proved reliable, simple and a "first timer." The 100 kc/s markers extended through the v.h.f. spectrum with remarkably constant amplitude, but it was found that the power had to be supplied from a truly pure d.c. source. Any trace of 50 or 100 c/s ripple on the 10 volt rail, even that which remained on a stabilized supply derived from an accumulator on charge, resulted in slight frequency modulation of the crystal oscillator. This could not be detected at the lower order harmonics, but became quite noticeable beyond the 1000th. All traces of frequency modulation completely disappeared when the accumulator was taken off charge.

## Alignment

While the long term stability of the oscillator proved to be more than sufficient for adequate receiver dial calibration, it was found necessary to observe two precautions before relying on the marker. It is necessary to make sure that construction is reliable and extremely rigid, and the crystal padder should be adjusted to bring the output into zero beat with a standard, such as the BBC Light Programme on 200 kc/s. A 10 c/s error in the crystal oscillator results in the 2m band markers being almost 1·5 kc/s out. Furthermore, as an additional check on drift, operation at a constant temperature by using a crystal oven is desirable, especially when very long term stability is required.

* 20 Harcourt Road, Charlton House Estate, Wantage, Berkshire.

## Front Cover—June

The photograph of a parabolic aerial on the front cover of the last issue was unfortunately shown as belonging to GM3FBY. This was in error, and should have read GM3FYB.

## The G3JJG S.S.B. Exciter

(continued from page 447)

Tune the receiver to 2 Mc/s and, using VR2, endeavour to balance out the carrier signal. Connect C13 and adjust this capacitor in conjunction with VR2 for the best possible balance. It may be possible to find a position where the carrier is completely cancelled, but this point will not be held in use. Apply speech to CS1 and the signal at 2 Mc/s should be received as l.s.b. single-sideband with no audible distortion. Take care not to overdrive TR1 with a high-output microphone.

## Measurements

If a valve-voltmeter equipped with an r.f. probe is available, the tuning of T1 and T3 should be checked to give the maximum signal at the oscillator frequencies across VR2 and VR3 respectively. As a guide, the following r.m.s. measurements were made on the prototype when using the TL-2D5A filter; all are with respect to earth and with VR1 at maximum gain.

| | | |
|---|---|---|
| a.f. input to CS1 | 1·0 mV | 1000 c/s |
| junction C8/R35 | 0·5 volts | |
| junction R35/C11 | 0·16 volts | X1 removed |
| TR6 collector | 1·38 volts | |
| either side of VR2 | 0·36 volts | no a.f. input |
| TR4 collector | 3·0 volts | |
| T2 secondary | 0·54 volts | |
| junction R17/C20 | 0·12 volts | X2 removed |
| TR8 collector | 4·2 volts | |
| T4 secondary | 0·32 volts | |
| either side of VR3 | 0·8 volts | no a.f. input |
| TR5 collector | 3·5 volts | |
| at CS2 across 4·7K ohms | 1·4 volts | |

Further measurements on a spectrum analyser indicated carrier and sideband suppression never less than 50db and, viewing the wanted sideband, distortion products totalling 5 per cent and consisting predominantly of third harmonic products (probably introduced in the a.f. stages).

*(To be continued)*

# IARU Region 1 Opatija Conference—Part I

By JOHN CLARRICOATS, OBE, G6CL*

THE seventh triennial Region 1 Division Conference was held in May this year at Opatija, Yugoslavia. This was the first to be held in a middle European country, previous conferences having been held in Paris (1950), Lausanne (1953), Stresa (1956), Bad Godesberg (1958), Folkestone (1960) and Malmoe (1963).

Seventeen of the 22 subscribing member societies were represented, 16 in person and one by proxy. The countries and societies represented were: Austria (Oe.VSV), Belgium (UBA), Finland (SRAL), France (REF), Germany (DARC), Ireland (IRTS), Italy (ARI), the Netherlands (VERON), Nigeria (NARS), Norway (NRRL), Poland (PZK), Soviet Union (RSF of the USSR), Sweden (SSA), Switzerland (USKA), United Kingdom (RSGB) and Yugoslavia (SRJ). Dr Michael Dransfield, 5N2AAF, representing the Nigerian Amateur Radio Society, held a proxy on behalf of the Ghana Amateur Radio Society.

Also in attendance, as an observer, was the newly-elected President of the ARRL/IARU (Mr Robert Denniston, W0NWX/G5ADH), accompanied by the General Manager of ARRL and Secretary of IARU, Mr John Huntoon, W1LVQ. Mr Noel Eaton, VE3CJ, who is Canadian Director of the ARRL attended the Conference as an observer in his capacity as Honorary Treasurer of the IARU Region 2 organization.

Although not yet a member society in the IARU the Conference welcomed as observers two delegates, Mr Milos Svitak, OK1PC, and Mr Jezek Frantisek, OK1AAJ, from the Central Radio Club of Czechoslovakia.† A similar welcome was extended to Mr M. J. P. Vemembre, 7X0VP, an observer from Amateurs Radios Algériens, it having been announced that that Society had submitted an application to join IARU. Because of official business in Geneva Mr Jean Wolff, LX1JW, was unable to attend the Conference as the representative for Luxembourg (RL).

The Conference was held in the Hotel Kvarner, Opatija, and was attended by about 60 delegates, a dozen observers and about 20 ladies.

## Opening Ceremony

The Conference was opened at 2.30 p.m. on Monday, 23 May, 1966, by the Honorary President of SRJ, Mr Slobodan Nakicenovic, YU1A, who welcomed all delegates to Opatija. He spoke of the tasks facing the Conference and of the importance of protecting the amateur bands. He referred to the special efforts being made to bring Amateur Radio to the notice of the new and developing countries and to the opportunities the Conference would provide of increasing friendships. SRJ had been greatly honoured by being asked to organize the Conference.

The chair at the opening ceremony was taken by Mr Harry A. Laett, HB9GA, in his capacity as Chairman of the Executive Committee who, in a speech of welcome to the delegates, referred to the excellent arrangements which had been made by SRJ.

## First Plenary Meeting

At the first Plenary Meeting, held immediately after the opening ceremony, Mr Nakicenovic was elected Honorary Conference President. After a suitable reply Mr Nakicenovic invited nominations for the offices of Chairman and Secretary of the various Committees. The following were elected:

*Administrative and Operational*

Chairman: Lt. Col. Per-Anders Kinnman, SM5ZD (Vice-Chairman, Executive Committee).

Secretary: Mr Roy Stevens, G2BVN (President, RSGB).

*V.H.F.*

Chairman: Mr C. J. van Dijk, PA0QC (Chairman, V.H.F. Working Group and Vice-President, VERON).

Secretary: Mr F. G. Lambeth, G2AIW (Secretary, V.H.F. Working Group and Vice-President, RSGB).

*Credentials and Finance*

Chairman: Mr Win Dalmijn, PA0DD (President, VERON).

Secretary (ex-officio): Mr John Clarricoats, O.B.E., G6CL (Conference Secretary).

Messrs H. Hansen (DARC), E. Heriter (USKA), E. G. Ingram (RSGB) and G. Schiff (ARI) were elected to serve on the Credentials and Finance Committee.

At the conclusion of the elections the Chairman referred to the presence at the Conference of the newly-elected President of the ARRL/IARU and to the attendance for the first time of an observer from the Region 2 organization. He also spoke of his pleasure at seeing Dr Dransfield present as the delegate of the Nigerian Amateur Radio Society and to the attendance of two observers from the Central Radio Club of Czechoslovakia. He reviewed briefly the events of the past year and on the assets side suggested that reciprocal licensing had made great strides. Public relations had progressed a great deal since the Malmo Conference in 1963 and the *Region 1 Bulletin*, in its new and enlarged form, had provided a most important means for the exchange of information between societies. On the liabilities side Mr Laett referred to the changes brought about by the recent ITU Conference in Montreux, changes which he suggested could have important effects on Amateur Radio. He commented on the fact that very few Member Societies give full attention

**Well known Zagreb DX man Matija Klauzer, YU2DB, had the pleasant conference task of organizing the ladies programme. He is seen with RSGB President Roy Stevens, G2BVN, and past President Ted Ingram, GM6IZ.**

*(Photo by G6CL)*

* Conference Secretary and Secretary, IARU Region 1 Division; Honorary Member, RSGB.

† It was reported during the Conference that the election to membership of IARU of the CRC of Czechoslovakia would be announced in the June 1966 IARU Calendar.

**Ernst Krenkel, RAEM, President of Radio Sports Federation of USSR and Slobodan Nakicenovic, YU1A, Honorary President of SRJ, discuss conference arrangements with Janez Znidarsic, YU1AA, President of SRJ. Mr Nakicenovic opened the Conference.**
*(Photo by G6CL)*

to IARU matters in their journals and made reference to the withdrawal from Region 1 Division of EDR.

The Chairman concluded his speech by informing the Plenary Assembly that he had decided, for business reasons, not to stand again either as Chairman or as Committee member.

### Receptions

During the early evening of 23 May, 1966, the Mayor of the Communal Assembly, Opatija, Mr Nikola Slavic, gave a reception at the Hotel Kvarner. In the course of a brief speech he extended a civic welcome to the delegates and their ladies, and spoke of " the importance of Amateur Radio in bringing together tens of thousands of people regardless of nationality, customs, faith or frontiers." He was sure the present Conference would help to bring about a closer understanding between Member Societies. RSGB presented the mayor with a copy of the *Amateur Radio Handbook* for the Opatija library.

Twenty-four hours later, also at the Kvarner, Mr Robert Denniston was host at a reception given by the ARRL. In a short speech he expressed his great pleasure at being given an opportunity, so soon after his election, to visit Europe and to meet delegates from many societies. He had watched with great interest, the development of the Region 1 Division and was hopeful that the regional idea would soon extend to Region 3, it having already begun to take active shape in Region 2.

Highlight of the social activities was a visit to the famous Postojana Caves—third largest in the world. The visit terminated with a reception given by the Board of SRJ at a restaurant close to one of the exits from the Caves. Following the reception a demonstration was given of v.h.f. equipment used during SRJ Fox Hunting Championships.

### Ladies' Programme

An excellent Ladies' Programme organized by SRJ and supervised by Mr Matija Klauzer, YU2DB of Zagreb, was carried through without a hitch.

### Committee Meetings

Meetings of the Administrative and Operational Committee and of the V.H.F. Committee were held during the afternoon of 23 May and throughout the mornings and afternoons of the next two days. Meetings of the Credentials

### Conference Highlights

- Mr Harry Laett, HB9GA, retired from the Executive Committee after ten years as Chairman. Vice-Chairman Lt. Col. Per-Anders Kinnman, SM5ZD, became Chairman, and RSGB President Roy Stevens, G2BVN, was elected Vice-Chairman.
- Former RSGB General Secretary John Clarricoats, O.B.E., G6CL, was re-elected for a fourth term as Secretary of IARU Region 1 Division.
- New basis for annual contributions was fixed at 75 Swiss centimes (about 1s. 3d.) per licensed member.
- Conference reaffirmed confidence of Region 1 Division in IARU Headquarters.
- Newly elected President of ARRL/IARU, Robert Denniston, W0NWX, attended Conference with Noel Eaton, VE3CJ representing Region 2 organization. John Huntoon, W1LVQ, General Manager ARRL—Secretary IARU was also present.
- Next Conference will be held in Belgium during 1969.
- Proposals were made and steps taken for defending the Amateur Bands at future ITU Conferences.
- Proposals for introducing Amateur Radio into the new and developing countries were discussed and passed to the Executive Committee for consideration.
- Publicity material is to be produced, which will be available to all Region 1 Societies, describing Amateur Radio and the part it can play, both Nationally and World Wide.
- Subscribing Member Societies are to approach their administrations direct whenever persistent national intruders are reported.
- An amended European Band Plan was adopted recommending, *inter alia*, that RTTY takes place around 14090 kc/s.
- *Region 1 Bulletin* is to be continued and Societies are to be urged to appoint *Bulletin* Liaison Officers. Printing methods are to be examined and consideration given to making the *Bulletin* available on a subscription basis.
- The Conference decided that the appointment of a part-time paid General Manager is very desirable. The Executive Committee is to study conditions and implications of such an appointment and to submit proposals for approval to the Subscribing Member Societies not later than 30 June, 1968.
- Subscribing Member Societies are to ask National Postal authorities to seek from the International Bureau of the Universal Postal Union an interpretation of Article 128 of the Vienna Convention insofar as QSL cards are concerned.
- Subscribing Member Societies are to submit comments on an International Sports Code, (submitted by RSF) to the Executive Committee not later than 31 December, 1966.
- The Conference recommended that 45·45 Bauds and 50 Bauds be provisionally adopted as standard speeds for RTTY.
- The Conference agreed to sponsor the construction of a Region 1 OSCAR during 1966 and to contribute 500 Sw. Fr. towardst he expense. In addition 2000 Sw. Fr. is to be made available annually for the following three years to realise the construction of at least one Region 1 Satellite per annum.
- An amended V.H.F. Band Plan was adopted.

**Harry Laett, HB9GA, retiring Chairman IARU Region I division, with the newly elected ARRL President Robert Denniston, W0NWX and ARRL General Manager, John Huntoon, W1LVQ. W0NWX and W1LVQ are ex-officio President and Secretary of IARU.** *(Photo by G6CL)*

and Finance Committee were held on 23 May and on 26 May.

The deliberations of the various committees were recorded in Conference documents which were later presented to the final Plenary Meeting on 27 May, for consideration. A detailed account of the views, opinions and recommendations will be given in the August issue of the RSGB BULLETIN. In the meantime highlights of the Conference are set-out elsewhere in this article.

### New Executive Committee

At the final Plenary Meeting three important changes took place in the constitution of the Executive Committee.

Lt. Col. Per-Anders Kinnman, SM5ZD, who had been Vice-Chairman for the past 10 years, succeeded Mr Harry Laett as Chairman. RSGB President, Roy Stevens, G2BVN, was elected Vice-Chairman. VERON President, Win Dalmijn, PA0DD, succeeded Dr Jacques Simonnet, F9DW, as Honorary Treasurer, Mr John Clarricoats, O.B.E., G6CL, was re-elected Honorary Secretary, Mr Herbert Picolin, DL3NE, replaced Mr Alfred Schädlich, DL1XJ, as an ordinary member of the Committee and Mr Janez Znidarsic, YU1AA, was re-elected as an ordinary member of the Committee.

**The Executive Committee of Region I Division IARU elected at the Opatija Conference. Standing: H. Picolin, DL3NE and J. Znidarsic, YU1AA. Seated: R. F. Stevens, G2BVN, Vice-Chairman; P-A. Kinnman, SM5ZD, Chairman; J. Clarricoats, G6CL, Secretary, and W. J. L. Dalmijn, PA0DD, Treasurer.**

### Next Conference

The delegations of Belgium (UBA), Ireland (IRTS) and the Netherlands (VERON), having offered the hospitality of their respective societies in connection with the next Conference it was agreed by seven votes to five each to accept the offer of UBA to hold the 1969 Conference in Belgium.

### End-of-Conference Dinner

It has become a tradition to hold an end-of-Conference Dinner soon after the conclusion of the final Plenary Meeting. At the Opatija Conference dinner the Chair was taken by Janez Znidarsic, YU1AA (President, SRJ) who had the close support of the retiring Chairman (Harry Laett, HB9GA) and incoming Chairman Per-Anders Kinnman, SM5ZD). Also at this table were Robert Denniston, W0NWX, Noel Eaton, VE3CJ, John Huntoon, W1LVQ, John Clarricoats, G6CL, Jacques Simonnet, F9DW, Alfred Schädlich, DL1XJ, Win Dalmijn, PA0DD, C. van Dijk, PA0QC, Ferid Suman, YU1AF (Secretary SRJ) and Ernst Krenkel, RAEM (President RSF of USSR) together with Mrs Britta Kinnman, Mrs Helen Denniston, Mrs Pat Huntoon and Mrs Wilma Dalmijn.

During the evening Roy Stevens, G2BVN, on behalf of RSGB, presented to SRJ a magnificent piece of Spode china (commemorating the 900th Anniversary of Westminster Abbey) in appreciation of the efforts made by Mr Znidarsic and his colleagues in arranging the Conference and for acting as hosts. Mr Stevens also presented a cigarette lighter to Mr Znidarsic for his personal use. Numerous other gifts were made during the evening, including miniature station call-sign plaques from the Conference Secretary to members of the SRJ organizing committee.

After-dinner speakers included Janez Znidarsic, YU1AA, who thanked delegations for their gifts and expressed the hope that visitors from other lands would return home with happy memories of a successful Conference; Ernst Krenkel, RAEM, who spoke of the important part young people are playing and will continue to play in the development of Amateur Radio and Harry Laett, HB9GA, who counselled his listeners to take great care of the unique heritage of Amateur Radio handed down to them by their predecessors and to pass it on untarnished to their successors. Mr Laett thanked the members of the retiring Executive Committee and wished the new Committee every success. He spoke of the beautiful country which they had been privileged to visit and of the warm hospitality of its people. Lt. Col. Kinnman looked back to the first Conference in Paris (in 1950) and commented that only three others present that evening in addition to himself (John Clarricoats, G6CL, Win Dalmijn, PA0DD and Jean Lips, HB9J) had been in attendance on that occasion. He stressed that the future success of Region I Division depended not only on the Committee but also on the co-operation the Committee receives from the Subscribing Member Societies. He thanked the retiring Chairman for his guidance and leadership and his wife, Britta, for her help at each Conference. Robert Denniston thanked the Conference for the kind reception afforded to him and Mrs Denniston and to the other representatives from IARU/ARRL. He expressed warm appreciation to SRJ for all they had done to ensure the success of the Conference. Jean Lips proposed a toast to the ladies to which a delightful response came from Mrs Eva

*(continued on page 477)*

# Mobile Column

By E. ARNOLD MATTHEWS, G3FZW*

DURING one lunch-time early in June a Cortina car was observed negotiating one of Birmingham's more difficult traffic islands. Traffic in the vicinity could not be described as light, but a well known commercial manufactured amateur mobile aerial on the Cortina caught the writer's eye, and then, horror of horrors, the driver was observed to be in QSO using a hand-held microphone! Irresponsible behaviour of this sort gives Amateur Radio a bad name, constitutes an offence under the Road Traffic Acts and is an exceptionally dangerous practice.

It is not necessary to spend a fortune on a boom microphone. One can be made up very simply from two pieces of steel wire, some systoflex or similar insulation material, and a dab of Araldite. Including a cheap crystal insert the cost does not reach ten shillings, and the time to make is only about half an hour. Its value in terms of human life: priceless.

Two " stations " were seen at the Whit Monday rally at Calstock: GB3SAL (right) operated by G3SN, President of the Saltash Club, and a special SWL's station consisting of an impressive array of receivers. With the help of this equipment, the younger members, including Keith Burgoyne and John Tozer seen in the photo (left), " explained " the mysteries of Amateur Radio to visitors.

## Mobile Rally News

**South Shields Mobile Rally.** This event, organized by South Shields and District ARS will be held at Bents Park Recreation Ground, Coast Road, South Shields on Sunday, 10 July. Talk-in stations will operate as follows: 160m, G3DDI, active from 10.00 GMT, and 2m, G3SFL, 145·8 Mc/s from 11.00 GMT. The site is adjacent to an expanse of sandy beach which is ideal for walks, games and bathing. Rally events will commence at 2 p.m. and will include competitions for mobileers, motorists and other amateurs. As on previous occasions, light refreshments will be available.

**Derby Mobile Rally.** The ninth annual Derby Mobile Rally will be held at Rykneld Schools, Derby, on Sunday, 14 August. The rally will be open from 10 a.m. when two talk-in stations will be on the air to assist visitors. The indoor and outdoor events will commence at 2.30 p.m., and these will include a demonstration of Karati, an exhibition and competitions with some Boy Scout's famous " Soap Box Derby " racing cars, demonstrations of electronic organs, a model exhibition, a junk sale, the grand prize draw, a children's treasure hunt, a mobile radio contest and musical entertainment. Plenty of refreshments, ice cream and Coca-Cola will be available at very reasonable prices. Admission and parking is free, and there will be ample indoor accommodation available if necessary. Last year's rally attracted 6000 visitors, and the organizers hope to top that figure this year. Further information may be obtained from the organizer, T. Darn, G3FGY, " Sandham Lodge," 1 Sandham Lane, Ripley, Derbyshire.

**Calstock Rally.** A letter from BRS26760 (Honorary Secretary to the Saltash and Districts ARS) reports that the club's second mobile rally held on Whit Monday was highly successful—deservedly so by virtue of the novel ideas which this young and virile club produces.

Talk-in was provided by GB3SAL, operating on 160, 80, 4 and 2m from 10 a.m. until 2 p.m., re-opening again at 5 p.m. for " talk-out." Prizes for the longest distance QSOs with the station were won by G3TWO/M (Bridgewater), G3MMN/M (Ashford) and G3IGV/M (St. Austell) on 160, 80 and 2m respectively. G8AFA and A4322 were awarded prizes for travelling the longest distance to the rally. During the afternoon a lively programme of events provided amusement for all: free trips on the River Tamar for the children in G3UBY's speedboat, a " guess-the-weight-of-a-cake " competition, won by G3FIM's wife (Plympton), a balloon race and radio and non-radio prize draws in addition to the usual playing field apparatus. The first prize in the non-radio draw, a food mixer, was won by Mrs G3NXV (Birmingham) and G8AFA won the Multiminor test meter in the radio section.

The " Tower of Babel " contest, in which mobiles have to race from their cars, retrieve their own QSL card from a pile, and then transmit their call-signs to the talk-in station on 160m was won by G3LWJ, who also won the award for the best mobile installation. The " Hunt-the-Hidden-Ham " competition (the proceeds of which were donated to RAIBC) was won by G3LSD (Plymouth).

Conditions were poor for the demonstration of DX-TV, but Colin Jones' demonstration of RTTY reception attracted much attention, as did the Daystrom Ltd. display of Heathkit equipment and Contactor Switchgear (Electronics) Ltd. CSE 2A10 solid state transmitter.

The fine weather no doubt helped to bring the total attendance to over 400 people, including 80 licensed amateurs. BRS26760 has kindly supplied a breakdown of the equipment of the mobiles who attended which shows that of a total of nearly 40 only half were equipped for 160m only. Six had all h.f. band equipment, two had equipment for 160 and 4m, and another two were operational on 4m only. Two more had equipment for 160 and 2m, four had 2m equipment only, and one was equipped for 70 cm only.

## Manufacturers' Information Required

The Society's Mobile Committee will be pleased to receive information from manufacturers giving the specifications and other relevant details of equipment suitable for mobile installations. Communications should be addressed to the Mobile Committee at Headquarters.

## 4X4TP to visit London

Mr Tsvi Piekarczyk, 4X4TP, will be in England from 21 July to 24 August and in London from 27 July to 10 August. He is taking part in the International Youth Science Fortnight in the University College of Residence in London. He wants to meet British amateurs and can be contacted via " The Bridge " Organization, 66 Blandford Street, London, W1.

* 1 Shortbutts Lane, Lichfield, Staffs.

# TECHNICAL TOPICS By PAT HAWKER, G3VA

*" Don't want to know " amateurs? · Transistorized Vackar · Stenode Again · New Transistor Communications Receivers · FET front-ends · Silicon or Germanium? · Elevated Feed Verticals Power Transistors · QRP Transmitter · S.S.B. Intelligibility*

THE enquiry across the Atlantic into the current state of Amateur Radio has included, according to *QST* (May, 1966), some professional " market research " on behalf of ARRL into the views of sample members. This has thrown up some interesting information—part of which, viewed from this side of the water, seems positively alarming.

Not surprisingly the survey finds that there is no such animal as a " typical amateur," but in the manner of market researchers the world over, the report goes on to divide our transatlantic confreres into four main categories: the eager neophytes (beginners); the established operators; the experimenters; and—" the largest group of all "—the amateurs who have little or no interest on the technical side, use commercial gear, and are probably phone operators. The report draws the stark conclusion that in this final category there are " probably more amateurs than in all the other groups combined, and their ranks are growing." Many amateurs, it is suggested, once they have a licence " don't need or don't want to achieve further technical skill or proficiency."

If this is really the situation, the outlook seems bleak indeed for those remaining " squares " who actually read (or even write) the technical pages of the amateur journals. But for various reasons it could be possible that the market researchers have been—at least to some extent—misled. Could it be that of the sample of amateurs actually questioned, most felt that they themselves were in one of the first three categories, but were only too ready to classify the rest of the herd into the final group? This would be in keeping with the traditional outlook that mankind is going downhill rapidly—starting always of course with the next generation or next district to one's own.

Anyway, for my part, I shall continue to believe that most RSGB members do have some modicum of interest in the technical side of the hobby, even when using commercially built gear. Certainly most of those whom I meet or hear from still seem to be able to tell a valve from a transistor—and are interested in exploring some of the differences, even when this means operating one of those outmoded Morse keys! Indeed from such encounters I usually retreat feeling that it is about time that I got down to a bit of serious study if only to keep up with what everyone else is talking about or building.

## Transistorized Vackar Oscillator

Over the years a number of stable transistor oscillator circuits have been described but most of these have been aimed primarily at the transmitter v.f.o. But this time, thanks to L. Williams, BRS25769, of Birmingham, we are able to include a circuit which appears to have real promise for both transmitters and receivers but which, as far as we are aware, is described here for the first time.

BRS25769 writes: " I have done some work on a high stability oscillator circuit (Fig. 1) which is a transistor version of the Vackar-Colpitts (Tesla) circuit. I am sure someone must have done it before but I have never seen it in print.

" The circuit arose from a search for a v.f.o. for a high stability receiver on which I am doing some design work. Published circuits seem to be either of the Hartley or Clapp form, usually with buffer amplifiers. The Clapp has the feature of output varying with frequency and transistor buffers do not give as high a degree of isolation as a well-designed valve stage.

" This circuit has the transistor terminals shunted with very large lumps of capacitance, as are also the output terminals. The values given cover 2·0-2·5 Mc/s, and the prototype will stay zero beat with a crystal frequency standard for hours. With C1 and C2 polystyrene and C3 silvered-mica temperature drift is plus 10 c/s per degree

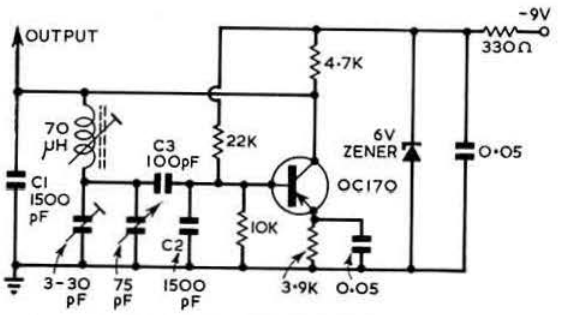


**Fig. 1. Transistorized Vackar high stability oscillator developed by BRS25769.**

Centigrade; this could be improved by making C3 mixed mica and ceramic. The amplitude of oscillation is controlled by C2. Increasing C2 reduces amplitude without very much effect on frequency. For good stability the amplitude should be limited to a few hundred millivolts. Three specimens of OC170 were tried with the values shown and all gave a similar performance.

" Perhaps some public-spirited experimenter would like to explore its potentialities and report on them."

Some preliminary trials at G3VA, using an *n-p-n* silicon transistor and a number of rather different values, have confirmed that the circuit values are non-critical, and the whole unit worked well almost at first go, apart from a slight tendency to squegg at audio frequency which was overcome completely when the operating point of the transistor was adjusted to conform rather better with the lower supply voltage in use. These tests were only with a rough breadboard set-up but certainly seem to support BRS25769's findings that, provided the usual care is taken with construction and components, the transistorized Vackar appears extremely promising. Although the output would be considerably less than the usual valve local oscillator, it should be remembered that semiconductor mixers require much lower injection voltages. The oscillator continues to function with considerable additional capacitance loaded across the tuning capacitors.

## The Stenode Again

Usually we try to avoid repeating information in *TT* but for once we are going to break this self-imposed rule, in again pointing out the extreme effectiveness of one of the

simplest circuits ever (*TT*, August 1962 from an article in *Wireless World*, July 1962). This consists (Fig. 2) of just a 200 pF capacitor shunted with a 2 Megohm resistor and was G6XN's suggested tone-correction circuit for " stenode " reception of speech through a sharp-selectivity single crystal filter. In the earlier item it was suggested that this treble-rise network be inserted between the detector and first a.f. stage, and this may have put off some who do not like delving into their receivers.

Recently we have been using the system by just inserting the network into the high-impedance headphone lead (values would have to be changed for low-impedance 'phones) and

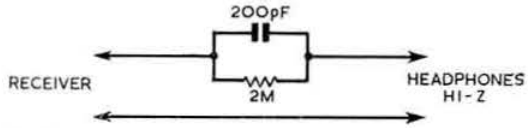


**Fig. 2. Stenode tone-correction filter for phone reception through a crystal or Q-multiplier filter.**

find it highly satisfactory. The idea, we understand, also works well with good *Q* multiplier systems which are sufficiently selective to make speech difficult to copy.

Here is an idea you can try out in two minutes flat—yet can result in one of the most effective (if least used) techniques for improving selectivity on a.m. or s.s.b. yet discovered (it only dates from 1929!). One capacitor, one resistor and that typically woolly and muffled speech becomes fully intelligible.

## Transistor Communications Receivers

Fully-transistorized h.f. communications receivers with performances truly rivalling or better than top valved designs have remained few and far between—at least until the past few months. Even now the latest commercial designs only really begin to warm up (an inappropriate phrase) as the prices soar up above about £500. There is thus hardly likely to be a rush of amateurs able to acquire such sets for their own shacks. But this does not mean that we should not be interested in keeping a careful eye on the very real progress sweeping into this field; clearly such changes and circuit techniques are bound to influence future receiver design for and by amateurs.

The present roster of general purpose sets of this type which have actually come to our notice include the Racal RA217 (basic price £625, and now in production); the Plessey PR155 (basic price £750, just in production); the GEC RC410R (about to go into production and with a price probably in the £750 region); and the American HRO500 (UK price just over £700). There is also a Redifon receiver

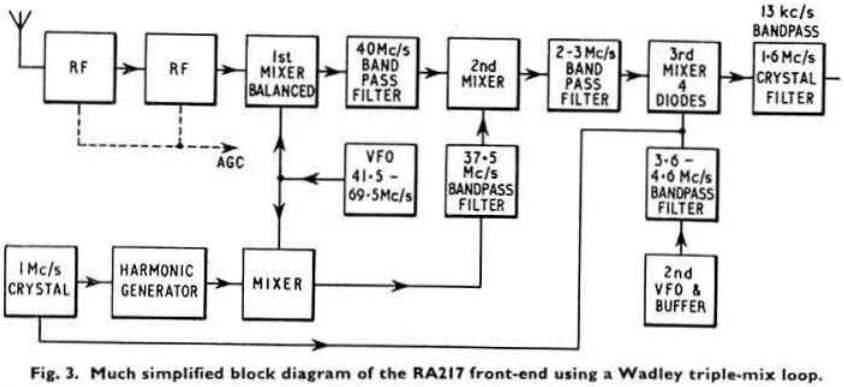


**Fig. 3. Much simplified block diagram of the RA217 front-end using a Wadley triple-mix loop.**

**The Racal RA217 transistorized receiver utilizes the drift-cancelling triple-mix technique made famous by the RA17 and RA117 receivers.**

intended primarily, we believe, for marine applications, and possibly some others, about which we have little firsthand knowledge.

While we have examined the Racal, GEC and HRO sets at exhibitions, etc., the only one which we have been able to try out for actual amateur operation is the Plessey PR155 which uses well over one hundred semiconductors and which we used intensively over a period of several days, though without subjecting it to the type of performance measurements which have been such a useful feature of recent BULLETIN reviews.

All the receivers have been designed for direct calibration with reset accuracies considerably better than 1 kc/s and with similar tuning rates right up to 30 Mc/s—though the methods of doing this differ a great deal. All feature high-stability techniques for s.s.b. operation based either on various forms of partial or full frequency synthesis, or on the well-known Wadley triple-mix system of the Racal RA17 to provide drift cancellation. Similarly, all the designers have had to come to grips with what still remains the basic problem involved in using semiconductors in the front-end of an h.f. receiver, that is the difficulty of achieving a really good dynamic range (i.e. the ability to cope with both very weak and very strong signals without excessive cross-modulation or blocking).

Briefly, the RA217 uses a triple-mix front-end (Fig. 3); the HRO500 uses frequency synthesis to obtain 1 Mc/s points, followed by a tunable i.f. (akin to the crystal-controlled front-end receivers such as the G2DAF); the PR155 uses a phase-locked frequency synthesizer controlled by a 1 Mc/s crystal in conjunction with a stable 2·3-3·3 Mc/s interpolating v.f.o. (Fig. 4) and is a triple-conversion receiver with intermediate frequencies of 37·3 Mc/s, 10·7 Mc/s and 100 kc/s; and the RC410R is fully synthesized, with the local oscillator phase-locked to a synthesizer incorporating a variable ratio frequency divider technique, providing 100 c/s steps and with crystal pulling of the second conversion oscillator to provide full interpolation with intermediate frequencies of 1·6 Mc/s and 100 kc/s.

It must be considered a sign of the flux in design outlook to find each of these receivers adopting such different approaches. Although it is not our intention to draw paper

comparisons, it may be noted that the direct single stage conversion to a fixed first i.f. used in the PR155 and RC410R allows a preliminary crystal filter to be inserted immediately following the first mixer which in the PR155 is a four-diode balanced ring type. The usual approach to improving cross-modulation characteristics is to employ a special a.g.c. loop for the r.f. amplifier, and in the PR155 this is entirely independent of the main, and very effective, " hang " a.g.c. system with 10 milliseconds rise time, 400 mS hang and about 50 mS discharge, suitable for use on a.m., s.s.b. and c.w., and remarkably effective even on very weak signals.

The PR155 is claimed to handle an r.f. input of up to six volts without damage, and we encountered no problems in running it immediately alongside a 100-150 watt transmitter. Linearity and stability of the interpolation oscillator are achieved by the use of permeability tuning and temperature compensation using a fairly standard type of oscillator circuit, and reset accuracy is about 250 c/s. Some idea of the stability can be gained by the fact that it proved entirely possible to tune in an s.s.b. signal, switch the whole set off for a period, and then switch on again to find the station still in accurate tune. All tuning is by moving a single core into a coil, and there are no ganged tuning capacitors whatsoever.

Similarly it is quite possible to receive broadcast stations as s.s.b. with immediate sideband selection—though no one would claim that this is the best way of receiving music for which one needs to be able to tune within 2 c/s or so! In practice, the outstanding feature of the receiver was the certainty with which stations can be tuned rapidly and held with minimum use of controls. Frequency stability after initial warm-up is claimed by the makers as better than $\pm 30$ c/s, or $\pm 5$ c/s short term. Tuning rate, in precision tune position, is 8 kc/s per revolution.

While the RA217 and HRO500 are compact receivers, it is noticeable that neither the PR155 nor the RC410R is significantly smaller than a valved receiver; the tendency seems to be to pack in more and more complex circuits rather than to reduce overall size. An unusual feature of the RC410R is that the frequency to which the set is tuned is indicated by a row of cold cathode indicator tubes, similar to those used in digital frequency meters. The RA217 also presents the frequency in the form of a numerical in-line decade display, though in this case on dials by means of a Veeder Root counter. The PR155 has an 84 in. " film scale " covering 1200 kc/s (1 Mc/s plus a useful calibrated overlap of 100 kc/s at each end). But it seems a pity that British firms so seldom include " shape factor " details in their technical literature.

Certainly, our limited experience with the PR155 (the first commercially manufactured receiver to be used at G3VA for many years) showed that the fully-transistorized

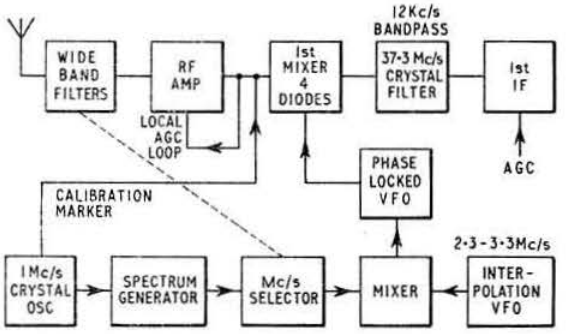


**Fig. 4. Much simplified block diagram of the PR155 front-end. The eight sub-octave wideband filters are selected automatically by the Mc/s selector. The 1 Mc/s oscillator also provides injection at 48 Mc/s for second conversion to 10·7 Mc/s.**

**The new Plessey PR155 receiver is fully transistorized and covers 60 kc/s to 30 1 Mc/s. Short-term stability is better than 5 c/s, and the long-term stability better than 30 c/s on all frequencies.**

h.f. receiver has now more than caught up with its valved brother provided that sufficient care is taken in design.

## Field Effect Transistor Front-ends

Although the GEC RC410R was originally designed to use transistors in the front-end, we gather that it is intended to change the production model to junction-type field-effect transistors, following tests on the relative susceptibility of FETs and conventional transistors to cross-modulation. This is only one sign of similar trends, and is accompanied by significant price reductions in FETs and the related though more expensive IGFETs and MOSTs (see *TT*, September, 1965). Seen recently at a US exhibition in London was a high-fidelity f.m. tuner by Scott also featuring FETs in the front-end, and the days of the five-shilling FET may be here sooner than many expect.

At the IEA Exhibition (see later) Texas Instruments had a demonstration (unfortunately not working when I was there) to show the much lower susceptibility of the 2N3823 FET (which has a noise figure of 2·5 db at 100 Mc/s but costs about £3 a time) compared with transistors. FETs will soon be available in the much cheaper " entertainment " TI " Silect " range of devices.

A 144 Mc/s converter based on this type of *n*-channel FET is described by Ulrich Rohde, the German engineer who did so much work on transistor parametric mode amplification, in *DL-QTC* (May, 1966). A good article on the 2N3823 FET, with circuits, is in *73* (May, 1966) by WA5KLY.

## Silicon versus Germanium

With the rapid lowering of prices of silicon semiconductors, the struggle between silicon and germanium types is in full swing at the moment, and the merits and demerits of the two materials at times tends to get lost in the grinding of commercial axes. A small booklet " Silicon and Germanium Transistor Selection " (SIGE1/KE) has been issued by Newmarket Transistors which does attempt to pin-point the areas where germanium offers an advantage over silicon and vice versa. It points out that germanium devices require lower drive voltages; have better high frequency performance for equivalent geometry; retain current gain better at very low temperatures; have lower saturation voltages. Silicon offers higher working temperatures; much lower leakage currents; and the possibility of higher input impedances. The booklet describes some of the types of circuit changes that may be necessary when changing from germanium to silicon.

There are certainly pros and cons in using germanium and silicon devices in the front-end of receivers. From a noise point of view germanium tends to be better (although low-noise silicon devices are now available), but it is more difficult to protect them against damage from excessively large signals or impulse interference such as lightning with-

out fairly elaborate circuit techniques. Silicon devices with breakdown voltages in excess of 2 volts can be protected by back-to-back diodes at the input: this arrangement is used in the RA217 and (according to *Racal Review*) can protect the set against sine wave signals of up to 10 volts and impulse-type interference to 10,000 volts.

We still feel that until FET and MOST devices become cheap and the circuitry established, there is much to be said for using miniature Nuvistor valves in the front-end of amateur receivers even if this does seem like a retreat from the "all transistor" design—we noted this approach recently in a high-quality v.h.f./f.m. tuner by Braun. One possibility would be a vari-mu Nuvistor pentode r.f. stage (or two Nuvistor triodes in a cascode circuit), followed by a four-diode ring balanced mixer.

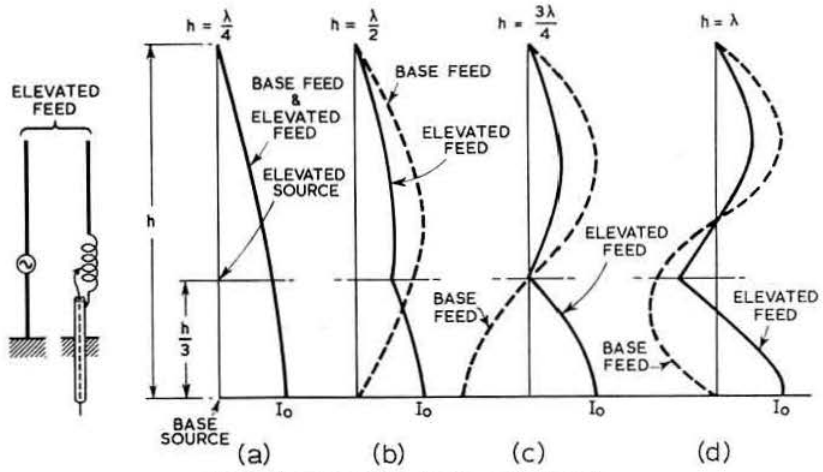


Fig. 5. Current distribution for vertical aerials.

## Elevated Feed Verticals

Just as the arrival of a letter describing a new type of oscillator can be quite an exciting moment, so scanning technical journals, even those which have no anticipated connection with Amateur Radio, from time to time produces a subject that seems to have considerable relevance to typical amateur operation. Such a moment came while reading an article in *The Marconi Review* (Vol XXIX, No. 160, First quarter 1966) on the new direction finder, type S480. For this contains a most interesting discussion on a type of elevated feed monopole due to W. Struszynski used in the eight element Adcock system; and from this it would seem that such a technique might provide an answer to a problem of particular importance to amateurs: how to get really good low angle radiation, without unwanted high-angle side lobes, from vertical aerials of appreciable electrical length.

In the particular application described, the elevated feed aerials are used to form a wide band (1·5-30 Mc/s) receiving system but, the same principles would apply to transmission. Admittedly the average amateur might not be able to reproduce such good low angle results as are indicated in the article, since for D/F installations considerable regard is paid nowadays to the ground plane in the form of large earth mats extending right around the multiple-element Adcock system (for the S480 a 2 ft. square copper wire mesh some 120 ft. in diameter elevated 1 ft. above the ground is recommended), and a more normal conventional earth system would undoubtedly degrade the vertical radiation patterns to some extent. The system increases earth currents and thus the need for good earth radials or mats (see G3HRH's article in the June issue).

The raising of the feed point up a vertical aerial has been done in the past for other reasons (for example in the "sleeve" aerials in which a low-impedance co-ax feeder is taken up through a sleeve) but this use of elevated feed to reduce vertical radiation angles seems to be relatively new. As shown in Fig. 5 the vertical aerial is earthed at its base, but at a point $\frac{1}{3}$ of its height, an insulator is inserted to form a feed point. In the Marconi D/F system, each of the eight elevated feed aerials uses a triangular mast type of construction, and the top $\frac{2}{3}$ of the height is supported on the insulators, with the co-ax feed line brought up inside the triangular mast and inner conductor connected to the top section either directly or through a suitable step-up matching transformer.

A form of elevated feed was used for a considerable time on the BBC anti-fading aerial for the Third Programme Daventry transmitter to optimise the vertical radiation pattern, and Telefunken are also believed to have done work with elevated feed systems.

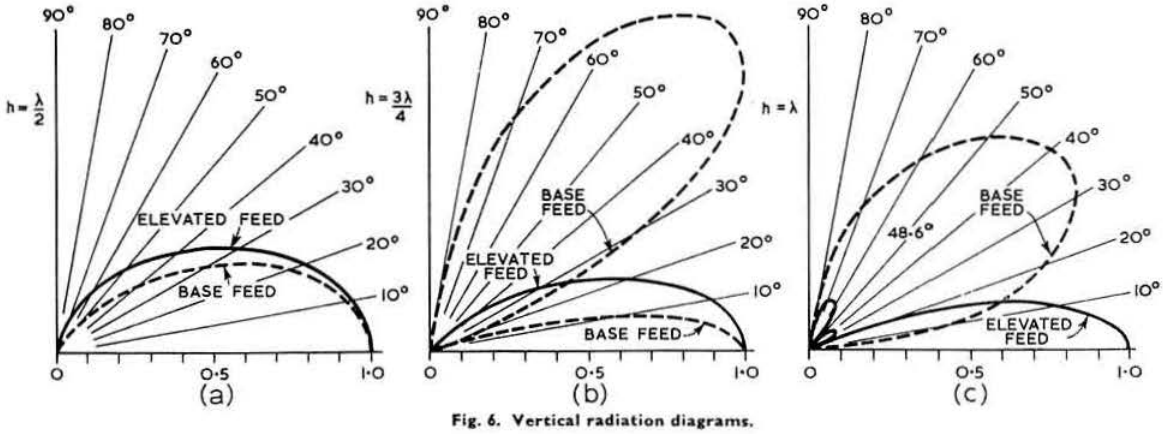


Fig. 6. Vertical radiation diagrams.

The two sections of the aerial thus have a current distribution of the type we associate with " in-phase " aerials. Fig. 5 shows the current distribution for total heights of $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and full-wave aerials, but the more interesting diagram is that of Fig. 6 showing computed vertical radiation patterns. It will be clear that there is no particular advantage over conventional base fed aerials until one gets to about $\frac{3}{4}\lambda$ and full-wave, and this means that height limitations tend to rule out its use except on 14 Mc/s and above. The $\frac{3}{4}\lambda$ system seems particularly attractive, though this results in high-impedance feed across the insulator; while this could be done with a step-up matching network, there might well be the possibility of using a tuned feeder run out for some distance horizontally from the vertical element, and then if required continued with a low-impedance feeder in the G5RV technique. One good point is that the two sections of the aerial form an in phase system and this tends to result in the reactance changing less rapidly than with equivalent base fed systems, so easing matching problems.

While it must be made clear that the concept of the elevated feed monopole for amateur operation (and the use of tuned feeders) has not yet been tried out, at least by G3VA, the information presented in the Marconi journal certainly makes the whole idea look very attractive, with its concentration of almost all radiation at low angles. We would be glad to pass on comments from anyone trying the system out for amateur operation, since it could well form a most useful addition to vertical aerial techniques.

## R.F. Power Transistors

The recent impressive IEA Exhibition in London gave an unusually good chance to check up on the growing ranges of r.f. power transistors now available from such firms as Mullard, STC (who have taken over the Clevite range), Texas Instruments, Motorola (UK agent Celdis), and TRW Semiconductors (UK agent MCP, and including the pioneer Pacific Semiconductors range).

For example, Mullard showed a 10 Mc/s, 100 watt p.e.p. *output* two-stage linear amplifier requiring 2 watts drive. The unit consists of a single BLY17 driver followed by four BLY17s in parallel in the final. A booklet giving details of the exhibit, including circuit diagram, is TP676, from Mullard Industrial Markets Division (Mullard House, Torrington Place, London WC1). The amplifier is powered from a 36-volt line. Stage gain of the driver is eight times (9 db) to give some 15 watts drive to the final. This exhibit is yet a further example of QRO operation of fully transistorized transmitters, though such forms of r.f. generation are still not cheap with the five BLY17s at about £15 apiece amounting to some £75. But it may be worth noting that a single BLY17 plus about 7½ watts drive can provide 30-40 watts c.w. output up to 30 Mc/s.

Of perhaps more immediate interest to amateurs are the now fairly common ranges of transistors which can provide useful power on 144 Mc/s directly from the h.t. rail (say 13·8 volts) provided by a conventional car battery. Examples include the new Mullard 125BLY (this is a development type number and will be changed later) which can give around 7 watts a.m. up to 175 Mc/s with a power gain of 7 db and the 158BLY with 2 watts as driver. Circuit details of a fully transistorized 170 Mc/s commercial mobile transmitter-receiver are given in the Mullard publication TP677, including an ingenious transistor protection circuit which reduces drive in the transmitter stages in the event of serious mis-match to the aerial. It uses an aerial directional coupler (the device which forms the basis of s.w.r. meters) plus a couple of transistors and a silicon controlled rectifier.

Motorola (e.g. 2N3927), TRW and TI have some useful looking devices for this type of application, and semiconductor transmitters for business mobiles are just about appearing. Incidentally, all British mobile equipments are likely to change over in the future to 12·5 kc/s channels in place of the current 25 kc/s channels, so that a fair amount of current hybrid valve/semiconductor equipment will eventually become obsolescent though some existing equipments can be modified for 12·5 kc/s. Recently we had a chance of examining the first all-transistor high power (10-watt) equipment (Storno Ltd.) to pass Post Office type-approval tests for business mobile use.

## Low Power Transistor Transmitter

Almost suddenly, with the availability of lower cost r.f. power transistors, has come widespread interest in low-power transistor transmitters. Almost every journal one picks up has useful circuits for powers up to about 25 watts. A British amateur who has spent considerable time developing a low-power transceiver for 1·8 Mc/s—and now finds he can get contacts up to 100 miles in daylight with about 3 watts input from a pair of 6-volt lantern batteries is David Blake, G3MWV, whose p.a. stage (Fig. 7) has some useful features which ensures that he can achieve modulation up to and beyond 100 per cent.

He writes: " To improve modulation I use a slightly modified positive peak expander circuit (see pair of OA81 diodes feeding driver (AF117) stage). This method gives more drive on peaks of modulation and overcomes the usual compression effects of most transistor transmitters using high level modulation.

" During peaks of modulation the modulation voltage is added to the normal bias supply. This happens in the positive direction only due to the action of the diodes and I can highly recommend this circuit.

" The p.a. works in the normal manner and the 470 pF

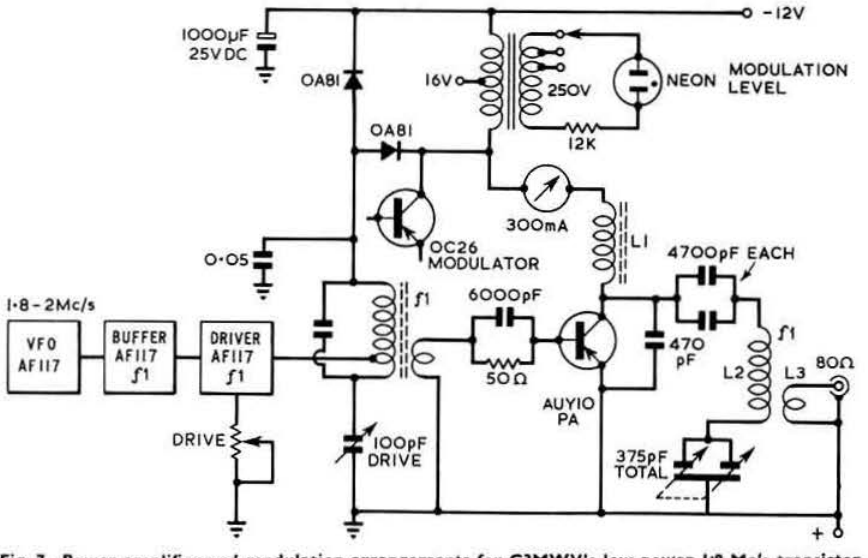


**Fig. 7. Power amplifier and modulation arrangements for G3MWV's low power 1·8 Mc/s transistor transmitter.**

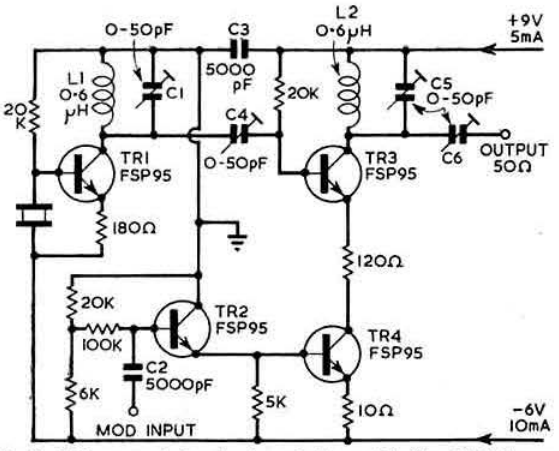


**Fig. 8. This unusual circuit of a miniature thin-film 30 Mc/s a.m. transmitter developed at RRE has a number of features which might be useful for more conventional small transmitters. TR3 and TR4 form a cascode with the lower section modulated by the emitter-follower TR3 with high impedance input.**

capacitor from collector to emitter is to suppress harmonics which tend to give a little TVI. One point to be noted is that on peaks of modulation a small kick downwards of the p.a. current can be seen on the meter; this is quite normal. The modulation choke is a Radiospares 16-volt heater transformer. The primary is used with a neon to indicate modulation."

## S.S.B. Intelligibility

For several years, the civil airlines have been considering the use of s.s.b. instead of a.m. for long-distance flights, and an ARINC characteristic has recently been issued on the subject. One of the main questions, for such applications is how far can the equipment be " off-tune " (that is when the inserted carrier differs from the original suppressed carrier, as to some extent it will always tend to be). It reprints a report of an investigation made into this question, which includes some points of interest to amateur operators.

It was found that an a.f. band of 300-3000 c/s provides higher intelligibility than any other for frequency shifted speech in the presence of noise, particularly with low signal-to-noise ratios. A change to 500 c/s for the lower edge or to 5000 c/s for the upper edge were both found to degrade intelligibility.

Downward frequency shifting tends to produce greater deterioration than upward shifts, and as the listening conditions deteriorate the tolerable amount of frequency shift is reduced.

With a really good signal, speech can be shifted 400 c/s upwards or 300 c/s downwards without unduly impairing its intelligibility for communications purposes.

With a fair signal, plus 200 or minus 100 c/s are about the limits.

With a poor signal, shifts of more than 100 c/s are unsatisfactory.

## Here and There

Back in December 1962, *TT* reported that G3LAR had found that parametric (varactor) frequency multiplication was possible using ordinary Zener diodes in place of the considerably more expensive varactors. Now, in *73* (January, 1966) W1OOP suggests that varicaps and silicon power diodes can be used effectively for experimental circuits for doublers and triplers at lower (h.f.) frequencies; for example as a tripler from 10 to 30 Mc/s, or doubler to 21 Mc/s. He provides a suggested circuit for using a silicon power diode for doubling from 3·8 to 7·6 Mc/s.

During the period when we were trying out the PR155 with its good direct frequency calibration, it came as something as a shock to observe the number of European stations straying over the edges of 7 and 14 Mc/s. Most were outside by not more than a couple of kc/s, but one hopeful was noted calling CQ on 13,986 kc/s. In the business of intrusion, amateurs are far more sinned against than sinners—but we do not want to give the potential opposition any unnecessary ammunition in the frequency allocation struggles ahead.

Amateurs who have long had their own definition of a " lid " may have been surprised to find a headline in *Electronics* " a lid with legs "—this turned out not to be a variation of the classic signal " try other foot " but yet another new type of semiconductor (" leadless inverted device.")

Also noted is that Sylvania engineers have recently described an " adaptive receiver " which searches a band of frequencies for signals of required type—a few more gimmicks and it will be making the contact, entering up the log, and sending off the QSL. Ah well, I always knew automation would get us all in the end.

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### Special Events Stations

**GB3PAS** will be operating from the Peterborough Agricultural Show from 19 to 21 July.

During Brighton Technical College Open Days 30 June and 10 July, **G3TCB** will be operating on all the h.f. bands using a.m., s.s.b. and c.w.

The Silverthorn Radio Club will be operating under the call-sign **G3SRA/A** on Saturday, 9 July, at Ridgeway Park, Chingford, during the annual Chingford Day. All the h.f. bands will be used.

During the annual Liverpool Show on 14, 15 and 16 July, the Liverpool and District Amateur Radio Society will be putting a station on the air with the call-sign **GB2LS.** Operation will be on all the h.f. bands and 2m, using a.m., s.s.b. and c.w. Contacts will be confirmed with a special QSL card.

The Basildon and District Amateur Radio Society is running an exhibition station at the Shell Club, Corringham, Open Day on 9 July 1966. **GB3BRS** has been allocated and the station will be operating on 160, 80, and 40m with phone and c.w.

### Oscar Newsletters

Those members who wish to receive copies of future Oscar Newsletters are asked to send a minimum of four self addressed stamped (4d) envelopes to G2AOX who will be responsible for the distribution to interested persons. The envelopes should be 9 in. x 4 in. and should be sent to Mr W. Browning, G2AOX, 47 Brampton Grove, Hendon, London, NW4. It is stressed that the Newsletters will be issued as information becomes available and not at regular intervals.

### International Award for Mullard Film

The Mullard film *Thin-film Microcircuits*—seen by all who have attended one of the Mullard film-meetings during the current session—was awarded a silver medal (1st class) in its category at the 10th International Festival of Scientific-Teaching Films, organized by the University of Padua in conjunction with the Venice Film Festival. Over 150 films from 18 countries were entered. *Thin-film Microcircuits* is a 16mm sound and colour film which deals with the manufacture of this new type of electronic component from design stage to the finished product. Another Mullard film—*Electromagnetic Waves—Part II*—won a bronze medal (2nd class) at the 9th Festival.

# The G3HZP Balun

By H. D. JAMES, G3HZP*

A DEVELOPMENT of the half-wave dipole which has become very popular for DX operation is the inverted-V; it is usually quite simple to erect, and can generally give a very satisfactory performance. The writer has learnt by experience, however, that it is sensitive to the method of feed, and an unbalanced coaxial line can ruin what could otherwise be a very desirable radiation pattern. Nevertheless, coaxial line is almost universally employed with this aerial, and a form of unbalance-to-balance match is obviously essential. This is normally accomplished with a pair of closely coupled air-spaced coils, but is unnecessarily cumbersome.

A much more convenient compact unit has been developed by the writer based on a toroidal ferrite core, and this forms the principal subject of this article. To avoid leaving the

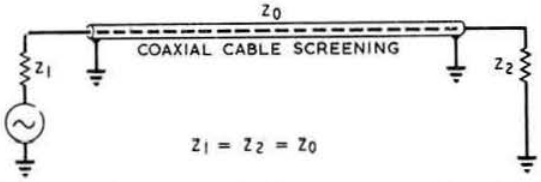



**Fig. 1. An unbalanced transmission system, perfectly matched. The outer conductor of the coaxial cable behaves as a perfect or near perfect screen.**

degree of improvement brought about by the use of a balun, a matter for conjecture, however, the results of tests will be described, introduced by a discussion of the implications of feeding a balanced dipole with coaxial line.

### Feeding a Dipole with Unbalanced Line

In a properly matched unbalanced system, as Fig. 1, the coaxial cable is a perfectly screened transmission line with no electric or magnetic fields extending outside the screening. If a current should flow in or on the screening, this current would not be balanced with respect to the current flowing in the inner conductor. In these circumstances the screening function of the outer coaxial cable is ineffective.

When an unbalanced transmission line, i.e., coaxial cable, is used to feed a symmetrical aerial directly, the latter effect is experienced, and a proportion of the feed current flows on the outer surface of the coaxial screening, owing to the unequal currents at the feed point (Fig. 2). When this occurs in a transmitting system, radiation takes place from the coaxial feed line, causing the following detrimental effects: (i) not all of the available power reaches the aerial; (ii) the horizontal and vertical polar diagrams will be distorted, plus a loss of back-to-front ratio with a beam aerial, and displacement from the same plane of the two major lobes of a half-wave dipole; (iii) the radiation from the transmission line will in most cases be at a very high angle owing to the length of line involved. High angle radiation is generally not desirable.

The same adverse effects apply to receiving aerials, which means simply that received and transmitted signals will be below the theoretically possible strength for the particular aerial.

* "Mayfield," Rampton Road, Willingham, Cambs.

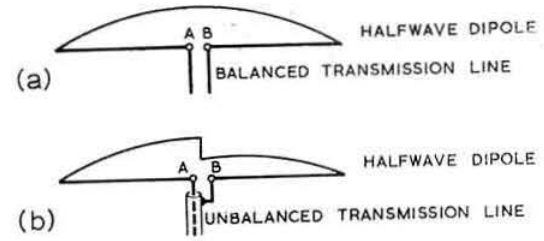



**Fig. 2. (a) With a balanced transmission line, equal and correctly phased currents flow in each half. (b) With an unbalanced transmission line, coupled direct to a half-wave dipole, unequal and incorrectly phased currents flow in each half. These current distributions also apply to a cubical quad over half its length about the feedpoint.**

### Evaluating the Inverted-V

The inverted-V form of half-wave dipole was put on test by G3HZP for a period of four months, and particular attention was paid to the following three aspects:

(i) The effect of height above ground on polar diagrams.
(ii) Performance when fed with coaxial cable directly.
(iii) Performance when fed with coaxial cable and matched.

The horizontal polar diagram of a half-wave inverted-V dipole is a function of its height above ground. At heights greater than $\lambda/4$ the horizontal polar diagram changes from an essentially omni-directional pattern to a distorted figure of eight which would be expected from a half-wave dipole with drooping ends.

The optimum height above ground measured to the feedpoint appears to be 0·1875$\lambda$, or three-quarters of a quarter-wave, with an included angle of 90°. The horizontal polar diagram at this height is essentially a circle with nulls off each end to a depth of about 6 to 10db (Fig. 3). The major vertical lobe appears at about 20°, which is somewhat higher than a vertical aerial. Three methods of mounting the inverted-V are illustrated in Fig. 4.

When the inverted-V aerials were first erected during the winter of 1965/6, the performance on 80 and 40m was significantly inferior to a half-wave dipole at 50 ft., but this was with an unbalanced coaxial feeder. When the balun was inserted, however, according to signal reports the gain increased by about 10db.

### The G3HZP Toroidal Balun

The balun developed for the writer's inverted-V aerials is illustrated in the photographs. It is a one-to-one ratio bifilar wound transformer with a toroidal ferrite core,

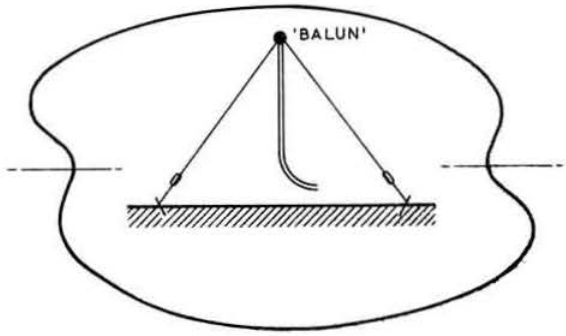


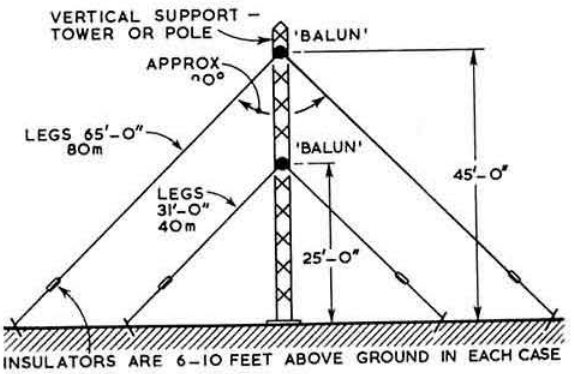

**Fig. 3. The horizontal polar diagram of an inverted V. It is essentially omni-directional except for 10db nulls off each end in the plane of the V.**

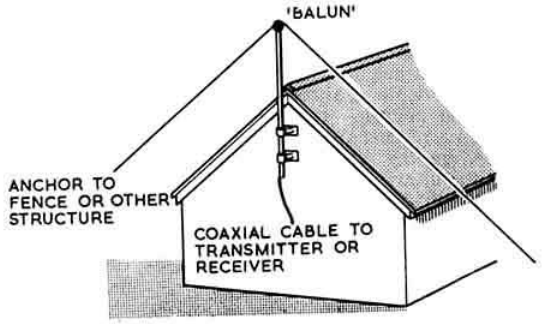
exhibiting an impedance of 65 ohms ± 15 ohms, an insertion loss of less than 0·1db, and a balance better than 10 per cent over the frequency range 1·5 Mc/s to 30 Mc/s. The impedance varies slightly over the frequency range, but this is of no consequence, and the balun is equally effective with 50 or 80 ohms coaxial cable. If desired, the turns ratio can be varied, thereby introducing an impedance transformation property.

**Construction of the Balun**

Two Mullard FX1588 toroidal cores are stacked, and bound with acetate, polyester or silk tape before the primary and secondary coils are wound. The primary, L1, consists of 10 turns, while the secondary comprises two windings of five turns connected as shown in Fig. 5. The wire used is 0·110 in. × 0·060 in. enamelled copper tape, 20 in. being required for L1, and 13½ in. for each section of L2. When the winding is completed, the balun can be completely enveloped for protection with one of the following materials: bitumen, Chatterton's compound, several coats of tropical varnish or polyurethane varnish of the type supplied for small boats or yachts, fibreglass (Holts car kit), Araldite, or solidfying silicone grease (EP5555, ICI Ltd.). Alternatively, it can be encapsulated in a small hermetically sealed metal box.

Three methods of mounting have been found suitable. Perhaps the simplest method is to attach the toroid to a triangular sheet of Perspex, and completely envelop the assembly in Araldite. The coaxial line can be readily secured with a sheet metal clamp bolted to the Perspex; the toroid is held in position by the combined action of the mounting wires and Araldite. The dimensions and drilling points are shown in Fig. 6; the inner holes X retain the balun lead-out



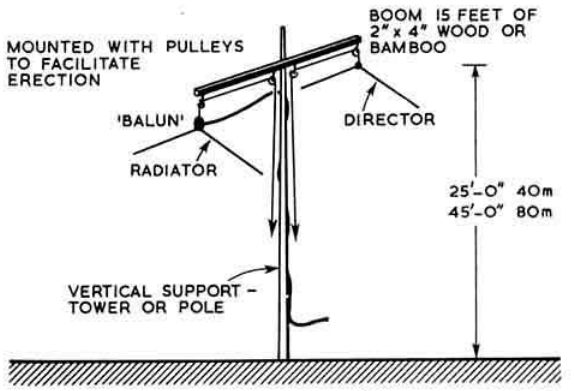
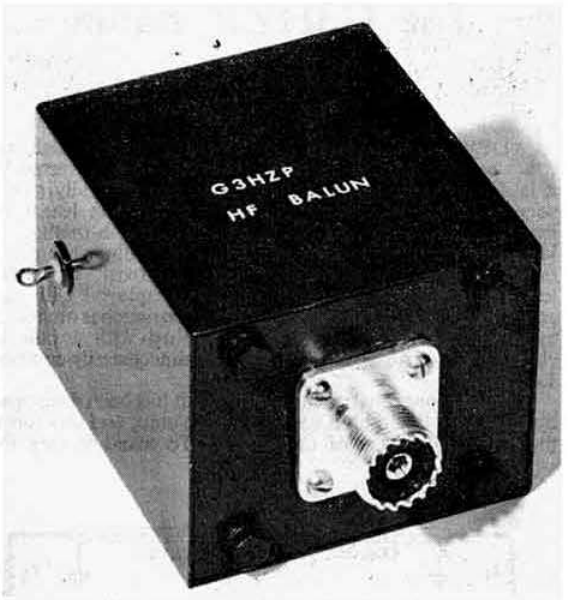




**Fig. 4. (Above) A two-band assembly requiring a mast or pole 45 ft. high. (Centre) An inverted V can be conveniently mounted on the gable end of a house using television aerial brackets and thin wall aluminium tube. (Below) A possible refinement is the addition of a director. This provides good front-to-back ratio, but does not significantly increase the gain.**




**The most satisfactory method of mounting the balun is to hermetically seal it within a metal box. Glass feed-through insulators are used to connect the balun to the aerial.**

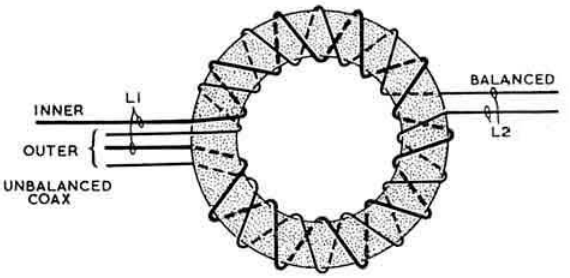



**Fig. 5. The construction of the windings on the toroidal core. L1 consists of 10 turns, and L2 is formed with 5 + 5 turns.**

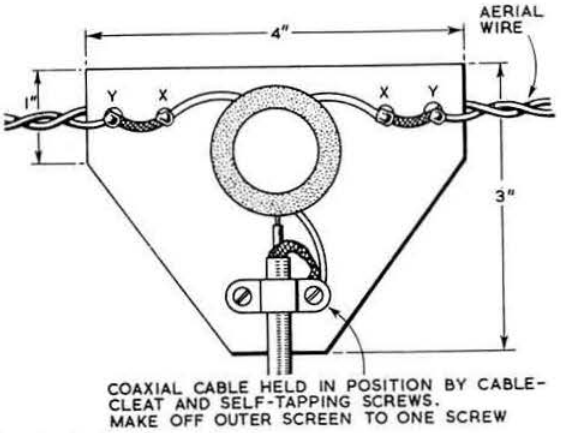
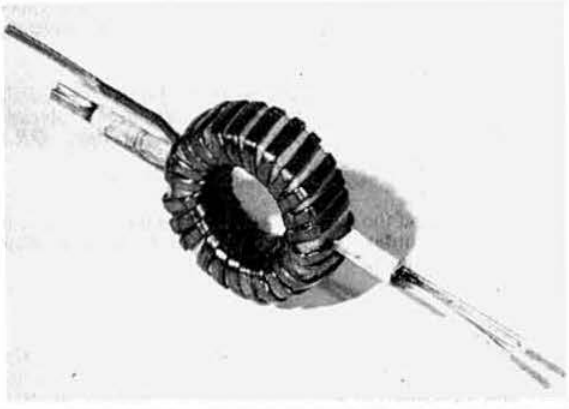



**Fig. 6. A triangular block of perspex makes a strong mounting for a balun positioned at the centre of a half-wave dipole. The balun is anchored with its connecting wires and a coating of Araldite, the coax is held with a cable cleat, and the aerial wires are passed through holes Y. Braid is used to connect the output of the balun to the aerial wires to avoid straining the connections owing to flexing in the wind.**

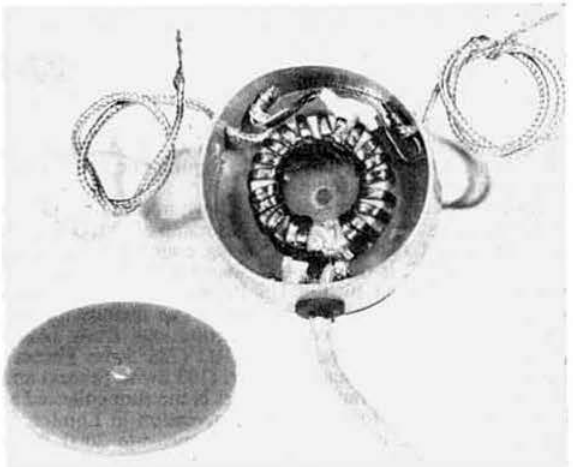
wires, and the holes Y Y secure the aerial wires. The jumper between holes X and Y should preferably be a length of copper braid to prevent damage owing to flexing of the assembly in high winds.

A second fairly simple method of mounting is to enclose the balun in a short length of Marley plastic drainpipe, the ends being covered with discs of paxolin. The discs can be cut with a fly-cutter, the pilot holes being used to allow a brass screw to clamp the ends together, or alternatively used as fixing points to tie the unit to a mast. The coaxial cable is held tight by a rubber grommet in the centre of the tube wall, while the balanced winding can either be connected to the dipole by braid fly leads, or alternatively a small strain insulator cut from Perspex sheet can be mounted within the unit; this possesses the added advantage that all joints are totally enclosed. The unit should be sealed with Evostick or Twinpack Araldite.

The third, more complex, system of mounting the balun is to seal it hermetically within a metal box. Suitable measurements are 2 in. × 1½ in. × 2½ in., with the type 83 coaxial socket mounted on the 2 in. × 1½ in. dimension. Glass feed-through insulators are used for the aerial connections. Unless a suitable box is available, one can be fashioned without too much difficulty from tinplate and the joints soldered.



**The completed balun. The two right-hand leads are the balanced aerial connections (L2); the other end of each of these windings is connected to the earthy end of L1.**



**An inexpensive mount using a short length of plastic drainpipe.**

### Alignment

There are two adjustments to be performed: the length of the aerial arms, and the included angle of the V. The initial length of the aerial is found by the usual formulae for a half-wave dipole. Apply power to the aerial with an s.w.r. bridge in the coaxial feeder, and prune the aerial arms until minimum s.w.r. is achieved. The ends should be 6 ft. from the ground at first, and when the arms are gradually reduced in length, the included V angle should remain constant. When the optimum point has been found, the arms can be varied in height to determine the correct angle. The ends can then be anchored to insulators in the most convenient manner.

### Conclusion

Aerial systems using this ferrite balun have proved to give excellent results, including G4ZU beams, the G5RV aerial and the GM3BQA form of quad. The power rating is at least 1kW, which gives an adequate safety margin. The writer is indebted to the following stations for signal reports that have made evaluation possible: VE1IE, CN8AW and VE3GJ (80m); VK2AHT, VK3OZ, VP6KL, G3NBP and G3GGK (40m).

### Coaxial Connectors Distributor

Texas Instruments Ltd., Supplies Division, Slough, Bucks., has been appointed distributor in the United Kingdom for the Series BNC and UHF coaxial connectors manufactured by Greenpar Engineering Ltd., Electronics Division, Harlow, Essex.

**Northern Radio Societies' Association**

**1966 CONVENTION**

Exhibition Hall, Belle Vue, Manchester

3-4 SEPTEMBER, 1966

*Information may be obtained from I. D. MacArthur, 55 Langdale Road, Bramhall, Cheshire.*

# The V.H.F. Aspects of the IARU Region 1 Conference at Opatija 23-27 May

THE Society's V.H.F. Manager, G3FZL, having returned from Opatija, Yugoslavia, reports on the v.h.f. content of the meet as follows:

**Eu-OSCAR:** Much interest was shown in the construction of translator satellites under the sponsorship of IARU Region 1. The first of these, which is being constructed by Karl Neizner, DJ4ZC, is now well advanced and, all being well, should be launched by the US Project-Oscar Association during the last quarter of this year. The finance for this stellite has been provided by contributions from IARU Region 1 (500 Swiss Francs), DARC (728 Swiss Francs), VERON (330 Swiss Francs), USKA (100 Swiss Francs) and RSGB (1100 Swiss Francs). The last is the sum collected at the twelfth International V.H.F. Convention in London in April. Region 1 has also agreed to provide 2000 Swiss Francs per annum for the next three years to support the construction of further translator satellites, either of DJ4ZC origin or from any other group who can make satisfactory proposals. The Eu-Oscar project is being co-ordinated by a sub-committee consisting of PA0QC, DL1LS and G3FZL, all V.H.F. Managers.

**2m Band Plan:** After considerable discussion a new European Two Metre Band Plan was agreed which was accepted with reservations by RSGB in view of our own revised band plan published last month. It is:

| | |
|---|---|
| 144·0-144·1 Mc/s. | C.w. exclusive. |
| 144·1-144·15 Mc/s. | C.w. exclusive except when stratospheric or satellite translators operating: then s.s.b. also. |
| 144·15-145·85 Mc/s. | All modes. |
| 145·85-145·95 Mc/s. | Reserved for stratospheric or satellite translators. |
| 145·41 Mc/s. | International s.s.b. channel. |
| 145·95-146 Mc/s. | Beacons. |

Of this the RSGB endorsed the allocation of the bottom 100 kc/s for c.w. and the top 50 kc/s for beacons. It is hoped that the c.w. allocation will result in greater DX activity by tropospheric scatter propagation.

**QRA Locator:** UK amateurs were urged to make greater use of the QRA Locator system, a practice which is growing considerably at present in Europe. It is hoped that a large scale QRA Locator map, consisting of four sheets covering the whole of Europe, printed in Switzerland, will be available in the autumn. This will be stocked by the Society.

**Status of Active Satellite Contacts:** It was agreed to create a separate list for the purposes of countries worked and related awards in respect of contacts by translator devices either balloon bounce (*ARTOB*) or satellite (*OSCAR*).

**U.H.F./S.H.F. Bands: Crystal Controlled Working:** A proposal put forward by RSGB originating from G3HWR, for segments of the u.h.f./s.h.f. bands to be allocated for crystal controlled working, was accepted in toto. It is

| | |
|---|---|
| Crystal controlled exciter | 1150-1158 Mc/s |
| ×2 | 2300-2316 ,, |
| ×3 | 3450-3475 ,, |
| ×5 | 5750-5790 ,, |
| ×9 | 10350-10425 ,, |

Such allocations have become practicable because of the availability of varactor multipliers. It was also pointed out that 144 × 16 = 2304 Mc/s; 144 × 24 = 3456 Mc/s, etc.

**4m Band:** All European societies present excepting Sweden agreed to approach their postal authorities with a view to obtaining an allocation in the band 70-75 Mc/s having notes the UK allocation of 70·1 to 70·7 Mc/s and that in Ireland of 70·2 to 70·4 Mc/s. It is hoped, long term, that as amny Region 1 delegations as possible to the next ITU Frequency Allocation Conference (date as yet unknown) will be briefed to press for an allocation for amateurs in the 4m region. It should be noted that in both Region 2 and Region 3 there is an exclusive allocation to amateurs in the band 50-54 Mc/s where as in Region 1 there is no allocation between 29·7 and 144 Mc/s.

**Space Communications, General:** It was agreed to make an approach to postal authorities with a view to having amateur space communications authorized in all v.h.f./u.h.f./s.h.f. bands and possibly the 28-29·7 Mc/s band also. At present only the 144-146 Mc/s band is allocated for space communication by amateurs whereas plans are already in hand for translator satellites operating not only in this band but also in the 28, 432 and 1296 Mc/s bands (already 432 Mc/s has been used by *OSCAR IV*).

**Scientific Projects:** The scientific effort of IARU Region 1 which has been jointly led by DARC and RSGB is stimulating considerable interest. The French Society, REF, has an active Scientific Committee led by F3NB and one of the current projects has been to study long range tropospheric propagation in relation to meteorological conditions using the methods developed by GM3LTP (see RSGB BULLETIN, March and May, 1964). All member societies endorsed the need to pursue scientific projects and especially to publish the results either in Amateur Radio or scientific journals.

**Beacons:** The number of European v.h.f. beacons is growing steadily. These are used both as signal sources for scientific projects, for example the study of sporadic *E* and auroral reflection propagation and also as a general service to v.h.f. workers. Some new beacons of particular interest to UK operators are:

YUGOSLAVIA:

*Call:* **YU2VHF.** *Frequency:* 146·00 Mc/s. *Power:* 50 watts input. *Aerial:* four 4-element Yagis NW, SW, NE, SE. *Time:* 24 hours per day. *QRA Locator:* HF28J. *Height a.s.l.* 1510m.

*Call:* **YU1VHF.** *Frequency:* 145·99 Mc/s. *Power:* 50 watts input. *Aerial:* Four 4-element Yagis, NW, W. NNE, SE. *Time:* 24 hours per day. *QRA Locator:* JD29G *Height a.s.l.* 1230m.

The above should be fully operational by August 1966. YU1VHF is at present radiating on a test basis on a frequency of 145·920 Mc/s.

POLAND:

*Call:* **SP7VHF.** *Frequency:* 144·010 Mc/s. **SP7UHF.** *Frequency:* 432·030 Mc/s. *Power:* 50 watts input. *Aerial:* Omnidirectional stacks. *Time:* 24 hours per day. *QRA Locator:* KK10A. *Height a.s.l.* 500m.

To be operational by 5 July, 1966.

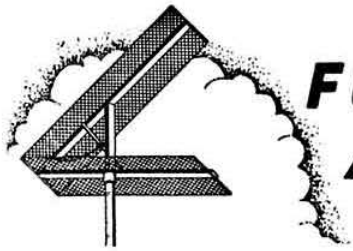
SWEDEN:

**SM4UKV** is off the air at present but it is hoped to have it back in the autumn. It is also planned to have another beacon further north.

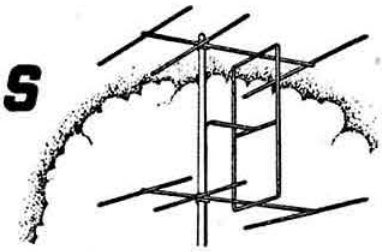
* * *

In all, v.h.f. interests were pursued with vigour at the Conference, leading, we hope, to even greater activity on the very and ultra highs in Europe and also perhaps leading to a new European frequency allocation in the 4m band.

—G.M.C.S.



# FOUR METRES AND DOWN



By JACK HUM, G5UM*

## TOPIC

OVERSHADOWING all other metre-wave topics this month is: What happened at the IARU Region 1 conference at Opatija so far as v.h.f. is concerned?

Let us make no mistake: discuss as we may band-planning, conditions, modes and what-have-you, it is what happens on the *international* front that gives us the opportunity (a) to have bands to work on at all and therefore (b) to be able to discuss such things as the above. Meetings like Opatija help the Amateur Radio movement to speak with one voice at the even more important international consultations with the professionals that come up at the next ITU.

The report prepared by the Society's V.H.F. Manager, Geoff Stone, on what transpired at Opatija on the v.h.f. front is of such importance as to deserve special prominence, and it therefore appears as a special contribution on the opposite page.

If anyone ever asks you what he gets from his RSGB subscription besides the BULLETIN, the QSL service, the right to vote and a few dozen other things besides, just reply "Opatija." Then go on to tell him what an international conference like Opatija means, how little it takes from his sub and what a lot it gives back. And for good measure ask him what the alternative is: just sit back, do nothing and wait until you are engulfed?

## CHEERS FOR THE BAND PLAN

The revised British Isles Two Metre Band Plan announced last month has been greeted with general acclaim mixed with a certain sense of relief that the plan "as-was" has been broadly preserved.

Repeated below is the panel showing how it works today. Inevitably there have been a few comments—they hardly come into the category of criticisms—about the Plan based largely on local considerations rather than national ones. Broadly, the new Plan, hammered out in cordial consultation between your V.H.F. Committee and G6FO of *The Short Wave Magazine*, is meeting most people's needs most of the time.

Nevertheless a word of warning comes from G3EMU of Canterbury about the use of v.f.o. and netting procedure on 2m, and the danger of "reducing 2m to a 20m rat race. Why do you think we go on 2m? To get away from it!"

He reminds us about "the poorly located station having to wait to the end of the queue for the DX, never getting to bed till after midnight. Please don't kid yourself on good behaviour: it's not there."

Discounting the final note of slight pessimism—for most people would agree that what distinguishes metre-wave operation *is* the high standard of behaviour—there is no doubt that G3EMU has a point.

*Moral:* if you see rats racing in the air, do your best to nip them in the bud!

It appears that amateurs in Cornwall are not so happy about the new Plan which has re-allocated their Zone for exclusive c.w. use. They will, however, still be able to use their existing crystals for c.w. work and in fact gain space in the band 144·1 to 144·25 Mc/s for their local phone QSOs. In the long run they should achieve more DX QSOs on c.w. as a result of the band plan. The V.H.F. Committee is sure that they will also appreciate the need to meet a national requirement and to co-operate with Europe in creating a c.w. section at the bottom end of the band. This follows long established h.f. band practice, and incidentally, is now also being implemented by petition to the FCC by ARRL in the USA.

The Cornish amateurs also share G3EMU's apprehension about the use of v.f.o.'s; again we stress the need for operating practices of the highest order if the revised band plan is to be a success.

Many wil lprobably agree that apart from the encouragement of single-channel working which the new plan gives, the most revolutionary provision is, believe it or not, the setting aside of 100 kc/s at the bottom end of "Two" for that hoary, old, much-maligned mode *telegraphy*.

Just how fascinating it is to operate A1 on v.h.f. is borne in on members who have tried winkling out those distant low power stations that make RS53 on c.w. but RS00 on phone and this is especially noticeable during the Society's annual c.w. contests on "Two" and "Four" when whole new areas of activity hitherto unsuspected become audible.

So when you hear that big shot down the road working the DX at the l.f. end slap that crystal filter in and follow him around. Don't forget to keep clear of 144·0 and 144·09, those aeronautical spot frequencies.

Let G5NU of Reading have the last word on this point: "I am sure we miss a lot of fun on 'Two' and don't get the best out of the band because almost everyone uses phone. Many a time one can hear weak carriers which would be perfectly OK for a QSO if they were keyed, but are unresolvable on phone."

### SKEDS OPERATIVE

G3JGJ has been keeping a sked with GC2FZC on 2m *for the last 12 years* from various locations in South Devon. From his present site near Moretonhampstead he keeps a daily sked (4 watts to a 6J6) with GC2FZC at 18.35 hours and at 10.00 hours, clock times, on Sundays.

Even more "DX-y" to most UK operators is G3OCB at Truro, and the two following schedules he keeps—both cover well over 220 miles QRB—are worth listening for:

G3SHK 20.30 GMT on 145·2 Mc/s s.s.b., every Monday.

G3BA 21.00 GMT on 145·1 Mc/s s.s.b., every Monday.

Most Sunday mornings, G3PTO operates "Stroke P"

* Bulls Green, Knebworth, Herts. Please send reports to arrive not later than 8 July for the August issue, and 12 August for the September issue.

on 2m from around the Midlands and Wales. You might collect a useful rare county from him.

Monday is the G3BA sked-night (see G3OCB above). At 21.15 GMT he links with GW3FSP on two-way sideband over a difficult mountain path-route, and at 21.30 GMT with G3IOE (the latter is building for sideband so this link will be s.s.b. both ways soon).

G3BA is open for s.s.b. skeds with any other stations on Mondays for preference, on 4m, 2m, and 70cm. He adds: "I will accept modes other than s.s.b., but the purpose of the exercise is to show the superiority of s.s.b. for weak signal DX phone QSOs even over atrocious paths."

## SKEDS WANTED

So you want GC on 4m? Then write to GC3OBM for a schedule any evening between 18.00 and 21.00 GMT, phone or c.w. Frequency used is 70·425 Mc/s and the input is 40 watts to a 6146 into a 4-element Yagi.

In turn, 'OBM asks for 4m schedules with GI, GD, and GM.

QTH is "L'Abri," Rouge Huis Av., St. Peter Port, Guernsey.

And Devon on 2m? G3JGJ will oblige with skeds from 08.00 to 19.00 GMT which is a time-spread that should suit any man. QTH is Rose Cottage, Pepperdon, Moretonhampstead, Newton Abbot, Devon.

From G8AAF in Bucks, comes an offer of 70cm skeds Mondays or Fridays 17.30 to 23.00 GMT and Sundays 07.00 to 11.30 GMT. Frequency 433·1 Mc/s.

QTH is 2 Fair View, School Lane, Seer Green, Beaconsfield.

"Would also like to get a 70cm net arranged for Bucks, Berks., and counties to the W. and S.W." is a further offer from G8AAF.

Skeds on 2m at any time will be welcome, says G3PTO, 2 Ashfield Road, Wobaston Estate, Wolverhampton. Frequencies: 144·07 c.w. and 145·12 or 145·66 c.w. and phone.

## CONTESTS IN RETROSPECT

The two contests that fall within the purview of these notes this time are the wet-and-windswept 144 Mc/s Portable at the beginning of May, and the warm-and-Whitsun 432 Mc/s Open at the end.

On the former an apt visual commentary is provided by the accompanying picture of two of the operators of GW3RJH/P atop Sugar Loaf Mountain near Abergavenny. They don't look warm but at least they both look cheerful. They are G3UCN and G3RJH. The third operator was G8AEG.

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

| Call-sign | Location | Nominal Frequency | Emission | Aerial Direction |
|---|---|---|---|---|
| GB3ANG | Craigowl Hill, Dundee | 145·985 Mc/s | A1 | S |
| GB3CTC | Redruth, Cornwall | 144·10 Mc/s | A1 | North-East |
| GB3GEC | Hammersmith, London | 431·5 Mc/s | A1 | |
| GB3GI | Strabane, N.I. | 145·990 Mc/s | A1 | |
| GB3LER | Lerwick | 145·995 Mc/s | A1 | S |
| GB3LER | Lerwick | 70·305 Mc/s | A1 | N/S |
| GB3LER | Lerwick | 29·005 Mc/s | A1 | N/S |
| GB3VHF | Wrotham, Kent | 144·50 Mc/s | A1 | North-West |

### RSGB V.H.F. BEACON STATION GB3VHF

The frequency of the Society's v.h.f. beacon transmitter at Wrotham, Kent, when measured by the BBC Frequency Checking Station, was as follows (nominal frequency 144·50 Mc/s):

| Date | Time | Error |
|---|---|---|
| 4 May ... ... ... ... | ...10.18 GMT | 310 c/s low |
| 10 May ... ... ... ... | ...10.00 GMT | 352 c/s low |
| 17 May ... ... ... ... | ...10.03 GMT | 280 c/s low |
| 24 May ... ... ... ... | ...10.15 GMT | 190 c/s low |
| 1 June ... ... ... ... | ...14.08 GMT | 340 c/s low |
| 7 June ... ... ... ... | ...14.00 GMT | 340 c/s low |

There was cause to *be* cheerful: they had 101 contacts on a very rough day ("... average distances rather disappointing. However, as this was our first attempt at portable contest working we cannot grumble. We certainly gained a great deal in experience.").

In Devon, G3JGJ/P, even though operating from a site 1000 ft. up, found things very quiet, in spite of a clutch of nice semi-DX contacts (GC2FZC best).

By contrast, the "Seventy Cem Open" brought a long awaited lift that is best described in the words of G8AAC of Barnsley: "Before the contest I had worked a total of four stations under my own call, the farthest being 10 miles away. I have now worked a total of 40, the farthest being over 300 miles away, all with about 1½ watts of r.f. reaching the aerial ... the best contacts were PA0VLP and ON4ZK."

G3UCN and G3RJH on Sugar Loaf Mountain.

An unusual feature at G8AAC is the use of a pair of 8-over-8 home-made slot aerials of which the upper slot is used for receiving and the lower slot for transmitting.

Apropos the May event, G8AAC adds: "I feel we should return to 24 hours for the 70cm contest, with the 23cm contest running concurrently for the last 6 or 12 hours."

G8AAC QSL cards are on the way to everyone worked.

G8AAF (Bucks) reports some confusion among 70cm contestants as to whether they should give locations as "so many miles or so many kilometres east of Rockall."

He adds:

"I am lucky with regard to calculating my score: I am working on a computer!"

From Barnehurst in Kent, A3672 (he will probably have his G8-plus-3 by now) logged no fewer than 26 new calls during the 432 Mc/s Open, bringing his total to 90 different call-signs heard this year on "Seventy", from PA0JMS in the east to G3MPS in the west.

And way down south in Dorset, G3OBD operating portable near Shaftesbury during the 432 Mc/s Open netted 46 stations, the best well into Yorkshire. Claimed score 5149 but that was by no means all: on 23cm from the same site 'OBD worked G3MPS at 33 miles, G8AAY/A at 19 miles, G3TND/P at 37 miles, G3NNG/P at 50 miles and G8AII/A at 53 miles. Claimed score 3245 points.

These are results which a few years ago many people would have been glad to achieve on 70cm, let alone 23, which prompts curiosity as to what did the trick. Here is the answer. The receiver had a CV2154 crystal in a radial mixer cavity and the tuning range was 24–26 Mc/s. For sending, the 70cm transmitter drove a 2C39A tripler at 36 watts in. The aerial was a 4 ft. dish 10 ft. up.

Mid-Herts. man Ray Hills, G3HRH, tells *Four Metres and Down* that he had a thoroughly enjoyable time during the 432 Mc/s Open, with a brace of GW contacts highlighting a log full of activity which, again making comparisons, one

would say was the norm for 2m not so many years ago. Now it can be done on " Seventy."

## EXPEDITIONARIES

On 70cm GD8AGY/P will be portable in the Isle of Man 27 July to 10 August (" running as much power as we can squeeze out of a QQV02-6," says G8AEG).

Several useful expeditions to EI-land have already been made. Here are two more, with a strange coincidence of call-signs:

G3MWZ will be operating (a.m. only) in Co. Donegal 21-24 July, Co. Sligo 25-27 July, Co. Galway 28-31 July, Co. Dublin 1-3 August, all dates inclusive, with special attention to the 70 Mc/s Portable contest on 24 July when 70·4 Mc/s will be used. Equipment for 2m will also be taken. Call-sign EI9BF (" Easily remembered! " remarks Paul).

G3RIK will be operating on 4m in Northern Ireland as GI3RIK and in the Irish Republic as EI8BF (" They must have known we were coming! " observes 'RIK) from 17-29 July. Frequencies: 70·26 and 70·475 Mc/s. Aerial: 4-over-4. The co-pilot will be G3SBI.

Later, G3JIJ will join the team for an expedition to Ben Nevis to coincide with V.H.F. National Field Day.

Rarish Huntingdon will be put into some 70cm passbands on 10 July when G8AHE/P, helped by G3OVA, will be on 433·26 Mc/s from 13.00 GMT onwards. An 8 watt transmitter will feed a 14 element Yagi, and a transistor converter to an Eddystone EC10. Skeds on application—quickly (QTHR).

For those who seek Huntingdon on " Four," Bert McHenry from Belfast will be operating from that county both on phone and c.w. for much of July. If he inadvertently sends his normal prefix of " GI " that will properly set the cat among the pigeons! Call-sign in fact will be G3NSM/A, and skeds may be arranged with Bert, c/o Batchelors, George Street, Huntingdon.

Equally rarish Nairn will be put on the 2m map by GM3LOV/P on 9-10 July. This is a rather special occasion. It marks the last annual camp of the 92nd Royal Signal Regiment. " Before it disappears in the melting pot of the new reserves, we are organising Exercise Final Fling, determined to go out in a blaze of glory after many years of Amateur Radio activity " says G3LOV (he is chairman of the " SIGS " Radio Club).

Alderney again: yes, GB2GC will be there! Dates 18 August to 7 September. Schedules will be welcomed for 4m, 2m, 70cm and 23cm—but not during the weekend of V.H.F./NFD. Write G3SHZ, 19 Dorset Road, Harrow, Middlesex, giving your frequency and preferred dates and times.

From 23 to 30 July, GM3RIM/P on 160m and GM3RIN/P on 4m and 2m will be heard from several Scottish counties. The frequencies will be 1·825 Mc/s, 70·425 Mc/s and 145·65 Mc/s. Skeds can be arranged with C. E. Saveker, G8AMU, Johnston House Lodge, Hatchlands Road, Redhill, Surrey.

Those who wish to secure GM on 70cm should listen between 15 and 31 July inclusive on 433·08 Mc/s for GM8ANY/P, when Dave Woodhall, owner of the call, will be on a touring holiday in Scotland—exact itinerary not stated, but if schedules are sought, write to him c/o 50 Stanway Road, West Bromwich, Staffs.

## SUNDRY MODES ON " SEVENTY"

Comments on last month's piece about Sundry Modes on 70cm:

" To me, n.b.f.m. seems a preferable mode to s.s.b. The modulator is simpler, p.a. design conventional and stability requirements are not so stringent either for transmitter or receiver. And as for hillbounce, I can hear G8ACQ of Scunthorpe who is ENE of me by beaming West. I get his reflected signals from a hill about a mile away."—G8AAC, Barnsley.

" A new s.s.b. rig (on paper at present) will be solid state to 432 Mc/s. Then valves will take over to push the power up a bit—when it gets built! What with gardening, shift work at Fylingdales Early Warning Station, and two daughters, I'm kept very busy! "—G8ANQ, Whitby.

### THE NEW 2M BAND PLAN

| | | | |
|---|---|---|---|
| Zone 1 *C.W. only* (Nation Wide) | 144·0 | to 144·1 | Mc/s |
| Zone 2 *Phone* */*C.W.* | 144·1 | to 144·25 | Mc/s |
| Zone 3 *Phone* */*C.W.* | 144·25 | to 144·5 | Mc/s |
| Zone 4 *Phone* */*C.W.* | 144·5 | to 144·7 | Mc/s |
| Zone 5 *Phone* */*C.W.* | 144·7 | to 145·1 | Mc/s |
| Zone 6 *Phone* */*C.W.* | 145·1 | to 145·3 | Mc/s |
| *Single Sideband Spot Frequency* (Nation Wide) | 145·41 | Mc/s | |
| Zone 7 *Phone* */*C.W.* | 145·3 | to 145·5 | Mc/s |
| Zone 8 *Phone* */*C.W.* | 145·5 | to 145·8 | Mc/s |
| Zone 9 *Phone* */*C.W.* | 145·8 | to 146·0 | Mc/s |

Members are invited to add the above amendments to their copies of The British Isles Two Metre Band Plan at the back of the current edition of the *Call Book*.

* Including s.s.b.

## POINTS OF VIEW

**On the Key with G8-plus-three:** " I would very much like to see permission granted for the use by G8-plus-three stations of c.w. in the little used sector 436-440 Mc/s, after passing a 6 w.p.m. Morse test. This would enable G8 + 3s who wanted to do so to build up their speeds for getting a full Class A licence,"—G8AAF, Beaconsfield.

**Sideband Slice for Seventy?** " What about an s.s.b. channel on 70cm similar to the one created on 2m by the Band Plan?" —A3672, Barnehurst.

**" Thanks, members of the V.H.F. Committee,** for establishing at long last a portion of the 2m band for c.w. This is the most intelligent move the Committee has arrived at in the ten years or so of its existence."—G3PTO, Wolverhampton.

**" The new 2m Band Plan is very fair** . . . I take it the same sort of arrangement will apply in time to the 70cm band, *i.e.*, an s.s.b. calling channel on 433·41 Mc/s—or is there a continental allocation about which we do not know? Perhaps the V.H.F. Committee would bear this in mind."—G3BA, Sutton Coldfield.

**" Welcome to the new c.w. zone on 2m.** I would like to see a similar zone on 70cm and hope this can be arranged."—G3PBV, Northampton.

## TECH-CORNER

**From G3PBV:**

(i) On 70cm a grounded base amplifier will go unstable if fed into another grounded base stage or a crystal mixer via a length of coax. There are two solutions.

(*a*) (The coward's way out!) Use a grounded grid valve stage between the two.

(*b*) My solution: a grounded emitter stage, run at low gain, following the first grounded base stage.

(ii) On the last multiplier to 414 Mc/s it was found possible to boost the output by 10db up to 1mW by shunt tuning the single turn input coupling loop.

(iii) The mixer output feeds a phase splitter (emitter follower with equal load in the collector). This gives adequate gain and gives two reasonably independent outputs for feeding two receivers. The same technique has been used with those ancient devices called valves.

**From G3BA:**

The prototype 70cm translator (70 Mc/s to 70cm) has been proved on the air and is being made properly before going into permanent operation. The high level mixer is a 6-40A and this produces 4 watts peak output r.f. on 70cm which is at least visible. The attempt to use QQV02-6s and amplifiers was too clumsy and took too many stages, hence the high level job which has just the same number of stages as the conventional transmitter would. Tests with locals have been made on all modes, and reports seem quite favourable so far with modest power from the linear.

It is hoped to use TV from an industrial camera whose output will be on 70 Mc/s and thus prove the real flexibility of the translator systems which are so common nowadays in professional circles.

**From G6SBD/T:**

A word or two about the work being done by G8AEO and G8AEV would not be out of place. They have produced excellent transmitter and receiver designs for 70cm.

G8AEO is currently experimenting with transistors for transmission.

Would a straight circuit diagram and coil values of the AEO/AEV designs do for Tech Corner? (Yes, very much so.—J.H.)

## FRUSTRATION ON " FOUR "?

Here are some challenging words from Tom Douglas, G3BA, about the present state of 4m in the Midlands:

" Four metres really has been frightfully frustrating of late in the Midlands with certainly no local activity at Christian hours at all. Even on Sundays I can tell you beforehand the calls of the few diehards I will hear when I switch on.

" I run a sked (unfortunately on different days because of work) with G3FDW two-way and this is a dream: vox, S9, no QSB and a 70 mile hop—does my heart good to be able to *converse* with someone for a change.

" Suppose that TV is the snag, but why not more n.b.f.m.? This will help some types of TVI and the B44 brigade can copy it if the deviation is right.

" Wot, no s.s.b. on 4? I am sure there must be some forward thinking person somewhere who can shift himself to get cracking? "

## FULFILMENT ON "FOUR"

By contrast with the above look at—or rather listen to—the situation in North Surrey. Here a high level of activity occurs on " Four " most evenings thanks to the vigour with which the Purley club—surely one of the most buoyant and youthful in the South of England—is developing the band.

Every Wednesday a net on 70·32 Mc/s swings into action at 19.30 GMT. Duplex operation to 160m, and " Four Club " nets linking in with other societies in the area are further features.

But at a recent Purley club meeting G6QN made the wise point that it does not do to confine such activities to A3 only. It is well worth providing keying facilities in some of the ex-commercial gear that is in use, and thus to double its range.

We hear, too, that many users of ex-commercial rigs are discarding the built-in receiver circuitry in favour of external converters that can be made to give a far superior performance. One of the Purley club's receiving members has produced a transistor converter for 70 Mc/s that seems to meet this requirement admirably. Further details for " Tech Corner " would be welcome.

## OSCARLATIONS

Don't think because nothing much hits the public eye at the moment about *OSCAR* that nothing is happening. A lot is behind the scenes both in the States and elsewhere.

Bill Browning says he has had a report that G2JF heard *OSCAR III* as recently as 29 May.

It is worth reminding all who are eager for the next *OSCAR* (and few are not) that these devices get their rides in space only when room can be made available in a particular rocket by one of the launching agencies. So the next mark of *OSCAR* may be kept waiting in a queue. This is one of various reasons why *OSCAR* firings receive such short notice.

## LAST ROUND-UP

New inspiration was derived by G8ACK during a trip to Italy when he visited two leading v.h.f. workers, I1RG and I1NAO. Back home Mark now has a new 11-over-11 up at his Hampstead QTH.

* * *

At Liverpool University Amateur Radio Society the accent is very much on 70cm with a keen flock of G8-plus-3s available. Beams for 70cm, 2m and 4m are at 80 ft. at the top of the Students' Union building, which stands on a hill overlooking the city. How good the site is may be concluded from the fact that in the first ten days of operation the club station G3OUL worked five counties on 70cm, 15 on 2m, and eight on 4m.

* * *

From Aden, Sergeant B. W. Evans, of the RAF at Steamer Point reports receiving the licence VS9ABF under conditions similar to Amateur (Sound) licence B. He will, however, be permitted to use " Two." Operation on 144·6 Mc/s with a QQV03-20A at the giving end will commence shortly.

### Region 1 (North West) Events

The annual V.H.F. Contest for Region 1, which is organised by the Ainsdale Group, will take place this year on Sunday, 17 July.

The Region 1 Field Day (h.f.) has again been timed to coincide with 80m Field Day and will take place on Sunday, 11 September.

Rules and other details of these two contests may be obtained by writing to the Regional Representative, B. O'Brien, G2AMV, 1 Waterpark Road, Prenton, Birkenhead, Cheshire.

### Grafton Field Day

The Grafton Radio Society's Annual Field Day will be held on 17 July, when G3AFT/P will be operating all day from Tumulus Hill, Hampstead Heath, London, NW3, mainly on 160m, and possibly 80m. Visitors will be welcome to visit the station. NW3 is a rare postal district for 160m, and this activity should be an opportunity to gain an extra area for WALT, the Worked All London Town award.

### GB2RS SCHEDULE

RSGB News Bulletins are transmitted on Sundays in accordance with the following schedule:

| Frequency | Time | Location of Station |
|---|---|---|
| 3600 kc/s | 9.30 a.m. | South East England |
| | 10 a.m. | Severn Area |
| | 10.15 a.m. | Belfast |
| | 10.30 a.m. | North Midlands |
| | 11 a.m. | North West England |
| | 11.30 a.m. | South West Scotland |
| | 12 noon | North East Scotland |
| 145·10 Mc/s | 9.30 a.m. | Beaming north from London |
| | 10.00 a.m. | Beaming west from London |
| 145·8 Mc/s | 10.15 a.m. | Beaming south from Belfast |
| 145·30 Mc/s | 10.30 a.m. | Beaming north west from Sutton Coldfield |
| | 11.00 a.m. | Beaming south west from Sutton Coldfield |
| 145·50 Mc/s | 11.30 a.m. | Beaming north from Leeds |
| | 12 noon | Beaming east from Leeds |

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.

# THE MONTH ON THE AIR

By JOHN ALLAWAY G3FKM

ONCE again it is your Scribe's unhappy duty to report the passing of another well known and respected member of our hobby. As many readers will already know, "Tommy" Thomas, G6QB, was taken seriously ill on 14 May and became a Silent Key a few days later.‡ A man of many talents, he was well known as writer of the DX column in the "*Short Wave Magazine*," a task which he had carried out with great success for many years. It was fitting that he should be current President of the F.O.C. as Tommy was one of the old school of polite amateurs who sincerely believed that it was more important to behave as a gentleman than to obtain a rare contact by the use of bad manners and operating techniques. He will be sadly missed by his many friends all over the world. It is to be hoped that we can all remember him by trying to live up to his standards.

## News from Overseas

A letter from **MP4TBM** has been received describing his recent trip into the Jahra Dhana desert. He originally intended to drive inland far enough to cross the Saudi Arabian border, but when 200 ft. high sand dunes with near vertical faces were encountered it was decided that 100 miles driving through soft sand had been far enough! The MP4TBM/P operation took place from Jebel Faiya, and in all about 100 contacts were made. The gear consisted of an NCX-3 together with a linear amplifier which ran about 450 watts p.e.p. This is believed to be the first s.s.b. activity from inland MP4T.

According to a letter from VK1QL, of the Canberra Radio Society, a vast number of QSL cards are being received by the Society for stations with VK1 call-signs which have never been issued. A check on the cards received shows that over 90 different illegal VK1 calls have been used. From observations on the bands it seems that some of these pirates are located in Europe and the US as well as in Australia. Since there are only 61 legal VK1s it would seem that there is a *rather less than 50 per cent chance* that any given one is genuine! John Weatherley (who was G3KQL) suggests that all contacts with VK1 stations not listed in the latest *Callbook* should be treated with caution, always allowing, of course, for new licensees.

The Como section of ARI has started to produce an excellent news sheet—***CO DX*** which gives up to date information on DX stations active on the bands, and also has sections giving contest information, QTHs, and QSL managers. Although printed in Italian quite a large amount of the information given is comprehensible to non-Italian speaking readers.

Two more cases of piracy are reported, the first being "OY3BB" who was reported on 7 Mc/s last month. According to Martin, OY7ML, he is not known in the Faeroe Islands. The other is "ZS1BB/MM" who has been heard and worked on 3·5 Mc/s. The real ZS1BB is at present in Rhodesia using the call ZE7JR. The pirate appears to be /MM, possibly actually on the Cape Town-UK run.

## Special Activity Stations

The **92nd Royal Signal Regt. AER Radio Society** is celebrating the occasion of its last annual camp before the Regiment disappears into the "melting pot" with exercise "Final Fling." A number of their 16 licensed members will be visiting the Scottish county of Nairn, and will be looking for contacts on Top Band and 2m. The operation will take place on 9 and 10 July, the call-sign being **GM3SIG/P** (on 1825 kc/s) and **GM3LOV/P** (145·980 Mc/s). Good conditions are hoped for, and QSLs may be sent to: Michael Francis, 35 Downs Wood, Epsom Downs, Surrey.

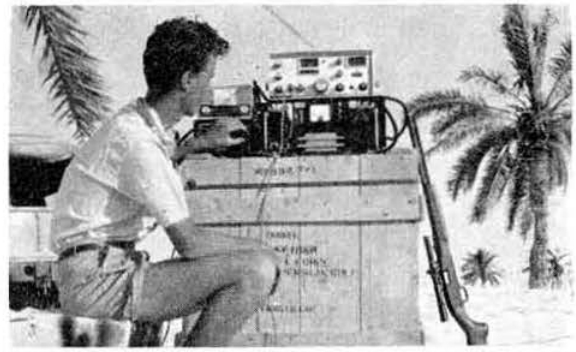
**Warwickshire Scouts** will be setting up a special station at Packington Park, near Birmingham, during the week 21 to 28 July. They will be active 24 hours daily on 80, 20, 15, and 10m. The two station call-signs will be **GB3AMI** and **G3SPY/A**, and both will operate on s.s.b. The organizers of the station (GEC Coventry Apprentice Association) would like to set up skeds with any interested parties who are asked to write to: Peter Cleall, G8AFN, 28 Oldham Avenue, Wyken, Coventry.

Visitors to Norway are invited to call on the special CCIR Conference Radio Amateur Club, **LA1ITU**, which will operate between 22 June and 22 July, from the top of the telecommunication building in Universitetsgt 2, Oslo. Hours of operation will be 18.00 to 23.00 every day, and all QSOs will be confirmed by special QSL card. There will also be an exhibition of Amateur Radio activities.

## Awards

Those who take pleasure in using c.w. may be interested to know that a Code Proficiency Award is issued by VERON. This is issued to anyone who can prove that he or she has copied faultlessly for one minute from a text transmitted by PA0AA on the last Friday of each month at 21.30 GMT on 3600, and 14,100 kc/s. The code runs are transmitted at speeds of 15, 20, 25, 30, 35 and 40 w.p.m. for five minutes at each speed. Stickers are available for each 5 w.p.m. increase in speed. The original handwritten copy of PA0AA's transmission (for at least one minute) should be submitted with one IRC to: Traffic Bureau, VERON, Mr G. Vollema, Gerard Doustraat 57, Leeuwarden, Netherlands.

Another certificate issued by VERON is the **A.DX.C**,



**MP4TBM operating /P from Jebel Faiya during his recent DXpedition into the Jahra Dhana desert.**

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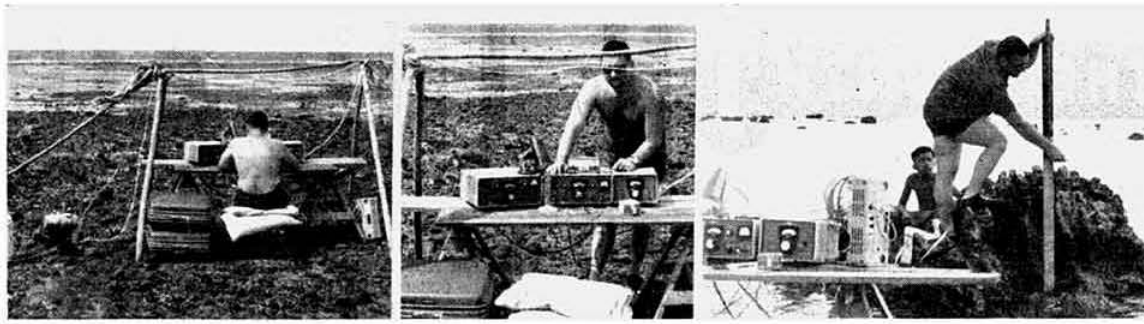
* 10 Knightlow Road, Birmingham 17. Please send all reports to arrive by **13 July** for the **August** issue, **13 August** for the **September** issue, and **14 September** for the **October** issue.

‡ See page 476.



**During a recent DXpedition to the Pacific, Don Miller, W9WNV, operated from the Minerva and Maria Theresa Reefs. W9WNV/1M4A is seen on Minerva (left and centre) and making aerial adjustments on the Maria Theresa Reef while operating W9WNV/FO8M (right). During the short stay on these locations more than 5000 QSOs were made using c.w. and s.s.b.**

issued by the Amsterdam branch. This Amsterdam DX Certificate is awarded to those who can prove contact with at least 10 members of the Radio Club of Amsterdam since 1 January, 1957. No award will be issued unless the applicant's QSL cards have been received by the PA stations contacted. Applications, consisting of a list of claimed contacts, the QSLs, and five IRCs, should be submitted to: Mr G. Leenheer, PA0OI, Kattenburgergracht 5 hs, Amsterdam.

Details of the Venezuelan Radio Club's **DX-200** and **DX-300** Certificates may be obtained from G3FKM. Although running closely to the lines of DXCC these certificates may interest readers as they are issued in three categories—all modes, all telephony, and two way s.s.b. Those who are holders of DXCC need only submit form "CD-11" as received from ARRL. For the s.s.b. award, if the *CQ Magazine S.S.B. Award* is held only the equivalent acknowledgement from *CQ* or details of where it is announced in the magazine will suffice. In the absence of either of these forms of proof it is necessary to submit QSLs to RCV for checking. The fee for each certificate is 10 IRCs, plus sufficient for return postage on any QSLs submitted. Applications should be addressed to: RCV Comision de DX, P.O. Box 2285, Caracas, Venezuela.

## DXpeditions

Don Miller, W9WNV, returned to the USA after his operation from W9WNV/ZK1, from Suvorov Is. in the Manihiki group, and was expecting to leave New York on 21 June for South Africa. He hoped to sail from there for **Heard Island** sometime between 22 June and 30 June. The length of his stay at VK0 will largely depend on the weather, but may be as short as two days. This should take place around 10 July. On his way back to the US Don hopes to be able to put in one or two more stops at exceedingly rare places. He will be accompanied by another operator on these occasions. During the last nine months this DXpedition has operated from 20 rare spots, six of which are believed to be new DXCC countries. An idea of the colossal number of contacts made may be obtained from the fact that during the 56 hours total operating time from 1M4, FO8M, and ZK1S, over 8000 QSOs were made! An enormous vote of thanks is due to Don, and also Ack, W4ECI, for the enormous effort they have made to give those of us who are interested in DX so much enjoyment over the past nine months. It may interest readers to know that permission was given for visits to Nauru (VK9) and British Phoenix Is (VR1) before the disaster struck Chuck and Ted and caused plans to be altered.

**Tom Christian, VR6TC, is now very active on c.w. and s.s.b. from Pitcairn Island. He is a direct descendant of the mate of the *Bounty*.**

It is reported that Ray, VS9ARV has now been given permission to proceed with his trip to **Kuria Maria,** and it is possible that he will appear as **VS9KRV** early in August.

At the time of writing Iris and Lloyd Colvin were in **Jersey,** using the call **GC5ACI/WB6QEP.** They intend to move on to **Guernsey**, where Lloyd's call **GC5ACH/W6KG** will be used. After this they will depart for **Gibraltar.** They have been using 7 Mc/s as well as their well-known 14,050 kc/s and 14,105 kc/s spots. Reciprocal licensing has been worthwhile if only to allow us the pleasure of having these two fine visitors operating from the British Isles.

The latest news from G3NAC is that a ship will be leaving Northern Ireland on 27 July, bound for Stornoway. It is hoped that sometime during this voyage a landing will be attempted on **Rockall Island.** The chances of this being achieved are rated at 30 per cent. If a landing is made radio operation will commence almost immediately and will continue for a minimum of four and a maximum of ten hours. The call-sign of the station is not yet known, but the frequencies will be 14,125 kc/s, and 14,250 to 14,260 kc/s will be tuned for callers. Exactly on the hour every hour a QSY will be made to 7085 kc/s where a *very short* standby for Europeans will be made. Callers are asked to answer on 7095 kc/s, and to just give their own call-sign *once*. Brevity during an operation of this kind is essential. The operators taking part will be G3GJQ, G5AAM/WA6ZIQ, and possibly 4S7IW. QSL matters will be dealt with by G3NAC (see *QTH Corner*).

Rumour has it that HK0AI and HK0AVK intend to visit **Serrana Bank** (KS4), **Bajo Nuevo** (HK0) and also possibly **Malpelo Island** (HK0) sometime next winter. It may be recalled that the latter is a most difficult island to land upon, so further details are awaited with interest, especially as so many missed HK0TU a few years ago.

The Royal Signals Singapore Club station 9V1RS will be taking a trip to **Brunei** during July. 9V1MK and 9V1ML will be the two operators taking part, and should be on from

13 to 20 July signing **VS5MC** and **VS5DJ**. S.s.b. and c.w. will be used and the main frequencies will be 14,050,14,160, 21,050 and 21,160 kc/s. An occasional check of 28 and 7 Mc/s will be made.

## DXCC

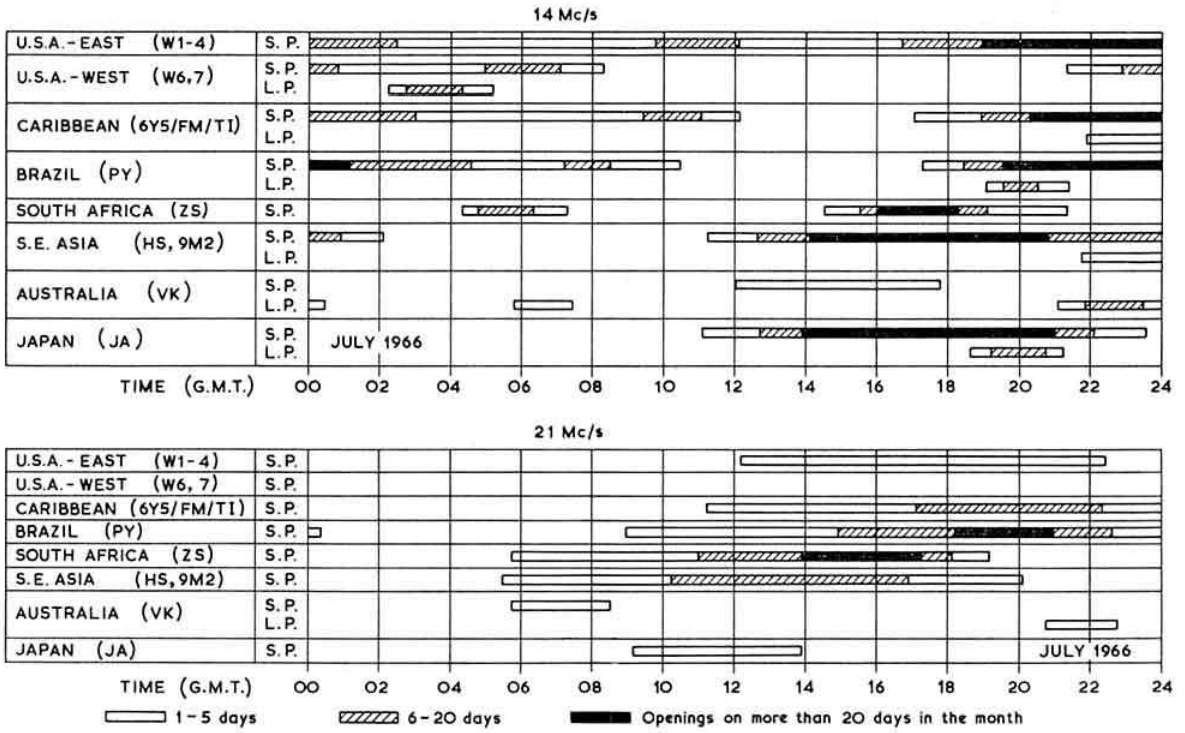
ARRL Official Bulletin No. 61, dated 19 May confirms that **Desroches** will now count for DXCC. Contacts since 10 November, 1965, will be counted, and credit may be claimed immediately.

## Contests

The **Eighth Scandinavian Activity Contest** will take place in two parts—c.w. between 15.00 GMT on 17 September and 18.00 on 18 September, and phone between 15.00 on 24 September and 18.00 on the 25th. All bands from 3·5 to 28 Mc/s will be used, and non-Scandinavians will try to work as many Scandinavians as possible. A station may be worked once on each band during the contest. For the purpose of the contest Scandinavia will consist of: LA, LA/P (Jan Mayen, Svalbard, Bear Island), OH, OH0, OX, OY, OZ, and SL/SM. Serial numbers consisting of report plus serial number of QSO (starting from 001) should be exchanged. Each completed contact counts one point, and a maximum of eight multipliers can be obtained on each band. These consist of the countries listed before, all the LA/P's counting as one. A final score is obtained by multiplying the sum of QSO points by the sum of the multipliers. There are no single band classes in this contest, but there are single and multi-operator classes. Club stations count as multi-operator, even though they may only be operated by one operator throughout. Logs should show date, time of QSO, station worked, number sent, number received, band, and note if new multiplier. A summary sheet showing totals on each band and total score should be sent, together with a statement that the entrant agrees to the rules and has abided by them and will accept the decision of the Contest Committee. These must be sent to EDR Traffic Dept., PO Box 335, Aalborg, Denmark, postmarked no later than 15 October, 1966.

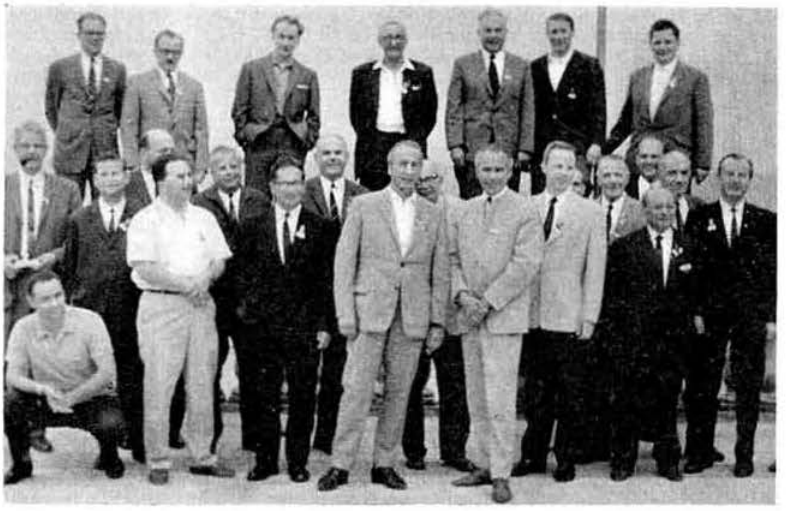
The **Independence of Colombia Contest** will take place between 00.00 on 16 July and 23.59 on 17 July. As before the object of non-HK stations will be to contact as many HK and other stations as possible, on all bands 3·5 to 28 Mc/s. Points for stations in Europe taking part consist of 5 points for HK QSO's, and 1 for QSOs with participants outside Colombia. The usual report plus serial number, starting from 001, must be exchanged and logged. The total score will consist of the total number of QSO points multiplied

## Propagation Predictions




**Conditions this month will be very similar to those for June, and DX conditions on 21 and 28 Mc/s will therefore remain poor. Some relief will be provided by the frequent occurence of short skip conditions for contacts over distances from 300 to 1200 miles. 14 Mc/s will continue as the main DX band, especially during the night. Once again attention is drawn to the frequent possibility of contacts via the long path with various DX zones on this band during the summer. As it is now winter in the Southern hemisphere, traffic with South Africa will end rather early, but Central Africa, as well as Zambia and Rhodesia, will generally be audible longer than ZS. The same comments apply also to 21 Mc/s. Propagation conditions on 3·5 and 7 Mc/s will not be significantly different to those of June. Users of these forecasts will probably have already noticed that the periods during which propagation conditions to certain DX zones are favourable do not always produce contacts with stations in those areas. This is usually the case when these periods do not coincide with the main periods of activity of the amateurs in those zones. Thus the conditions are only optimum when favourable propagation conditions occur during the main activity period of the amateurs in the areas concerned. This applies especially to areas with a low amateur population.**

**The provisional sunspot number for May, 1966 was 43·7 with the period of greatest activity occurring during the second half of the month. The predicted smoothed sunspot numbers for September, October and November are 50, 53 and 57 respectively.**



Delegates to the Region 1 Conference who are members of the DXCC. Rear row: WILVQ, SM7ACB, OH2YV, ON4TQ, G2BVN, LA5HE, and OE3CL. VE3CJ, IIZCT, HB9DX, PA0LOU, DL3NE, 5N2AAF, F8BO, HB9J, G6CL, DJ1BZ, SM5KV, GM6IZ, IIAXD, F9DW and W0NWX.

by the total of DXCC countries plus HK zones (HK1-HK0) worked on all bands. Logs, consisting of QSO information, plus a list of HK zones and DXCC countries and score claimed should be sent to: Colombia Independence Contest, c/o LCRA, Ap.584, Bogota, Colombia, postmarked no later than 30 September. European winners of last year's event include **G4CP**, who scored 325 points. European leader was DJ2BW, who scored 690 points.

The c.w. section of the **1965 *CQ* WW DX Contest** attracted a slightly increased entry over last year of 1341 entrants from 116 different countries, in spite of the fact that conditions over the period were so poor. In a preview of the results kindly supplied by W1WY some of the leading stations mentioned were:

| All Band Single operator | | Multi-Operator Single Transmitter | |
|---|---|---|---|
| VR2EW | 2,499,536 points | ET3USA | 1,071,213 points |
| CX2CO | 1,252,275 points | UA3KAS | 990,943 points |
| 7G1A | 1,079,049 points | ZD8AR | 844,662 points |
| KH6EPW | 920,142 points | W2PCJ | 769,834 points |
| W4KFC | 847,314 points | EL2AE | 740,691 points |
| W3GRF | 670,275 points | WA6SBO | 726,131 points |

The leading multi-operator multi-transmitter station was K2GL with 2,513,448 points, and at least five other stations in this category scored over a million points. Continental leaders include **G3HCT**, who once again was European top score on 21 Mc/s with 80,276 points, and **G3IGW** who led Europe on 1·8 Mc/s with 1,760 points. Congratulations to both these, and also to the other leading UK entrants who included:

| | | |
|---|---|---|
| G3SSO | Multi-operator Single transmitter | 530,944 points |
| GM3GUJ | " " " | 80,730 points |
| GI3GAL | " " " | 57,936 points |
| G3FKM | All Band | 246,959 points |
| G3OHP | 28 Mc/s | 6,681 points |
| G3HDA | 14 Mc/s | 155,290 points |
| G3POI | 7 Mc/s | 28,161 points |
| G3ESF | 3·5 Mc/s | 19,317 points |
| GC3KCE | (Guernsey) All Band | 54,366 points |
| GC4LI | (Jersey) All Band | 31,248 points |
| GM3JDR | All Band | 30,450 points |
| GW3MRI | All Band | 18,644 points |

Further information on high UK scores in the Telephony section of last year's ***CQ* WW Contest** was also received with the c.w. results. In the multi-operator single transmitter section the top UK stations were G5BK with 123,354 points, GI3SXG with 155,040 points, and GW3NWV with 515,134 points. In the single operator section leading stations were:

| | | |
|---|---|---|
| G3DYY | All Band | 138,649 points |
| GM3BCL | All Band | 58,935 points |
| GW3PSM | All Band | 38,962 points |
| GW3PMR | 1·8 Mc/s | 360 points |
| G3NLY | 7 Mc/s | 26,440 points |
| G3HDA | 14 Mc/s | 146,176 points |
| GM3JDR | 14 Mc/s | 34,112 points |
| GW3OCD | 14 Mc/s | 24,180 points |
| G3PEU | 21 Mc/s | 103,410 points |
| G3OHP | 28 Mc/s | 6,681 points |

The **VK-ZL-Oceania DX Contest** 1965 attracted nearly 100 European entrants to its C.W. and 31 to its Phone section. In the C.W. section European leader was DL7AA with 2180 points. There were four G entries, G5RI (1751 points), G3SSO (1095 points), G6XN (864 points), and G2DC (374 points). The Phone section European leader was DJ6QT (3312 points), G6XN was top G with 1952 points, and G3UML second with 1080.

The Fourth Annual **Illinois QSO Party** will take place between 16.00 on 6 August and 22.00 on 7 August. All bands and modes may be used, with a.m. and s.s.b. counting as phone. Stations can be counted twice if worked on both

## QTH Corner

| | |
|---|---|
| ET3AC | For QSO's after 8.5.66 to W4NJF, 421 Saddle Rock Road, Norfolk 2, Va., USA. |
| FB8ZZ | via FR7ZD, Guy Hoarau, 10eme Km, Tampon, Reunion. |
| FK8AB | B.P. 779, Noumea, New Caledonia. |
| GC5ACI | (Jersey) via YASME. |
| GC5ACH | (Guernsey) via YASME. |
| IC1KCB | PO Box 362 Naples, Italy. (Station on Capri.) |
| K4ERU/KB6 | via K4MQG, Robert Dixon, 1618 1/2, Central Avenue, Augusta, Ga, USA. |
| WA7EZW/Kure | 918 N. Miller, Wentachee, Wash., 98801, USA. |
| MP4BFV | R. G. Brade, 14a Roman Way, Hale Road, Farnham, Surrey, or via ISWL. |
| SV0WU | PO Box 66, Rhodes, Greece. |
| TA2BK | via DJ2PJ, Hans Teichmann, Schulstr. 49, 6051 Dudenhofen, Germany. |
| W9WNV/VK0 | (Heard Is.) via W4ECI. |
| VP2AP | Box 93 Antigua. |
| VP2LS | via W6KTE, Richard Krist, 214 S. Emerald Street, Anaheim, Calif. |
| VP2MW | PO Box 274, Montserrat, BWI. |
| VP3AA | Box 25, Georgetown, Guyana. |
| VQ9HB/D | via G8KS, 31 St. Leonards Road, Eastbourne, Sussex. (S.a.s.e. please). |
| VR6TC | via W4TAJ, John Maddox, 1403 Woodside Drive, Johnson City, Tenn. |
| VS5DJ, VS5MC | WO1 M. J. Caplan, 249 Signal Sqdn. c/o GPO, Singapore. |
| VU2DIA | B. S. Hegde, Wireless Supervisor, ISPW Stn, Police Radio Branch, Mylapore, Madras 4, India. |
| YV5BIG/YV7 | vis K3SLP, William Westbrook, RFD 2, Village-by-the-Brook, E. Stroudsburg, Pa, 18301, USA. |
| ZS8I | Ulli Dehning, PO Box 194, Maseru, Basutoland. |
| 5N2AWW | via K5OQO, 818 Sutton Court, Irving, Texas. |
| 9Y4VT | PO Box 149, San Fernando, Trinidad. |
| **QSL MANAGERS** | |
| W4ECI | 3101 Fourth Avenue South, Birmingham, Ala, 53233, USA. |
| YASME | YASME Foundation, Box 2025, Castro Valley, Calif. |

modes, even on the same band. The object is to contact as many Illinois stations as possible, and the score is obtained by multiplying the QSO points (one per QSO) by the total number of Illinois counties contacted. Entrants should exchange QSO number, report, and country. It is suggested that operation should be centred around the following frequencies: 3600, 7040, 14,080, 14,300, 21,100, 21,300, 28,100 and 28,700 kc/s. Logs should show date, time of QSO, station worked, exchanges sent and received, band, mode, and score claimed, and should be postmarked not later than 1 September. They should go to: Cliff Corne, K9EAB, 711 West McClure Avenue, Peoria, Illinois, USA 61604.

The **Rumanian Contest** will be held on the weekend of 6-7 August. Full details may be obtained from G3FKM.

## QRP News

A slight but worthwhile improvement in interest this month. G3TFX reports altering his Top Band transmitter to work on 28 Mc/s, and finding that he could get solid QSOs with 9J2, 5N2, and all over Europe with 7 watts input on a.m.! He has tried 100 milliwatts from a transistorized transmitter on 160m and worked GM3FXM. Not bad when it is realized that G3TFX is located in Kent. His aerial on this occasion was a quarter-wave long with about 42 ft. of it vertical and fed at the bottom with an a.t.u. The next step is going to be trying 100mW on 28 Mc/s, and as the theoretical loss in reducing power from 10 to 0·1 watts is only 3 S points the results could be interesting! Your scribe will report progress. G3NUA is also about to try his hand on the h.f. bands this summer, and G3URX is still QRX for his gear for 21 and 28 Mc/s to be completed. In the meantime he has been on 14 Mc/s c.w., and has been rewarded with a contact with KL7BJV. The last of the correspondents to this section, G3TMB, has had receiver trouble and has not been active. He reports an experiment in which a local station doubled his power during a contact and found that there was no detectable increase in signal strength. G3MBL uses a 25-watt a.m. transmitter and separate 2 element beams on 10 and 15m. Recent QSOs on 15 have included MP4BBA, PY7VA, 5A1TK and 9J2VX, and OD5AC was contacted on 10m.

## Band Reports

With midsummer upon us there has been a comparative loss of interest in the l.f. bands, but a certain amount of good DX is still being reported on 7 Mc/s. As usual 14 Mc/s is carrying the majority of the rare DX and at the moment appears to be open for 24 hours daily. 21 Mc/s has been performing very well indeed and has been carrying signals from JA and VK as early as 07.30, and from North and South America until 01.00 or even later. A number of signals from the Pacific have been noted, including VR6TC, who seems to be audible nearly every Monday around 22.00. 28 Mc/s is open most evenings to Europe, Africa, and the Middle East, but short skip is proving to be rather troublesome. Many thanks to the following correspondents without whose help writing this section would not be possible: G2BOZ, G2LB, G3FBA, G3HCT, G3HDA, G3JFL, G3KSH, G3NMH, G3SML, G3UML, G3URX, G3VJG, G4MJ, G8JM, G8VG, G8API, GM3ITN, GM3SVK, GW3AX, BRS 20317, BRS 22299, BRS25605, A3942, A4038, A4568, A4609, and A4955.

**7 Mc/s C.W.:** EA8GY (06.15), EL2AF (22.43), JA6AK (20.30), PY6HL (22.31), PY7QBD (22.25), UA0PY (Z.18, 20.30), UJ8AV (23.20), UI8KNA (22.35), UL7ME (22.10), ZD7IP (22.25), ZD8J (23.05).

**7 Mc/s S.S.B.:** CN8AW (21.07), EL1A (21.30), HB0s AFM ZT (20.00), IC1KDB (23.20), OX3s BS, LP (21.00), PYs 1-8 (22.00), UW9AF (21.00), VK2AVA (20.30), VK3VJ (21.47), VP6KL (21.30), YV5BZX (23.27), ZB2s AJ, AM (20.00), ZD8ARP (?) (22.00), ZS1JA (21.00), 9H1A (20.00), 9M2OV (20.55).

**14 Mc/s C.W.:** CE8CF (20.25), EA6BH (11.30), HK2DP (22.09), HK7XI (21.30), HL9TH (17.46), JT1KAD (05.39), KL7BJV (23.22), OA8D/3 (06.25), TI2WR (06.20), VK9CJ (13.15-14.10), VQ9TC (22.14), VR2DK (07.30), VS5JC (15.30-16.10), XE1OE (00.20), ZD7RH (08.15), 5W1AZ (07.51), 6Y5BB (08.30).

**14 Mc/s S.S.B.:** CP1DF (06.50), FG7XL (07.15), FK8AB (07.35), FO8s AA, AB, AG, AQ (06.50-07.30), FY7YJ (20.12), HR5LB (05.58), HS1AK/2 (16.25), W4ERU/KB6 (09.30), KC4USN (07.02), KC6BO (07.35), WA7AZW/KH6 (Kure Is. 06.57), KJ6CF (08.14), KJ6DA (08.43), KM6CE (07.00), W4MCI/KS5 (?) (08.40), W7VER/KS6 (08.40), SM5KY/M1 (08.25), OA1BW (06.23), PJ4AC (21.03), TI3AA (22.06), VE0NC (20.19), VKs (LP, 22.00-02.00), VK8KK (07.41), VK9DJ (07.37), VP2AA (22.35), VP2MW (21.05), VP2VV (21.54), VP8CW (20.24), VP8IK (Argentine Is. 20.30), VR6TC (07.36), XP1AA (Greenland, 07.58), YA1AW (13.05), W9WNV/ZK1S (09.00), ZF1GC (21.51), ZL4CH (Campbell Is. 07.02), ZL5AA (07.20), 6Y5RA (21.55) 9M6NQ (08.10).

**21 Mc/s C.W.:** CE8CF (20.05), CO2BO (22.40), CP3CN (22.20), CR6DX (20.25), G3SJ/CT3 (08.46), CX1JM (19.16), EA8ET (20.00), EL2Y (14.32), FG7XC (22.44), FL8MC (15.10), FL8RA (19.10), FO8AB (07.31), HI8XAL (13.00), HK3RQ (17.53), HK7UL (22.17), HM5BG (11.35), JAs (07.00-14.00), KG6AAY (09.56), WS6BW (07.25), MP4BFV (20.15), OA4SE (20.04), PJ3CJ (12.02), PY5ASN (20.10), SU1IM (12.01), UA0DA (13.20), UA0LL (22.50), UG6AW (11.55), UM8AP (07.37), VP3SJ (22.30), VQ8AW (06.20), VQ8BLV (13.00), VQ9HB (17.30), VR2DK (11.54), VR2EK (08.37), VR6TC (22.02), VU2JA (15.10), YN1AA (11.45), YV5BNK (18.20), ZB2AS (14.45), ZD7RH (06.20), ZD8TV (20.25), 5N2AAF/P (19.11), 6O6BW (12.56), 9K2AD (20.00), 9M2BM (16.30), 9V1MY (16.32).

**21 Mc/s A.M.:** CE3FI (21.20), CR6LAS (17.32), CR7GR (16.11), EA8DR (09.24), JA2BWN (14.45), MP4BBA (14.55), OA4DB (21.01), PY8RC (17.52), TT8AB (16.00), UA9UH (16.30), VE8BZ (17.45), 7X0BB (19.16), 9H1AG (15.53), 9K2AB (18.44), 9L1JP (18.08), 9V1NP (18.08).

**21 Mc/s S.S.B.:** CE1HI (21.25), CP1EW (17.57), CP6FP (22.00), CP8BC (18.54), CR7GF (16.40), CX9AAN (16.15), ET3WH (17.50), FB8WW (13.20), FH8CD (12.30), HK3AJD (21.34), HR1JMF (00.05), HR2ABC (18.00), HZ1AB (17.31), JA7UJ (17.12), KC4AAA/MM (Antarctica, 21.50), KH6BB (07.35), KJ6DA (13.00), KR6DJ (15.12), KV4EQ (17.30), DJ6QT/LX (18.15), MP4TBO (14.19), OA4J (22.24), OA5AO (19.47), OA6BL (21.28), VE8ML (15.57), VK2NN (22.20), VK3ABA (22.30), VP2AP (19.40), VR6TC (22.34), VS9AJC (18.13), VS9OC (15.20), VU2JM (11.20), XW8AL (17.00), XW8AZ (07.13), YN4SH (22.42), ZD8BJ (22.30), ZP5DH (21.30), ZS1CZ (14.53), ZS8L (15.31), 4U1SU (17.30), 6O1s AU, GD, PF, (17.48-18.08), 9M2LO (16.40), 9M6AP (16.04), 9Q5YL (09.10), 9V1NL (15.12).

**28 Mc/s C.W.:** CR6EI (15.18), CR7IZ (16.50), EA4CR (10.20), F9VN/FC (Corsica, 10.50), MP4BFV (18.25), PY7AKQ (18.50), ZD7IP (16.50), ZE3JO (14.05), 5Z4BM (17.26), 7X2AH (15.18), 9H1AB (10.35), 9J2VX (09.35).

**28 Mc/s A.M.:** CE3PT (19.55), CM2EB (19.19), CR4BC (19.25), CR7IZ (18.26), CX4DE (19.54), LU5DVJ (17.10), LU6XS (21.14), PY1TZ (22.02), VE2AKU (21.04), W4MOE (21.32), YV6AU (20.44), ZE2JA (12.00), ZS6ATT (19.13), 4X4HF (17.47), 5X5JK (17.49), 9Y4VS (18.00).

**28 Mc/s S.S.B.:** CP5AJ (19.12), CR6JL (15.45), DK1AO (New prefix for Germany. 20.14), HP2VT (19.47), KP4MC (17.52), KZ5BE (20.35), LU1DOX (19.14), MP4TBO (17.20), OD5EL (17.56), PJ3CD (20.30), PY5ANE (18.36), VS9AJC (14.20), VU2JM (14.00), W1, 2, 3, 4, W0PNU (20.00-22.00), YV1PF (20.06), ZB2AM (18.46), ZC4CI (16.38), ZD8SKI (18.28), ZE7JR (15.33), ZS1JA (18.26), 4U1ITU (09.15), 5H3JJ (18.40), 5N2AAE (14.45), 5Z4AA (18.04), 9J2VX (12.10).

*(continued on page 474)*

# RSGB Slow Morse Practice Transmissions

**The following Slow Morse Practice transmissions are sponsored by the RSGB. Alterations and additions to this list should be sent to the Honorary Organizer, M. McBrayne, G3KGU, 25 Purlieu Way, Theydon Bois, Essex.**

| Time | Call-sign | kc/s | Town |
|---|---|---|---|
| **Sundays** | | | |
| 09.30 † | G3KZZ / G3TNF | 1920 | South Shields, Co. Durham |
| 09.30 | G3HZL | 1940 | Isleworth, Middlesex |
| 10.00 | GW3TMH | 1980 | Rhyl, Flints. |
| 10.00 | G3TTK | 1860 | Coalville, Leics. |
| 10.15 | G3CGD | 1875 | Cheltenham |
| 10.30 | GI3JEX | 1860 | Belfast |
| 11.00 | G2FXA | 1900 | Stockton-on-Tees |
| 12.00 † | G3HVI / G3OGD | 1890 | Stoke-on-Trent |
| 12.00 | G3SVD | 1870 | Reading, Berks. |
| 12.00 | G3TJD | 3575 | Stafford |
| 12.00 | G3SZF | 1825 | Broxbourne, Herts. |
| 18.00 | GW3TMP | 1980 | Mold, Flints. |
| 18.30 | G3NCZ | 1920 | Blackburn, Lancs. |
| 21.00 † | G3LKT / G3PLQ | 1892 | Salisbury, Wilts. |
| 21.30 | G3NQR | 1875 | Harrow Weald, Middx. |
| **Mondays** | | | |
| 18.00 | G3SWR | 1980 | Middlesbro', Yorks. |
| 18.30 | G3NCZ | 1920 | Blackburn, Lancs. |
| 19.30 † | G2ATM / G3KTP / G3OKX / G3ONB / G3RTO / G3RUB / G3RWN | 1890 | Heanor, Derbys. |
| 19.30 | G3SRY | 1920 | Cheam, Surrey |
| 20.00 | G3HJG | 1980 | Manchester |
| 20.00 | G3IBJ | 1910 | Southampton, Hants. |
| 20.15 | G3SAZ | 1845 | Ashford, Middx. |
| 20.30 | G3TOF | 1915 | Harlow, Essex |
| 20.45 | G3SUU / G3UCZ | 1900 | Bradford, Yorks. Pudsey, Yorks. |
| 21.00 † | G3IRM / G3MWO / G3PHW | 1981 | Bury St. Edmunds |
| 21.00 † | G3LKT / G3PLQ | 1892 | Salisbury, Wilts. |
| 21.30 † | G2BSW / G3TBW | 1865 / 1865 | Studley, Warks. / Redditch, Worcs. |
| **Tuesdays** | | | |
| 19.00 † | G3PPE / G3PXX | 1875 | Wallasey, Cheshire Neston, Cheshire |
| 19.00 | G3NUE | 144·26 Mc/s | Worcester |
| 19.30 | G3RFL | 1910 | Great Harwood, Lancs. |
| 19.30 | G3TAG | 1970 | Cambridge |
| 19.30 | G3RPB | 1860 | Porthcurno, Cornwall |
| 20.00 | G3RZO | 1865 | Redditch, Worcs. |
| 20.00 | G3PJI | 1910 | Southampton |
| 20.30 | G3NKX | 1915 | Loughton |
| 21.00 † | G3LKT / G3PLQ | 1892 | Salisbury, Wilts. |
| 21.30 † | G3HZG / G3TNI | 1865 / 1856 | Redditch, Worcs. / Bromsgrove, Worcs. |
| 22.00 | G3HZM | 1925 | Manchester |
| **Wednesdays** | | | |
| 18.30 | G2FXA | 1900 | Stockton-on-Tees |
| 19.00 | G3GBS | 1865 | Moseley |
| 19.00 | G3GBJ | 1870 | Redditch, Worcs. |
| 19.00 | GW3CJR | 1930 | Newbridge, Mon. |
| 20.00 | G8QU | 1950 | London N.22 |
| 20.00 | G3SAD/A | 1980 | Stevenage, Herts. |

| Time | Call-sign | kc/s | Town |
|---|---|---|---|
| **Wednesdays** | | | |
| 20.30 | G3KGU | 1915 | Theydon Bois, Essex |
| 20.30 | G3SJE | 1870 | Harrow, Middx. |
| 20.45 | G3SUU / G3UCZ | 1900 | Bradford, Yorks. Pudsey, Yorks. |
| 20.30 | G3AGN | 1875 | Felixstowe |
| 21.00 † | G3HVI / G3OGD | 1890 | Stoke-on-Trent |
| 21.00 † | G3LKT / G3PLQ | 1892 | Salisbury, Wilts. |
| 21.00 | G3POU / G3SFO | 1850 | Doncaster, Yorks. |
| 21.00 | G3RIS | 1980 | Cromer, Norfolk |
| **Thursdays** | | | |
| 18.00 | G3SWR | 1980 | Middlesbro', Yorks. |
| 18.30 | G3NC | 1968 | Swindon |
| 18.30 | G3TMI | 1840 | Canterbury, Kent |
| 19.00 | G3NUT | 1875 | Wallesey |
| 19.30 † | G2ATM / G3KTP / G3OKX / G3ONB / G3RTO / G3RUB / G3RWN | 1890 | Heanor, Derbys. |
| 19.30 | G3RFL | 1910 | Great Harwood, Lancs. |
| 20.30 | G3RSF | 1915 | Harlow, Essex |
| 20.30 † | G3KAD / G3LLZ | 1850 | Swindon, Wilts. |
| 20.30 | G3HZL | 1845 | Isleworth, Middx. |
| 21.00 † | G3IRM / G3MWO / G3PHW | 1981 | Bury St. Edmunds |
| 21.00 † | G3LKT / G3PLQ | 1892 | Salisbury, Wilts. |
| 21.30 † | G3EVT / G3TOI | 1865 | Redditch, Worcs. |
| **Fridays** | | | |
| 18.30 | G3NZC | 1920 | Blackburn, Lancs. |
| 19.30 | G3PWU | 1850 | Reading, Berks. |
| 20.15 | G3SAZ | 1845 | Ashford, Middx. |
| 20.30 | G3TLF / G3TXI | 1925 | Harlow Nazing, Essex |
| 21.00 † | G3LKT / G3PLQ | 1892 | Salisbury, Wilts. |
| 21.00 | G3PKE | 1920 | Dorking, Surrey |
| 21.00 | G3RIS | 1980 | Cromer, Norfolk |
| 21.30 | G3TJD | 3575 | Stafford |
| 21.30 † | G3RZI / G3TQD | 1865 / 1865 | Redditch, Worcs. / Droitwich, Worcs. |
| 21.30 † | G3UCZ / G3SUU | 1900 | Pudsey, Yorks. Bradford, Yorks. |
| **Saturdays** | | | |
| 10.00 | G3TTK | 1860 | Coalville, Leics. |
| 12.00 | G3TJD | 3575 | Stafford |
| 13.00 | G2FXA | 1900 | Stockton-on-Tees |
| 14.00 | GI3JEX | 1860 | Belfast |
| 14.00 | G3SVD | 1870 | Reading, Berks |
| 15.30 | G3RFL | 1910 | Great Harwood, Lancs. |
| 18.00 | GW3TMP | 1980 | Mold, Flints. |
| 20.00 | G3KPO | 1980 | Peterborough |
| 20.30 | G3TLJ | 1925 | Roydon, Essex |
| 21.00 † | G3LKT / G3PLQ | 1892 | Salisbury, Wilts. |

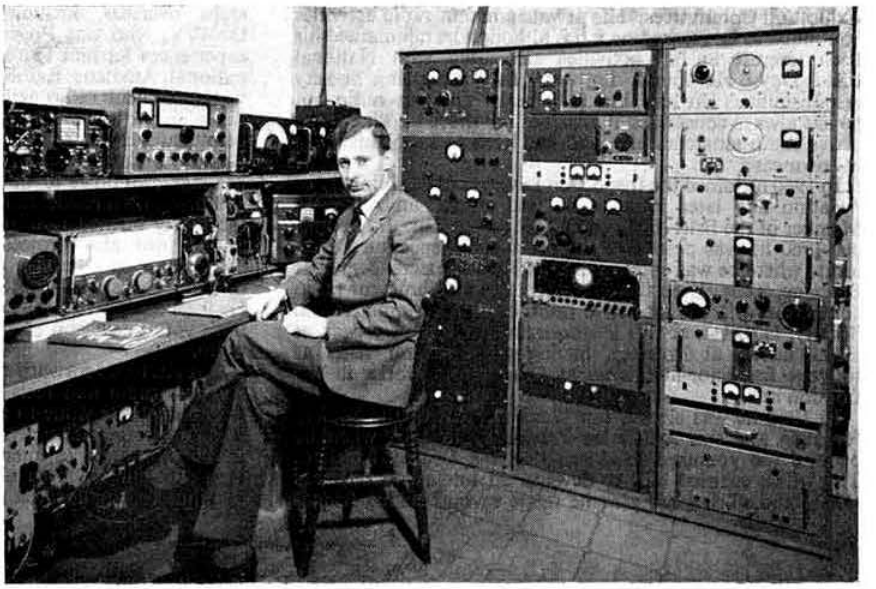
† *Alternately*

**Channel Islands, Northern Ireland, Scotland and Wales are inadequately covered by this service to the SWL. The Hon. Organizer would be pleased to hear from any member in these areas, or any other part of the British Isles, who would be willing to make regular Slow Morse Practice transmissions.**

# PROFILE

## G. M. C. STONE

## G3FZL



FOR Geoff Stone, who was born on 30 October, 1930, interest in Amateur Radio was kindled at an early age by his father who was licensed in 1936 as G2ZL. Between that time and 1939 he accompanied his father at various amateur radio activities including those organized by the then South London District Radio Transmitters Society. He also spent time in his father's shack and picked up the jargon of amateur radio by listening to QSO's and also " assisted " in the construction of amateur radio equipment. The war ended these activities and, with the death of his father in 1942, interest in amateur radio could well have ended. But the crystal set bug bit during 1943 and this started a new and continuous interest in radio matters lasting to this day.

His aim, as soon as the war ended, was to obtain a transmitting licence encouraged by Bert Wybrow, G2VJ, and a first application to the GPO led to the call-sign G3AZL being offered. But it was also indicated that he would have to pass the RAE and Morse test. Thus work was started by self training for the RAE and in learning Morse with the Air Training Corps at his school, Dulwich College. This led to a pass in the RAE and later the Morse test, the call-sign G3FZL being issued in late 1948. A growing interest in electronics led to his joining A. C. Cossor Ltd., in 1948 on leaving school, as a Student Apprentice and this initial phase of his career lasted until National Service with the RAF in 1952. During these formative years he was greatly influenced by the activities of the South London U.H.F. Group and, in particular, by Charlie Newton, G2FKZ, one of the leading lights of the Group who was a pioneer worker on the 70 cm band. G3FZL's first transmitting equipment was, in fact, designed for this band, being unusual for the day in that it was crystal controlled. At the same time a start was made on 80m c.w. using again simple home constructed equipment. His technical education was proceeding in parallel during this time being one of the first students enrolled on a Sandwich Course scheme (6 months industry, 6 months College) at the Borough Polytechnic, S.E.1. This led to a Higher National Diploma in Radio Engineering in 1952. G3FZL joined the Society in 1948 and was an active member of the Dulwich and New Cross RSGB Group, taking part in particular in National Field Day, firstly as a log keeper and later as an operator. He also participated in v.h.f. field days organized by G2FKZ and especially in the 70 cm Tests which were held annually by the Society before 70 cm contests were started.

The next phase of his life was centred around his National Service in the RAF where he was commissioned in 1952, having entered the Service as a Graduate IEE. He spent his time in Bomber Command, mainly concerned with airborne radar working on improvements to some of the systems then in use. He established his station at RAF Scampton and was active on 2m. He also maintained his interests at home with the Norwood and South London RSGB Group which superseded the Dulwich and New Cross Group as the centre of Society activity in South London.

After leaving the RAF in 1954 he returned to Cossor as a junior development engineer working on the same systems in which he had been interested in the RAF. Amateur Radio activities continued as before and he was elected as the Secretary of the RSGB Group, later to become the Crystal Palace and District Radio Club, his first amateur radio appointment which he holds to this day. About the same time he became friendly with John Rouse, G2AHL, and was by him introduced to the activities of the Society, becoming a member of both the V.H.F. and Technical Committees in 1956. Also in 1956 he left Cossor to join the then Ministry of Supply as an Experimental Officer working under R. H. Taylor, G8HT, then a Principal Scientific Officer. From this time on his professional and amateur radio careers have continued to be complementary in that experience gained in the one has been of great value in the other, both in terms of technical and of administrative experience. In 1957, arising out of his work on the V.H.F. Committee he was appointed one of the joint co-ordinators of the Society's effort during the International Geophysical Year, the other being G2FKZ.

In 1959 he was elected to the Council of the Society, taking office in 1960 and one of his first actions was to found the Scientific Studies Committee to widen the scope and to co-ordinate more effectively the Society's scientific effort. He also continued his activities with the V.H.F., Technical and

Exhibition Committees. His private amateur radio activities continued to be centred on v.h.f. although he maintained his keen interest in h.f. activities associated with National Field Day. He found, however, that increasing Society responsibilities left less time for " real " amateur radio but he has always considered it essential for those in office to be active radio amateurs also and has tried to keep this so in his own case.

In 1960 he joined the Inspection Division of the Ministry of Aviation and later in the year was elected an Associate Member of the Brit. IRE and in 1961 of the IEE. In December 1960 he was posted to the Electrical Inspection Directorate where he was employed at its Headquarters located at Bromley, Kent. Even there he maintained his amateur radio contacts as there is an active radio club, the Aquila Radio Society, G3BRK, at this Headquarters. He is now back at Headquarters at Bromley, having spent several years as resident Inspector-in-Charge at Contractors works in the London area.

In 1962 he was elected the Vice-President of the Society for 1963 and this led to his Presidency in 1964 when he became the youngest President that the Society has had. This office enabled him to develop an interest in overseas affairs and during the year he made several lasting friendships overseas, including one with René Vanmuysen, ON4VY, who was President of UBA at the time. These experiences let him to realise the importance of the International Amateur Radio Union, not only to co-ordinate world amateur radio activities but of much greater importance, to protect the frequencies allocated to amateurs both below and above 30 Mc/s. He recently attended the IARU Region 1 Conference in Opatija as the Society's V.H.F. Manager, an office to which he was appointed in 1966.

During his Presidential year he became the Chairman of the newly formed Education Committee and led this committee into new projects including the Amateur Radio Symposium at Ollerton, Nottingham, and towards the end of 1965, the Daily Mail School Boys and Girls Exhibition. He feels that there is much scope for the Society to introduce both youngsters and older people to the hobby of amateur radio.

G3FZL looks forward to the continuance of all aspects of amateur radio and feels that provided the movement can demonstrate its value to mankind in general in the fields of education, scientific activity, emergency communication and in the promotion of international friendship and goodwill, then amateur radio as we know it will continue and will continue to be allocated frequencies in which to operate.

## The Month on the Air

(continued from page 471)

### 1966 Countries Table

| | 1·8 Mc/s | 3·5 Mc/s | 7 Mc/s | 14 Mc/s | 21 Mc/s | 28 Mc/s | Total |
|---|---|---|---|---|---|---|---|
| G8JM | 4 | — | 14 | 182 | 90 | 12 | 302 |
| G3UML | 3 | 29 | 26 | 145 | 69 | 55 | 327 |
| G3NMH | — | — | — | 159 | 89 | 45 | 293 |
| G3IGW | 19 | 43 | 46 | 58 | 55 | 1 | 222 |
| 5N2AAF | 9 | 14 | 16 | 87 | 46 | 11 | 183 |
| G8VG | 5 | 22 | 26 | 73 | 59 | 28 | 213 |
| G3IAR | 6 | 32 | 38 | 57 | 52 | 16 | 201 |
| G3LHJ | 4 | 20 | 19 | 63 | 22 | 4 | 132 |
| G3KSH | 7 | 16 | 28 | 44 | 32 | 9 | 136 |
| 9V1LP | 6 | 12 | 20 | 27 | 23 | 14 | 102 |
| G3JVJ | 15 | 9 | 16 | 6 | 2 | — | 48 |
| G3MWZ | 7 | 10 | 1 | 20 | 6 | — | 52 |
| A4489 | 21 | 59 | 76 | 157 | 25 | 1 | 339 |
| BRS26222 | 5 | 39 | 22 | 188 | 88 | 51 | 393 |
| G8API | 2 | 16 | 40 | 141 | 110 | 47 | 356 |
| A3942 | 12 | 36 | 59 | 94 | 45 | 1 | 247 |
| A4048 | 7 | 37 | 36 | 116 | 59 | 16 | 271 |
| A4370 | 4 | 22 | 5 | 139 | 27 | 1 | 198 |
| A4552 | 2 | 25 | 12 | 127 | 84 | 30 | 280 |
| BRS25605 | 9 | 35 | 44 | 86 | 48 | 18 | 240 |
| A4609 | 14 | 14 | 31 | 98 | 92 | 13 | 262 |
| A4311 | — | 15 | 13 | 115 | 37 | 23 | 203 |
| A4038 | 5 | 9 | 7 | 114 | 93 | 19 | 247 |
| A4431 | 4 | 25 | 31 | 64 | 66 | 19 | 209 |
| A4955 | 8 | 19 | 33 | 50 | 52 | 7 | 169 |
| A3699 | 7 | 21 | 17 | 37 | 26 | — | 108 |

(This month's table is given in order of 7 plus 14 Mc/s scores.)

### DX Briefs

Tom Christian, **VR6TC,** is workable from Europe on most Monday evenings on or around 21,065 kc/s at around 21.00, and his s.s.b. signals have been excellent on Tuesday mornings. He has now worked a considerable number of Europeans, including a number of British stations. He is apparently still using his exciter only, although he also has an HT41 linear.

Another rare bird who has now received s.s.b. equipment is **ZD9BE,** who has been heard on from **Tristan da Cunha.** In view of the poor communications between Tristan and the outside world Alan will pass his log over the air every week to PY2PE, who will record it and retransmit it to the US to W2GHK who will take care of the QSL'ing.

**LA1K** was due to be active from **Bear Island** during the last week in June, and from **Spitzbergen** in early July, using the call-sign **LA1EE.** He expected to be on 7 Mc/s. Sheepskin hunters might note that Bear Island counts as a separate country for the WAE certificate, although not for DXCC purposes.

**VS5JC,** who is G3DPS at present in **Brunei,** is being heard and worked on 14 Mc/s c.w. He runs 50 watts to a long wire and expects to remain in VS5 for about another year. Also from the Far East is **VU2DIA,** Port Blair, Andaman Islands, who is being contacted regularly from the US at 00.00 to 02.00 GMT, on around 14,031 kc/s. No reports of his being heard in the UK have been received so far.

Those still needing a contact with the South Orkney Is. might try listening around 17.00 on 21,251 kc/s c.w. for **LU1ZG.** Whether anyone making contact will ever receive a QSL is another matter! Your scribe would be grateful to receive information on how to squeeze confirmations out of LU-Z stations.

G3SJ, who has been resident in Madeira for the past two years has now obtained a licence to operate on all bands, and has been heard using the call-sign **G3SJ/CT3** on 21 Mc/s c.w.

Those who encounter **OK4CM** will be interested to know that this is the first OK4 call-sign ever issued, and belongs to OK3CM who is using it whilst acting as radio operator on the M.S. " *Bojnice* " which travels around in the Black, Aegean, Adriatic and Mediterranean seas.

The Radio Society of Bermuda now has its own call-sign, VP9BDA. This is the first three-letter VP9 call ever issued.

* * *

All correspondents are thanked for their assistance, and particular thanks and acknowledgements are due to the *West Gulf DX Bulletin* (W5IGJ) the *L.I.D.X.A. Bulletin* (WA2EFN), *DX'press* (PA0FX), *The DX'er* (Northern California DX Club), *Florida DX Report* (Florida DX Club), *DX News Sheet* (Geoff Watts), *On The Air* (ON4AD), *K.A.R.L. News*, and *CQ DX* (I1LCJ). Please send all items for the **August** issue to arrive not later than **13 July,** for the **September** issue not later than **13 August**, and for the **October** issue not later than **14 September.**

# News from Headquarters

### First G to be elected President of ARRL

At the meeting of the Board of Directors of the American Radio Relay League held on 6-7 May, 1966, Robert W. Denniston, G5ADH/W0NWX, was elected President of the League and of the International Amateur Radio Union. Mr. Denniston is a member of the Executive Committee of IARU Region 2.

Following the Region 1 IARU Conference in Opatija, Mr Denniston and Mr Noel Eaton, VE3CJ/G3SDA, Canadian Director of ARRL and Honorary Treasurer of Region 2 IARU, spent a few days in England. During the visit, G5ADH/W0NWX took the opportunity to operate from RSGB Headquarters using a KW2000A transceiver and other equipment kindly loaned by Mr Rowley Shears, G8KW, Managing Director of KW Electronics Ltd.

The majority of contacts were on 1·8 Mc/s—W0NWX is a keen Top Band enthusiast—but contacts on other bands were made with amateurs in Asia, Europe and North America.

### John Ware Chairman of The Television Society

The Council of The Television Society has elected Mr John Ware, F.R.I.B.A., Dipl.Arch. London, to be Chairman of Council for the 1966-67 session.

Mr Ware is now engaged as an architect in the firm, The Ware Macgregor Partnership at Chelsea and Twickenham, specializing in work for the electronic and television industry. His connections with television go back to 1934 when as a schoolboy he constructed receivers for the 30-line system. In 1942 he developed radar equipment at Murphy Radio Ltd, but later, in 1945, as an architect he started his career in the design of laboratories and factories.

In 1936 he obtained an artificial aerial licence with the call-sign 2AAA. He now devotes his activities principally to amateur TV, holding the call-sign G6RPA/T, and is Chairman of the British Amateur Television Club.

### Mrs Marjorie Varney

It is with much sorrow that we have to report the death of Mrs Marjorie Varney, wife of Council Member Louis Varney, G5RV. Marjorie was always happy to welcome amateurs to her home, particularly those from overseas.

On behalf of all members we express our deepest sympathy to G5RV in his tragic loss.

### Reciprocal Licensing

An Amateur Radio reciprocal licensing agreement is now in force between the United Kingdom and Israel. All enquiries should be addressed to The Director General, Ministry of Posts, (Posts, Telegraphs, Telephones and Radio), Jerusalem, Israel.

### Representation 1966/1968

The following has been appointed a Deputy Regional Representative for Region 7:

M. A. C. MacBrayne, G3KGU, 25 Purlieu Way, Theydon Bois, Essex.

The following have been appointed Deputy Regional Representatives for Region 12:

Dr. J. M. Lyons, GM3GUJ, 1 Thorfinn Place, Thurso, Caithness.

W. G. Cecil, Innes House, Oran, Clochan, Buckie, Banffshire.

A. W. Smith, GM3AEL, 1 Scalattie Place, Bankhead, Bucksburn, Aberdeenshire.

### Area Representatives

The following member has been appointed Area Representative:

ILFORD GROUP:

Horace S. Edmonds, 64 Perrimans Farm Road, Newbury Park, Ilford, Essex.

### Affiliation

The following society is now affiliated to RSGB:

DOUAI SCHOOL RADIO SOCIETY

Rev. Paul Sollom, G3BGL, Douai Abbey, Woolhampton, Reading, Berkshire.

### Affiliated Society Representative

The following Affiliated Society Representative has been appointed:

SOUTH DORSET RADIO CLUB:

W. N. Burden, G3EAT, 102 Westhill Road, Wyke Regis, Weymouth.

### RSGB Amateur Radio Call Book

The following are corrections to the 1966 Edition of the *RSGB Amateur Radio Call Book*.

G2HR—J. E. J. Johnson, 35a Woodland Road, North Chingford, London, E4.

G2PU—S. R. Kharbanda, " Ivett Lodge," 39 London Road, Harston, Cambs.

G2CDT—F. H. Martin, 22 Walders Avenue, Wadsley, Sheffield 6.

G2CXR—E. M. Challans, 20 Windmill Balk Lane, Woodlands, Doncaster Yorks.

G3ADZ—D. W. J. Haylock, 3 Norrisgardens, Havant, Hants.

G3IGO—Electronics and Amateur Radio Society, c/o Students Union, Battersea College of Technology, Battersea Park Road, London, SW11.

G3JMF—G. F. Brown, 7 Redburn Avenue, Shipley, Yorks.

G3KSS—F. J. Davis, 21 Cuttys Lane, Stevenage, Herts.

G3PRZ—G. W. C. McClellan, 27 Bromfords Close, Wickford, Essex.

G3SYF—D. R. Legge, Ridgehurst, Uplands Road, Kenley, Surrey.

G3TSC—Trinity School of John Whitgift, Shirley Park, Croydon, Surrey.

G6QO—H. Fearnley, 30 East Park Street, Morley, Leeds, Yorks.

G8ACQ—R. C. Whatton, 14 Trinity Road, Chancel Estate, Bottesford, Scunthorpe.

GM3BGW—T. W. J. Homewood, 32 Sandylands Road, Cupar, Fife.

GW2FOF—W. J. G. Williams, Somerset House, 67 Brook Street, Williamston, Rhondda, Glam.

## Silent Keys

We record with sorrow the passing of the following amateurs:

F. L. Nunn, G2DT, Ipswich, Suffolk.
M. J. Knowles, G3IOB, Wolverhampton, Staffs.
D. M. Pearce, G3RIP, Chelmsford, Essex.
E. Carr, G3SDE, Woodlesford, Leeds.
A. J. Clatworthy, GW3IDJ, Fairwater, Cardiff.
J. Noel, GW3SZI, Llanishen, Cardiff.
H. S. S. Hart, BRS26469, Banstead, Surrey.
Eric J. Lake, VK4EL, Townsville, North Queensland.

# Obituaries

## Lawrence Howard Thomas, M.B.E., G6QB

The news that Tommy had suffered a sudden and very severe stroke on 14 May greatly distressed his many friends, especially the 70 old-timers who had been with him at the RAOTA Reunion only a few days earlier. For nearly a fortnight he lay dangerously ill in St Helen's Hospital, Hastings, where he died on 27 May in his 60th year without regaining full consciousness.

Tommy was first licensed in 1923, at the age of 16. By the time he was 18 he had become a regular contributor to *Popular Wireless* and other similar publications. He was a loyal and enthusiastic Society member throughout his life. He first came into prominence during the years between 1926 and 1930 when he performed the duties of South London District Representative. About this time he began to contribute "Soliloquies from the Shack" to the T & R BULLETIN, using the pen name "Uncle Tom." For years his identity was preserved, in fact it is doubtful whether, even today, more than a few of his close friends knew that the author of those famous soliloquies was the quietly spoken man from South London whose DX achievements even in those days placed him on a pedestal among the fraternity.

Tommy was closely associated with the "Sliders"—the very active South London & District Radio Society which attained eminence in the years before the war. Tommy was also a member of the Surrey Radio Contact Club in its early days but he was at his best when engaged in technical debate at pre-war Society meetings at the Institution of Electrical Engineers.

During the war he served with distinction in the Royal Air Force, in which service he rose to the rank of Squadron Leader. He was appointed a Member of the Most Excellent Order of the British Empire in recognition of his work during the war.

His love for DX and his skill as a journalist led him, soon after the war, to join forces with his friend and war-time colleague Austin Forsyth, O.B.E., G6FO. Tommy's monthly article in *The Short Wave Magazine* was one of the most professionally compiled of all such commentaries. He had friends and correspondents in every part of the world, which fact, coupled with his constant alertness on the air enabled him to present a column that was ever fresh and always challenging.

One other side to his interests was music; while still at school he graduated to the post of Assistant Organist at Crystal Palace, and, following the disastrous fire, found a position as demonstrator of organs for Boosey and Hawkes. With the war over he returned to organs, and his competence earned him the position of resident organist at the Hastings White Rock Pavilion. He later became free-lance, but continued to work and live in the Hastings area until his death. Tommy never permitted his performances to be "flashy" or slipshod, and the hundred or more broadcasts he gave from the BBC Theatre organ are a tribute to the standard and appeal of his programmes.

Amateur Radio benefitted greatly from Lawrence Howard Thomas. It has lost much by his passing.

## Archie Gillies, GM3MKJ

In the motor-cruiser disaster off Arran, Archie Gillies, GM3MKJ, was one of the eight prominent Campbeltown business men who were lost in the hurricane. Archie, as the town's leading electronic engineer, customarily did duty as radio operator during the various recreational cruises which the vessel, the *Quesada*, undertook along the Clyde and Irish coasts. At home his well-equipped station was widely known on 80m phone. His courtesy and quiet Scottish wit will be sadly missed both on and off the air. To his widow Jean and daughter Flora sympathy will be extended not only by his radio friends in the district but by the many who, visiting Kintyre, were delighted by his hospitality.

J.H.

## R. MacIntyre, PA0EO

It is with sorrow that we announce the passing of Bob MacIntyre of Amsterdam, a quiet but nevertheless well known amateur. Bob was a British subject resident for the greater part of his life in the Netherlands from where he was active on 2m.

We, his radio friends mourn his loss and wish to convey sympathy to his widow and daughter.

## F. D. Thom, G3NKT

On Saturday, 4 June, 1966, Francis Denis Thom passed peacefully away. At the very time of his death, the Reigate Club, of which he had been Secretary since its foundation, was in the midst of National Field Day. Had Denis been asked, all who knew him would have expected him to say "carry on"; in fact one of his biggest disappointments during his last weeks was that his illness prevented him taking part in all the usual NFD arrangements.

Denis will not be remembered for tremendous feats in the operational or technical aspects of Amateur Radio; the abundant enthusiasm he brought to this, as well as his other interests, was sometimes concealed by his quiet and unassuming personality. His real memorial, an active reminder of many years hard endeavour, is the Reigate Amateur Transmitting Society. Now one of the most active groups in Southern England, Reigate club originated from a very few enthusiasts encouraged by "NKT." As a result of this, Denis made a tremendous number of friends in the Amateur Radio fraternity, particularly in the Reigate and Crawley areas, all of whom mourn the loss of a man they were proud to know.

Our deepest sympathy goes to Joyce Thom and her family in their great loss.

R.G.B.V.

## A. Clatworthy, GW3IDJ

The death occurred on 28 May of Alfred Clatworthy, GW3IDJ.

He operated all bands, until recently with home-built equipment, with conspicuous success. His employment entailed continuous night work, and in consequence he was not as well-known personally as his seniority in the hobby might indicate. He was a keen amateur, always ready to assist less experienced members, and his call will be missed particularly on the h.f. bands.

Deep sympathy is extended to his widow, son and daughter.

C.H.P.

## G. S. C. Udall, G2HCD

The quite unexpected death of Gordon Udall, G2HCD, at the comparatively early age of 56, came as a great shock to all who knew him. Particularly to his fellow members of the South Dorset Radio Society, of which he was a founder member, and to Dorset "Raynet" where he held the office of County Controller, is his passing most deeply felt.

Gordon's willing assistance, whether to the group, or to an individual, whenever it was needed, endeared him to us all. To the youngster especially, he always tried to give a helping hand. No "Field Day" in Dorset for many a year has been complete without his cheerful participation. His high sense of public duty was responsible for his giving up so much time and effort in recent years to the organisation of RAEN in Dorset. A lesser man would have given up long since against the many difficulties which continued to be encountered.

In fact, in the words of my young daughter, "he was such a kind man."

To his widow and his family we extend our truest sympathy.

M.S.

## Vice-Admiral J. W. S. Dorling

The death on 12 May, of Vice-Admiral James Wilfred Sussex Dorling, C.B., M.I.E.E., aged 76, at his home in Fareham, Hampshire, broke links with the Society which went back more than 30 years.

It was in 1932, while he was Admiral Commanding Reserves, that representatives of the RSGB and others, including Hugh Pocock, Editor of *Wireless World*, were called to his office at the Admiralty to discuss the possibility of forming a naval reserve of radio amateurs. From that meeting came into existence the Royal Naval Wireless Auxiliary Reserve, later changed to the Royal Naval Volunteer (Wireless) Reserve. Many years later, after Admiral Dorling had retired from the Royal Navy, he became the Director of the Radio Industry Council and whilst holding that office he offered to the Society free space at several post war Radio Shows held at Earls Court and Olympia. In 1955 he was invited by the Council of the Society to open what was to be the last Amateur Radio Exhibition to be held at The Royal Hotel, Woburn Place, London.

Vice-Admiral Dorling had been associated with naval radio development since 1912 and the first radar apparatus was successfully installed in one of the Navy's ships in 1936 when he was in command of the Signal School at Portsmouth. He was head of the British Admiralty Supply Mission at Washington for 1941–44 and Flag Officer Liverpool 1944–46. He was the brother of Capt. Taprell Dorling; Taffrail the novelist. In the 1914–18 war he was concerned with the development of high power continuous wave installations to meet the pressing needs of the Navy for long-range communications.

His appointment in 1946 as Director of the Radio Industry Council came at a time when all sections of the industry were getting together in earnestness to recommence radio and television production. He retired from the RIC in 1958.

J.C.

# Society Affairs

*A Brief Report on the May, 1966 meeting of the Council*

THE meeting was held on 9 May, 1966 and was attended by Messrs R. F. Stevens (President), N. Caws, J. Etherington, J. C. Foster, J. C. Graham, E. G. Ingram, L. E. Newnham, F. K. Parker, A. D. Patterson, J. F. Shepherd, G. M. C. Stone, J. W. Swinnerton, Louis Varney and E. W. Yeomanson (Members of Council) and John A. Rouse (General Manager and Secretary).

**Relay Television**

It was reported that a member of the Council had written to the Watford Council drawing attention to the problems which can arise with wired television systems employing carrier frequencies embracing amateur bands. In reply, the Borough Council had asked for permission to pass the letter on to its consultants and the Post Office.

**Recommendations of Committees**

The Council accepted recommendations relating to preparations for the 1966 RSGB International Radio Communications Exhibition, and a vote to be given at the Opatija Conference in favour of a rise in the contribution fees from member societies to the funds of Region 1 IARU provided the delegates were satisfied that a valid case is made out for the proposal. The Council also accepted recommendations relating to the results of the RSGB 7 Mc/s DX Contest 1965 and the First 1·8 Mc/s Contest 1966 (*H.F. Contests*), First 70 Mc/s Contest 1966 and the Second 144 Mc/s (Open) Contest 1966 (*V.H.F. Contests*) and a new British Isles Two Metre Band Plan (*V.H.F.*). Details of the new plan were given on page 399 of the June, 1966 issue of the RSGB BULLETIN.

**Membership and Affiliation**

The Council elected 159 new members (125 Corporate and 34 Associate) and approved 22 applications for transfer from Associate to Corporate grade.

The subscriptions of five members were waived on the grounds of blindness and four on the grounds of severe physical disability.

One application for waiver was deferred pending further information.

The Council granted affiliation to the Air Electronics Amateur Radio Club, RAF Topcliffe, Thirsk, Yorkshire, and the Southgate Radio Club.

**Anonymous Donation**

It was reported that a member had donated £20 to be applied towards the cost of waiving the subscriptions of blind members and £5 towards the cost of running the RSGB QSL Bureau.

**RSGB Bulletin Advertising**

The Council considered a report on members' complaints against an advertiser in the RSGB BULLETIN and decided to inform the firm concerned that if there were any further complaints the Society would reluctantly have to refuse to accept further advertising.

**National Field Day—Change of Rules**

The Council discussed at length a proposal to change the rule regarding power to be used by stations taking part in National Field Day. It was agreed, with effect from the the 1967 event, to forbid the use of p.a. valves of greater anode dissipation than 13·5 watts. (Details will be published next month.—EDITOR.)

**Minutes of Committees**

The Council accepted as reports the minutes of the following Committee meetings: Membership and Representation (7.3.66), H.F. Contests (17.3.66. and 21.4.66.), Scientific Studies (21.3.66.), Exhibition (25.3.66.), Education (26.3.66.), GPO Liaison and TVI (30.3.66.), V.H.F. Contests (6.4.66.), V.H.F. (15.4.66.), Mobile (20.4.66.) and the IARU Working Group (4.4.66.).

**Malta Beacon**

It was reported that Lt. Cmdr. H. Cunningham, 9H1A, was willing to set up and operate a 70 Mc/s beacon station in Malta on behalf of the Society. An expenditure of £37 10s. 0d. on equipment on loan for the station was authorized, subject to the approval from the Government of Malta for the installation.

**New Headquarters**

It was reported that a building at Burnham, near Slough, Bucks., had been considered as a possible new headquarters but on investigation had been found to be unsuitable.

*The Meeting ended at 10.00 p.m.*

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**Headquarters Fund—List No. 29**

The following are additions to the list of those who have contributed to the fund:

L. Cdr. F. A. C. Benenna, R. E. Hurst, and C. J. Brockbank, GW3RCD.

**Total amount contributed to date: £2,251 9s. 7d.**

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**Opatija Conference** **(continued from page 451)**

Tottie, wife of Lt. Col. Carl-Erik Tottie, SM5AZO, President of SSA.

The Opatija Conference will long be remembered for the cordiality of the reception which delegates received from the President and members of the SRJ Preparatory Committee. Special mention should be made of the work done by Mr Ferid Suman, YU1AF (Secretary of SRJ) and of his energetic young assistant Miroslav (Mile) Bogosavljev, YU1SJ.

Throughout the Conference an Amateur Radio station operated from the Kvarner Hotel under the call-sign YU0IARU. Many hundreds of contacts were established all of which have been confirmed by an attractive coloured QSL card featuring the centre of Opatija.

Through the generosity of Rumag-Inzenzering of Belgrade, SRJ were able to present to each delegate a plastic-bound fitted writing hold-all to provide a lasting souvenir of the Opatija Conference. Among a number of well-produced documents included in the hold-all, the one that stood out above all others was a 16-page booklet produced by SRJ outlining the work of IARU Region 1 Division since its inception and an account of SRJ. Membership statistics, the Conference Programme, the names of the members of the Preparatory Committee and a short description of Opatija, helped to make the booklet an outstanding Conference contribution. The hold-alls were contained in plastic underarm cases donated by JAT Airlines each bearing the call-sign of the delegate to whom it had been presented.

*(To be continued)*

# BERU CONTEST 1966

THE twenty-ninth BERU contest held on 19-20 March, 1966, was won by D. R. Taylor, 9J2DT, with a score of 4040 points produced by 501 contacts. A very comprehensive aerial system consisting of a rhombic and three V aerials each 412 ft. per leg, was effective in quashing all opposition.

In second place is D. L. Coutier-Dutton, G3FPQ, whose 271 contacts produced 3427 points. This is an improvement over last year of almost 800 points and three places in the table. Third place is taken by George Barrett, ZD7IP, who last entered this contest in 1964 as 5B4IP. This year, operating from St. Helena, he scored 3236 points from 382 contacts. There was fierce competition for third place, and the final positions depended, mainly, on the accuracy, or in some cases inaccuracy, of the logs.

### Low Power Section

J. F. Dunglinson, 5Z4JX, who last year entered the High Power Section, this year dropped his power and secured first place in this section by scoring 2162 points from 228 contacts.

A praiseworthy effort from down-under puts Ray Jones, VK3RJ, in second place with 1778 points. The retiming of the contest seems to have been of advantage to VK/ZL stations, and it hoped that this will attract more entries from that part of the world in future contests.

### Receiving Section

For the sixth year running, Bill Wilkinson, BRS20317 leads the receiving section. He regrets the poor SWL entry in this contest and wonders if c.w. is a minority interest in the ranks of listeners. In second place is Eric Howell, BRS24775.

This section would not be complete without a log from Eric Trebilcock of Victoria, Australia, who normally sends in the only overseas entry. This year marks his twenty-fifth BERU. Congratulations Eric, we look forward to receiving your logs for many years to come.

### Conditions

Conditions seem to have generally improved in recent years, despite occasional radio blackouts in various parts of the world. Holding the contest a month later met with the approval of the majority of entrants, although some stations in the more tropical zones found the increase in static cut their scores on the l.f. bands. In most cases, however, this was compensated by increased scores on the h.f. bands.

**3·5 Mc/s.** " Total loss this year . . . usable openings obliterated by QRN " (9V1LP). " Much better than 7 Mc/s . . . good signal strengths and little QRM " (5N2AAF).

**7 Mc/s.** " Open to most areas . . . horrible QRM . . . especially good opening to G and VE during last two hours of contest " (9V1LP). " Disappointing . . . high QRN, too many East EU . . . not much time spent on this band " (5N2AAF).

**14 Mc/s.** " Excellent openings to EU . . . limited openings to North America and VE1, 2, 3, the only call areas worked . . .

## HIGH POWER SECTION

| Position | Call-sign | Total Points | Bonus Points | Power (watts) |
|---|---|---|---|---|
| 1*† | 9J2DT | 4040 | 1580 | 100 |
| 2*‡ | G3FPQ | 3427 | 2100 | 150 |
| 3* | ZD7IP | 3236 | 1400 | 75 |
| 4* | VE2NV | 3215 | 1700 | 150 |
| 5* | VO1FB | 3214 | 1220 | 500 |
| 6* | 9V1LP | 3202 | 1760 | 150 |
| 7* | G5WP | 3182 | 2060 | 150 |
| 8 | G5RI | 3150 | 1940 | 150 |
| 9 | G3OEV | 3105 | 1980 | 150 |
| 10* | 6Y5XG | 3100 | 1020 | 150 |
| 11* | VE1RB | 3095 | 1300 | 800 |
| 12 | VE1TG | 3034 | 1260 | 500 |
| 13* | 5N2AAF | 3000 | 1180 | 150 |
| 14 | VE2WA | 2980 | 1520 | 600 |
| 15 | VE2NI | 2925 | 1340 | 1000 |
| 16* | ZB2AM | 2887 | 920 | 75 |
| 17* | 9H1R | 2760 | 860 | 150 |
| 18* | ZL4BO | 2625 | 1402 | 150 |
| 19 | G2DC | 2500 | 1560 | 130 |
| 20* | VK6RU | 2390 | 1340 | 150 |
| 21 | G3DYY | 2380 | 1580 | 150 |
| 22* | VE3AU | 2360 | 1240 | 600 |
| 23* | VK7SM | 2295 | 1340 | 150 |
| | 9M2LO | 2295 | 1420 | 100 |
| 25 | VE3BHS | 2265 | 1200 | 150 |
| 26 | VE2ATU | 2180 | 1060 | 600 |
| 27 | G2QT | 2177 | 1380 | 150 |
| 28 | VE3ES | 2125 | 1100 | 900 |
| 29 | G5RP | 2055 | 1360 | 150 |
| 30 | VO1AW | 2045 | 700 | 150 |
| 31 | G3GFG | 2035 | 1220 | 150 |
| 32 | G3GEW | 2000 | 1320 | 150 |
| 33 | G3GGS | 1970 | 1400 | 100 |
| 34* | ZC4TX | 1955 | 920 | 150 |
| 35 | G3NAC | 1945 | 1260 | 150 |
| 36* | VK3AXK | 1940 | 1180 | 120 |
| 37* | VK2PV | 1920 | 1200 | 150 |
| 38 | G3EYN | 1885 | 1240 | 150 |
| 39 | VE2BV | 1835 | 840 | 500 |
| 40 | VK3APJ | 1832 | 980 | 80 |
| 41 | G3KSH | 1755 | 1180 | 150 |
| 42* | VP7NN | 1705 | 1000 | 150 |
| 43 | G3APN | 1685 | 1060 | 150 |
| 44 | VK2GW | 1677 | 1100 | 150 |
| | GW3OAY[1] | 1675 | 1100 | 150 |
| 45 | 9V1MT | 1620 | 880 | 75 |
| 46* | VK4LT | 1607 | 940 | 14[illegible] |
| 47 | G5VU | 1605 | 700 | 75 |
| 48 | VK3XB | 1575 | 1040 | 150 |
| 49* | VS6FO | 1535 | 960 | 150 |
| | VE2LY | 1535 | 840 | 170 |
| 51 | G3KHA | 1525 | 1040 | 100 |
| 52 | GW3CW | 1515 | 1080 | 120 |
| 53 | VE2AYY | 1440 | 760 | 180 |
| 54 | ZL1HY | 1215 | 860 | 150 |
| 55 | G3LZQ | 1195 | 820 | 150 |
| 56 | VE3BJK | 1180 | 480 | 180 |
| 57 | VE1EK | 1150 | 580 | 90 |
| 58 | G3IGW | 1140 | 880 | 150 |
| 59 | G3HDA | 1135 | 860 | 125 |
| 60 | G2FYT | 1120 | 820 | 150 |
| 61 | VK3UM | 1095 | 720 | 70 |
| 62 | G3VW | 1090 | 800 | 130 |
| 63 | G3JKY | 1085 | 660 | 130 |
| 64 | G3IAR | 1075 | 760 | 130 |
| 65 | G6XL | 1050 | 720 | 140 |
| 66 | G3TJD | 1040 | 800 | 120 |
| 67 | G2GM | 1010 | 720 | 150 |
| 68 | GI3RTS | 1005 | 700 | 150 |
| | 9H1AL | 1005 | 420 | 130 |
| 70 | G2AJB | 1000 | 680 | 150 |
| 71 | VE3MZ | 975 | 560 | 275 |
| 72 | VK5KO | 890 | 760 | 140 |
| 73 | GW2DPD | 860 | 580 | 100 |
| 74 | G8KU | 830 | 560 | 120 |
| 75 | G3JJG | 825 | 640 | 150 |
| 76 | G2RF | 815 | 540 | 125 |
| 77 | G3OXI | 810 | 580 | 50 |
| 78 | G3ULF | 800 | 560 | 50 |
| 79 | ZE3JO | 755 | 560 | 75 |
| 80 | G8DI | 730 | 500 | 140 |
| 81 | G2BLA | 640 | 460 | 90 |
| | G3JVJ | 640 | 480 | 70 |
| 83 | VS6BJ | 580 | 440 | 150 |
| 84 | G3MWZ | 575 | 400 | 150 |
| 85 | GM3NKQ | 545 | 420 | 120 |
| 86 | G2HAO | 520 | 380 | 100 |
| | G8QZ | 520 | 400 | 150 |
| 88 | VE5PM | 500 | 240 | 300 |
| 89 | GM3RFR | 485 | 360 | 100 |
| 90 | G3GSZ | 465 | 320 | 150 |
| 91 | G8KS | 430 | 260 | 150 |
| 92 | G3USF | 360 | 260 | 50 |
| 93 | VE3FEM | 340 | 240 | 100 |
| 94 | VE2CK | 310 | 220 | 175 |
| 95 | ZL1QW | 280 | 140 | 150 |
| 96 | VK6AS | 265 | 200 | 100 |
| 97 | VK3KS | 180 | 140 | 150 |
| 98 | VK9XI | 165 | 120 | — |
| 99 | G3KW | 160 | 120 | 40 |
| 100 | VE3DHN | 150 | 120 | 30 |

## LOW POWER SECTION

| Position | Call-sign | Total Points | Bonus Points | Power (watts) |
|---|---|---|---|---|
| 1*§ | 5Z4JX | 2162 | 1120 | 25 |
| 2* | VK3RJ | 1778 | 1040 | 25 |
| 3* | G2DU | 1675 | 1140 | 25 |
| 4* | VK2QK | 1285 | 780 | 25 |
| 5* | VP9BO | 1195 | 660 | 25 |
| 6* | VK4SS | 1190 | 760 | 25 |
| 7 | VK3ZC | 1150 | 800 | 25 |
| 8 | G3GNS | 1115 | 780 | 25 |
| 9* | ZL1MT | 860 | 600 | 15 |
| 10* | VK5ZF | 785 | 440 | 21 |
| 11 | VK4UC | 425 | 280 | 25 |
| 12 | 6Y5FH | 262 | 180 | 25 |
| 13 | VO1BD | 210 | 120 | 20 |

* Certificate Winner. † BERU Senior Rose Bowl or miniature. ‡ Col. Thomas Rose Bowl or miniature. § Junior Rose Bowl or miniature.

[1] GW3OAY ineligible—Multioperator station.

## RECEIVING SECTION

| Position | | Name | Total Points | Bonus Points |
|---|---|---|---|---|
| 1* | BRS20317 | W. E. Wilkinson | 3290 | 2000 |
| 2* | BRS24775 | Eric Howell | 3075 | 2000 |
| 3 | BRS6604 | E. H. Sherlock | 2470 | 1640 |
| 4 | BRS2292 | C. Harrington | 2020 | 1300 |
| 5* | BCRS195 | Eric Trebilcock | 1695 | 920 |
| 6 | A4489 | M. Dennison | 1425 | 940 |
| 7 | BRS18461 | F. C. Powell | 1315 | 900 |
| 8 | A2966 | S. H. Jesson | 1100 | 820 |
| 9 | BRS21008 | B. Crook | 795 | 600 |

* Certificate Winner. || Receiving Rose Bowl or miniature.

fantastic opening to EU 1500-2000 on second night; almost all G stations 599 but only workable at about one per ten minutes through East EU stations" (9V1LP). "Conditions good Saturday morning . . . VEs workable up to 03.00 . . . no ZLs heard" (5N2AAF).

**21 Mc/s.** "Unexpected opening to G 14.00-15.00 second day . . . band wiped out for a lot of the time by local QRN" (9V1LP). "The most productive band for QSOs although not for bonus points . . . Far East openings of short duration . . . conditions fair to VE" (5N2AAF).

**28 Mc/s.** "Much improved this year . . . several Gs worked during first afternoon . . . signal strengths to Australia and Africa phenomenal . . ." (9V1LP). "Several useful openings to G and one to VE" (5N2AAF).

ZD7IP remarks on the difficulty of working into VK or ZL from St. Helena, ZL being due south across the Antarctic; his failure to contact either of them during the contest was no surprise.

### Comments

Grateful thanks are due to those entrants who had sufficient energy left after writing out their logs to add a few comments.

In general most competitors find the present rules quite satisfactory although there are pleas from various stations for single band entries and multipliers instead of bonus points. All these suggestions are discussed by the committee when it revises the rules each year. The major difficulty in making any changes is that the committee must be certain that an attempt to make the contest fairer for one part of the world does not have the reverse effect elsewhere; and it is for this reason that comments sent in with logs are so valuable.

"1964 entry was spoilt as cross-fire between Greeks and Turks in Cyprus prevented me from retuning the vertical antenna for different bands—this year I suffered from crystal control!" (ZD7IP).

"Reckon 9J2DT had no sleep at all!" (ZB2AM).

"Persistent QRM from J. A. Regret lack of interest shown by VK/ZL" (VS6FO).

"Interest in ham radio re-aroused—please send necessary forms to rejoin RSGB! BERU very enjoyable because one doesn't have to compete with kW friends south of the border" (VE3FEM).

### How They Made Their Scores

**Contacts**

| | 3·5 | 7 | 14 | 21 | 28 Mc/s |
|---|---|---|---|---|---|
| 9J2DT | 7 | 43 | 151 | 215 | 84 |
| G3FPQ | 32 | 53 | 97 | 79 | 10 |
| ZD7IP | 23 | 44 | 145 | 113 | 53 |
| VE2NV | 43 | 67 | 128 | 63 | 3 |
| VO1FB | 50 | 74 | 131 | 144 | 1 |
| 9V1LP | 5 | 55 | 158 | 52 | 27 |

**Call Areas Worked**

| | 3·5 | 7 | 14 | 21 | 28 Mc/s |
|---|---|---|---|---|---|
| 9J2DT | 7 | 11 | 24 | 25 | 12 |
| G3FPQ | 13 | 20 | 33 | 30 | 9 |
| ZD7IP | 7 | 9 | 22 | 21 | 11 |
| VE2NV | 13 | 21 | 29 | 19 | 3 |
| VO1FB | 10 | 12 | 22 | 16 | 1 |
| 9V1LP | 4 | 18 | 28 | 22 | 16 |

The committee thanks the following for their useful check logs: G3AAE, G3AIM G5VM, G6LX, VE1DB, VE1OM, VE1WL, VE2BK, VE3CRA, VE3DU, VE3EK, VE4MF, ZL1HV, 9V1MK and 9V1NM.

"Highlight—9J2DT all alone on 28 Mc/s" (VE3AU).

"Found the hors d'oeuvres on 80 particularly wholesome, followed by an excellent main course" (G3GEW).

"P.S. I still hate c.w." (G3NAC).

The standard of logging was, in general good. In particular, the leading logs were extremely accurate, and it is, perhaps, worth noting that several stations who *claimed* high positions had so many inaccuracies in their logs that they dropped by five or six positions in the final table—the lesson is obvious!

## Slade D/F Qualifying Event

A larger than usual contingent of 17 teams braved the gale force wind and rain squalls on Clee Hill for the start of this contest. The signals from G3SRS/P and G3UCN/P, while leaving something to be desired, were sufficient to enable the contestants to start tracking down the hidden stations.

After the contestants left Clee Hill, the weather rapidly improved with many bright intervals. The organizer, seeking to fool the very experienced "hounds," placed the two stations at opposite ends of Bringewood Chase, barely 2½ miles apart, but eight miles distant by road. The A station was on a hillside, approached by a long "dead end" road starting from Ludlow, while the B station was on a hill overlooking the River Teme, the official route to this transmitter being over a small decaying bridge, only accessible by a quarter mile walk along the river bank. However, all these wiles were of no avail, and the winning competitor, E. Bristow of Oxford, found both stations by 3.15 p.m. He was closely followed by E. Mollart, W. North and C. N. Smart. Of the 17 teams 10 found both stations, four found one station, and three failed to find either.

Tea was taken at the George Hotel, Bewdley, followed by the announcement of results, and the presentation of prizes to the winning contestants. Thanks are due to the operators at both stations and to Mr D. A. Findlay for acting as umpire.

| | | "A" Station | "B" Station | |
|---|---|---|---|---|
| 1 | E. Bristow | 3.15 | 2.47 | Oxford |
| 2 | E. Mollart | 3.16 | 2.47½ | Oxford |
| 3 | W. North | 3.17 | 2.48 | Chiltern |
| 4 | C. N. Smart | 3.18 | 2.37 | Slade |
| 5 | M. Hawkins | 2.52 | 3.25 | Oxford |
| 6 | F. Allsopp | 3.46 | 2.36 | Derby |
| 7 | A. Hitchcock | 3.52 | 2.50 | Derby |
| | I. Butson | 3.52 | 2.57 | High Wycombe |
| 8 | T. Gage | 2.53 | 3.59 | Oxford |
| 9 | I. Jackson | 3.19 | 4.14 | Rugby |
| | J. Grant | 3.29 | — | Rugby |
| | B. J. Mahony | — | 3.44 | Rugby |
| | R. Harding | 4.05 | — | — |
| | G. T. Peck | — | 4.13 | High Wycombe |

Mr E. Mollart previously qualified for the RSGB D/F Final, which means that the qualifying competitors from this event are E. Bristow, W. North, and C. N. Smart.

## CONTESTS DIARY

| | |
|---|---|
| 9–10 July | 1·8 Mc/s Summer Contest (see page 338, May 1966) |
| 17 July | Derby D/F Qualifying Event (see page 411, June 1966) |
| 24 July | Third 70 Mc/s (Portable) Contest* (see page 338, May 1966) |
| 31 July | High Wycombe D/F Qualifying Event (See page 411, June 1966) |
| 13-14 August | WAE Contest (C.W.) |
| 3-4 September | V.H.F. NFD * |
| 10-11 September | WAE Contest (Phone) |
| 11 September | 80 Metre Field Day |
| 18 September | D/F National Final |
| 16 October | Second 1296 Mc/s Contest * |
| 15-16 October | RSGB 21/28 Mc/s Telephony Contest |
| 15-16 October | Second 432 Mc/s Contest * |
| 29-30 October | RSGB 7 Mc/s DX (Phone) Contest |
| 12-13 November | RSGB 7 Mc/s DX (C.W.) Contest |
| 19-20 November | Second Top Band Contest |
| 4 December | Fourth 70 Mc/s (C.W.) Contest * |

* Qualifying contests for V.H.F./U.H.F. Listeners' Championship

# CLUBROOM

## A Monthly Survey of Club and Group Activities

*For further information on membership or the activities of a particular club, application should be made to the person whose call-sign is indicated at the end of the item. Full addresses may be obtained from the RSGB Amateur Call Book.*

**AERE (Harwell) ARC** seems to have had quite a time during the last 4m contest. Aside from the blood—literal—toil and sweat involved in erecting the station, the transmitter created havoc on Channel 5. One irate viewer in a village several miles away called out the local police who diplomatically referred him to the GPO. As the transmitter had been checked and approved by the GPO, there seems to be little that can be done to remove the interference. *G2HIF.*

**Basingstoke ARC** will be meeting at 7 p.m. on Saturday, 16 July, for talks on v.h.f. by several speakers.

**Bedford ARC** normally meets in a school, but is now facing the problem of being " out on the street " during the summer vacation. The club is therefore anxiously searching for alternative premises where this difficulty does not arise. *G3VBA.*

**Bristol RSGB Group.** At the last meeting an amusing and constructive talk on v.h.f. matters was given by G3KUJ. In addition, points on mobile working and aerials were demonstrated. *G5UH.*

**Bromsgrove and District ARC** assisted the Bromsgrove Rovers football club at its Fête on Whit Monday by putting on a demonstration station under the call G3VGG/P. This is the club's own call-sign and the one which they used during NFD.

**Cambridge and District ARC** had the opportunity of seeing two home-built TV cameras on 3 June, when Bill Thacker, G6PGF/T and Doug. Wiles, G6BBY/T, described in detail the construction from collecting the parts to final switch on. They proved themselves to be true enthusiasts who are most willing to help others to get going. The June programme included a visit to the BBC Television Centre in London, and the GPO Radio Telephone Station at Baldock. *G5BQ.*

**Chelmsford ARS** held another informal D/F hunt recently despite the efforts of the clerk of the weather. Further similar events are planned provided that the present level of support continues. *G3EIX.*

**Cheltenham Group** enjoyed a good turn-out in April, and has formed a small committee. This resulted from a pointed and sound letter to G8ML from G3BA. *G8ML.*

**Cheshunt and District RC** hopes to have a talk on s.s.b. at the July meeting. As is the usual custom, the club will not be meeting in August. One of the highlights of the June meeting was a junk auction when some made purchases which were bargains by anyone's standard, and others bought apparatus which can only be described as priceless. *G3EGD.*

**Coventry ARS's** current *Newsletter* under review contains an excellent article on printed circuits and the manner in which they may be constructed. On 1 July, the club enjoyed the GPO film *Ship-to-Shore*. *G3UOL.*

**Crawley ARC** is again holding its Annual Mobile Evening on the Hoggs Back between Guildford and Farnham on Wednesday, 27 July. Nothing will be organized, just a friendly evening chat. *G3FRV.*

**Cray Valley RS** had more than a rough time during the 144 Mc/s/P contests, not the least of the troubles of which were caused by batteries which failed a little too quickly for comfort. However, by circulating the available vehicles, they got by. *G3DCN.*

**Crystal Palace and District RC** reports that NFD was reasonable, apart from a lack of operators, especially for the " night shifts." Equipmentwise, there were virtually no complaints, only a couple of minor irritations. Attention is now to be directed to producing transistorized gear for future occasions. *G3FZL.*

**Dudley ARC** reports that with the coming of the summer months, a treasure hunt is to be organized, and that they will be taking part in the v.h.f. portable contest from a site in Denbighshire under the call GW3RXK/P. A special note should be made of 7 October which will be the date of the home construction competition. *G3PWJ.*

**East Worcestershire RS** is back in its stride once again thanks to a very active committee. Future activities include demonstrations, lectures on BCI and TVI, amateur TV, and two constructional projects, the equipment proposed being a single band transmitter, and an s.s.b. project. The club would like to see again some of the old stalwarts who seem to have drifted away from the pack. Meetings are held on the second Thursday in each month at the Old People's Home, Park Road, Redditch commencing at 7.45 p.m., and to which visitors and potential members are always welcome. *G3HCT.*

**Echelford ARS** reports that its ex-treasurers have showed the new treasurer how to tie highly complicated knots in the purse strings, knots so good that it takes all evening to decide how to even start undoing them, let alone get at the sheckles inside. Knot-tying is the hallmark of any good treasurer. Meetings take place at the usual time and venue. *G3RHF.*

**Edgware and District RS** had a most enjoyable NFD which was well supported by members, and atttended by quite a number of visitors. The club was especially pleased to hear that their treasurer, G3SJE was nominated as Operator of the Month by the ARRL. The club net now takes place on Wednesdays at 21.00 on 1875 kc/s. *G3RAA.*

**Kings Lynn and District YMCA ARC** was formed in January and reports good support. The official opening of the new premises will take place on 14 July when the club transmitter will be in operation.

**Magnus Grammar School RS** had a very enjoyable NFD with visitors from many widely placed towns. Many reunions were made. *G3JNK.*

**Midlands ARS** reports that the North Midlands Mobile Rally was a resounding success, and by 4 p.m., nearly 2000 people had passed through the gates. What gave the greatest pleasure was the very great distances some operators had travelled to attend the rally, one of whom at least had travelled some 150 miles. *G3JDJ.*

**North Kent RS** has a special edition of its *Newsletter* to celebrate the 100th edition, and special thanks are given to G3HKX who conceived the idea and ran it for some 60 issues, and to G2FNT and his XYL Mary for their current hard work. The July meeting will be on the 14th when the club will be visiting the Shell Centre.

**Northern Heights ARS** regrets to announce that the slides for the W1BB taped lecture have been lost in the post and as a result all present bookings have had to be cancelled until replacements are secured. On 7 July the club will be visiting Emley Moor TV station to see the new 625 line equipment. *G3MDW.*

**Newark SW Club** reports that its effort for NFD was well supported, and that a newly acquired petrol generator set more than proved its worth. *G3TWW.*

**Peterborough and District ARS** will be active on all bands from 160 to 2m at the Peterborough Agricultural Show. The station will be located in the Sports and Hobbies section which is next to the pig pens. All members are hoping that the wind will be in the right direction. *G3KPO.*

**Purley and District RC** meets on the first and third Fridays in each month at the Railwaymen's Hall, Whitecliffe Road, Purley. Visitors and prospective members are always sure of a hearty welcome. The next meeting will be on 15 July when G3JQN will be talking on 144 Mc/s, 432 Mc/s and 23 cm. Still in the v.h.f. field, the club is busily engaged in preparing for the V.H.F. NFD. Meetings on 5 August and 2 September will be informal natter nights. *G3FTQ.*

**Plymouth RC.** In the current issue of *QUA* under review, the chairman, G3SVZ, makes a plea for full attendances at AGMs. As your conductor has observed on many occasions, the AGM is undoubtedly the most important meeting of the year, for the outcome of the AGM sets the pattern for the ensuing 12 months, and it is at such meetings that all members have an opportunity to voice their opinions, and in so doing, give guidance to the newly elected officers. Paul made his points well. Let's hope they were taken to heart. *G3UKI.*

**Radio Invalid and Bedfast Club.** The issue of *Radial* to hand is as full of snippits as any for a long time. We particularly like the definition of an adult which is given as: A person who stops

## OFFICIAL REGIONAL MEETING
## REGION 9

**2 OCTOBER** **ROYAL HOTEL WEYMOUTH**

*FURTHER DETAILS NEXT MONTH*

growing in an upward direction and begins to grow outwards instead. *G3LWY.*

**Reading ARC** held its Annual Constructional Competition on 7 June. Thirty-two items of an exceptionally high standard were submitted, and this made judging a very difficult task indeed. The winners were selected by a secret ballot in which all members took part. The Nash Cup, awarded to a licensee, was won by G3TOQ for a superb s.s.b. transmitter, and the Hill Cup, awarded to a non-licence holder, by Mr J. Green for a transistorized receiver. *G2FQR.*

**Reigate ATS** will be holding its next meeting at the George and Dragon, Redhill on 21 July at 7.30 p.m. when the subject will be demonstrations of members' u.h.f. gear. The society was greatly saddened by the call to Higher Service of its secretary Denis Thom, G3NKT. Liked and respected by all, he will be sorely missed. *G3NKS.*

**Salisbury and District SW Club** will be operating GB3WIJ from the Wiltshire International Jamboree at Ogbourne from 29 July to 7 August. Contacts will be welcomed on all bands. *G3OBW.*

**Saltash and District ARC** held a very successful rally on Whit Monday, and, hearing that G9BO was to show his face, even the sun came out in curiosity. The personal appearance did not materialize, for, although Stinker was there, he funked showing his face at the last moment—the first time in history he has ever shown any modesty—and even this is some sort of record. On 15 July the club meets for a mobile competition, and on 29 July for a Problem Night—radio of course. *G2DFH.*

**Southgate RC** had a very enjoyable lecture on transistors by G3RVV, as a result of which many gained a clearer idea of what these devices can—and cannot—do. *G3TXA.*

**Stoke-on-Trent ARS** has its AGM behind them and are looking forward to another year of progress. During NFD, two stations were operated, and this entailed considerable organization. The Trentham Rally attracted a record attendance of some 2750 people, which number included about 300 mobiles. *G3UBU.*

**Surrey Radio Contact Club** held its constructional contest recently, the winner of which was G3OOD with a fine s.s.b. transceiver. The July meeting will take place on the 12th when the lecture will be "Communication by Light," given by G3DGN. *G3KGA.*

**South Birmingham RS** has changed its meeting evening to the third Wednesday in each month, so if you stick to the old day, you will be out of luck. The July meeting will be an informal "Natter Night." Like a great many other clubs, South Birmingham spent a great deal of time preparing for NFD. *G3OHM.*

**Thames Valley ARTS** will be meeting on 6 July for a talk on Radio Telephone Equipment by G3TYR. On 3 August, the meeting will be devoted to a lecture on Transistor Circuitry by G3JKA. *G3JKA.*

**Verulam (St Albans) ARC** is enjoying increasing membership and support, indeed so much so that it has outgrown its QTH. As a result, it has now moved to the Cavalier Hall, Watford Road, St Albans. The club has expressed its grateful thanks to Marconi Instruments Ltd. who have acted as hosts for so long. The July meeting will on the 20th at the new QTH when the subject will be "Bridging the Gap"—personal memoirs of G4GA of Amateur Radio in the late 'thirties. *G3GJX.*

**West Kent ARS** will be meeting on 15 July for a film show, and on the 29th for a talk by G3PAH on radio teleprinters. Further details from *G3SSE.*

**Wimbledon and District ARS** has received some most interesting suggestions in a letter to the Secretary from the Secretary concerning future lectures. Two of the most fascinating are—Fair Isle knitting using p.v.c. wire—and—Why you and I are the only members left. Is somebody kidding somebody? Judging from the comments dotted about the issue of *QRK* under review, it would seem that the Editor's typewriter is designed for left-footed operation rather than the more usual mode. Perhaps we can back up his plea by asking if there are any typewriter repairers in the fold. *G3EPU.*

**Wolverhampton ARS** is meeting on 18 July at 7.30 p.m. at Cheapside for station visits. A most important meeting will take place on 3 October. This is the AGM, the date of which should be written in red ink in your diary. Don't miss this one. *G3JJR.*

**Yeovil ARC** paid a visit to Hinkley Point nuclear power station late in June. On 6 July a tape "Amateur TV" is to form the main stay of the programme. Plans are well under way for participation in V.H.F. NFD. *G3NOF.*

*Is your club, society or group getting the fullest advantage from the publicity which it can secure from this column?* Those contributions which are associated with a call-sign do. Does yours? If not, why not?

Deadline for the **August** issue is **8 July.**
Deadline for the **September** issue will be **12 August.**

### British Rail Amateur Radio Society

Members who work for British Rail will be interested to know that efforts are being made to form a British Rail Amateur Radio Society. Further information may be obtained from R. V. New, 29 Little Dock Lane, Honicknowle, Portsmouth, or from H. A. J. Gray, BRS23279, "Eleven" Swanton Drive, East Dereham, Norfolk.

## MOBILE RALLIES

**10 July**.....**Hurn Airport Mobile Rally**
Hurn Airport, Bournemouth
*Organized by the Wessex Amateur Radio Group and BAC Radio Club*

**10 July**.....**South Shields Mobile Rally**
*Organized by the South Shields and District ARC*

**17 July**.....**Worcester Mobile Picnic**
The Hill County Secondary School, Upton-upon-Severn. NGR SO 839399
*Organised by the Worcester and District ARC*

**24 July**.....**Cornish Mobile Rally**
Pentire Headland, Newquay
*Organized by the Cornish Radio Amateur Club*

**14 August**.....**Derby Mobile Rally**
*Organized by the Derby and District ARC*

**29 August**.....**Peterborough Mobile Rally**
Riverside, near the swimming pool, Peterborough
(See page 334, May)
*Organized by the Peterborough and District ARS*

**4 September**.....**Swindon Mobile Picnic**
Lidiard Park, near Swindon
*Organized by the Swindon and District ARC*

**11 September**.....**RSGB National Mobile Rally**
Woburn Abbey, Bedfordshire
*Organized by the Radio Society of Great Britain*

**25 September**.....**Harlow Mobile Rally**
*Organised by the Harlow and District ARS*

# Forthcoming Events

**Details for inclusion in this feature should be sent to the appropriate Regional Representatives by the first of the month preceding publication. A.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. Standing instructions cannot be accepted.**

### REGION 1

**Ainsdale (ARS).**—6, 20 July, 3 August, 8 p.m, 77 Clifton Road, Southport.

**Allerton (Liverpool) (SRHS).**—Thursdays, 8 p.m., 3rd Allerton Scout Group Headquarters, Church Road, Woolton, Liverpool.

**Ashton-under-Lyne (AuL&DARS).**—15, 29 July, 8 p.m., Ashton-under-Lyne Technical College.

**Blackburn (ELARC).**—7 July (Visit by Regional Representative), 4 August (Talk by GPO Representative), 7.30 p.m., YMCA, Limbrick, Blackburn.

**Blackpool (B&FARS).**—Mondays, 8 p.m., Pontins Holiday Camp, Squires Gate. Morse tuition from 7.30 p.m.

**Bury (B&RRS).**—12 July (Quiz Night: Bury v. Eccles), 9 August (Lecture and demonstration by a commercial organisation, subject to be announced), 8 p.m., Old Boars Head, Crompton Street (private room).

**Chester.**—Tuesdays, except first in each month, 8 p.m., YMCA.

**Crewe & District.**—1 August, 8 p.m., Earl of Crewe Hotel, Nantwich Road.

**Eccles (E&DRC).**—Tuesdays, 8 p.m., Patricroft Congregational School, Shakespeare Crescent, Patricroft, Eccles. Every Thursday, club Top Band net at 20.30.

**Liverpool (L&DARS).**—Tuesdays, 8 p.m., Conservative Association Rooms, Church Road, Wavertree.

**Liverpool (ULARS).**—18 July, 1 August, 7.30 p.m., Students' Union, 2 Bedford Street North, Liverpool 7.

**Macclesfield.**—19 July, 2 August, 8 p.m., The George Hotel, Jordongate.

**Manchester (M&DARS).**—Wednesdays, 7.30 p.m., 203 Droylsden Road, Newton Heath, Manchester 10.

**(SMRC).**—Fridays, 7.45 p.m., Rackhouse Community Centre, Daine Avenue, Northenden.

**Morecambe.**—6 July, 3 August, 125 Regent Road.

**Preston.**—12 July, 9 August, 7.30 p.m., St. Paul's School, Pole Street, Preston.

**Southport (SRS).**—Wednesdays, 8 p.m., and Sundays, 4 p.m., Sea Cadets Camp, The Esplanade.

**Stockport.**—13, 27 July, 10 August, The Blossoms Hotel, Buxton Road, Stockport.

**Wirral.**—6, 20 July, 3 August (Junk Sale), 8 p.m., Harding House, Park Road West, Claughton, Birkenhead.

### REGION 3

**Birmingham (SBRS).**—20 July (Natter Night), 8 p.m., The Scouts Hut, Pershore Road, Selly Park, Birmingham, 29.

### REGION 5

**Bedford (B&DARC).**—12 July (Transmitter project), 28 July (Transmitter project), 7.45 p.m., Westfield School, Queen's Road, Bedford, Slow Morse, 7.45 p.m.

**Cambridge (C&DARC).**—8 July (Informal), 13 July (Visit to BBC TV Centre, London, 2.15 p.m., List closed), 15 July (Evening Visit to GPO Radio Telephone Station, Baldock), 22 July (Informal), 29 July (Informal). 19 July, Committee meeting, 7.30 p.m., Club Headquarters, Corporation Yard, Victoria Road, Cambridge.

**(CUWS).**—Activities suspended until October Term.

**Luton (L&DARS).**—Tuesdays, 8 p.m., ATC Headquarters, Crescent Road, Luton, Bedfordshire.

**March (M&DRAS).**—Tuesdays, 7.30 p.m., rear of Police Headquarters, March, Cambridgeshire.

**Royston (R&DARC).**—Wednesdays, 8 p.m., Manor House Social Club, Melbourn Street, Royston, Herts.

**Shefford (S&DARC).**—Thursdays, 7.45 p.m., Church Hall, High Street, Shefford, Bedfordshire.

### REGION 6

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

### REGION 7

**Acton, Brentford & Chiswick (ABCRC).**—19 July ("Power Supplies for London Transport," by G3GEH), 7.30 p.m., AEU Club, 66 High Road, Chiswick.

**Ashford (Middx.) Echelford (ARS).**—13, 27 July, 7.30 p.m., Links Hotel, Ashford.

**Bexley Heath (NKRS).**—14 July (Visit to Shell Centre), meetings 8 p.m., Congregational Church Hall, Chapel Road, Bexley Heath.

**Chingford (SRC).**—13 July, alternate Tuesdays, G3RYF, 17 Forest Drive, Leytonstone, E11.

**Croydon (SRCC).**—12 July, 7.30 p.m., Blacksmiths Arms, South End.

**Dorking (D&DRS).**—12 July (Informal Meeting), 8 p.m., Wheatsheaf. 26 July (Informal Meeting), 8 p.m., Black Horse, Gomshall.

**Ealing (E&DARS).**—Tuesdays, 7.30 p.m., Northfields Community Centre, Northcroft Road, Ealing, W5.

**East Ham.**—Tuesdays fortnightly, 7.30 p.m., 12 Leigh High Road, East Ham.

**East Molesey (TVARTS).**—First Wednesday each month, Prince of Wales, Bridge Road, East Molesey.

**Edgware & Hendon (EADRS).**—11 July (Film Show), 25 July (Informal Meeting) 8 p.m., John Keble Hall, Church Close, Deans Lane, Edgware.

**Gravesend (GRS).**—20 July, 7.30 p.m., RAFTA Club, 17 Overcliffe Road.

**Greenford (G&GARS).**—Alternate Fridays, 15 July, 8 p.m., Greenford Community Centre, Oldfield Lane, Greenford, Middlesex.

**Guildford (G&DRS).**—14, 28 July, 8 p.m., Guildford Model Engineering Society in Stoke Park.

**Harlow (DRS).**—Tuesdays, Thursdays, 7.30 p.m., Mark Hall Barn, First Avenue.

**Harrow (RSH).**—Friday, 8 p.m., Roxeth Manor School, Eastcote Lane.

**Havering (H&DARC).**—13, 27 July, Romford.

**Holloway (GRS).**—Monday, Wednesday, (RAE & Morse), 7.30 p.m., Friday (Club), 7.30 p.m., Montem School, Holloway, N7.

**Hounslow (HADRS).**—11, 25 July, Canteen, Mogden Main Drainage Department, Mogden Works, Isleworth.

**Ilford.**—Thursday, 8 p.m., 579 High Road, Ilford (Nr. Seven Kings Stn.).

**Kingston.**—7, 21 July, 8 p.m., YMCA, Eden Street. Fridays (Morse classes), 2 Sunray Avenue, Tolworth.

**Leyton & Walthamstow.**—12, 26 July, 7.30 p.m. Leyton Senior Institute, Essex Road, London, E10.

**Loughton.**—15, 29 July, 7.30 p.m., Meeting alternate Fridays, Loughton Hall (Nr. Debden Station).

**New Cross.**—Wednesdays, Fridays, 8 p.m., 225 New Cross Road, SE14.

**Norwood & South London (CP&DRS).**—16 July, CD Centre, Catford, London, SE6.

**Paddington (P&DARS).**—Wednesdays, 7.30 p.m., Beauchamp Lodge, 2a Warwick Crescent, W2.

**Purley (P&DRC).**—15 July, 8 p.m., Railwaymen's Hall (Side Entrance), 58 Whytecliffe Road, Purley.

**Reigate (RATS).**—21 July (Demonstration of members' u.h.f. gear), 7.30 p.m., George and Dragon, Cromwell Road, Redhill. 27 July, Hogs Back Rally.

**Romford (R&DRS).**—Tuesdays, 8.15 p.m., RAFTA House, 18 Carlton Road.

**Scout ARS.**—21 July, 7.15 p.m., Baden Powell House, Queens Gate, South Kensington, SW7.

**Science Museum (CSRS).**—19 July, 6 p.m., (Forthcoming visit to Jodrell Bank), Science Museum, South Kensington.

**Sidcup (CVRS).**—7 July, 7.30 p.m., Congregational Church Hall, Court Road, Eltham.

**Slough (SDR Group).**—First Wednesday in each month, 8 p.m., United Services Club, Wellington Street.

**South London Mobile Club.**—B. Negri, G3LXN, 17 Voltaire Road, Clapham, London, SW4.

**Southgate & District.**—7.30 p.m., Parkwood Girls' School (behind Wood Green Town Hall).

**St. Albans (Verulam ARC).**—20 July ("Bridging the Gap, Then to Now," by G4GA), 7.30 p.m., The Cavalier Hall, Watford Road, St. Albans.

**Sutton & Cheam (SCRS).**—19 July, 8 p.m., The Harrow Inn, High Street, Cheam.

**Welwyn Garden City.**—14 July (Annual Sausage Supper), Club Cottage, Burnham Green.

**Wimbledon (W&DRS).**—8 July, 8 p.m., Community Centre, St. George's Road, Wimbledon, SW19.

**Wembley (CECARS).**—Thursdays, 7 p.m., visitors ring ARNold 1262, first.

### REGION 8

**Crawley (CARC).**—13 July (Informal, for details contact G3FRV). 27 July (Mobile Evening), 8 p.m., Hogs Back, nr. Guildford, Surrey.

### REGION 9

**Bristol.**—29 July, 7.15 p.m., New Physics Theatre G.44, Royal Fort, Bristol University, Woodland Road, Bristol 8.

**Burnham-on-Sea (B-o-SARS).**—Second Tuesday in each month, 8 p.m., Crown Hotel, Oxford Street, Burnham-on-Sea.

**Camborne (CRAC).**—First Thursday in each month, Staff Recreation Hall, SWEB Headquarters Pool, Nr. Camborne.

**(CRAC V.H.F. Group).**—First Thursday in each month, 7.30 p.m., The Coach and Horses, Rydar Street, Truro.

**Exeter.**—First Tuesday in each month, 7.30 p.m., George and Dragon Inn, Blackboy Road, Exeter.

**Plymouth (PRC).**—Tuesdays, 7.30 p.m., Virginia House, Bretonside, Plymouth.

**Saltash (S&DARC).**—Alternate Fridays, 7.30 p.m., Burraton Toc H Hall, Warraton Road, Saltash.

**South Dorset (SDRS).**—First Friday in each month, 7.30 p.m., Labour Rooms, West Walks, Dorchester.

**Torquay (TARS).**—30 July (Tape Lecture, "Aerials," by G6CJ), 7.30 p.m., Club HQ, Belgrave Road, Torquay.

**Weston-super-Mare.**—First Friday in each month, 7.15 p.m., Victoria Hotel, Weston-super-Mare, Somerset.

**Yeovil (YARC).**—Wednesdays, 7.30 p.m., Park Lodge, The Park, Yeovil.

### REGION 10

**Cardiff.**—11 July, 7.30 p.m., TA Centre, Park Street, Cardiff.

### REGION 14

**North Ayrshire (NAARC).**—First Sunday each month, 7.30 p.m., Ardrossan ATC HQ, The Academy, Sorbie Road, Ardrossan.

### REGION 15

**Belfast and District RSGB Group.**—Third Friday in each month at 8 p.m., Ulster Tape Recording Society Clubroom, 44 Dublin Road, Belfast.

### REGION 16

**Basildon (BDARS).**— 2 August (Social). Details from G3IJB.

**Chelmsford (CARS).** 9 July (Visit to North Foreland G.N.F.). No meetings in August.

**Great Yarmouth (GYRC).**—Fridays, 7.30 p.m., The Manager's Office, The Old Power Station, South Quay, Swanstons Road, Great Yarmouth. Details from G3HPR.

**Ipswich (IRC).**—Last Wednesday in the month, 7.30 p.m., Red Cross HQ, Gippeswyk Hall, Ipswich.

**Norwich (NARC).**—Mondays, 7.30 p.m., Old Lakenham Hall, Mansfield Lane, Norwich.

# OFFICIAL REGIONAL MEETING

# REGION 12

# 20-21 AUGUST, 1966

## *Programme*

| | | | *Venue* | *Ticket* |
|---|---|---|---|---|
| *Saturday, 20 August* | | | | |
| 10.30 a.m. | ... | Assemble | Car Park, opposite Elgin Town Hall | |
| 11.00 a.m. | ... | Civic Reception | Town Hall, Elgin | |
| 1.00 p.m. ... | ... | Lunch | Two Red Shoes, Elgin | (8/-) |
| 2.00-4.00 p.m. | ... | Radio Exhibition | Two Red Shoes, Elgin | |
| 4.30 p.m. ... | ... | Afternoon Tea | Public Institute, Fochabers | (3/-) |
| 5.00 p.m. ... | ... | Business Meeting | Supper Room, Public Institute, Fochabers | |
| 7.30 p.m. ... | ... | Dinner and Social | Public Institute, Fochabers | (21/-) |
| *Sunday, 21 August* | | | | |
| 10.00 a.m. ... | ... | Assemble for Morning Coffee | Laverock Bank Hotel, Lossiemouth | (2/6) |
| 10.30 a.m. ... | ... | Technical Visit | Royal Naval Air Strike Squadron, Lossiemouth | |
| 1.00 p.m. ... | ... | Lunch | Laverock Bank Hotel, Lossiemouth | (9/-) |

## *Ladies' Programme (Saturday only)*

| | | |
|---|---|---|
| 2.00 p.m. ... | ... | 'Bus Tour of Speyside, starting from Elgin (Two Red Shoes) |
| 4.30 p.m. ... | ... | Afternoon tea at Cullen House, residence of Countess of Seafield |
| 5.00 p.m. ... | ... | Tour of Cullen House Gardens |
| 6.45 p.m. ... | ... | Arrive at Public Institute, Fochabers (8/6) |

**Firm Reservations MUST be made by 9 August to GM3AEL, GM3GUJ, GM3KHH or GM3OWG. Hotel accommodation can be arranged if required.**

A. W. Smith, GM3AEL,
1 Sclattie Place,
Bankhead,
Bucksburn,
Aberdeenshire

J. M. Lyon, GM3GUJ,
Thorfinn Place,
Thurso,
Caithness

W. G. Cecil, GM3KHH,
Innes House,
Oran,
Clochan,
Buckie
Banffshire

M. V. Harvey, GM3OWG,
Highlanders Hotel,
West Church Street,
Buckie,
Banffshire

### LONDON MEMBERS' LUNCHEON CLUB

Revised arrangements for the entertainment of overseas visitors are being made, details of which will be announced later. In the meantime meetings of the Luncheon Club are cancelled.

## LOOKING AHEAD

**10 July.**—Hurn Airport Mobile Rally.

**10 July.**—South Shields Mobile Rally.

**24 July.**—Cornish Mobile Rally.

**14 August.**—Derby Mobile Rally.

**29 August.**—Peterborough Mobile Rally.

**3-4 September.**—Northern Radio Societies' Convention, Manchester.

**4 September.**—Swindon Mobile Picnic.

**11 September.**—RSGB National Mobile Rally, Woburn Abbey, Bedford.

**25 September**—Dundalk Convention

**2 October.**—Region 9 ORM.

**26-29 October.**—RSGB International Radio Communications Exhibition.

**9 December.**—RSGB Annual General Meeting.

# The INTERNATIONAL AMATEUR RADIO CLUB

(Station 4U1ITU)

wishes to announce that its

# ANNUAL CONVENTION 1966

will be held in Geneva (Switzerland) from 26 to 28 August, 1966. The complete programme and the registration form will appear in IARC Newsletter No. 5 which is being sent to all those interested in attending the Convention.

Participants will be able to discuss problems, attend lectures, make interesting tours and visit scientific installations.

There will be a reception in the ITU Headquarters and a dinner/dance in a famous Geneva restaurant.

For all information and registration, contact:

**IARC, Box 6,**
**1211 Geneva 20,**
**Switzerland.**
**Tel: (022) 34.70.00.**

# Letters to the Editor

*Neither the Editor nor the Council of the Radio Society of Great Britain can accept responsibility for views expressed by correspondents. Letters for inclusion in this feature should be concise and preferably not more than 200 words in length.*

### G3SBA Top Band Transmitter

A number of constructors have written to me about " The G3SBA Top Band Transmitter " described in the March issue, and I would like to summarize my replies to them for the benefit of any other puzzled members.

The component list refers to RFC2, which is used in my prototype to decouple the supply for an external relay operated from the v.f.o. h.t. line. As I have never used this feature it was omitted from the published circuit, and it should have been deleted from the parts list too. C11 appears twice in the parts list, as 680 pF and 1000 pF, and as 1000 pF on Fig. 1. It should be 680 pF, so that in parallel with the 220 pF C9 (which has a large temperature co-efficient) 900 pF of the correct temperature co-efficient to minimize oscillator warm-up drift is obtained. My original design used just a 1000 pF, hence the error.

The pot cores used were Mullard, of 11mm *outside* diameter, but are now obsolete. To check on pot core windings with a g.d.o. it is necessary to form a loop in the lead to the coil, and wrap this round the g.d.o. coil.

Zener diode CR1 is shown the wrong way round in Fig. 1.

Should the waveforms be checked with an oscilloscope, note that in transistor circuits it is generally the current, not the voltage that is important. For example, if T3 is correctly tuned it will double, so that the current through the primary, and hence the secondary voltage, will be mostly double frequency, but the voltage across the primary will be only a clipped fundamental frequency waveform. Likewise, the secondary voltage of T4 will be badly distorted when driving the p.a. as the p.a. only draws current on one half-cycle. It is almost impossible to observe this particular waveform with an oscilloscope anyway, as neither side of the winding is earthed.

The dip of the p.a. at resonance is less marked than on a valve p.a. Mine only dips about 30 per cent. Final tuning is done with the aid of the aerial ammeter. I have never lost a p.a. transistor, despite deliberate overmodulation with the output unloaded; this seems to be an unusual (and unexplained) feature of the design.

R. C. MARSHALL, M.A., A.M.I.E.E., G3SBA

Harpenden, Herts.

### Who is the Oldest Active Amateur?

It has occurred to me that it would be very interesting to know who is the oldest active licensed amateur transmitter in the world.

In West Australia we have a candidate for the title in the person of an ex-President and Life Member of the W.A. division of the Wireless Institute of Australia, VK6WS, William Schofield of 40 Irvine Street, Peppermint Grove, West Australia, who, on 18 July next, will be 92 years of age.

From the early 1930s to 1962, except for the war years, he was very active on the lower frequencies and was well known in most parts of the world as " Skipper."

He became blind and had to cease his activity on the lower frequencies but is still active on 52 Mc/s, operating entirely by touch. He has good health and his brain is as active as ever.

W. E. COXON, VK6AG

Claremont, West Australia.

### Phenomena

During the FOC Marathon on Sunday, 22 May 1966, we in Leicester (and perhaps elsewhere) were subjected to short electrically charged rain storms. I would be pleased if someone could provide an answer to the "modulation" effect experienced by me during these storms.

The equipment in use was a KW2000A and a ground plane aerial.

*On reception:* As each storm approached, the noise level (on all bands) increased steadily, the S meter reading increasing from S2 to S9. The more severe the storm the greater the S meter reading. At the peak of the storm this would be approximately S9 + 10.

*On transmission:* As soon as the storm rain commenced my p.a. started to " tick," rather like a geiger counter or a faulty condenser. As the storm reached its maximum so the p.r.f. of this " tick " increased. The " tick " was eventually traced to a spark jumping from the p.a. to the chassis.

During the afternoon I was operating on 21 Mc/s when one of these storms arrived immediately blotting out reception. This time, however, the static appeared to be " modulated " and I could distinctly understand the speech. Swinging the receiver over the 21 Mc/s band made no difference. I switched on the general coverage receiver and eventually traced the modulation to a local amateur station located some 400 yards away transmitting on 3·7 Mc/s. The entire spectrum from 2 to 25 Mc/s appeared to be " modulated." As the storm cleared so did the " modulation " and the signal returned to its normal A3 bandwidth.

Perhaps this phenomena has been experienced by other amateurs or a few of these Ionospheric Sounding operators may have a few interesting graphs or recordings they could throw light on the subject with.

DAVID A. PILLEY, G3HLW

Oadby, Leicester.

### 1967 Commonwealth Contest

It was nearly 30 years ago that I was present at the Annual Convention of the RSGB in Pinoli's Restaurant when Neville Shrimpton from New Zealand made the excellent suggestion that an annual BERU Contest be held. This suggestion was received with enthusiasm, and it has continued to this day as a most popular annual contest.

Although times change and the British Empire has given way to the British Commonwealth of Nations, this contest has maintained a high state of popularity.

As next year will be thirtieth contest, may I urge that all parts of the far flung Commonwealth appoint representatives to take part in the 30 year celebration? Local radio clubs could lend their weight by talking about it and arranging for certain of their members to have their part in it, so that all areas which are multipliers may be on the air.

Quite a few of the VE2 boys are going to talk about this on the air, so as to create as much interest as possible.

HAM WHYTE, VE3BWY, ex-G6WY

Scarborough, Ontario.

### Trees as Aerial Supports

After reading G5VT's letter in the June BULLETIN, I was pleased to hear of his success of hitting tennis balls over obstacles such as trees. At the end of my garden, there are a couple of horse-chestnut trees about 40 ft. high, and I used this method of erecting long-wires but soon found out that the bark of the tree would not allow string to pass by without getting caught under it. This always happened as the ball was half-way down and could not be pulled free. This means that I now have three tennis balls dangling in the wind from short pieces of string.

My long-wire now goes over the roof of the house and is fastened to a sycamore, but I had to resort to hurling a brick up there in the end. I think that a lot of practice in a field would have helped first, but I got it up in the end, though not without some smiles from the neighbours.

P. J. MARCHAM, A4414

Pinner, Middlesex.

### Operating Manners

Where have the good operating manners of days gone by vanished to? I am appalled by the apparant lack of operating technique and normal courtesy displayed by many European stations these days when a DX station shows his nose on the bands. I now find that I get " Tailenders," " Frontenders," " Middlenders " and the stolid character who just calls all the way through a QSO. The " golden rule " appears to be " To hell with the station being worked and call anyway." Directional calls are completely disregarded and when time out is taken to admonish the offender all that is usually received is " Pse QSL ur new country." Don't they ever think that I may be a new country also for the fellow whose QSO they have ruined'

I recently received a QSL from K2KBI, upon which he had made the following observation, " Heard your comment to your VE7 friend just prior to our QSO regarding the " Buttinskies " announcing themselves on the frequency of the one you're listening to, which is bad enough (for you), but boy oh boy, it is disturbing when someone in my shoes, after QSO is established with you on

a frequency three or four kc/s down from you, has to copy you through six or seven stations all calling you on your frequency *WHILE YOU'RE SENDING* to me. Boy oh boy, shore is ruff."

To me this is crazy and would indicate that the calling stations are either idiots or not receiving me properly or why do they keep calling when I am transmitting. If I try to have a QSO other than " rubber stamp " I usually lose the other station in the welter of QRM from calling stations. I usually prefer a QSO that's a little more than the " rubber stamp " type but because of the operating tactics of many stations the contacts have to be kept down to just that sort.

Can I make a plea through " Letters to the Editor " for stations, especially the ones in Europe, to tighten up on their operating and take a pride in their courtesy and manners during operating. Above all, let us use a little bit of common sense, and in the words of the day, get with it. To the many stations with whom I have had really enjoyable QSOs I offer my thanks and hope to see you again.

HARRY PAIN, 9V1MT/ZB2A/XZ2HP/VS7PH/DL2XS/GI3ATH/G3ATH/9M4MT

## Subscriptions for Young Licensees

I feel that it is time that a teenaged licensed member expressed a view on the matter of subscriptions.

In reference to Mr Smith's letter (May 1966 issue), I should like to point out that many of us are engaged in public examinations or are at boarding schools or colleges, and are unable to do part-time work. Neither are there many of us who are, as Mr Smith suggests, the offspring of parents who are willing to bestow an annual allowance of £50. I feel quite fortunate in having succeeded in procuring the princely sum of ten shillings a week. Out of this, running costs of the station, the licence, QSL cards, and all the other expenses, as well as other forms of entertainment, have to be paid. I fail to see why, because we are licensed and therefore have an added annual expenditure of £2 for the licence, we must pay exactly twice the subscription. The only advantage in doing so is that I am now able to vote in an election, about which, frankly, I know nothing, and therefore must abstain. At present, I am paying almost 10 per cent of my entire income to the RSGB.

I should also like to point out to Mr Smith that because many students and schoolboys are simply unable to afford the subscription, this does not imply that we are neither keen nor willing to support the Society.

I would therefore suggest that licensed unemployed student members be given some consideration on this point.

D. COTTER, G3UKR

*Hon. Secretary, Woking County Grammar School Radio Soc.*

Woking, Surrey.

I was very pleased to read G2HR's plea for a reduction of subscriptions for licensed members of the student class. There is surely a strong case for the youngsters who take their tickets at the age of 14-16 while still at school.

The examination fee, the Morse test fee (plus the cost of a journey to some centre) the licence fee itself and the cost of some simple home brew transmitter all mount up with the result that becoming a Corporate Member of the RSGB is put off until a later date.

There is also the point that boys looking forward to gaining their licence are unlikely to become Associates, preferring to save the fee towards the £2 10s. required for full membership later.

Schools (quite rightly) encourage youngsters to have a range of interests and hobbies other than radio which may also eat into the pocket. Parents who feel the same way are often those who cannot afford large sums of pocket money or do not deem it wise to see that their offspring's pocket is over subscribed. Maybe there are brothers and sisters also to have a share. Boys who are keen enough to take their amateur licence as well as grapple with GCE Examinations, maybe at the same time, are unlikely to be able to take a spare time job.

Many boys like to join a local radio club (another small outlay) and as G2HR points out many such societies (often in need of funds) deem it advantageous to both club and schoolboy to offer reduced subscriptions.

Remembering, of course, that all members receive a copy of the BULLETIN which, however highly we regard it and despite the efforts being made to include interesting material for junior members, is not a youngsters' magazine. Only as he becomes more mature does he realize the full significance of what the RSGB does for us and the part played by the BULLETIN. He would probably wish to have some other publication at xs. per month (approximately equal to the RSGB subscription).

Keen lads will get on with or without the RSGB but surely the RSGB would desire them to join its ranks and I think some reduction of the fee could supplement the excellent work already being done to encourage young people to become full members.

R. WALLWORK, G3JNK

Newark, Notts.

I feel that I must disagree with G3JIX on his observations concerning the income of young amateurs. My annual gross income is approximately £35, from all sources. This figure appears to be rather higher than most radio-minded people, of the younger age-group, whom I know.

Instead of a reduction in subscriptions why not an instalment system? The much valued(?) right to vote is virtually useless unless one lives in or near London, so why not a separate, higher subscriptions voting grade?

C. J. HORROBIN, G3TZW

Stoke-on-Trent, Staffs.

## RSGB News Bulletin

I write in support of G2MI's protest regarding the interference to the RSGB News Service on Sunday mornings. I tuned in on the frequency on 5 June and found G2CVV helplessly driven right off 3600 kc/s. It thus seems that G2MI's protest is a just one, whatever some of the opponents may seem to think. I previously drew attention to this matter but so far my letter appears to have found the waste-paper basket. It now seems, however, that you will have to print my protest. I consider that the News Bulletin is a sheer waste of time for the news reader because over half of G2CVV's transmission was lost. I was particularly interested in that News Bulletin because I wanted to hear if any reference was made to the proposed BRARS. G2CVV did mention that there was quite a lot of local QRM, but as far as I was concerned this was completely incorrect, for the QRM was due to continentals going mad with a contest. It always happens, with or without a contest, however, and it is useless listening to the News Service on this frequency. I consider it high time that Council took a hand and protested most strongly to the continental societies and request their members to avoid 3·6 Mc/s while the RSGB News Service is on the air. If there is no improvement we may as well pack up the service and wait for the " BULL " to come to us with the news.

H. A. J. GRAY, BRS23279

East Dereham, Norfolk.

G2MI's letter in the June issue of the BULLETIN is typical of the RSGB attitude. Readers should not be given the impression that Amateur Radio and the RSGB are synonymous for nothing is further from the truth. Whilst it is true that RSGB has done much for Amateur Radio they are but servants. G2MI's letter is offensive regarding " clots " and it should be clearly understood that 3600 kc/s is *not* reserved for RSGB news announcements and any station may use this frequency under first comer's right. It should also be noted that not all members of RSGB are their supporters since many merely wish to make use of the Bureau.

The BULLETIN continues to contain the same dreary repetitions of the same old faces and call-signs and one wonders if it is all a bit of a privately owned club! RSGB, remember you are servants.

K. WHITTON

Wells, Somerset.

*Mr Whitton has made the error of confusing the RSGB and the Society's headquarters staff. The latter are the servants of Amateur Radio but RSGB is made up of its thousands of loyal members. It seems reasonable therefore to expect them to keep clear of* their *news bulletin transmissions for the short time they are on each week.*—EDITOR.

## Morse is a Ham's Best Friend

I did just want to write and say thank you very much for publishing the article by G3BIK which appears in the May issue of the BULLETIN.

As you will see from my very low BRS number it is about time I did something about getting a ticket, and Mr Chicken's article has encouraged me tremendously.

I hope to read, mark, learn and inwardly digest what was said and look forward to progress.

(Rev.) Gilbert Spurrell, BRS5205

Norwich, Norfolk.

G3SIL's letter in the June Bulletin and his objection to the above headline raises some interesting points which prompt some comment. His observations will not go unchallenged by those no more indoctrinated by his ideas than by the particular headline which offends.

Most amateurs are balanced, courteous and generous in their assessment of all modes of operation old or new, irrespective of ability, preference, age, etc. " Let's get with it in 1966 before it is too late " is a little out of step with the facts and the spirit of Amateur Radio. One is entitled to ask what constitutes " being with it." Being progressive in the latest techniques is indeed commendable but surely for amateurs only part of the whole. *Many do not* see technical progress as just an end in itself. There are sociological and other important factors to be considered in the overall make-up of our ranks, which make themselves felt in the personal evaluations of the various modes of operation, whether old or new, best suited to individual needs and conditions. As such they are entitled to be respected if they differ from our own. Many have limited pockets and facilities and generalizations such as " Primitive Modes of the past," " Smoke Signals," etc., are hardly fair when addressed to c.w. operators many of whom also run highly sophisticated home constructed phone gear.

The various modes of speech communication are not neglected at the expense of an over emphasis on c.w., as a perusal of the Amateur Technical Press will show. Many of the contributors have so well applied themselves to the new techniques as to be engaged professionally in the electronics industry.

In conclusion as a *Primitive* dotty dash type I am happy to use the old modes alongside the new with a preference for c.w. taking into account the crowded state of the bands today.

Maurice B. Edwards, G3MV

Brentwood, Essex.

I strongly object to the contents of G3SIL's letter. Maybe the use of Morse code is the earliest form of radio communication and also of land-line communication prior to that. In view of the fact that Morse code is still used by the Services and other communications administrations over circuits when radio conditions fall below a given level surely goes to prove that c.w. is still the most reliable mode. Perhaps G3SIL does not fully appreciate this. Perhaps he managed to just scrape through his 12 w.p.m. Morse test to obtain a licence for the h.f. bands and having got it, is either unable or unwilling to obtain a better operating standard, has dispensed with his Morse key.

On 4-5 June I was listening to and working NFD stations (all using Morse code Mr Rudolph). The high operating standard and the high quality of their Morse code made it a pleasure to operate with them at a steady 20-25 w.p.m. even through the colossal QRM such an event inevitably creates. G3SIL's more sophisticated modes may be all right if they can cope under conditions prevailing similar to NFD.

African tom-toms, Red Indian smoke signals or Great Grandfather's mode, call it what you will, please let us maintain a goodly supply of *real* radio operators. Let us retain some individuality and not be reduced to the status of glorified telephonist or machine-mad teleprinter maniac.

Dotty-dashily yours,

Reg. H. Farr, G8IJ

Bridgnorth, Salop.

I must object most strongly to the letter headed " Morse is a Ham's Best Friend? " on p. 419 of your June issue. This would seem to be yet another attempt to indoctrinate readers, especially SWLs, with the all too prevalent and entirely erroneous belief that phone is the be all and end all of Amateur Radio.

Speaking is a most primitive form of communication being older than the African Tom Tom or Red Indian smoke signal. It has shown no advancement (other than the wholesale butchery of the English Language) since the microphone was first used to modulate the r.f. carrier. I admit that speaking does have its uses especially when used as a means of communication and for this reason I would strongly support any suggestion that a GPO English Language test should be introduced, but to continue to regard phone as our primary mode in this day and age is positively ridiculous!

Let us catch up with 1966; amateurs should be looking to the future, striving to improve and perfect the various modes of c.w. communication instead of concentrating their energies on the mode used by their primitive forefathers. Ship some of the emphasis off phone—there is no room for that superior "holier than thou " attitude of many " mike happy " types, many of whom boast that they don't even possess a key—let them see that this is not something to be proud of. This is 1966: let's get with it before its too late.

In closing may I say that I consider the article on p. 312 [of the May issue] to be excellent and feel that many SWLs will find it extremely helpful—I hope I haven't *baud* you.

R. C. Ray, G2TA

Bushey Heath, Herts.

In the past I have heard many arguments between licensed amateurs on the advantage of c.w.; for instance c.w. requires a narrow bandwidth, and cuts QRM enabling messages to be received under conditions when recepti :n on phone would be impossible. There are, however, a number of disadvantages and these are mainly connected with the tiresome business of learning the code and getting up to the regulation speed of 12 words per minute. Most people can receive between five and seven w.p.m. by actually thinking about the code, but to achieve greater speed the reaction must be completely automatic. To break through this barrier requires endless perseverance and daily practice with devoted colleagues.

If Morse is really necessary, the Society should actively encourage it by pressing for the introduction of a restricted licence which would allow technically qualified people to transmit code at any speed they find convenient in a narrow frequency band within one of the existing amateur bands, say 160 or 10m, using a low power of 1 or 2 watts.

This would be in keeping with the terms of the amateur licence because it is training in radio communication. It would enable individuals to practise code and operating techniques in a realistic manner with little danger of causing interference. Lastly, this concession would maintain the interest of many would-be licensed amateurs during the dreary period of learning Morse for the full licence.

D. Keenan, BRS24911

Eccleston Park, Prescot, Lancs.

With reference to " Morse is the Ham's Best Friend," published on page 312 of the May issue, it would be a pity if the word " ham " should become common usage in our magazine. So far we have avoided it.

And what a lot of fuss about five or seven " dits! " What is a dit anyway? I write as a one time professional telegraphist in the GPO, and had we been taught as suggested, I doubt whether we would ever have mastered the Morse code! They will be using a computer next! What are required are well formed letters with sufficient spacing between letters and adequate spacing between words. Some of the bug key operators sling all the letters together with absolutely no spacing between words. Let me end with:

CHOO CHAT CHOO CHAT
CHOO CHOO CHA CHOO
Afraid my radio
is all askew.

J. MacIntosh, GM3IAA
(ex VS1AA, etc.)

Cradlehall, Inverness

*While we have a certain amount of sympathy for GM3IAA's point of view regarding the word ham, we feel rather like Canute. The new* Penguin Dictionary *defines a ham as an amateur radio operator but does not mention radio amateurs!*—Editor.

## Reciprocal Licensing

I notice mention on page 250 of the April Bulletin of " The First Americans to receive British amateur radio licences——".

Which do you consider Canadians: Asiatics or Europeans?

J. T. Hepburn, VE7KX/G3NJD

Mt. Lemman, B.C., Canada.

*We discussed the difficulty raised in this letter with Noel Eaton, VE3CJ/G3SDA, Canadian Director of ARRL, during his recent visit to RSGB Headquarters. Noel pointed out that there is no single word to describe a citizen of the United States of America. Nevertheless, common usage is supported by the Oxford Dictionary and Websters' Dictionary, both of which define an American, inter alia, as a citizen of the USA.*—Editor.

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