The SHORT WAVE Magazine

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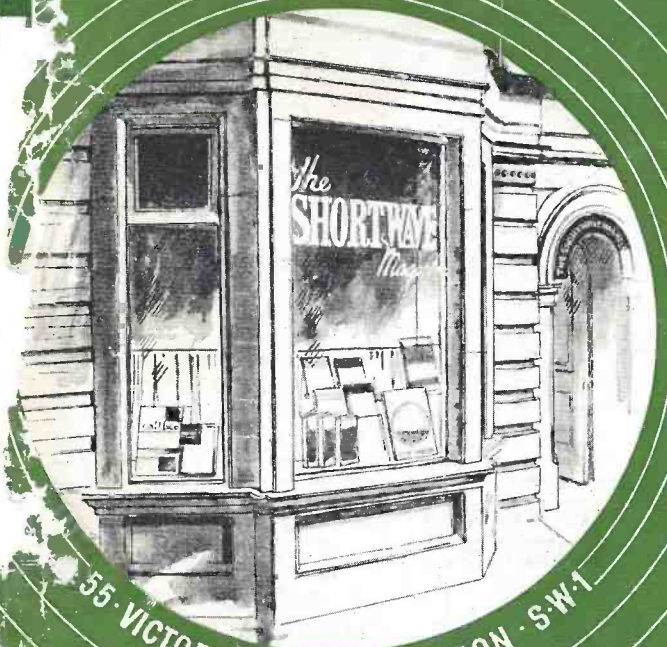
VOL. XXVIII AUGUST, 1970 NUMBER 6



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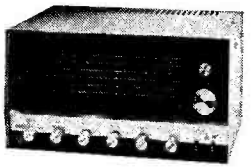

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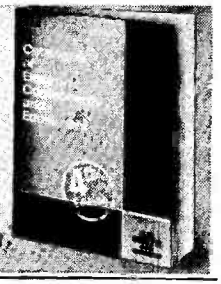

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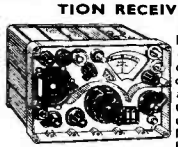

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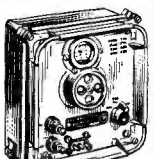

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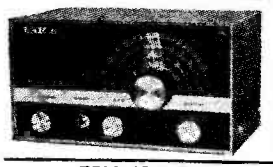

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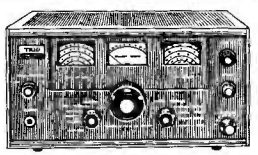

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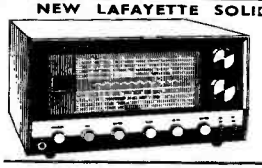

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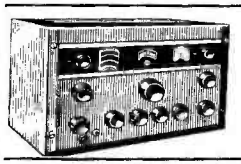

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CONTENTS

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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT WAVE Magazine

EDITORIAL

Realism *To many observers of the Amateur Radio scene in the U.K. it will not have come as a surprise that the RSGB feels compelled to ask authority for a larger subscription—though in our judgement even £4 is not in the end going to be enough. Ever since the unfortunate decision was taken to invest in a permanent and wholly-owned headquarters building in London, the financial instability of the Society has been evident from the annual statement of accounts. Large borrowings had to be made to finance the Hq. venture. After paying the interest on these loans and debentures, operations have run into loss—with the probability of an even greater deficit to be shown in the next accounts.*

Lest this be read as " irresponsible comment based on hindsight "—or inspire some equally pompous reproof, as on a recent occasion in connection with the Society's council election!—let it be said that, as at least some readers of this piece will be aware, in private discussion and correspondence over the last two years or so the writer was forecasting the present turn of events—even to the extent of prophesying that the RSGB annual subscription would have to go to four guineas.

The membership itself may feel alarmed not only at the prospect of a largely increased subscription but also for the effect it may have on numbers. Actually, this need not be any anxiety. In round terms, ten thousand members at £4 ensures a larger premium income than 13,000 at 50s. Moreover, a smaller membership paying a bigger subscription can lead to important additional gains in other directions—such as lower costs in the production of the journal and its distribution, and a lighter work-load on staff (from which further economies could flow).

* * * *

It is interesting that an almost parallel situation now exists in Germany, where the DARC (the national Amateur Radio body) is divided on the issue of providing a costly permanent Hq. and of increasing their annual subscription to the equivalent of nearly £5 to finance it. The contrary opinion over there is that a membership-association should not seek to own property, so that rather than paying interest on loans for that property it can use its resources to improve services to members without a heavy subscription increase.

* * * *

It is not yet altogether clear how the situation is going to resolve itself, either for the RSGB or the DARC.

Austin Forsyth, G6FO.

WORLD-WIDE COMMUNICATION

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INCORPORATING AERIAL CHANGE-OVER AND SWITCHING, SWR INDICATOR AND DUMMY LOAD

I. E. HILL (G6HL)

IN the interests of reduced interference on crowded amateur bands we should all carry out preliminary transmitter adjustemnts using a non-radiating dummy load. In fact, using a dummy of equivalent impedance value to the intended load is the *best* way of ensuring that the transmitter is correctly adjusted. Unfortunately, unless provision is made to bring the load into operation at the flick of a switch the temptation is to go straight on to the aerial and probably spoil someone else's reception.

The unit offered here is very simple and there are no real constructional problems. The only critical feature is to follow the circuit layout and ensure that the various leads from aerial selection switch to change-over relay, coaxial output sockets and load resistance are kept as short as possible and made of substantial conductors.

Feeder Impedance

The first design decision required is the impedance of the coaxial line to be used for feeding the aerials. *Pi*-section PA outputs can usually accommodate anything from 50 to 75 ohms, the impedance of generally available coax. Commercially-made multi-band Yagi and Ground Plane aerials settle for 52 ohms. Television coaxial cables, which are the type most readily and economically available, are usually 75 ohms. Inevitably, the decision will be dictated by availability or inclination to purchase. There is a lot to be said for adopting one standard type and impedance of coaxial cable for use in all interconnection, converting by use of matching units when necessary. The writer has a liking for 52 ohms (and enough 52-ohm cable available) so this impedance has been adopted as standard and is referred to in the design of this unit. However, any other value in the coaxial cable range can equally well be used.

Construction and Layout

The unit requires effective and complete screening. This has been achieved by a standard of construction adopted for many other similar units. A sheet of 18 or 16g. half-hard aluminium is marked out as shown in Fig. 1 to make a chassis 17in. wide, 12in. deep and, in this case, 3¼in. high. The height can be varied to meet other requirements. The edges are bent inwards and then the chassis-screen itself is formed by bending inwards along A-A' and B-B' to look like Fig. 2. The chassis is secured to a 19 x 3½inch panel, using standard panel handles spaced 16 inches between centres (1½in. in from the edges of the panel). A strip of ½in. x ½in. right-angled aluminium is bolted to the inside of the panel ⅛in. from top and bottom. Screening is completed by use of top and bottom 18g. aluminium sheets 17 x 12in. secured using self-tapping screws spaced at intervals of not less than 3in. The result is a cheap and effective completely screened chassis to which other internal fittings, chassis and screens can be added as necessary.

Construction will vary depending on materials available, the first requirement being a suitable aerial selection switch. For powers up to 150 watts input, RF current would exceed one amp. so the usual wafer switch is rather too flimsy. Select a switch having healthy contacts, preferably well spaced on a 2-3 inch diameter " wafer." Locate the switch centrally on the inside rear of the chassis, fixed so that minimum lead length is necessary to connect to the aerial outlet sockets, change-over relay and dummy load, in that order of priority. The c/o relay should be mounted so that the centre connection is immediately adjacent to the switch arm. (refer Fig. 3). If these components are effectively located to keep resultant lead length to a minimum, remaining construction is not critical. The switch will be remotely controlled by a shaft to the centre of the panel. Meters and controls can be located on the panel in any preferred position and screen *in situ*. The comments following are relevant in each case.

Change-Over Relay

A convenient type, usable up to 2 or 3 amps RF, is the Londex 1026 (10 F/17544) obtainable from Lisle St. in Boxes Junction Type 7089. Mount the relay so that the " transmit " socket protrudes through the rear of the chassis. Use a coaxial socket and cable to connect the " receive " aerial to an outlet at the rear of the chassis. The outer of the change-over socket should be directly earthed to the chassis and the centre contact picked up by use of a push-fit socket connected as directly as possible by short lead to the switch arm. This lead will pass through the centre of the SWR Indicator coil L1, which should be secured in place with a suitable insulating

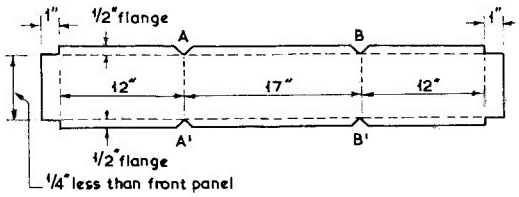

Fig.1 Marking out chassis/screen

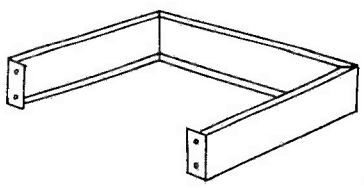

Fig.2 Chassis/screen bent to shape

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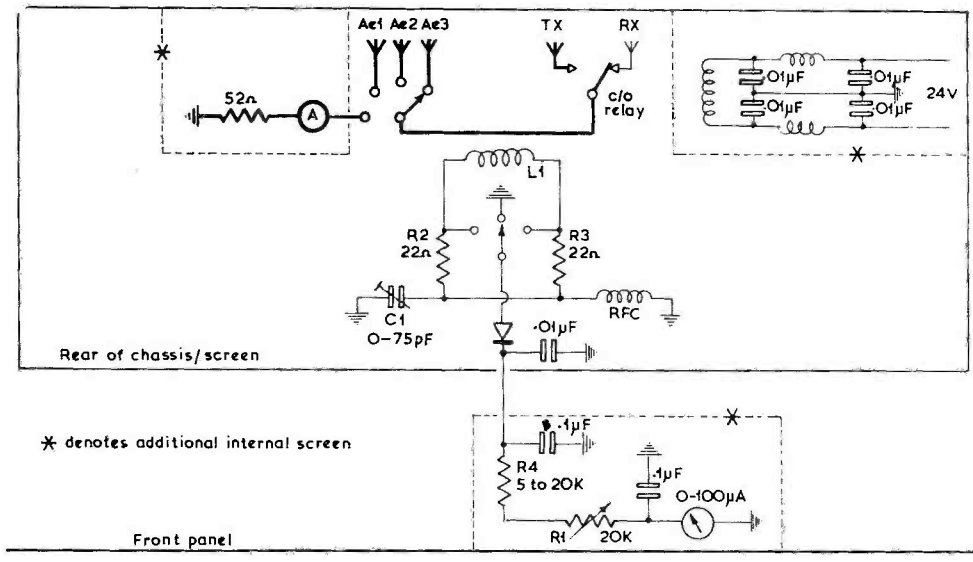


Fig. 3. Circuit and Layout

A 482

adhesive. The leads to the relay coil should be adequately screened, filtered and by-passed for RF.

Dummy Load

To be completely effective this load should be resistive and offer no capacity or inductance. This is, of course, impossible and for amateur purposes does not matter too much. First determine the maximum RF load to be handled—say 100 watts. Plan the load to handle 200 and there is less likelihood of overheating. A satisfactory solution is to use four 50-watt 200-ohm tubular carbon resistors connected in parallel to give 50 ohms, or with a short 2-ohm length from a 10-ohm 50 watt tubular in series to give 52 ohms. Another solution is to raid the junk box for 5-watt carbon resistors in the several hundred ohm range and build up a bank in parallel or series parallel to give the required final resistance and power handling capacity. The simple approach using the minimum of resistors will give the best results. The penalty for using a bundle of them will be increased inductance/capacity, resulting in inability to get a 1 : 1 SWR indication and results which differ between frequency bands—but even at this most practical requirements are met.

Power Indication on Dummy Load

It is useful to know what sort of power output is given by a transmitter. In the " forward " position the SWR Indicator will indicate maximum output but no actual measurement of power. The easiest way to achieve this is to insert a thermo-junction or hot-wire RF ammeter in series with the dummy load resistor. Power output can be calculated from $W = I^2R$. With a 52 ohm load a 0-2 amp. meter will indicate up to 200 watts RF. An alternative is to measure the RF voltage developed across the load and for this the easy thing is to use a diode rectifier and microammeter, as shown in Fig. 4. An arbitrary 0-100 scale can be used, or direct calibration applied by checking power in the load using the series ammeter. Use of an ammeter in series with the resistor load will inevitably affect its reactance and it may be impossible to obtain a zero reading on the SWR1 in the " reverse " position. For this reason setting up of the SWR1 is best done with a single carbon resistor of correct value connected directly across the SWR1 output.

SWR Indicator

This is quite conventional and the circuit is as Fig. 3. The toroid L1 is of 18 turns of 28g. on a Mullard FX3012 core slipped over a suitable insulating sleeve which in turn is fitted over the short lead between aerial change-over relay and selector switch. The forward/reverse switch is mounted close to the toroid and controlled by a shaft from the front panel. Resistors R2 and R3 should be of about 22 ohms but, more important, they should be identical. It is preferable to use a single diode as shown but alternatively separate diodes can be connected in the F/R legs and the outputs filtered to earth permitting location of the F/R switch on the front panel. The indicating circuits of the SWR1 should be filtered from RF and screened, as indicated diagrammatically in Fig. 3. The value of R4 will depend on maximum power and the microammeter used. Layout should be symmetrical.

Adjustment is simple. The SWR1 is switched to " forward," a resistive load of intended working value is connected to the output and RF applied. R1 is adjusted for full-scale deflection; then the SWR1 switched to " reverse " when the indicator reading should fall to

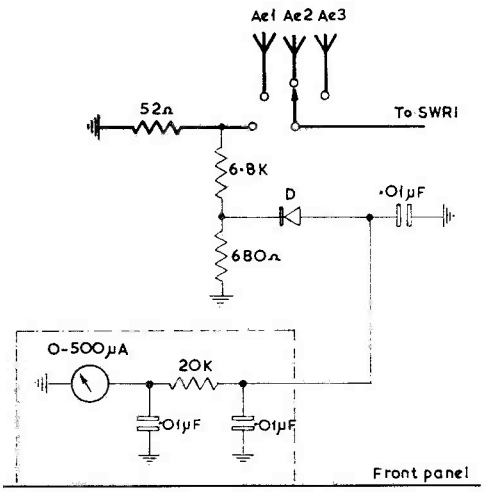


Fig.4. Diode RF voltmeter as alternative power indicator

near zero. Adjust C1 until a zero or minimum reading is obtained. If zero is unobtainable first check that C1 has not reached maximum—if it has then a little more capacity is required. If still in trouble examine the connected load to ensure that it is purely resistive. The indicator can be calibrated for SWR. However, as comparative readings are the useful criteria it is satisfactory to use a 0-100 scale indicating percentage reflection. The zero point is the condition of 1 : 1 SWR with no reflected power, and 100 the condition of 100% reflected power, *i.e.*, infinity SWR.

Ventilation

The dummy load is required to absorb power and it can do this only by radiating heat. If the resistor used is rated well above the intended maximum load there should be no dangerous hot spots but it will nevertheless be necessary to provide ventilation. This can be done by drilling a number of small (⅛in. diam.) holes in the screen chassis near either end of the load resistor. Another and better procedure is to blow or suck air over the resistor using a small blower motor and remembering that provision must be made for air to get in as well as out.

Caution

One last word of warning: The SWRI in this unit is probably on the aerial side of any TV filters; it contains a diode; diodes are non-linear and if supplied with RF will generate harmonics which can be fed to the aerial. The SWRI can therefore be a source of TVI and should always be switched to the "off" position when not required for testing or checking.

TRANSISTOR CO CIRCUITS

FOR YOUR NOTEBOOK

SHOWN here are two useful crystal oscillator circuits which will "go" with any HF-type transistor—though some will give more RF output than others.

Fig. 1 is for the LF range, 200-2000 kHz, as for a crystal calibrator, or CO for a Top Band Tx. The variable capacitor is adjusted to give smooth and instant starting of the crystal at switch-on.

The circuit of Fig. 2 can be used with fundamental crystals from 2 MHz to about 20 mHz, though coil-capacitor values necessarily change somewhat between the LF and HF sectors of the range. With a crystal between 2·0 and 10 MHz, C2 and C3 are 500 $\mu\mu$F and coil L 0·5 mH, with core adjustment. For the range 10-20 MHz C2 should be 150 $\mu\mu$F, C3 36 $\mu\mu$F and L 11 μH. The constant values are: C1, 60 $\mu\mu$F; C4, C5, C6, ·01 μF; R1, 15K; R2, 2·2K; R3, 470 ohms; and R4 1·5K.

Output coupling in both cases should be kept light, otherwise the crystal will not start easily, even after going off all right under no-load conditions.

(A recent issue of the New Zealand (*Break-In* is acknowledged as the sourse of these notes. —*Editor.*)

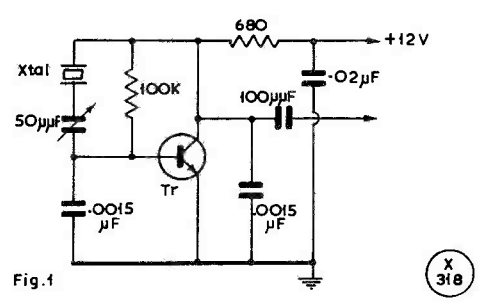


Fig.1

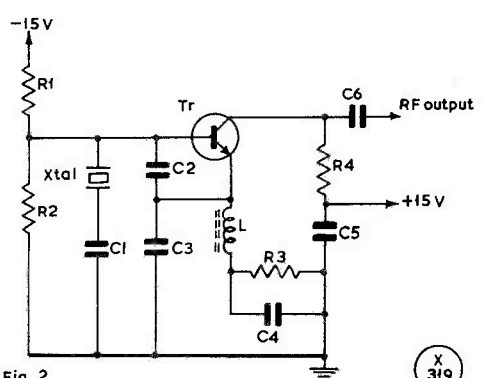
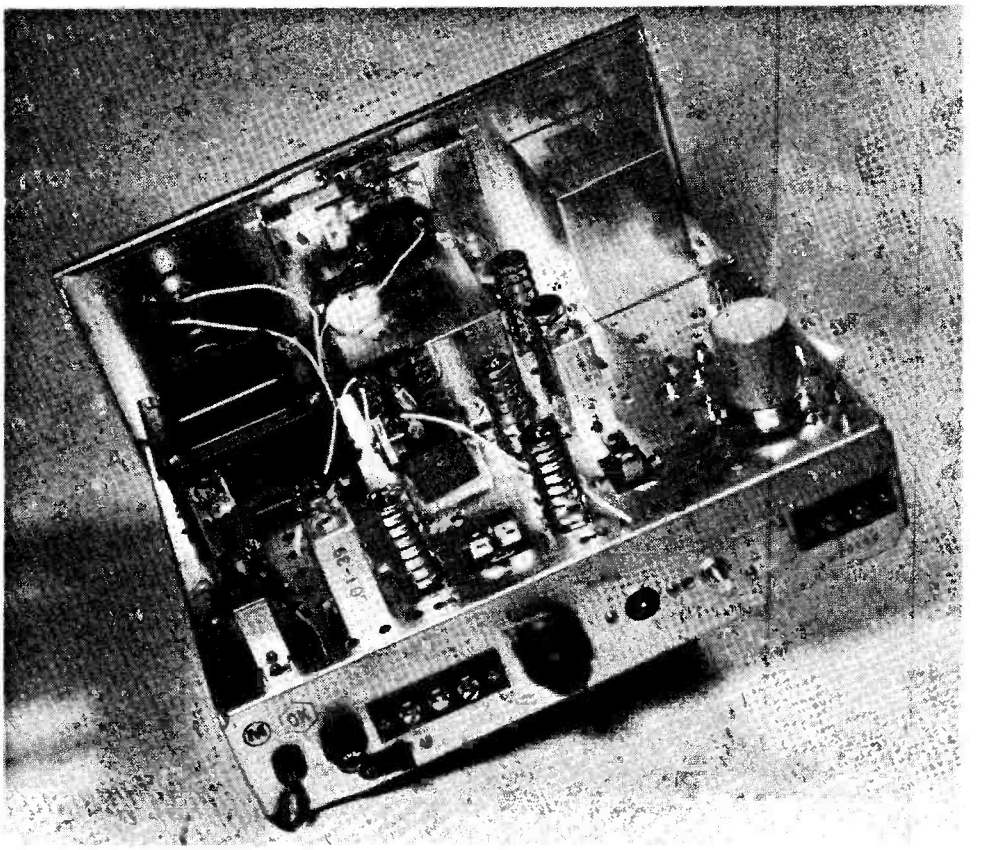


Fig. 2

To become a D/S costs only 45s.—or for first-class posting, 48s.



Inside upper-chassis view of the Trio JR-500, as modified for Top Band. The modification itself is a simple one, using an 11 MHz crystal specially produced for the purpose and a series coil, and is not immediately evident when examining the set—an indication here is the white lead from centre front to middle rear. The Top Band performance is entirely adequate—see report.

NOTES ON THE TRIO JR-500

AS MODIFIED FOR TOP BAND

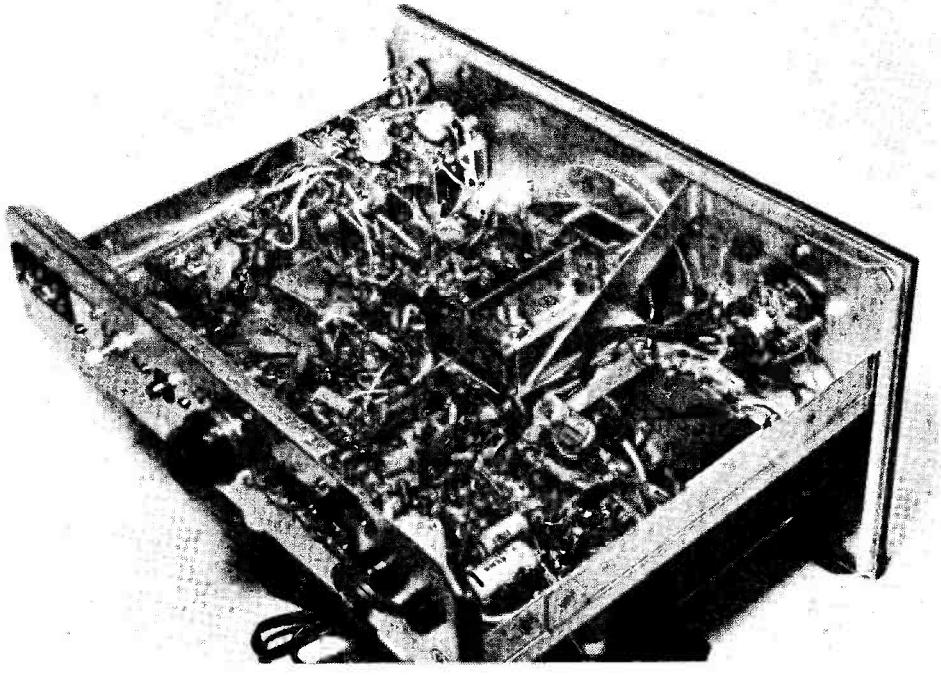
E. P. ESSERY (G3KFE)

This article, while offering some general impressions of the Trio JR-500 receiver, is primarily intended to discuss results on Top Band with the modification for 160-metre reception as devised and carried out by Messrs. Holdings of Blackburn. It should be noted that the modification can only be undertaken for customers of this firm buying a JR-500 new from them. The modification is a simple one and has been devised in such a way that the set can be "unmodified" without marking the chassis. Normally, the set covers the five amateur bands 3·5 to 29 MHz. The modification adds Top Band.—Editor.

THE receiver under test was supplied modified for Top Band, with an accessory crystal calibrator, by Holdings of Blackburn. At the outset, they make it quite clear that the Top Band modification is not a Trio " works " alteration, but one of their own. The calibrator is a suggested addition mentioned in the receiver manual —indeed, the standard receiver comes equipped with a pull-to-close switch ganged to the RF gain, ready for the installation of a crystal calibrator or other accessory.

The suggestion is made by Holdings that the accuracy of the calibrator is " no better than about 1 kHz at 28 MHz "; in fact, the one sampled came as near as no-matter to zero-beat with the BBC long-wave frequency on 200 kHz—the fundamental of the crystal—and indeed was also very near to exact zero with WWV on its higher harmonic at 15 MHz. On Top Band, the calibrator signal is S9 on the meter with the preselector tuned to the correct spot, and can still be picked out, albeit much weaker, at the upper calibration point on the highest range.

The sensitivity claim in the specification does not lay



General under-chassis layout and construction of the Trio JR-500. Again the 160-metre modification is not easy to pinpoint but is involved in the wiring beside the coil pack at upper left. This modification can be applied only by the suppliers (in this case Holdings of Blackburn) for customers taking new receivers.

down the conditions under which measurements are made. But if one assumes the usual standard of an AM signal 40% modulated, then the figure can be said to have been met on all bands other than 160 metres. The method of carrying out the modification adopted by Holdings is such that the receiver can be very rapidly converted back to the original, at some slight sacrifice in sensitivity. However, this need not worry any potential buyer, as the noise on Top Band is such that the slight lack of sensitivity would be entirely masked by the normal level of noise picked up on the aerial; some tests were run in conjunction with another receiver to prove this point.

The S-meter is one of the poorer features of the design, being almost impossible to read without peering, the scale markings being so small. In addition, the meter seems to take quite a time to settle.

Top Band Results

Putting the receiver to work on Top Band showed immediately that the preselector circuitry was very sharp in spite of the damping produced by the 75-ohm aerial termination. The AGC remains in operation on SSB, and helps to hold down the strong signals, although intelligent use of the RF gain does make things easier. Some very very slight evidence of pulling was noted on strong signals as the preselector was peaked, although it is doubtful if it would be enough to be noticeable in normal operation on the bench.

The warm-up drift is rather more than one expects in a modern receiver, but once the JR-500 settles down it is quite stable enough for most people. A quick flip of the switch to " off " and back again shows the effect to be purely one of temperature. One feels that an improvement to the ventilation of the cabinet would be well worth while in reducing drift effects.

Tuning around the band, one notes the presence of strong local signals when one tunes over them, but *not* elsewhere, which meant that when a local was using SSB it was still possible to work the weaker stuff on the other, CW, end of the band. Operation of the receiver on CW and SSB is greatly aided by the good filter, albeit one needs " filter ears " or an AF filter really to sort 'em out on CW. However, it would be unreasonable to expect variable selectivity to appear in the specification of a receiver in this price class.

Leaving Top Band, performance was very good on all the HF ranges, the only shortcoming of any consequence being the fact that sideband selection is effected by the mixing process, to give only the " correct " sideband for the band in use.

General Impressions

Now to a quick run-down on the layout and general finish of the Trio JR-500. The external appearance is nicer than the advertising photographs indicate; although

a small receiver compared with the other ones in the shack, the panel layout is not cluttered. The drive on the tuning knob is very light but a delight to use. Having personally tried to design an instrument gear-box for mass production, your reviewer has to take his hat off to the designer of this one. Readout is to the nearest 1 kHz, taken between the dial proper and the calibration marks on the knob.

The plastic-on-metal finish of the panel and case is a delight, and should maintain the appearance of the set for years. It is a pity that there is no way of altering the bandswitch scaling to read "1·8 MHz" instead of "WWV," but after all, one does get the Top Band and the calibrator conversions free of charge! The case runs decidedly warmer than most receivers, although it seems quite happy at its normal running temperature.

Inside, the layout is clean, and the lack of little screens all over the underside argues that the original design layout was good enough for them not to be needed. One feels that if ever this receiver "takes off" it will be due to a component failure rather than a marginal layout fault.

Mains input is for either 117 or 230 volts, the tapping being changed by a "blocked" switch to prevent any accidental alteration; a good design point, this. Aerial input is by way of terminals, but one notes with pleasure that there is a hole drilled and blanked-off for the fitting of a UHF-type coax socket should this be desired. Another nice touch is that the S-meter zero-setting pot, has an extended shaft so that one can reset the meter easily and quickly without the groping around usually necessary with rear-mounted controls.

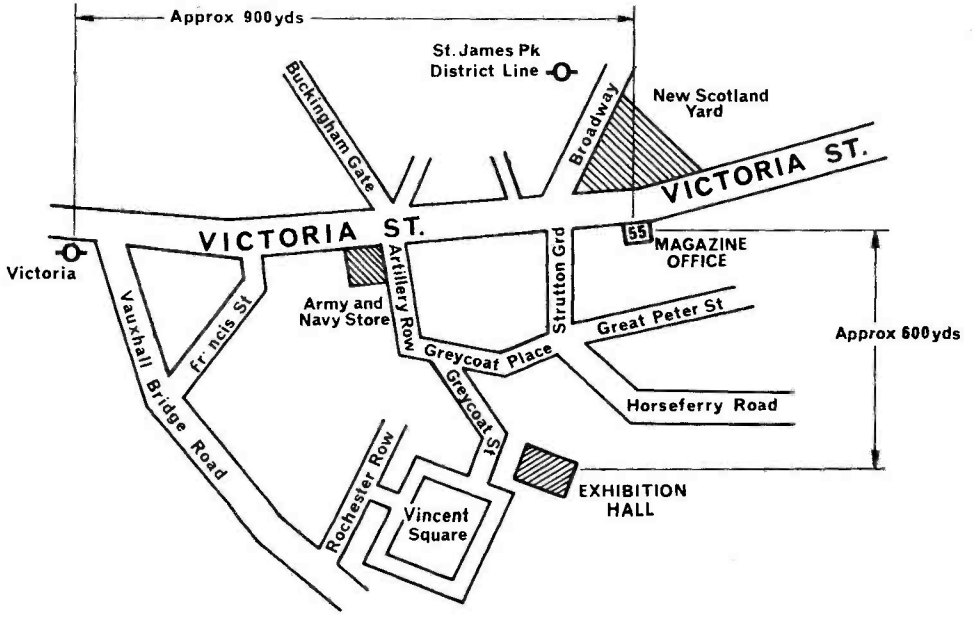
Cost Factor

At this point it would perhaps be wise to sit back for a moment and consider the whole question of communications receiver design and economics. If one considers any of the well-known makes, it is true to say that the cost reflects precisely the facilities one gets with the receiver. It is also true that to make any significant improvement in performance or facilities the price would go up quite markedly. The Trio JR-500 is one of the few receivers in its price-range which one could seriously recommend for use in conjunction with a SSB transmitter, and it will certainly satisfy any reasonable demands from an amateur-bands-only SWL. Both Trio, the makers, and Holdings who do the modifications are to be congratulated on a fine receiver for its price.

It should be noted that Holdings are only prepared to modify and supply a Trio JR-500S receiver, and not to undertake the conversion of receivers purchased elsewhere.

Summing it all up, we have a receiver which, in its price-class, is eminently satisfactory, whether considered as an SWL receiver, or, as the writer tried it, as the main receiver in an SSB-orientated amateur transmitting station, in which service provision is made for muting. For CW use, it will meet the needs of all but the dyed-in-the-wool contest operator. The additional Top Band range and the crystal calibrator both carry out their functions adequately, the slight fall in sensitivity on Top Band not being enough to be of any detriment, due to the high noise level which is always present on this band.

Your reviewer can honestly say he was sorry to see the receiver returned to its owners, after a month of use.



How to find us and get to the Exhibition. Distances are walking.

ABOUT SWR INDICATORS

ARE THEIR READINGS ALWAYS TO BE TRUSTED?

C. G. HARVEY (VK1AU)

This article, first appearing in the April 1970 issue of the Australian "Amateur Radio," will be of great interest to all who experiment with antennae—and will be disputed by some at least! The SWR Indicator or Reflectometer has always, and quite rightly, been regarded as the one reliable guide to antenna efficiency—in the sense of the capacity of an aerial to accept power at the required operating frequency. Broadly, the interpretation is that a high SWR (say, in excess of 3 : 1) means that power is being lost otherwise than into the aerial, while a low SWR (something better than 1·5 : 1) indicates that the antenna is accepting and radiating at least 95% of the power offered it. The author of this article shows why he doubts these basic assumptions where beams and multi-element arrays are concerned.—Editor.

THE practical results discussed here show that the SWR Indicator can confuse and mislead, and that it might be wise to hedge one's bets on the infallibility of assumptions based primarily on SWR readings.

Take the case of a three-element "plumber's delight" on 21 MHz, built to formulae except that all elements were intentionally lengthened 5 inches. It was gamma fed, with the SWR bridge at the transmitter end of a 66-foot length of co-ax. A frequency versus SWR run gave the following results:—

21200	kHz	SWR	2·4 : 1
21300	,,	,,	2·0 : 1
21400	,,	,,	1·6 : 1
21500	,,	,,	1·2 : 1

Table I

The inference is that the SWR would drop to a very low value outside the high end of the band, *i.e.*, the array is too short. Let us now lengthen all elements by 4 inches. A frequency *v.* SWR run now gave the results shown in Table II.

21000	kHz	SWR	1·6 : 1
21200	,,	,,	1·3 : 1
21300	,,	,,	1·0 : 1
21350	,,	,,	1·1 : 1
21400	,,	,,	1·2 : 1
21500	,,	,,	1·5 : 1

Table II

One would now conclude that the array is tuned and properly matched at 21300 kHz. But is it? Results show only fair forward gain, poor directivity and negligible front-to-back ratio. Despite this, the SWR meter says that the array is just fine!

Effect of Spacing Change

On the basis that a change in inter-element spacing to the optimum values for maximum forward gain might improve matters, and on the assumption that the element lengths were now fairly right, the reflector was moved slightly (to 0·25 wavelength spacing). Results as in Table III.

21000	kHz	SWR	3·2 : 1
2110	,,	,,	3·0 : 1
21200	,,	,,	2·9 : 1
21300	,,	,,	2·6 : 1
21400	,,	,,	2·3 : 1
21500	,,	,,	1·8 : 1

Table III

Could it be that a small change in inter-element spacing had so seriously detuned the beam that it was now resonating well outside the high edge of the band? Surely, with all elements already 9 inches longer than the formulae said it couldn't possibly be true that another 7 or more inches was needed to bring the beam back into the band? If the SWR meter indications were right, then the formulae were about 10% out—a fairly unlikely proposition. Something else must be wrong.

Perhaps the four half wavelengths feeder wasn't 75 ohms? Terminating the feeder with 52 ohms (as a load resistance across the far end) gave an SWR of 1·4. Terminating with 75 ohms gave an SWR of 1. The feeder was 75 ohms all right. At this point an interesting observation was made. If the SWR bridge was set to the 52-ohm position and the frequency run repeated, instead of the result in Table III, the readings became as in Table IV.

21000	kHz	SWR	2·3 : 1
21100	,,	,,	2·4 : 1
21200	,,	,,	2·5 : 1
21300	,,	,,	2·7 : 1
21400	,,	,,	2·7 : 1
21500	,,	,,	3·8 : 1

Table IV

Compare Tables III and IV. Table IV suggests that the beam is outside the low end of the band, Table III outside the high end! Obviously the shape of an SWR curve doesn't necessarily indicate anything useful.

Suspicions!

If anything is to be made of SWR readings it is obviously imperative to start with an almost flat line of a known impedance. Measurements showed that the 66ft. length of co-ax was in good condition with only 2 dB loss. It gave a fair resonance dip on the GDO at 21 MHz (and a very good dip near 14 MHz—presumably the free-space resonant point of the outer shield). With 75 ohms as load at the far end, SWR was 1:1.

Now to check out the balun. The traditional formula for a co-ax balun is 462 ÷ F MHz × Velocity Factor. Assuming 66% for the velocity factor, the length of the balun should be about 15 feet. However, at this length, the GDO showed resonance well above 21 MHz, and it was necessary to add about 3 feet to the co-ax to reach the correct length for 21 MHz! Apparently the velocity factor of this particular cable was well above the tradi-

tional 66%. The evidence of the GDO seemed conclusive, as the observed dip moved smoothly from 26 MHz to 21 MHz as the length was increased.

Finalising

The stage had now been reached where either 75 ohms at the end of the co-ax feeder, or 300 ohms across the 4 : 1 balun resulted in an SWR of 1 : 1. With the feed arrangements proven, the antenna was set up to the lengths required. Using the A.R.R.L. *Antenna Handbook*, it is possible to select the exact formulae appropriate to the inter-element spacing to be used. With an arbitrary setting on the gamma bars, the first SWR run of the re-arranged array resulted in the figures of Table V.

21000	kHz	SWR	1·0 : 1
21100	,,	,,	1·0 : 1
21200	,,	,,	1·1 : 1
21300	,,	,,	1·3 : 1
21400	,,	,,	1·7 : 1
21500	,,	,,	2·2 : 1

Table V

It was difficult to resist the temptation to shorten the antenna elements and so raise the frequency at which the SWR would drop to 1 : 1. Instead, attention was directed only to the gamma match. The effect of two values of series capacitance was as in Table VI.

	Series Capacitor			
KHz.	47 pF.		28 pF.	
21000	SWR	1·1	SWR	1·4
21100	,,	1·1	,,	1·4
21200	,,	1·1	,,	1·2
21300	,,	1·1	,,	1·1
21400	,,	1·3	,,	1·0
21500	,,	1·4	,,	1·0

Table VI

The impedance bridge applied to the end of the co-ax now showed a good non-reactive type dip at 21200 kHz and read about 70 ohms. Best of all, on-the-air checks showed a significant improvement over the initial condition when despite a low SWR, the beam element lengths were all wrong. According to one on-the-air report the half-power points were plus and minus 20 degrees, and the front-to-back ratio 25 dB. This is too good to be true, as 12 dB seems more likely.

The SWR bridge is now left in circuit partly as an aid to tuning for maximum output, but mainly as a way of knowing if some mechanical fault has developed in the feeder. A short across the far end of the feeder will show only about 2 : 1.

Guide Lines

On the basis of this project and the writer's experience, the following guide lines seem relevant to amateur-band beam design.

Element Spacing.—Go for wide spacing, reflector at least 0·2 wavelength, director 0·25 wavelength. This can replace the 2 dB loss inherent in co-ax feedline.

Driven Element.—There is a great temptation to set it to resonance using a radiated signal and a diode meter combination across intended feed point. Don't do it! For gamma feed, the radiator needs to be a little short.

Reflector.—Too much enthusiasm for front-to-back ratio will reduce forward gain slightly. But even the best front-to-back ratio will only cost you about 3 dB in forward gain. In VK it's usually best to go for maximum forward gain.

Gamma Bar.—Increasing the spacing of the bar from the radiator raises the impedance range of the bar. Also, shortening the radiator will raise the antenna feed point impedance. Since a lot of work will be needed to optimise the options available, it's better to rely on the formulae for radiator length, fiddling only the gamma match for maximum radiated signal. Don't forget to provide some series capacity to offset the inductive reactance of the gamma bar.

Design Frequency.—Design and tune up on a frequency 100 kHz *lower* than the spot you wish to operate on most. The array will increase in frequency when raised above ground to its intended operating height.

Test Equipment.—Use a simple Antenna Bridge, a GDO and a remote indicating Field Strength Meter, initially. Rely on these, rather than a SWR Bridge.

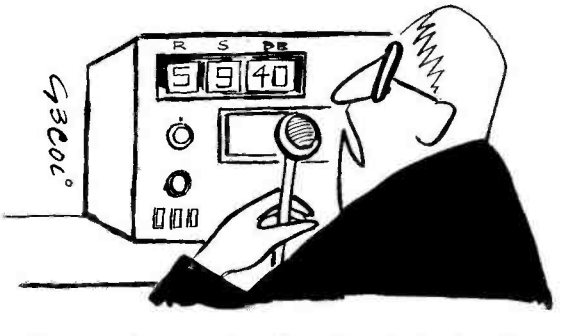
AMATEUR RADIO EXHIBITION

During the period of the Radio Engineering & Communications Exhibition, August 19-22, our Office—which is within short walking distance of the Exhibition Hall, *see* map p.339—will be open daily Wednesday-Saturday, 9.30 a.m. till 7.30 p.m. We shall have a comprehensive display of all the books and publications that we regularly advertise, for sale over the counter. Orders can also be taken for packing and despatch by post, if required, and *Magazine* subscriptions paid or renewed.

We shall be glad to see old and new readers, who are invited to sign the Visitors' Book. The map will guide you to the spot and our ground-floor Office window looks just as it does on the front cover of this issue. So, we look forward to seeing you.

FROM G8/3 TO G3/3

From the listings on our regular " New QTH " page, it is interesting to see that quite a fair proportion of B-licence holders are taking the Morse Test and becoming G3/3 for full operation on all bands. At the moment, the great majority of the G8/3's are keeping on two metres, to which they contribute the bulk of the activity.



". . . the S-meter here is a little unusal . . ."

TWO-METRE TRANSMITTER IN KIT FORM

USING A PRINTED-CIRCUIT-BOARD DESIGN FOR A CLUB PROJECT

M. HEARSEY (G8ATK)

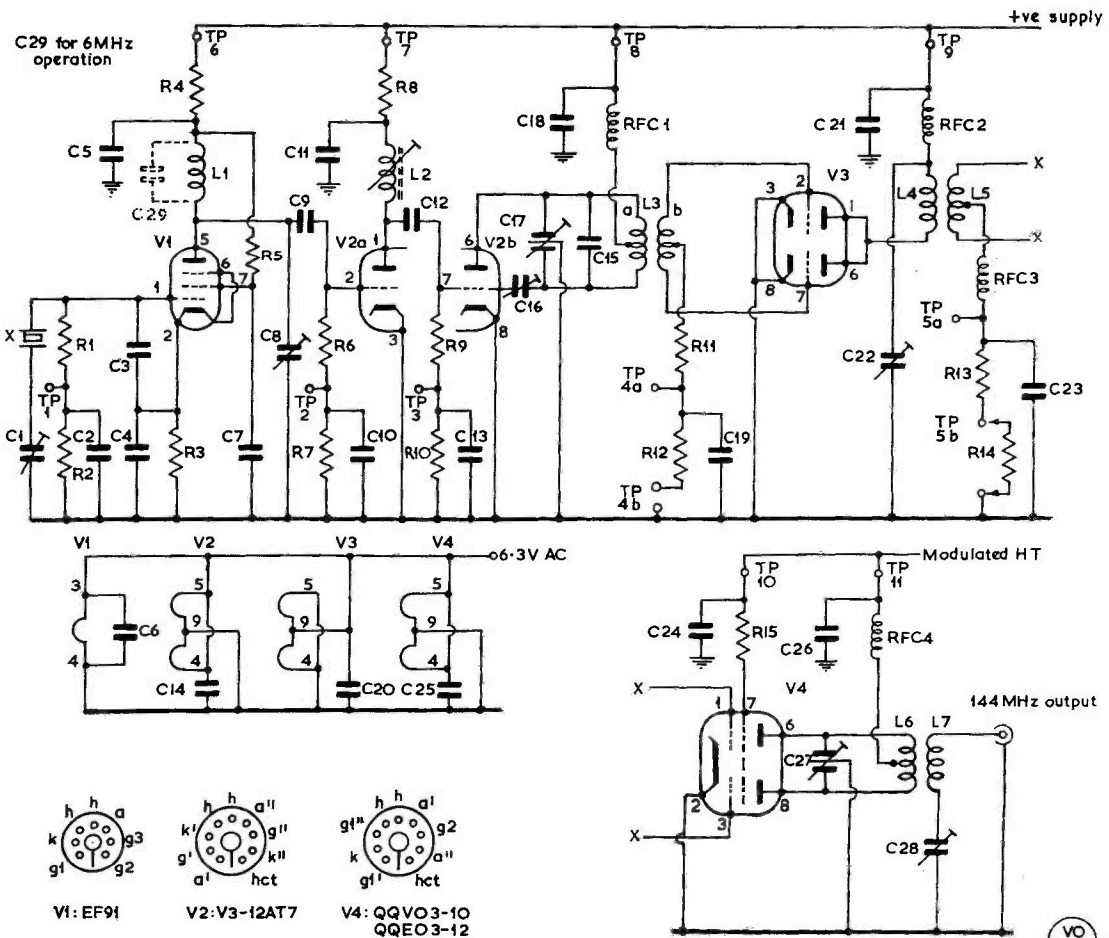
THE transmitter described was originally the basis of a Club Project undertaken by the writer for the Farnborough & District Radio Society. It is pleasant to record that only one person out of a total of 45 had difficulty in assembly. The success of the project has lead to further modular pieces of equipment being produced. These are a Modulator and a PSU, which are intended for use with the Transmitter. It is hoped to publish details of these in due course.

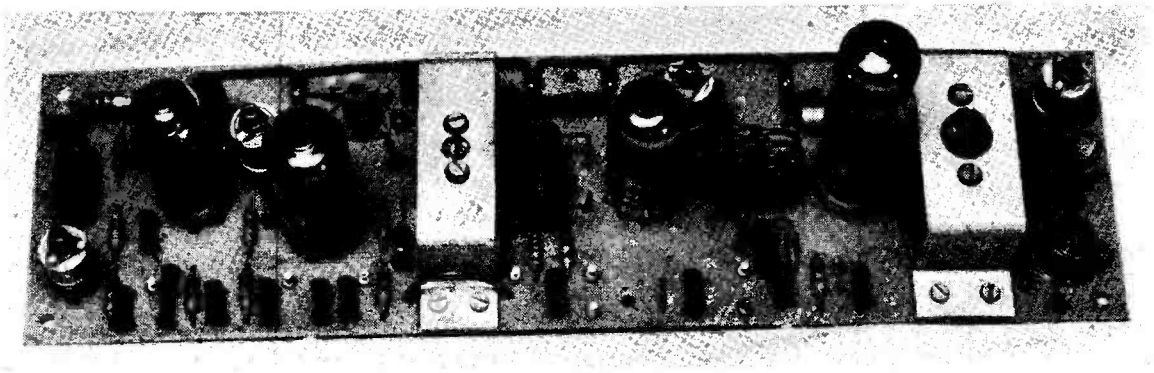
The transmitters were distributed in complete kit form, thus controlling the types of components used. Valves, however, were not included in the kit, as the types involved are quite commonplace. Metal oxide resistors were used throughout, capacitors silver ceramic, and the boards were manufactured from high grade fibreglass materials. All boards were roller tinned to minimise copper oxidisation. Each kit was supplied with a handbook containing assembly instructions, parts list and alignment procedures.

Valves were chosen instead of transistors as many of the people to whom issue was intended had had little experience of semiconductors, and also the cost of PA transistors at 144 MHz is quite high.

Circuit Description

The oscillator uses an EF91 valve in the harmonic mode, as opposed to overtone. Crystal frequencies can be 6, 8, 12 or 24 MHz, depending on choice. For the purposes of this text assume 8 MHz crystal usage. The





The kit-form two-metre Transmitter described by G8ATK.

tuned circuit L1, C29 is resonant at 24 MHz and tuning is achieved by C8; the 24 MHz signal is fed *via* the coupling capacitor C9 to the grid of a 12AT7 triplet; drive level can be monitored across R7. L2 is tuned by the stray capacitance of the valve to 72 MHz. To achieve a reasonable level of drive to double to 144 MHz, a second stage of amplification at 72 MHz was added (V2B). This is a neutralised stage using the second half of the 12AT7. Neutralisation offers one great advantage in as much as that *only* the frequency at which neutralisation has been carried out is allowed to come through to V3. (Neutralisation assists in the elimination of those elusive "Indians" who it is thought originate from the "Tennesse Valley"!) V3 is again at 12AT7, the anodes of which are strapped together to form a push-push doubler. L4 is resonant at 144 MHz when tuned with C22. This stage can be run on fixed or automatic bias as required. The 144 MHz signal is coupled to the grids of a QQV03-10 (V4) which forms the Power Amplifier. Grid drive is monitored across R14, alternatively fixed bias may be used. The PA tank circuit L6, C27 is tuned by C27. The output is taken *via* a one-turn link coupling to a Belling-Lee coaxial socket mounted on the board. VSWR adjustments may be made by tuning C28.

The strip may be modulated in the conventional manner or used simply as a means of obtaining RF for the big PA, or as an exciter for 70 cms.

Power requirements are: 300v at 140 mA; 6·3v at 3·5 amps; the typical power output is 10 watts into 75 ohms. Size is 11in. by 3in. wide.

Editorial Note: This kit is obtainable from the firm of Microwave Modules, Ltd., at £7 10s. post paid. Assembled and tested kits, or suitable boards only, are also available.

Table of Values

Basic Values for the Kit Tx

C1, C8, C22, C28	= 3-30 $\mu\mu$F	R2, R3, R7, R8, R12, R14	= 1,000 ohms
C2, C5, C6, C7, C10, C11, C13, C14, C18, C19, C20, C21, C23, C24, C25, C26	= ·001 μF	R4	= 12,000 ohms
C3	= 15 $\mu\mu$F	R5	= 27,000 ohms
C4	= 100 $\mu\mu$F	R6, R9, R11, R13	= 10,000 ohms
C9	= 47 $\mu\mu$F	R15	= 39,000 ohms
C12	= 33 $\mu\mu$F	Xtal	= *see text*
C15	= 8 $\mu\mu$F	RFC1, RFC2, RFC3, RFC4	= RF chokes
C16	= Twisted wires (low capacity)	TP	= Test points, against chassis
C17, C27	= 2-15 $\mu\mu$F	L1, L7	= Coils as required for tuned circuits
C29	= 6·8 $\mu\mu$F	V1	= EF91
R1	= 33,000 ohms	V2, V3	= 12AT7
		V4	= QQV03-10

Alignment Chart

Stage	Tune	Current	Monitor Point
V1	C1	10 μA	TP1
V1	C8	650 μA	TP2
V2a	L2	450 μA	TP3
V2b	C17A, B, C16	1·8 mA	TP4a
V3	C22, L5	2·0 mA	TP5b
V4	C27A, B, L7, C28	10 w.	Output

All readings taken with AVO-8 between point indicated and chassis line test point.

DAYSTROM—CHANGE OF NAME

For the past 12 years or so the well-known range of Heathkit equipment—widely used by radio amateurs and SWL's—has been produced in the U.K. by Daystrom, Ltd., Gloucester. The Company is now to be known as Heath (Gloucester), Ltd., with service and facilities continuing as before. Foreseeing a steady growth of sales in the U.K. and Europe, the Gloucester factory is being extended by 20,000 square feet. It can truthfully be said that the firm has made a very large and enduring contribution to the growth of Amateur Radio in the U.K

ELECTRONIC MORSE CODE GENERATORS

CONSIDERATIONS OF CIRCUIT DESIGN FOR A SENDER

Part III

G. E. GOODWIN (G3MNQ)

The first two parts of this article appeared in our June-July issues, which should be read for continuity. Because it is a fairly complex subject in the context of Amateur Radio, introducing ideas that will be new to most readers, it is being published as a series, the concluding parts of which will appear in forthcoming issues.—Editor.

WE take it up now from p.275 of the July issue, noting that there was an error in Fig. 18, p.273—the $\overline{Q}$ outputs in the BS2 section of that diagram should be reversed in sign; $\overline{Q}$ takes the place of Q, and *vice versa*.

The circuits already outlined can form the basis of all the generators to be described, as they all consist of the same " building blocks." The main variation, apart from the positioning of diodes in the selection matrix, is the complexity of the programmer which controls the flow of information from the selection matrix.

The basic block diagram is given in Fig. 21 the arrows showing the direction in which the signals flow. A switch controls the output of the generator, being either on or off. When switching " on " the programmer selects the first of the positive rails and also switches on the oscillator *via* the oscillator control line. Oscillator pulses flow into the decade dividers and hence the selection matrix produces an output depending on the diodes connected to the first positive line. At the end of the information on this line a reset pulse is produced which is fed back into the programmer through the reset line. This causes the second positive rail to be selected and again at the end of this information a pulse resets the programmer. This pattern is repeated until the switch is turned to " off."

Simple CQ Generator

Using the block diagram shown in Fig. 21 a simple programmer such as a CQ generator can be devised so that " CQ 2 de G3MNQ " (say!) is produced.

First, the call is broken down into its separate parts, *i.e.*, (*a*) CQ, (*b*) 2 de, (*c*) G3MNQ, which determines that there has to be three positive rails in the selection matrix necessitating three separate states in the programmer and there will also be three reset lines from the selection matrix to the programmer.

Fig. 22 shows the block diagram for the programmer and it will be seen that there are two flip-flops which, *via* AND gates, select the three positive rails. The two flip-flops combined can be in any of four different states and, as with the decade counters, these must be decoded so that only one is positive at any one time while the others remain at zero. The decoder consists, as before, of AND gates connected in the correct way to the flip-flops.

In practice four AND gates are used—three to select the positive rails and the fourth to produce an internal reset pulse for the programmer so that the information can be generated many times without attention from the operator. The monostables are used to convert pulses from the reset lines, on/off switch and the fourth AND gate into pulses suitable to trigger the flip-flops reliably. The OR gate allows either of the monostables to reset the decade counters.

Operating the on/off switch immediately produces a pulse from Mono 1 which resets BS1 and 2 and *via* OR puts the decade counters into their correct starting state. At the same time oscillator control volts are applied to the oscillator which then produces pulses to trigger the decade counters. BS1, BS2 and AND1 are arranged so that a positive voltage is applied to rail (*a*) and the selection matrix then selects the code as detailed by the isolating diodes connected to rail (*a*) to form the letters " CQ." (Output signals from the selection matrix are amplified by an output circuit so that they are suitable for keying the transmitter.)

The process goes on until a point is reached three counts after the last dash of the letter " Q," whereupon the selection matrix produces a positive pulse which is fed into the programmer *via* reset line (*a*). This causes Mono 2 to produce a pulse which triggers BS1 and BS2 so that A2 energises positive rail (*b*). At the same time Mono 2 pulse is fed through OR to reset the decade counters, so they begin counting again from zero. Oscillator pulses are still being produced so the selection matrix goes straight on to generate the information on rail (*b*), which is " 2 de." Once again, three counts after the end of the letter " e " a positive pulse is generated by the selection matrix which *via* " reset line " (*b*)

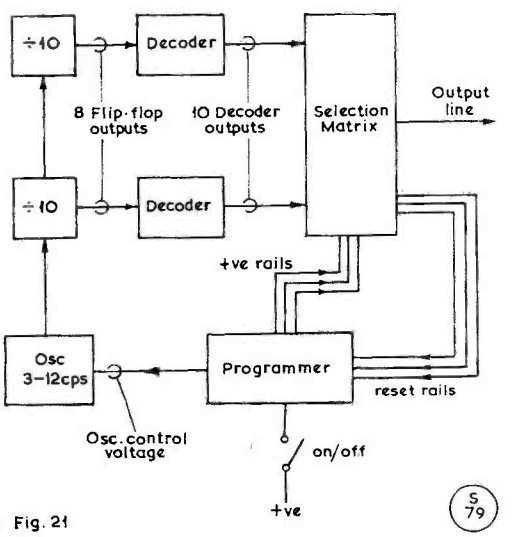


Fig. 21. Block diagram of the complete generator.

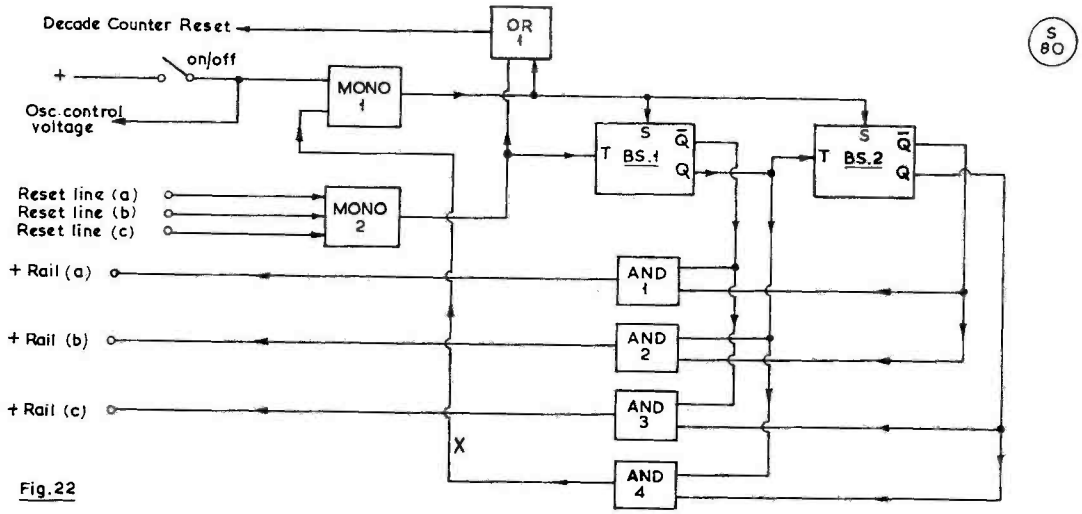


Fig. 22. Block diagram of simple CQ programmer—see text.

triggers Mono 2, causing BS1 and 2 to energise " positive rail " (*c*) *via* AND gate 3. The decade counters are reset by the pulse from Mono 2 and the count commences from zero generating the information on rail (*c*), which is the callsign. Mono 2 is again triggered by a reset pulse this time *via* " reset line " (*c*). BS1 and 2 select AND4. The output of AND4 is connected back to the input of Mono 1 which now produces a pulse. This resets BS1 and BS2 so that they are brought back to the same condition as they were immediately after operating the " on " switch, and also *via* OR the decade counters are reset. *Thus, the circuit will re-cycle itself as many times as may be required.*

Switching off will stop the generator anywhere through the call (which may not be very desirable) but by an addition to the circuit it can be made to switch off at the end of the callsign.

Cut-Off Signal

To incorporate this modification the connection between AND4 and Mono 1 (X on Fig. 22) is broken. Two flip-flops, BS3 and 4, and two more gates, AND5 and 6 are inserted, as shown in Fig. 23. The on/off switch is replaced by a push-button which will start the generator working and another push-button for " stop " is added.

Oscillator control voltage is now taken from the $\overline{Q}$ output of BS3 so that the oscillator is cut-off at the end of the callsign.

Operation is as before until AND4 output goes positive, when the reset pulse from reset line (*c*) has triggered Mono 2, with the exception that the oscillator control voltage is now supplied by BS4. If the " stop " button has not been pressed AND5 will have one input positive from BS3, which receives the same initial reset pulse as BS1 and 2, and when AND4 goes positive the output from AND5 will also so positive, triggering Mono 1 which restarts the cycle again. The stop push-button can be pressed at any time during the cycle, and when it is, BS3 changes state and the input to AND6 goes positive. When AND4 is +, AND6 output will go positive which will trigger BS4, cutting off the oscillator control voltage and also, *via* a third input to OR, reset the decade counters. The generator will therefore stop at the end of the callsign.

The selection matrix for this simple generator will be similar to all the others, and this is shown in Fig. 20, Part II, p.274, July. It has only three positive rails whereas generators which produce more information will have more but the circuit between the decade decoders and the output line will always be the same.

As can be seen some lines from the decoders do not have any connections *via* the diodes to any of the positive rails. These can be omitted providing it is thought that they will not be needed at any future time. The redundant lines will depend, in this case, on the callsign which is required to be sent and will vary to suit each individual case.

The reset point for each positive line is taken through an AND gate because all of the AND gates in the selection matrix are scanned by the decade counters every time information is produced and, were there no gates, spurious resets would occur. Therefore, if the reset AND gates have one input from the required reset point and the other input from that line's positive rail there will be no ambiguity.

Generator Circuit

For the sake of simplicity this generator does not produce a very ambitious type of CQ call but to be more representive of a normal hand keyed call it is necessary to go to more complication particularly in the programmer.

Circuit details are: OR1 as Fig. 12, p.221, June; AND1-6 as Fig. 9, p.221, June; MONO 1, 2 as Fig. 8, p.221, June, 1 with 2 i/p's, 2 with 3 i/p's and outputs taken

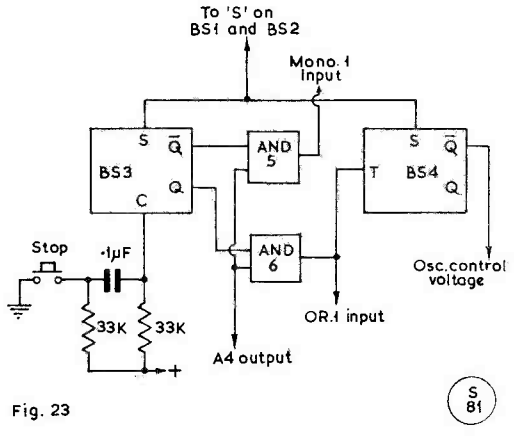


Fig. 23. Additional "stop" circuit that can be added to Fig. 22—see text.

from TR1 collector.

This has been designed to produce a CQ call incorporating the following: (*a*) CQ (repeated three times); (*b*) Band identification (160, 80,——4, 2, 70); (*c*) Callsign (repeated three times); (*d*) " pse k " (once only at end of call).

The controls included in this programmer for use by the operator are: (1) sending speed; (2) " Start " push-button; (3) " Stop " push-button; (4) Number of calls; (5) Band identification selection; (6) Monitor on/off and volume control.

In more detail these have the following functions:—

(1) A potentiometer so that the sending speed can be selected at anything between 6 and 24 w.p.m.

(2) A push-button; operation of which puts all circuits into their correct operating state and then commences the call.

(3) A push-button which can be pressed at any time during the call, whereupon the generator will continue as before until the end of the callsign is reached; it will then send " pse k " and stop sending.

(4) The number of complete CQ calls can be limited to three or be unlimited, but the stop push-button will take precedence at all times.

(5) Any band identification can be selected to suit the band being operated on, the first nine (*i.e.*, up to 70 cm) being catered for here. The number built in is entirely the constructor's choice.

(6) The generator includes an audio monitor for the code being produced and this can be switched on or off and the volume controlled. If a hand key is used this can also be monitored.

(To be continued)

MOUNTING A VHF DX-PEDITION

THE EI2AX/P FORAY MAY 23-30, 1970

T. P. DOUGLAS, M.B.E. (G3BA)

IN past years it has been usual to write a resumé of the happenings which have occurred during the days that we have been travelling around places which to the VHF man are considered to be " rare DX " and rather difficult to make contact with in the normal way of things. Instead of repeating what has already been recorded very well in the *Magazine*, it is proposed this time to give some account of the practical set-up required for a serious VHF expedition and the general reasoning behind the choice of apparatus and its layout, in the hope that this might be of interest to others who might be contemplating similar forays as well as to those several hundred VHF operators who followed us around Eire on the air during our expedition last May.

Preliminaries

In the first phase of pre-expedition planning some decision has to be made just *where* to visit in order that the trip should be of some real interest to as large a number of operators as possible. Wales has been and is covered very well each year both during contests and also by trips made by enthusiastic portable operators whose home locations are rather poor for extended DX working. Southern Scotland has been well covered and was the area in which G3BHT and the writer travelled in 1969.

In December last year we decided to make it EI or GI once again as, since our previous trip over there, the Class-B licencees had been permitted to use two metres and do so in very large numbers—therefore, a fair proportion of G8/3's would never have worked into this area and would be keen to do so if given the opportunity. We had received requests over the air to operate from EI on 4 metres and 70 cm. as well as two metres, but really the activity on these bands is such as to make such a trip rather unrewarding. It is never a good thing to mix bands on an expedition as this causes frustration and generally the whole thing fades out into nothing worth while at all. There is no getting away from the fact that two metres has a very large and active population at the moment and so this was the band which it was felt ought to be attempted first, leaving the other bands till later. As the situation in GI looked like becoming difficult we had to abandon any idea of doing Ulster and therefore we decided to make it an EI-only journey this time.

Having fixed up where we were going it was also necessary to determine when was the best time, taking into consideration holidays and the time of year when propagation was likely to be reasonable for working over distances in excess of 300 kms. for most QSO's. On our Scottish trip the Spring Holiday period had been found moderately successful and quite popular, so we saw no reason why we should not take this period again and consequently the ferry bookings were fixed before the end of February, *i.e.*, three months before the

actual expedition was scheduled to take place.

The time between February and May was spent poring over maps and writing to people over there to try to fix definite sites which would appear to be suitable. The first operational site is a most important one as it is the choice of this which really sets the expedition going. On this occasion we made quite sure that we could get to where we wanted to go from an admin. point of view, and all that would be required was the finding of a precise spot where the take-off direction and slope of the land was suitable.

The reason for paying so much attention to this first site is that the vast number of operators on the band are not particularly committed to looking for you and so it is quite imperative that the signal put down into the greater England areas must be good enough for most people —and then it is a matter of the news spreading by the grape-vine as to where you are, what frequencies you use and what is the chance of the " little man " making a successful QSO. If in addition you have a good number of pre-arranged schedules spread out over the total operating period then the expedition is set up for you and provided you choose your sites well the rest is a matter of operating ability and reasonable propagation conditions.

This matter of skeds is one that people argue about at meetings and over the air. Some think that they are quite unnecessary, others believe that they are unfair, and so on. By experience, readers can be assured that the liberal sprinkling of these arranged time-schedules throughout the operation periods are *essential* to success, and particularly so if conditions are no help. By having stations waiting there on target at a known time and with beams at the ready means that you are almost sure to hear each other and there is no hit-or-miss about it. About 40 to 50 is a reasonable number of skeds to have lined up for five hours of operation and permits sufficient time to work many other of the uncommitted operators in between the known skedmen. It can be said that a VHF expedition would hardly get off the ground were it not for the scheduled QSO's. Of course, pre-tour publicity plays its part but this has to be really determined and intense to bring real results. The *Magazine* VHF feature is a great help but even so a survey has to be made of the call signs of really active operators throughout the country, who are then written to giving them the full operational information of where, when and who is on sked; if this is done we have found that almost 80% of those contacted are there awaiting their turn to have a go at working you.

No HF Comparison

A VHF expedition cannot in any way be compared with a similar venture on 160 metres or the HF bands. The very nature of VHF signal propagation and operating techniques dictates that the entire show must be arranged right from the start. Needless to say, the expedition has to be taken seriously if it is going to stand any chance of real success. It cannot be just a sideline to a holiday somewhere. The whole period from when you set out until you arrive back home again has to be devoted exclusively to the matter in hand, and even if this is done time is very short indeed if you are attempting a " county-a-day " venture, with all its problems of travelling, shopping, finding a suitable site and getting the land owner's permission to park and operate from his patch, as well as attending to all the practical and technical details of the operating stints. You are working *all* the time, to a deadline — this must be met no matter what difficulties come along and that is perhaps what makes a VHF DX-pedition a very satisfying undertaking, when you can win out over the problems which arise. Some will no doubt be saying " But this is an amateur project and what *does* it matter if something prevents you operating at the correct time, from the right place? " Fair enough—but surely if you start something you must see it through to the best of your ability, and just because it has an amateur tag does not mean that it should be carried out in any way other than to the highest standards practicable in the circumstances.

Practicalities

In the case of our May expedition the means of transport and accommodation were nicely served by G3BHT's " VW Caravette." This vehicle was originally purchased with travelling holidays in view and it must be just about ideal for a radio holiday. Most of us who have been on Field Days know what misery can be felt when living and operating conditions are inadequate. Even more so does this apply to an expedition where the event lasts so much longer. This year we planned to make everything as comfortable as possible and with as many aids to operating as could be incorporated without too much difficulty. Sleeping, eating and travelling in comfort were all taken care of by the facilities built into the VW, so little or nothing had to be done on that side. On the radio side past expeditions had tended to be of the " put everything together on the night " variety and this weakness we determined should not be repeated this time. The front passenger seat was removed altogether and two sturdy shelves made of chipboard fitted up, one above the other, to take all the gear which was not part of the existing radio installation in the vehicle. These shelves were custom built to fit the contours of the body work and had small holes drilled to accept the feet of each of the units. These were held in position by luggage elastics and were quite secure and prevented from sliding about *en route* or when going over bumpy fields. By having all the communication equipment fixed, this meant that precious time was not wasted in having to connect it up. Only the mast, aerials and generator distribution needed to be assembled to get going and less than an hour was usually sufficient for this.

Erection of the mast and aerial was relatively simple once a drill was established between us both, and even under high wind conditions in the clouds with everything soaking wet no great difficulties were encountered. A *J-Beam* 10-element Yagi was the aerial used and this particular model in our opinion represents the best compromise obtainable in respect of gain, weight and windage; also, it is one of the easiest aerials to assemble under adverse weather conditions. The mast itself consisted of three 6ft. steel tubular sections with an extension piece for fitting the 10-element beam on to a CDR rotator and also for supporting an inverted-Vee dipole for the 80-metre talk-back link to our anchor man, G6CW. Four nylon guys were used as stays and the

whole mast assembly was erected by moving in the mast base against the lifting pull of two of the guys whilst raising the centre of the mast by hand and then walking it up. Two people in coordination can do this quite easily even in a stiff breeze. If the weather was really foul only two mast sections were used which gave an aerial height of 15 feet, which from the sites used was more than adequate for effective launching of the RF in the direction wanted. The CDR rotator was used to prevent the second operator having to shout to the man doing the operating stint and to prevent misunderstandings due to such a " relay system." This year the rule was that one man only was in complete control of his period of operation and the gear was arranged that beam rotation, switching on and off of transmitters and receivers, operating, logging and time-keeping for skeds could all be done in comfort from the operating position and without the need for assistance or dismantling plugs and sockets. The normal driving seat was used for operating and a light weight wooden board clipped to the driving wheel to act as operating table. This system worked out very satisfactorily indeed and was much to be preferred to the two-man arrangement which often results in confusion and differences of opinion (of course it is quite essential that the two partners remain friends all the way through!).

Gear Used

The technical arrangement was the result of much thought and experiment. The philosophy of the station design was as follows: For AM and CW the primemover was a " T.W. Communicator "—this receiver-transmitter combined had been very well tested in years past. It had a pre-amp. fitted to its converter, using a 2N5245, to improve on break-through and noise factor. In practice the drive only from the " Communicator " was used though in the event of a power failure it could be used on its own as a complete stand-by station. The output from the " Communicator " drove a QQV06-40A, plate-and-screen modulated by a pair of EL34's in push-pull. The modulated amplifier unit was completely self-contained and was designed specifically for field day and expedition use. The speech quality was tailored for DX weak-signal working without splatter, and recordings of the transmission were made to get it just right for the kind of job it had to perform. Power output was 35 watts RF carrier on AM and 50 watts for CW. For SSB working the HW-100 normally fitted to the G3BHT " Caravette " was used into the inverted-Vee on 80 metres and into a " T.W. Phase II " for VHF. About 50 watts p.e.p. output was obtained on the SSB channel. All voice operation was by press-to-talk and CW was by simple manual switching. The HW-100 had built into it an IRT facility and this was a necessity for our kind of work, as it is essential that stations spread out over 10 kHz to enable operating to be effective without too much QRM. The HW-100 also has a " real " AM facility so that if need by it could be used on its own. As an additional facility it was possible to drive the mod. amp. from the Phase II as a VFO on two metres in the event of the " Communicator " failing due to the accumulators being discharged—although this was unlikely as 100 A.H. worth of 12 volts were carried in addition to the normal vehicle battery. The main AM/CW receiver was a home-built converter using 2N545's in the RF stages and a dual-gate FET as mixer, and this in turn drove a " TW Twomobile " IF strip. All main receiving apparatus was solid state and powered off internal batteries. For SSB the Phase II Rx had a 2N5245 preamp before its Nuvistors to improve noise factor and give a little extra gain for the HW-100. Power was obtained from a British " Minigen " alternator, rated 1½ kW and showing excellent regulation under SSB conditions. From the foregoing it will be seen that the station had been designed around belt and braces philosophy but without going as far as having a kitchen sink for radio as well as cooking!

Operating Techniques

If the operating time is limited, as ours was, to only five hours per county visited and an expected 100-150 QSO's a time have to be worked through, there is very little time to sit around and chat, and only the bare minimum of talk has to be used to get the report and QTH over without any other frills or casual chitchat. The standard of operating on the actual expedition itself was really very good indeed and most operators were quick at appreciating what was required of them and getting on with the job without fuss. Inevitably, someone would tell us the story of his life with a three-minute over but in the main most QSO's lasted 15-20 seconds and this was just fine.

On SSB there was no need to make time skeds as the operating procedure was much as on the HF bands and QSO's were handled very quickly indeed. Our tape indicated that one every 20 seconds was average, certainly in the earlier sessions. The man who often got the contact was the one who instinctively knew when to pop his call over once when the QRM was subsiding and to be about 1 kHz off-channel to avoid those whose transceivers had no IRT and could only call right on our frequency. The bad manners of previous years was totally absent this time and we had not the slightest trouble handling the pile-ups as everyone showed patience and courtesy and it is easy to speed along in this kind of atmosphere. The CW technique was much more leisurely and split-frequency working was deliberately employed to prevent us having to chase about the band from mode to mode and to prevent pile-ups and needless QRM. We only tuned the CW end of the band whilst we ourselves kept to the zone channel and this method seemed to get most people through without much difficulty. We could have taken more CW stations in fact and particularly in the rarer counties the use of CW would have ensured many an uncertain AM or NBFM contact.

By far the greatest number of contacts were on AM and the operating drill for this mode had to be very different from that of SSB or CW. As split-frequency working is still the order of the day for most VHF stations this meant that we had to cover the whole 2 MHz of band without favouring any particular sector. We found that by alternating LF to HF with HF to LF tuning and announcing *every time* what frequency we were tuned to and what direction from that frequency we were going, operators were kept in touch with what was going on and those that could take advantage of placing themselves in our tuning window won the contact every time. Those who were rock-bound still had the chance of getting a QSO by calling when they knew we were search-

ing within a few kHz of their channel. This technique we reckoned was as fair a way of doing things as we could think of and it meant that calls were much shorter and tempers were kept at bay as it was clearly senseless to call us on a frequency where we were not searching. Most got the message very quickly and made our job that much easier to cope with as a result.

Summary

We chose to operate in mode sessions on a repetitive basis as we had found from previous experience this was the best way of doing things. Every hour on the hour for a duration of 15 minutes was the two-way SSB session; the next 15 mins. was devoted to two-way CW and the last half hour to two way AM/FM. These timings were reasonably successful although on the more distant sites we sometimes ran short of SSB and CW contact in the time, particularly late at night. The morning session from 0700-0800 was very busy and conditions were usually a little up on what they had been the evening before. Total number of contacts in the 7 days of operating in seven counties ran to 980 and from the QSL's which we have written almost 300 *different* stations made it over the Irish Sea—and that must be encouraging for those who urge us to " use or lose." Stations using powers as low as 300 milliwatts up to the full gallon were worked and many had gone portable to ensure a good signal into us from their small rigs and halo's. Our most distant QSO's were with the north of Scotland (GM8AGU) and F1ARR in Cherbourg.

Conditions were quite good except when we had a front between us and G-land when we were in County Leix but even so we never had a worse tally than 75 QSO's and our best was 213 from Wexford. Our finest hour was the first hour in the last county (Wicklow) when G3BHT knocked up 74 QSO's on all modes and had we no CW to slow things down over 100 per hour would have been quite feasible.

Of course, this story could not have been written without the enthusiastic co-operation of many many people both at home and in Ireland itself who saw the point of this whole event, and what it was that we were setting out to do. It was most enjoyable, very hard work, but a grand break from the " rat race " and what can sometimes be rather dull operating when nothing unusual is cooking on the band. Our combined thanks to all those that found "doing our thing" in EI was interesting and to those who aided us with obtaining locations, printing, loan of gear, aerials, fixing QSL's and not least to the Irish P. & T. authorities for permitting us to visit their lovely country once again with a caravan-load of highly suspicious apparatus.

" ZONE MAP " REPRINT

Another reprint of our well-known (we might almost say, world famous) *DX Zone Map*—of which many thousands have been sold over the years—is now in hand, and copies will be available shortly. The main revision—after all, we cannot do much about changing the shape of the world—is in the Zone data on the side panels. These have been completely revised and brought right up to date (July '70). This has involved nearly 300 alterations, deletions or corrections. All DXCC countries are now included under their correct Zones. The price of the *DX Zone Map*—which is a 4-colour job for wall mounting, with a wealth of detail—remains at 14s. 9d. post free and includes a copy of our new Prefix List as a free loose supplement. The Map is sent out in a postal tube to avoid damage in transit. It will grace the wall of any radio amateur station, transmitting of SWL. Orders, with remittance, to: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WITHDRAWAL OF FACILITIES—R.N./MM

It is reported that the operation of AT-stations from ships of the Royal Navy is being stopped by the Ministry of Defence. Current licences will not be extended and no new R.N./MM permits will be issued. No reason is given for this disappointing decision. Though there never have been many amateur/MM's operating from H.M. ships, those that have appeared have given a great deal of pleasure and interest to operators on the amateur bands throughout the world.

PROGRESS REPORT—CHESHIRE HOMES AMATEUR RADIO FUND

We are informed that by the beginning of July, donations (and profits from the " Mayflower 70 " award) had brought in a total of £456. Ten Cheshire Homes have now been equipped with a complete amateur-band Rx installation (modern receiver and aerial), while two more are under investigation. Though the present balance in the Fund is Cr. £85, there are still nearly 30 Homes without equipment—so there is a long way to go yet, and more support is urgently necessary. This Fund is officially approved by the Cheshire Foundation and those who operate the scheme give their time and services entirely free—virtually, the only charge on the Fund is the provision of receivers. Donations should be made payable to CHARN Fund and sent to: The Hon. Secretary/Treasurer, W. M. Clarke, G3VUC, 66 Fillace Park, Horrabridge, Yelverton, South Devon, PL20-7TE.

" . . . hope I've got a clean and tidy signal, OM . . ."

THE MOBILE SCENE

RECENT EVENTS AND PICTURES

—THE REST OF THE CALENDAR

THERE are still several big Rally events to come and in general those that have already taken place have been well supported, in very good weather—the Wx is always one of the prime factors.

They certainly had it for them up at *South Shields* on July 5, with an attendance of about 400 people in 130 cars. Of these, 31 were /M on 160m. and six mobile on two metres. This in fact represents just about the ratio, 5 : 1, in active mobile interest as between the two bands most used /M in the U.K. The South Shields programme proved popular with their visitors and this year they had five trade stands. South Shields has never been one of the "big shows"—geographically, its location is against it—but for the last ten years G3KZZ and his group have consistently put on a good show, with an established body of regular supporters.

* * *

Again in fine and hot weather, they had a very good Sunday attendance for the Anglian Mobile Rally at Ipswich over June 20-21—the Police gave an official estimate of *4,000* people! By contrast, the Saturday saw only about 200 people in the ground—Saturday Rally events never have succeeded in bringing in the crowd; for most people, there is too much else to be done on the domestic front. The Ipswich stations signing GB3AMR had 40 contacts on two metres; thirty on Top Band; 155 on 80m.; and the HF/DX station worked 111 contacts on 15-20m. On the Saturday, talks or demonstrations were given by G3DAH, G3FIJ and Owen Chilvers of Mosley Aerials. There were no less than 14 trade stands and the organisers had also laid on numerous "side shows" of interest to the family, one of the most popular being a good Punch-and-Judy performance. There was also a display of old machinery, steam and petrol. The bring-and-buy stall went down well, every type of equipment being available, with "raw junk" rigorously excluded.

The organisers were G3SJO and G8BVE, and they are to be congratulated on having achieved such a splendid result, much enjoyed by all who were there. It will establish the "East Anglian" as one of the big Rallies for future years.

MOBILE RALLY CALENDAR

August 16: The well-known Rally event at Derby, the 13th in their series, organised by the Derby & District Amateur Radio Society, at Ryknelds School, Derby. No details have been received but it is understood the event will be along the lines of previous years.

August 16: Torbay Amateur Radio Society Mobile Rally, at Newton Abbot Rugby Club ground, on the main Newton Abbot-Exeter road. Talk-in station G3NJA/A on 1880 kHz and two metres, opening 10.30 a.m. Under-cover, bar and refreshment facilities, competitions, trade stands and a "jumble sale." Routes will be signposted locally.—L. Webber, G3GDW, 43 Lime Tree Walk, Newton Abbot, South Devon.

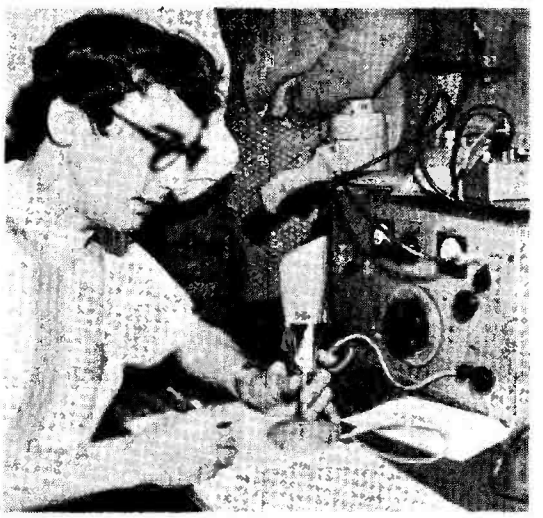
August 23: Plymouth Radio Club Mobile Gathering at the Scenic Car Park, Harrowbeer, Yelverton, near Plymouth. Talk-in station G3PRC/P on 160m. and G3BRJ/P on two metres.—I. D. Dawe, G3SPI, 345 Crownhill Road, Plymouth PL5-2LL, Devon.

August 23: Bromsgrove & District Amateur Radio Club Mobile Picnic at Hartlebury Castle, now the Worcestershire County Museum. Talk-in on Top Band and two metres, signing, G3VGG/A.—J. Dufrane, 44 Hazelton Road, Marlbrook, Bromsgrove.

The crowd in the assembly hall of the St. Ives Secondary Modern School for the Cornish Amateur Radio Club Mobile Rally on July 5.

(Above) The HF/DX station at the Anglian Mobile Rally, Ipswich, on June 20-21 signed GB3AMR. They had splendid weather and a capacity attendance on the Sunday. (Below) At the Cornish Amateur Radio Club Rally on July 5, the two-metre talk-in station was in charge of 16-year old Howard Brindle, G3YZY, who was licensed at the age of 15. In this picture, he is operating from the School at which he took evening R.A.E. classes given by the headmaster, himself the holder of a licence.

Very active on the organisation side for the highly successful Anglian Mobile Rally was G8BVE, left. In this picture, he is with G2JF, who was at the Rally with G3DAH.



The Top Band talk-in station for the Ipswich occasion over the weekend June 20-21 also signed GB3AMR. It was operated by G3XIX, assisted by his XYL as logger. They are reported to have had about 30 contacts.

August 23: Swindon Mobile Rally at No. 15 Maintenance Unit, R.A.F. Wroughton, two miles south of Swindon, off the A.361. A whole runway for parking and acres of grass for picnics and games. Covered exhibition area with trade stands. Attractions include raffle, lucky-number programmes, model steam railway, mobile foxhunt, contests for /M rigs and distances worked, also bring-and-buy stall (your surplus sold, 10% commission to Club). Talk-in by G3WEF on Top Band and G8AVG on two metres (spectacular results expected from an exceptional VHF location!).—M. Allenden, G3LTZ, 3 Westhill Close, Highworth (559), Swindon, Wilts.

August 30: Preston Amateur Radio Society Mobile Rally at Kimberley Barracks, Deepdale, Preston, Lancs. (adjacent Preston North End football ground), with local signposting, opening at 10.0 a.m. Talk-in on Top Band (G3KUE/A) and two metres (G3YJM/A). Refreshments available, also licensed bar. Commission sale of surplus gear (bring your own). Free admission and ample parking space.—G. Windsor, 26 St. Gregory's Road, Deepdale, Preston, Lancs.

September 19: (*Saturday*). Scottish Mobile Rally at David Livingstone Memorial, Blantyre, Lanarkshire, 10 miles south-east of Glasgow, easily reached from the South *via* the A.74 and M.74 motorway. Refresh-

G3DAH (Herne Bay) was portable/mobile on two metres at Felixstowe when attending the Anglian Mobile Rally at Ipswich. His car is a Humber Sceptre and the 2m. Tx just fits under the passenger-seat—which tends to get rather warm during protracted operating sessions. Mike describes himself as "just a bit of a loafer"—actually, he works hard in the VHF interest, and is well known as the contributor of our regular "VHF Bands" feature.

ments available on site, charge for parking includes admission to the Memorial museum. Rally will feature trade show, radio-controlled model demonstration and various competitions. Talk-in on 2-4-80-160m., opening at 10.0 a.m. Enquiries and information: G. A. Hunter, GM3ULP, The Bungalow, Bromside Braes, Camp Road, Motherwell, Lanarkshire.

September 20: Peterborough Mobile Rally, at Walton Senior School, Mountsteven Avenue, Peterborough, 2.0-5.0 p.m. Plenty of parking space. Everything under cover, including the giant surplus sale, so bring all your unwanted gear. There will be trade stalls, entertainment for the distaff side and harmonics, and refreshments available. Talk-in on Top Band, and two metres.—D. Byrne, G3KPO, Jersey House, Eye, Peterborough.

September 27: Harlow & District Amateur Radio Society Mobile Rally at Magdalene Laver Village Hall, near Harlow New Town, Essex. (*Details later*).

K.W. ELECTRONICS EXPORT SUCCESS

Recently, K.W. Electronics, Ltd. of Dartford, Kent, have been able to secure large export orders for their SSB communications equipment, the latest being for more than 100 items to be delivered to Nigeria. K.W. gear is used extensively not only by amateurs throughout the world but also by professionals for various communication services. The sales manager for K.W. Electronics is now James Scott, G3CMI, who is 41 years old and also holds a pilot's licence.

ITA's NEW OXFORD STATION

Now in service as part of the UHF Band V expansion scheme, the Oxford ITA transmitter (Ch.60) gives an effective radiated power of 500 kW, the vision frequency being 783·25 MHz with sound on 789·25 MHz. The system is 625-line, fully compatible.

F.O.C. ANNUAL CONTEST

The First Class CW Operators' Club recent annual Contest drew a total of 128 entries from six continents, more than 330 members actually taking part. The high scorers were G3FXB (1801 points and overall winner), and K3JH (1707 pts.). This was the best-supported event in the annals of the Club, which was founded pre-war and revived again after it, with a new start under the *aegis* of SHORT WAVE MAGAZINE.

". . . change-over here is a little unusual . . ."

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

SINCE we had such a good response to the last MDT (" Magazine Daylight Test ") and so many requests for another—book September 13, 1000 to 1700 clock for listening and working long distances on Top Band. Call " CQ MDT " on the key, or CQ Daylight Test on Phone, and see what you can raise. A full report on the results will appear in the November issue, while if it is possible we will give a quick first-impression report in October's issue, if anyone can get a report to Buckingham by the following morning.

And if you hear G3KFE or G6FO—don't write 'em off as phoneys, 'cos we do come on the band, despite what may be said to the contrary!

On a different facet of Top Band, the latest bulletin from W1BB was a little late this year—the reason being that once again Stew has been in hospital, for ten weeks. He says he is now out and rarin' to go again; we offer our sympathies and hope that now all is well his luck changes and he remains on top of the 160-metre world. (In case someone is wondering what may be the background to this, W1BB started working real DX on Top Band as long ago as 1938—*see* pre-War issues of SHORT WAVE MAGAZINE).

Top Band Notes and News

Probably the main event as far as Top Band is concerned this time round has been the sudden appearance of the South Americans, getting into the U.K. at very fair strength—in some cases as high as 59 SSB. PY1MGF and ZP9AY have been the noteworthy stations, with PY2BGH was not far behind. Just about every letter covering Top Band mentions one or other of them!

As if that were not enough, G3ZCC and G3ZES have reported hearing JA3AA at RST 469 on 1910 kHz. Interesting, when one knows that at the time JA3AA was sitting on that frequency—so perhaps it was not a pirate, although it is generally conceded that an EU-JA contact is about the nearest thing to impossibility one can think of for 160 metres.

On the domestic scene, GM3NVU (Bonnybridge) discusses the expedition of G3ONS/G3KRH mentioned in the May piece. For the first four days conditions were right and some excellent contacts were made, but then things deteriorated, to the extent that static was wrapping the S-meter needle round the pin. George would like to know the five most wanted Scottish counties, as the boys are planning to do some more trips. (*See* picture p.355.)

Those examinations are over for GM3YOR (Kirkcaldy), and so he has been able to turn his attention to the pressing matter of Top Band, after first exercising his call on Field Day, along with GM3FXM and GM3PFQ to show him the way of it. Drew did not manage a 160m. QSO with the South American stations when they appeared on June 21, although he says GM3YCB worked both PY and ZP.

Virtually a *nil* report from G3XTJ (Palmers Green) as a result of his B.40 dying and the RA-1 being lent to GC3VUE. However, by the time of this appearing Edwin hoped to be the proud possessor of a Drake-R4A—and doubtless a thinner bank balance.

G3YXM (Leicester) writes with various amendments to his entry in the First-Year Table, but is disappointed that he did not manage to connect with GB3FRE—which makes two of us.

Incidentally, *please*, *everyone*, put your *callsign* on the top of your letters—it is more than difficult to recall who comes from where when something like a hundred letters come across this desk each month; somebody signing just " Dave " caused this department quite a bit of head-scratching over a familiar but unidentifiable script—until he was identified by a passing remark about his score. (After all, in Amateur Radio, we deal in *callsigns*, not Christian names, which are merely a convenience in conversation between friends. From where we sit, we cannot possibly remember them all, either names or callsigns. So, when writing in to this piece, what we want is your callsign—not just a letter signed " Johnny," or whatever, with the implication "you know me." As a matter of fact, we practically never do!—*Editor*).

Like your humble conductor, GM3ZDH (Glasgow) managed to be " off the air for a few days "—just at the time to miss the South Americans. But Bob did add a few more to his score of counties as a consolation.

From August 28 till September 12, a group of chaps will be doing Wigtownshire—they will be signing GB3NFD on all bands from 10 to 160 metres, in both modes, and with eight operators available to ensure real continuity. G3WZM is *QTHR* if you want to drop him a line and tee up a sked. Incidentally, Graham asks " how to make an entry to the Ladders?" Easy—just tack claims on the tail of your letter (or on a postcard if you don't like writing long screeds) but *please* make the entry look like how you expect it to appear in the Table, so as to avoid copying errors.

Now to G3XDY (Cleethorpes) who is clear of exams., and a little green-eyed over missing those South Americans—but he adds something to the story by reporting that some G stations are known to have the cards in already for their PY and ZP contacts. In the domestic line, John has his doubts about a station signing " GM3WUD/P " from the Shetlands, complete with click and chirp, which is not like the real G3WUD. (As the latter is a reader of the *Magazine*, and sees this, perhaps he will set the G3XDY mind at rest). Back on the DX trail, G3XDY adds to the crop by reporting the presence on Top Band of ZD9BM and a couple of African

stations.

From Fareham, G3ZDY—odd coincidence the letters from 'XDY and 'ZDY being adjacent in the pile—lets us know how he is getting on with his ten watts of AM and CW. He is up to 81 counties worked and goes up two—although he only claimed one!—in countries. David heard the South American stations working DL9KRA and G3RPB at up to 589 on the peak. All this being said, one should just add that G3ZDY is now on the lookout for a Sideband rig, when he should really start to get around.

Nice to hear again from G3WPO (Burgess Hill) who seemed to have dropped out of our ken of late. Tony comments on the nice words passed to him both on the air and in QSL's regarding his M.C. stint with 9H1BL earlier in the year, modestly disclaiming any part in the affair—but it must be about the first time in Top Band history that a new country came on and *everyone* who called in got across, simply by eliminating the free-for-all. A Good Show.

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
	Phone and CW	
G2NJ	98	98
G2HKU	98	98
GI3WSS	96	97
G3WPO	95	98
G3VLX	95	98
G3XTJ	92	97
G8HX	86	89
G3XDY	83	96
G3KFE	58	78
G3LXD	44	78
	Phone only	
G2NJ	98	98
G3WPO	91	98
G3VGB	91	97
G3PQF	88	98
G3XTJ	78	92
G3XDY	61	97
GI3WSS	61	74

(Failure to report for three months entails deletion from the Table. Claims may be made at any time. Six months of "Nil" reports will also result in deletion.)

Westmorland, Cumberland and Roxburgh, July 27-29, were to have been done by the Hartlepools Club—but they sent the gen. in too late for last month's piece, and this one is virtually too late for them. It underlines the warning so often given, that if we are to mention any proposed activity in this piece, we *must* have adequate notice—which means getting your letter at least by the deadline for the month during which the event is to happen. However, if they appeared no doubt the trade was brisk enough.

Although his home QTH restricts him to indoor aerials in the loft-space, G3VPS (Hailsham) feels that he may have made a gain in the move, if only because he is now free from TVI, whereas before he had severe trouble on at least one band. However, that does not get him on Top Band again—so a /A set-up at Eastbourne was put into service, and used to work ZP9AY as the star turn, plus GC3YJI and G3XJG/P, Hereford, the latter pair being on SSB.

PA0PN can now be raised on SSB, reports G2HKU (Sheppey). Ted says that PA0PN has built a Top Band transverter for his TS-510, which works very well; Ted should know as he has both heard it in his own receiver, and operated it himself when he was over there with PA0PN and ON4CC. G2HKU mentions also the death of ON4ZO of the injuries received in the crash in which his son was killed. A sad affair indeed.

Now to GI3WSS (Holywood, Co. Down) who has found conditions very difficult, what with the long hours of daylight and the high static levels. However, Cyril has managed to continue rising in both columns of the Table—the cards being mainly from G3SVK's monster tour earlier in the year, while GM2ALB/P provided Aberdeen, to leave only Scilly outstanding for the full set of counties.

Also from GI3WSS comes some notes on the GB3FRE station and its doings. On the HF bands they had a 14-AVQ and a trap dipole, and for Top Band there was the half-wave dipole; apparatus comprised a KW Atlanta plus remote VFO, and a KW-2000B and KW-1000 Linear. On the HF bands quite a bit of DX was worked which is not surprising when you realise that GI3OLJ was among the operators. As for the LF bands, the star turn was undoubtedly working 4U1ITU and finding the operator to be Brother Ed, whose home call is of course HV3SJ. Top Band conditions during the whole period were pretty rough, due to a combination of factors. Mainly the problem was the necessity of closing down and being out of the building by midnight, not to mention the heavy static, so most contacts were CW on Top Band.

G3VFA (Broadstairs) has kept his promise, made at the time of the last MDT, to "keep up with this lark for the foreseeable future," and again submits a list of QSO's, mainly on 160 metres, but a few with 9 watts on Eighty. The QTH is only a half-mile from the famous North Foreland coast station, which means that many a promising contact has gone down the drain as a result of GNF doing its job on 1838 kHz, including ZL3RB, heard one morning for a few moments at 339. Other interesting ones included a couple of PA's, and DJ6TK, not to mention OK1HBT, who was better known, perhaps, as OL8AIO a few years ago, one of the biggest signals on the band.

Forty and Eighty

The static which has plagued Top Band did the same for these two allocations; however, on *Forty* at least, conditions during the late evening were quite reasonable on several occasions, with VK's and CR7IZ heard at quite good strength, not to mention a lot of less startling stuff. One gets the impression that the number of dirty notes on this band is on the downturn of late—and it is the dirty notes above all that make Forty so unpopular.

G3WTV (Torquay) has been forced to take quite a bit of time off operating to attend tiresome examinations, not to mention his activities in connection with the GB2SF affair, and between them they have knocked quite a hole in his time. *Eighty* produced PY0AD (Fernando do Noronha) for a new all-time country, and several GB's. *Forty* was less successful, yielding only an assortment of GB's.

Rather than build an attenuator

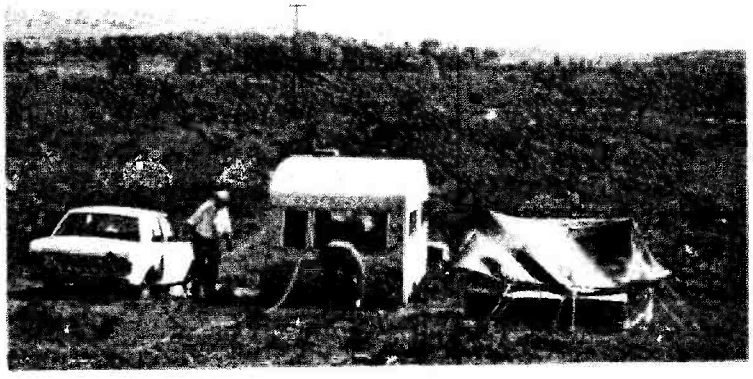
for *Forty*, 9H1BL (Paola, Malta) has put the receiver on to a short separate aerial. This does tend to bring down the DX signals but also reduces the cross-modulation more, making the DX easier to read. ZC4SS/P and South Americans were raised on CW, while SSB produced CR6PC at a fantastic signal strength.

An entirely 7 MHz report comes in this month from GM3JDR (Wick). CW gave UV9CO, OJ0DX (Market Reef), GC5ANX, EA8FF, CR7IZ, ZS6BT, JX3P, ZS6AL, 9J2WS, ZS1MH, ZM3GQ, 5T5BG, PY2DFR, UA9GL and PY7AZQ. Picking up the mike brought these under the hammer: TR8DG, OJ0DX, CT2AK, 6W8DY, PY7AHF, VK3ZL, LX1BW, OY7JD, UR2AO, PY7BFN, VK6JJ, PY7BBD, 3V8AH, XW8DS, ZS5XA, GC5ANX, 9J2WR, EP2TW, PY0AD, 9V1PP, CR6MJ, CR6IY, CR6BP, EA8FF, LX2CQ, OX3BE, CR7IZ, CR7GJ, CR7FM, ZS1MH, 7Q7BC, 5Z4MO, CR6BA, CN8DW and ZB2BY. All the contacts were made between 2000 and 2200z, using a half-wave dipole at 40 feet, plus a ground-plane whose top is about five feet higher.

G2HKU seems to have spent a bit of time looking at the bands; *Eighty* gave SSB with ZB2A, while *Forty* CW produced OJ0DX for a new one plus PY7SR; the SSB mode came up with YV1BI and PY0AD. All late-evening stuff.

From G3YDX (Newquay) comes a near-nil report. The reasons are fairly simple, in that Ron has decided to give up the transceiver in favour of "separates"—so his transceiver is with G3XTJ, who is attending to the business side of the deal. However, a little time was spent looking around Forty and Eighty, finding CR6GO on both, and going round *Forty* snapping up previously-overlooked EU prefixes and countries. Although the new transmitter will be a KW Vespa, 95% of the G3YDX operating time will still be CW, as he finds he cannot compete with the chaps with QRO and beams on Sideband. CW always does the trick by a call a few cycles off the frequency, but the "No-QSY" policy so often adopted on Phone puts the low-power wallah at a grave disadvantage.

G8HX (Mansfield) writes to say he has come up on *Forty*, and to recount the reasons. Seems the old Top Band aerial was by courtesy of no less than four neighbours. Local TV is Rediffusion; since the advent of 625-line TV they have opened up their bandwidth from 3.95 to 9.45. Frank found out by accident that his 3.5 MHz signal was cutting-up the neighbours' TV, so he voluntarily cut it down and put up a 7 MHz dipole in his own bit of land. This, of course, means that everytime he comes on the locals on Rediffusion are really in trouble. Now to the interesting bit: Although there have been petitions to the firm, and discussions with Weights and Measures people about false trade descriptions, not one complaint has come against Frank. Obviously he made it painfully clear to all concerned that his rig had received the OK from the PO chaps and was properly entitled to be there. He continues his operating quite happily without a single complaint—all the anger being aimed *at the TV company*. A good bit of P.R. work on G8HX's part, and a model way in which amateurs should set about some, at least, of their TVI problems.



The GM3ONS/A-GM3KRH/A camp at a site 600ft. a.s.l. in Perthshire during May 30-June 5, when 150 contacts were made on Top Band under rather variable conditions, with noise and static level very high at times—however, with GM3VNU, they thoroughly enjoyed themselves.

Twenty Metres

As usual, the band where the trade is briskest in DX. One always has had to dig for it on Twenty, but of late "excavation" is hardly a strong enough word, what between the short skip, the noise, and the Klots. What is needed is a DX-controlled squelch on the receiver, which only opens up when it hears DX, combined with a band-sweeping front end which parades up and down the band until the squelch bit says it has found DX, the whole lot then ringing a bell to awaken the operator. Won't some DX-minded inventor *please* set to work?

G3WTV (Torquay) has been relatively inactive, for reasons already mentioned, but he did have a few cursory glances at the band, and picked out the new ones, either for the band or all-time: AP5HQ, CO8RA, HH9DL, IT1SEZ/IF (Favigana Is.), WA3GZA/KP4, KZ5EE, all the W call areas except W6, TF3BB, ZS's, 4U1ITU and 5H3ML. All SSB, of course.

Look out for G3JFF/MM during the coming month—he is off on a cruise again, and will be in the VS6/DU/JA/KR parts. Frequencies 14025/21025 kHz CW and 14150/21150 SSB, up till around mid-September, when he will be coming home by air.

During the first part of June, GB3STF was showing the flag, with Sommerkamp gear to a Mosley TA-33Jr. They seem to have made a fair job of it, at that, to judge by the log from G3VLX. Most of the activity seems to have been on 15 and 10 metres—possibly grabbing the chance to give these bands a whirl without worrying about TVI! However Twenty did yield a QSO with F2CD/FC.

A very first report from G3ZKS (York) who has promoted himself from G8BRI by passing the Morse.

Frank has 200 watts p.e.p. to a trap dipole which has yielded a whole daffy of Europeans, W's, JA's, ZL and VU2BEO among the first hundred QSO's, which is a very encouraging start. Incidentally, Frank is very interested in cine and photography and would like to make skeds with others so interested. (37 Alwyne Grove, Shipton Road, York).

Although his garden has kept him very inactive in the radio sense over the past few weeks, and made him stay in bed when he knew DX was to be found on the band, G2HLU (Reading) has one happy bit of news —he has at last got his planning permission for a forty-foot mast and a triband rotary beam to go on top of it, after first going to considerable trouble to convince his Superior Authority that the guys could be sited in the corners of the kitchen garden out of sight—funny how wives do not seem to see beauty in these delightful structures!

Your conductor is taken to task by G3ZHI (Rotherham) for quoting his call as G3ZMI—apologies rendered forthwith. Ian has not neglected things this month, and on 14 MHz offers OJØMX, PY's, AX's, UI8ZAB, HS1A€H, LU6DAZ, FØVG/FC, M1B, VE1ATM, ZD7SD, SVØWY, ZP5CF, 5Z4IX, PY's, HC2BB, not to mention a two-hour ragchew with SM5DXB.

From G2NJ (Peterborough) we hear that he recently found great pleasure in working CT3AS, who was for years so well known in this country as G3SJ of crystals fame. Turning to matters /MM, Nick has received cards for his contacts with YO4ASG/MM, which state he was aboard s.s. *Moldova* in the Aegean Sea at the time of the contact. An "oddie" heard on CW was a station signing HB1ØØUA/G on June 17, 1115z, saying he was in Hungary, QTH Kaposvar, mobile and giving the reason for the call as a special for the year 1970, the /G bit being for the county in which he was located. Definitely a bit odd!

Just to avoid another session at the lawn-mover, G2HKU sat himself down and went through his log, coming up with OJØDX, on CW, plus CEØAE, ZL3JQ, ZL3SE, TI2SCH, all SSB, and an AM contact with M1AP.

Conditions earlier in the month were pretty good, but fell off later, in the view of G3NOF (Yeovil), with Pacific stuff in around 0700 followed by AX's until about 0830. Some days the W6's were very good; but again, although Don has been on by 0630, he has missed the peak of the morning conditions. During the day, it has been mainly a question of short-skip and noise, perking up a bit in the evenings again. G3NOF missed FG7AC and VQ9E, and never even heard VQ9A, but at least he rang the bell with AP5HQ, AX's assorted, EA6BN, FØQD /FC/M, FHØVP, FØ8BO, FØ8BY, HS4ADB, M1B, OH2BH/ZA, OJØDX, PJ2CW, TA1TT, TN8BK, W6's, ZD7SD, 3V8AB, 3V8AL, 4U1ITU, 5Z4KL, 5Z4LR, 6W8DG, 7Z3AB, 8P6AZ, 8P6AE, 8P6BX, 9Y4BFC and 9V1PE.

In the view of G2DC (Ringwood), Twenty is the only band to have been "giving" during the month, both day and night, but in particular at the favoured period of 0600 to 0830z. CW QSO's were made with AX2-7, HR4MAB, KH6LP, KH6AIO, KC6CT, KL7MF, OJØDX, TI2AP, UH8CJ, VE7QH, ZM1AAK/K, all W call areas, JA's, PY's and LU's.

The view that Twenty has been useful for most of the time is shared by 9H1BL, albeit Alan finds the noise somewhat off-putting, and as a result only traded call-signs with VP5TH and VP5NB on the band, going higher in frequency for most of his time.

Here and There

The call-sign OJØDX figured in many logs over the period—Market Reef once again, and totalling 13,500

SIX-BAND DX TABLE

(All-Time Post War)

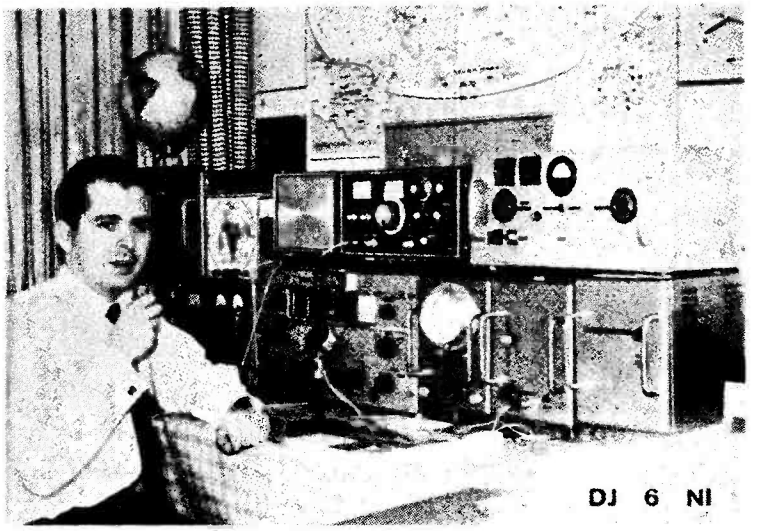
Station	Countries	28 MHz	21 MHz	14 MHz	7 MHz	3.5 MHz	1.8 MHz
W6AM	349	148	159	349	143	118	7
G3DO	338	210	246	331	90	83	9
G2DC	338	179	310	329	167	116	20
G3NOF	319	197	223	308	38	60	4
G3LZQ	265	140	156	215	72	38	8
G3KMA	258	198	190	189	131	55	11
G3IGW	211	128	153	168	131	105	47
G3WTV	196	125	124	157	70	74	—
G3RJB	171	76	59	156	60	37	8
9H1BL	189	115	125	140	66	54	8
G4RS	184	82	114	128	55	41	13
G3VPS	144	49	48	122	60	38	14
G3XBY	167	110	124	107	74	57	8
G3PQF	162	105	47	100	84	65	13
G3WPO	105	36	24	66	49	31	24
G3YDX	131	69	77	47	54	39	9
G3XAP	100	44	46	46	60	30	13
G3VLX	51	7	12	20	7	27	19

Note: Placings this month are based on the "14 MHz" Column. Claims must be made at least every three months to retain a place.

QSO's up till the final close-down on June 14. At the same time Gus Browning was knocking them off in his own inimitable style from FHØVP. Having run off 1100 QSO's from there, he was reported signing AC1A/MM *en route* for Geyser Reef, where he spent about seven days operating as ACØA/GR, in two stints with a break in the middle, caused by losing two drums of fuel, which had to be replaced by a trip back to FH8-land. By July 2, he was at Farquhar as VQ9/A/F, leaving there for Agalega on July 9, using 3B6CP as his call. Blenheim Reef and Chagos were in the pipeline after that.

Another one which came up during the month was ZA. First, there was one signing ZA1C, said to have been a group of YU's. They appeared on July 5, and gave all the signs of being genuine, with QSL's *via* YU3ZW, and were still going on 28 MHz CW/SSB at 2000; but then there was a silence, and many people are now wondering whether they worked a " good one " or not. A second ZA operation was that set up by OH2BH, signing OH2BH /ZA on July 10. They appear to have kept going through the night until 0600, making about 700 QSO's, when the gear was taken away, although they will remain there till July 17. However, at the time of writing it seems as though the ZA1C operation was indeed a phoney, as the YU brethren knew nothing of such operation. So—we must wait and see whether G3FKE has to eat his hat.

On the Contest front there is, of course the VK/ZL/Oceania affair coming up from 1000 October 3 to 1000z October 4. The object of the exercise is to work the VK/ZL/Oceania stations, with the usual RST plus serial number exchange. Logs to show, in this order: Date, time, call of station contacted, band, serial number sent and received, and points claimed. Underline each new VK/ZL/Oceania call area as it is first worked. Two points per VK/ZL, and one for each Oceania station. All-band score will be the total QSO points *times* a multiplier made up of the total number of VK/ZL call areas. Logs go to Federal Contest Manager, W.I.A., Box N.1002, GPO, Perth, Western Australia, to arrive before January 22, 1971.



Station of DJ6NI, Gunter von der Ley, D-4320 Hattingen, Raabestrasse 42A, West Germany. If you have ever heard or worked him, this is what his set-up looks like—he is a keen and active DX operator in our Zone 14 area.

On a more mundane plane, 9H1BL brings up the question of QSL's for SWL reports. The real difficulty is the SWL who sends a useless report with an IRC. If you don't verify, in Alan's book you are not far short of theft, but sending one is against his principles—and to write a letter explaining why the report is not worth a card takes up more time than sending a QSL! So—what *does* " A " do in such a situation? Any offers?

Off to one side again; last time Justin Cooper's SWL piece came out, it contained a query on the use of /MA by a maritime Mobile station. G3SWH comes in at this point to say that when he was G3SWH/MM, his licence commanded him to use the /MA suffix whenever the ship was berthed, moored, or anchored, and /MM when at sea. No abbreviated form of either call is allowed. So there you have it in a nutshell. Of course the /AM suffix sometimes heard is something different again—Aeronautical Mobile.

Incidentally, all VQ8 prefixes have now become 3B—and Ifni, EA9, no longer exists.

Fifteen and Ten

Lumped together this month, since neither has made any great showing, what with the fall in sunspots and the summer conditions, albeit both have been quite lively at times.

G3WTV damns *Fifteen* with faint praise, saying that the majority of his efforts resulted in all W call areas, but the " few others " seem to have included CE2OX, CE2TK, CO8RA, ET3DS, FØVG/FC, MP4BEU, OJØDX, PZ1CM, VO1DE/VE8, ZC4HS, 4U1ITU, 4X4CY, 5Z4LS and 9G1GG.

The 28 MHz offering showed openings to South America, albeit at lower signal strengths, giving CE7DW, FR7ZN, PY7VNY, ZP5SR all booked in on SSB.

The GB3STF effort aforementioned seems to have put most of its RF on to *Fifteen* SSB, in the hopes of giving the best picture of world-wide contacts to the spectators. To fill the bill, the following duly obliged with good reports: 4Z4KT, 4X4BI, ZD8JK, 11 JA's (all in a row, over a two hour morning period) OD5EJ, 9G1GD, 7Q7JD, ZS6YQ, 9J2PV, CT2AT, ZP5GJ, FHØVP—a QSO which probably shook the onlookers!—9J2DT, EL2AW, 9G1GU, OD5BA, 5N2ABM and 5N2AAJ. Considered in terms of a revelation that the ordinary amateur, with an extemporised set-up at an exhibition, can

work round the world at the drop of a hat, so to speak, it was a very fair effort indeed.

G3ZHI considered the band conditions were very poor—but poor or not, in the short time he has been licensed he has crept up to 118 countries worked! *Fifteen* this time seems to have yielded 5Z4KL, ZS6BAZ, CR6's, EL2CA, AX9AC, VP7CG, 9Q5WV, OD5BA, CE7DW, ZC4, OA4LM and YN2AB; *Ten* appears to have been totally unprofitable.

As far as G3NOF was concerned, *Ten* was definitely "off" as compared with last year; as, for example, his daily sked with ZS1KZ at 1630 which has not been too successful this time but was almost 100% last year. Conditions to Africa earlier in the afternoon were said by others to be better—but Don knows this only from hearsay, since he, like the rest of us, has to work for a crust. A few weak and watery W4's were heard, and FG7XT; however, Don did ring the bell successfully with CR6BX, EA6BJ, FHØVP, ZE1BP, ZS1HR, ZS1KZ, 4X4HF and 9G1DT. *Fifteen* was not a lot more helpful, albeit here the picture is somewhat complicated by TVI which makes the "heard" list more important. Around 1100 and 2200 Don did venture to project a little RF up the feeder, and with it raised a few W's, VS6BE and 9V1PX.

"FIRST-YEAR-OF-OPERATION" LADDER

Top Band Only

Callsign	Date Licensed	Counties	Countries
	Phone and CW		
G3YMH	3/6/69	89	16
G3ZDY	21/2/70	81	11
GM3YOR	30/7/69	80	10
G3YXM	14/11/69	79	14
G3YPM	20/8/69	75	15
G3YPT	20/8/69	63	14
G3ZCC	12/3/70	37	6
GM3ZDH	24/3/70	36	5
	CW Only		
GM3YOR	30/7/70	80	10
G3YMH	3/6/69	69	16
G3YPT	20/8/69	58	14
GM3ZDH	24/3/70	28	5
G3ZCC	12/3/70	21	5
G3YXM	14/11/69	14	8

A first entry to this table must contain a statement of the date of first licensing or of commencing operations.

Reporting the HF Bands

Though conditions were decidedly erratic at G2DC (Ringwood), Jack had the pleasure of notching up three new ones, even if EA6BD, OJØDX, and IS1AEW were all "locals. The only other contact on the band was FB8XX. Looking at *Fifteen*, conditions there have also deteriorated, particularly in the afternoons. Mornings and evenings are by comparison much better—so scrub round your holidays! CW did the trick, as always, with AX5FM, CE3CF, G3RSP/MM (in the Mozambique Channel), KR8EA, FB8XX, OJØDX, VS6BL, JA, PY, LU, W and VE. Changing his tack a little, Jack is a bit worried by the way in which Gus is handling the pile-ups; in one specified period of 75 mins. Gus never once gave either his own call-sign or any indication of where he was listening, with the result that pretty well all the CW portion was wiped out with hopeful callers. This is certainly a bit unfair to the vast majority of band users to whom the name "Gus" brings on a blank stare, and to whom DX means anything outside the local village—and we *are* in a majority, you know. It is not in keeping with the Browning reputation to operate in that style—and it is probably no more than an oversight that needs to be pointed out.

At 9H1BL, the pickings on 28 MHz included CN8CS and 5N2AAE on SSB, plus CW with FB8XX, VK3VG and PJ2VD, both the latter two being hooked just after midnight local time. The meat in the sandwich came on 21 MHz, where CW produced K3GWA/KL7, who was calling CQ at 599 for *ages* before Alan went back to him; the poor chap had come to the conclusion his rig was u/s by then! Also worked KR8AG, and a WAC in 70 minutes by way of contacts with DL, VK4, W, FR7, JA, and YV5; others were ZL's and VK's and HM4FA, all around 2359 or in the small hours. The Lazy Man's Mode brought in EP2TW, M1AP, and OJØDX on Market Reef for a new country. To round off, a CQ produced W7TSM in Wyoming to fill in the last of the States. On a different slant, 9H1BL makes great play with the encouragement that the 9H1BL/G3VPS skeds should bring. Although G3VPS is now reduced to dipoles in the loft, the skeds have gone on as usual, and (here comes the punch-line!) when conditions were not so hot between U.K. and 9H1, the information was passed by relays with 9V1 or ZE—which proves just how effective the indoor aerial can be.

The other end of that sked, G3VPS, confirms that he is very surprised indeed at the effectiveness of his indoor dipoles. CW on 15m. gave a new country in the form of TU2BW, plus ZE1CR—a new one for the band—W's, VR's and 9H1. As for Ten, conditions militated against it with the indoor wire, but UI8FH, UA9LB and 9H1 were all booked in. Incidentally, the new estate where Peter now has to suffer the "no aerials" embargo has certain advantages in that he finds himself completely free of TVI due to the communal TV system in use there. Lucky devil!

QSL Addresses

All from G3NOF this time; Don, incidentally, is quoted in June *QST* as being QSL manager for AX9AC—the only snag is that G3NOF knows nothing of the arrangement! Cards for AX9AC should be addressed to Tom Irons, C/PT Training College, Racecourse Road, Boroko, Papua. *IS1DFO* cards go to WA5QYR; *FG7XT* to K5AWR; *GB3HRH* to G4RS; *M1B* to I1MKN; *OJØDX* to OH2BH, *8P6AZ* and *8P6BX* to VE3DLC; *DL5YX* to G3HSE; *TA1TT* to DK1BH, or the Bureau; *YTØM/P* to YU1BCD; *FØQD/FC* to G3JIJ; *HS4ADI* to Box 1654, APO San Francisco 96310, U.S.A.;

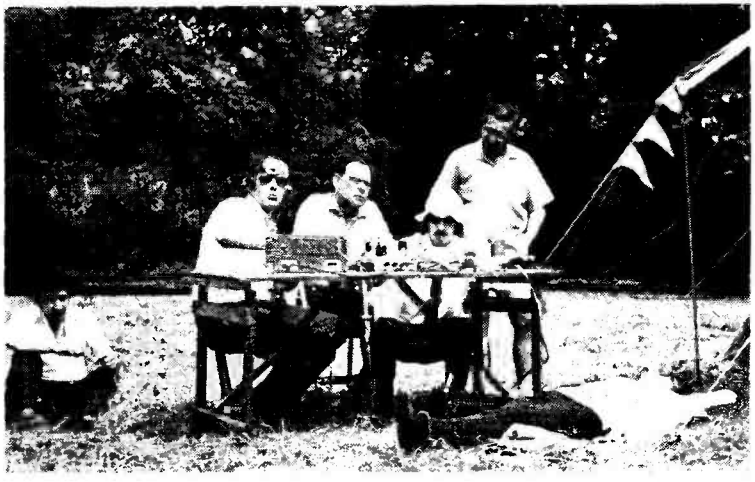
ZD7SD to P.O. Box 16, Jamestown; and *3V8AB*, R.E.F. Bureau.

The Tables

The time has now come when the First-Year Table is to have its first taste of the pruning-knife, and also its first "champ," at the head of each section.

The pruning will leave the Table a little short of new entries, and so it is suggested that a few more of the New Boys comb through their logs and put in a score. Who knows—at the end of a year you may well find your own call up at the place of honour!

That's about it for this time once again. For the September issue, the deadline is to arrive by first post **August 10**. The address, as always, is "CDXN," SHORT WAVE MAGAZINE, BUCKINGHAM. *73 de G3KFE.*



For the recent field day occasion, Coventry Amateur Radio Society had their G2ASF/P out on Top Band, operated by, left to right: G3SCJ, G3XQE, G3UOL and G3RIR—the supine figure in foreground is said to be "ground plane G8APB."

RESULTS—BARTG SPRING CONTEST

The RTTY contest in March last, organised by the British Amateur Radio Teleprinter Group, produced a total of 53 entries from 20 countries; of these, there were only five from EI/G. The high-scorer was I1KG with 177,800 points; leading U.K. station G3MWI, at 5th, scoring 123,480 pts.; and EU country best represented by number of entrants, Italy, with six. Though RTTY activity cannot be said to be very thickly spread on our bands, its practitioners make up in enthusiasm and operating ability for what they lack in numbers—for instance, G3MWI worked 26 countries in 5 continents by radio T/P, using all bands 10-80m. for his total of 152 teleprinter QSO's—nice work.

TO HELP US

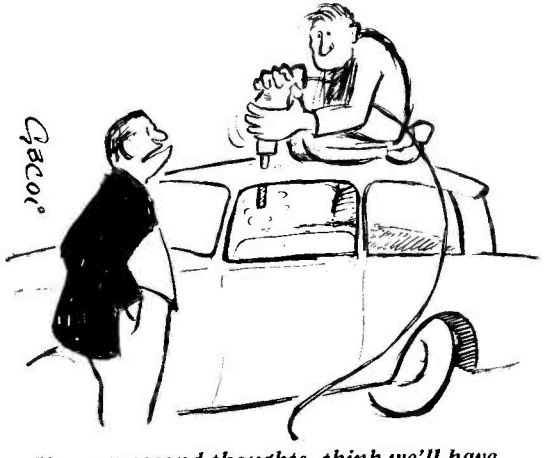
If you are sending in a new QTH for publication, or a change of address, *please* say whether or not you are a direct subscriber—this is only to save office time in checking our subscriber record.

Please write on separate sheets to our various departments—like CDXN, Clubs or VHF Bands, which are news features and thus editorial matter, so should be addressed: Editor, SHORT WAVE MAGAZINE, BUCKINGHAM.

For prompt attention to book orders, subscriptions or small advertisements, the address is: Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1. We *do not* accept small advertisements over the phone, nor can we invoice minor sums. In general, reader advertising and orders for books must be accompanied by the appropriate remittance.

Remember that any communication to the Editor to which a reply is expected must be accompanied by an s.a.e., noting also that reader-queries can only be dealt with as time and opportunity offer, and that we do not guarantee immediate editorial attention to such correspondence—but we do our best!

As a footnote, it ought to be added that of course anything coming in by post to either address always finds the right slot in the end—there are some Club secretaries who even now, after all these years, still use the Victoria Street address for their reports to "The Month with The Clubs"—but there could be several days' delay in getting sorted out if your item goes to the wrong address.



". . . on second thoughts, think we'll have it wing mounted . . ."

VHF BANDS

A. H. DORMER, G3DAH

FOR those who have not already heard the grim news, it may still come as a bit of a shock to learn that the commercial Mobile Radio interests have now opened negotiations with the Ministry of Posts and Telecommunications to relieve the amateur of the whole of the 70 MHz and 70 cm bands.

While a reduction in the allocation of frequencies around 432 MHz is unlikely to be fatal to amatuer interests, as long as the requirements for A/TV are catered for, the loss of four metres would be a considerable blow unless it can be substituted by, say, a reallocation of the five-metre band, which we had before the advent of the Idiot's Lantern. The move to UHF/TV might make this a possibility. Whatever the outcome of these discussions, and there may well be international repercussions, we *must* make full use of our frequency allocations, not only to justify the retention of those we have, but also to prevent further, and even more serious, threats than those we are already facing.

Conditions

Highlight of the month must be the spectacular 4-metre Sporadic-E openings to ZB2, TF3 and 9H1 around July 5-6. On the Sunday, between 1645 and 1900z, ZB2BO worked, *inter alia*, G3JVL, G3GVM, G3YHM, G3JHM, G5NU, G3VEL, G3TVH, G3FDW and, it is believed, GI3VPK/P. At this time, spor-E propagation was observed right up to 100 MHz or so. On the Monday evening, TF3VHF was heard at 2050z by SWL Ham and by G3JVL, who called TF3EA on 20 MHz and established contact on Four at 2058. Subsequently, the TF3 was worked by G3MHW, G3VNQ, G3TDH, G6HD, G3VSA, G3OHH, G3PLX, G3GVM, G2AXI, EI6AS and possibly others. By Tuesday, the conditions had deteriorated somewhat, and the Icelandic beacon was down to 20 dB over noise in 100 Hz at G3WBQ and G3JVL.

* * *

9H1BL made the first HF/VHF cross-band contact with this country by working G3VPS. The Malta station was transmitting on 21 MHz, and the 'VPS signal on Four was peaking at RST 599 at 1530z on July 6. The gear used in Sussex was a B.44 with about four watts out to a 4-ele beam at 12ft. from a QTH at 100ft. a.s.l. This was the culmination of some months of patient effort on the part of both operators, and they are both to be congratulated on it. It must be very frustrating for 'BL having to listen to the four-metre activity and not be able to transmit! He copied the GB3SX beacon for the first time on June 24 at RST599 around 1000 GMT, having recorded BBC sound transmissions on Channels 1-5 just previously. He looked for any possible cross-band QSO's by calling on 28·1 MHz and announcing that he was listening on Four, but there were no takers. However, he intends to follow this practice on those occasions when he finds that the band is open, so when there is some indication of four-metre Sporadic-E about over here, it might be a good plan to scan ten metres also.

There was a small four-metre auroral opening between 1523 and 1700z on July 9, but this seems to have been confined to the North. GM3UAG was hearing GB3GM at 59A and DLØPR was 53A.

* * *

Two-metre conditions have been very variable, and after the good openings during the middle of June, as described last month, things quietened down quite a lot. Once again, the South appears to have had the best of the DX. Considerable ducting was in evidence between June 12 and 14, when the GM's were very strong in the South-East, and yet were not being heard in the Midlands. Coastal refraction helps here, of course, and it was noted that the GM's with the strongest signals were nearly all in counties lying along the North Sea coast from Berwick to Aberdeen, with Banff and Moray just round the corner. It was this combination of duct and sea path which did the trick for OY2BS on the Thursday, when the QRM on the SSB channel while he was working PA and D had to be heard to be believed. There is still no report of any G contact with him. The band appeared fairly quiet for the next ten days or so. The DX was there, but it took quite a bit of digging to find it, and the heavy QSB made contacts very difficult. One surprise on June 25 was a breaker on the SSB channel while your scribe was working G8BNR (St. Albans) who turned out to be EI4AL, with whom a very nice 5 and 7/8 QSO resulted. No other EI/GI signals were audible at the time, and propagation to the North-West did not appear particularly good.

A disturbing feature of the mid-June opening was the continued presence at the top end of the band of certain North London and Midlands stations. A quick QSY up there and back to raise a station who is announcing that he is tuning his own frequency is quite in order of course, but to use out-of-zone operation when there is a lift on, and for what appeared in many instances to be some pretty puerile local QSO's was frustrating (to say the least) for those who were trying to work GM and the North.

The DLØPR beacon was particularly strong during the period June 12-14, in spite of the fact that it beams North and South only; DLØER was much weaker than usual, and F3THF was above average, although activity from the South was low. However, both GC2FZC and GC8BMO were good signals on the Sunday morning. It is reported that OE and HB9 were logged in Caernavon by a portable team on the same day.

* * *

Tropospheric propagation during the two-metre contest over July 5-6

was not all that startling, although good in places. Once again the DX was there, but it took a bit of working under the generally unstable conditions. There appeared to be no definite axis for best DX, and few contacts over the 350-mile mark can have been made, although activity was gratifyingly high.

Excellent conditions to the South returned on July 11, with contacts being made down into central France without too much difficulty. F9NL in the Pyrenees was worked by several operators in the South. These conditions lasted throughout the Sunday, an unusual signal being that from HB9AEN/P at Le Chasseron (QRA Locator DG13b) who was being received by Derek Brace, a SWL in Herne Bay, at 5 & 9 on a halo at 1830z. He was still audible, though much weaker, until quite late in the evening. Incidentally, while in QSO with him, he told your scribe that HB9ADJ and his wife HB9AJJ, would be QRV on 144·63 MHz from the same 3,500ft. site until the beginning of September.

There were also some good openings on 70 cm, and these generally coincided with those on Two. For example, G3DAH worked five countries, including DK, in just over one hour on June 12. However, the activity on the band was very much lower than on 144 MHz, and the axis of best propagation appeared to be to the East and North-East.

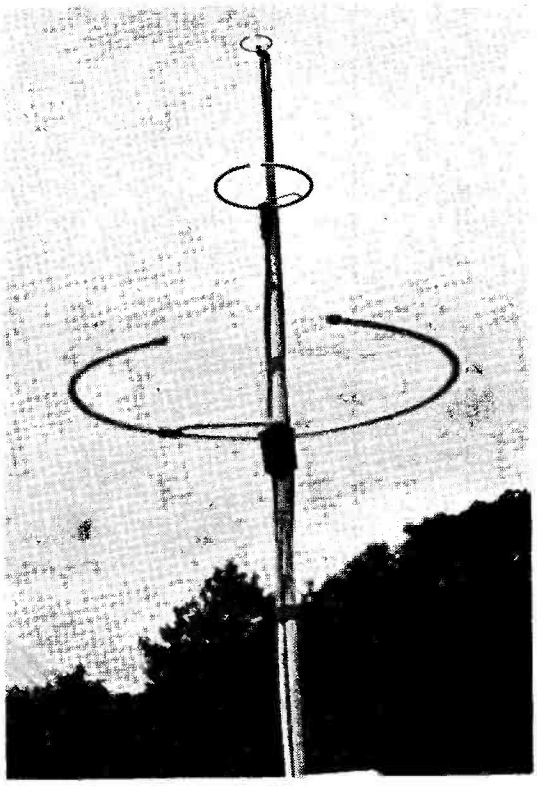
VHFCC Awards

Certificate No. 67 goes this month to one of our French colleagues, Jacques Rocourt, F1APQ, for his work on two metres. There can be but few operators on that band who have not heard the fine signal that he puts out from Department 62 in the Calais area, particularly when he is working portable from Cap Blanc-Nez in company with his friend F1AOY. His list of 100 stations worked is composed of G calls only, and starts at July 5, 1969, so he hasn't wasted much time! Although he has been running fairly low power, he now has a QQV06-40. He is also QRV on 70 cm.

John Tye, G8BYV, operating on two metres from Dereham in Norfolk, also gains the Award this month. It took 248 contacts before he got the necessary 100 QSL cards. The rig is home-built, and runs 15 watts input to a QQV03-10 in the PA, with a pair of OC35 as modulators. The converter uses FET's and has an IF of 24·26 MHz which is fed into an R.216. The 40ft. steel tower, of John's own construction, carries the 8/8 Yagi. The family seem to go in for D-I-Y as John and his wife built their own bungalow between them—good show! He is also active on 70 cm., and was one of the fortunate few in his part of the country who made it with GM3TLA/P. He also has a Tx (BAY 96) and antenna (4ft. dish) for 23 cm., and has received a 5& 9 report on that band from PAØ. The Rx has yet to be completed.

G8BEW is Peter Hale who is on two metres from Cleethorpes, Lincs. Operations commenced on October 16, 1968, and 210 QSO's were required from the 100 cards. Most of Peter's contacts were made with a QQV03-10 PA at 15 watts input, and a six-element Yagi in the roof space. The receiver is a Trio. He now has a 4-ele beam outside at 30ft. and a modified Pye base-station with 20 watts into a QQV03-20A.

Congratulations to them all.



Whose is this? Seen at the Longleat Mobile Rally, a /M array for two metres, 70 cm. and 23 centimetres. We would very much like to hear from the owner, with a run-down on the gear.

DX-Peditions

The following notes contain the last minute information on the G3VER (Verulam Club) trip to the northern counties of England. G3VER/P will be QRV for skeds during August 9-13, with the exception, be it noted, of the 10th, which is the date for the next two-metre SSB contest. Operation will commence after lunch on the 9th, with the first skeds at 1930z. The Club will participate in the SSB contest, but will be "open for normal business" after the close of that event, and will concentrate on AM and CW calls, since they reckon that they will have worked all the SSB they can hear by then! On the

following days, they will start skeds at 1930 and continue through until 2300z officially—though if the activity warrants it, they will press on after that time. Early morning operation is *not* envisaged, as they will have quite a job keeping to their itinerary, though if propagation is particularly good, they will try to meet the demand. Frequencies are confirmed as 145·20 MHz for SSB and AM, and 144·098 MHz for CW. During sked periods, they will make a point of calling the station next on the list, rather than that stations call them, as this should help with the time-keeping arrangements, organised as they are on the basis of five minutes for each contact. They will *not* answer calls on their own frequency, so spread out 10 kHz or so HF or LF. Operators are G8BNR, G8BJK, G8ATO and G3ZDN.

G3WZM reports that a group of eight operators will be QRV from the Mull of Galloway during VHF/NFD. They will have gear for Four, Two, 70 cm. and 23 cm., AM and CW on all bands in addition to SSB on Two. The callsign for the period will be GB3NFD, and they will be staying until September 12, so are willing to arrange skeds *via* G3WZM, *QTHR*.

Jack Wilson, GM6XI, expects to be portable on Two from the Mull of Kintyre between July 24 and August 14. He will have AM and CW available. The GM3ATZ/P expedition to Lowther Hill, reported last month, on 145·92 MHz, were to have been on over the weekend July 25-26.

The G8DIZ/P expedition to the West Country seems to have gone off very well in spite of no better than average propagation conditions. They operated on eight evenings from various counties, and during that time made upwards of 500 contacts. Poorest night for QSO's was July 8, when they were on Yes Tor in Devon. Not only was propagation down, but they had absolutely appalling weather conditions. Most consistent signals came from G8GP, G6TA, G5MA and G2DQ, who were all reported as much stronger than other transmissions from their respective areas (coincidence that these are all two-letter calls?). Special mention is made of the fine signal from G8BIH, who made contact every night, and of G8AMG/M, with whom a QSO was made from Cornwall, Somerset and Herefordshire, while Mike was in the London area. They were a little startled by one operator who suggested that they would do better and make more contacts if they used AM instead of NBFM. At that time, they were completing QSO's at the rate of 30 an hour! It does raise a point, though. Albeit they were RS59 at times during their contacts with G3DAH, the propagation was very unstable, and once the signal dropped under S6, they were below the pre-FM detector limiting level in the receiver, and they could then only be copied by slope detection, and that, with the QSB, made reception difficult. An AM signal with full modulation and at the same received signal strength could certainly have been copied much more easily. So thanks go to G8AXZ, G8BEJ and G3UHW for the chance to work some of the more difficult ones.

The Scottish Scene

GM3OXX continues to surprise us all by his achievements with his "Minibox." Working recently from Lammerlaw Hill up at 1745ft. in the Lammermuir Hills, and using only his customary 75 *milliwatts*, he worked into Aberdeenshire, in fact, some 50 km. north of the Granite City. To the South, his best contact was with G3OZP in North Shields. G8BAA/P was heard at 5 - 9 but could not be raised despite many calls. On July 4, George took part in the Top Band Contest, staying up all night until he was joined by GM3DXJ, when they were QSY to both two metres and Tinto Hill in Lanarkshire (2335ft.). Having climbed this little lot and set the 2m. Minibox going with a six-element Yagi, they proceeded to work EI6AS, 12 km. south of Dublin, which must surely do something to the record book in view of the power they were running. 'DXJ had to leave early, and when George was worked by GM6XI/P later on, he was holding down the tent in a howling gale, brewing coffee, and modestly mentioning his success in working no less than five G stations. There seems to be no well-defined limit to what he can do with those transistors of his! However, he is by no means resting on his laurels, and has just introduced GM3PQU in Edinburgh to QRP on Two, with the result that Sandy now works into Aberdeen with three watts to a four-over-four. Coerced by old man Scottish Radio himself, 'PQU is also either now on, or at least coming on, four metres.

A new recruit to the ranks of A/TV is GM3VBB/GM6ADU/T in Balerno, Midlothian. Colin is running 100 watts to a Parabeam, and is radiating a potent 625-line, 70 cm. signal from there. He recently left a receiver with GM8BCB in Currie, and then went home to transmit "a varied and enjoyable programme," in the reflected glory of which 'BCB is said to be still basking. *A propos* A/TV in general, and not GM in particular, one wonders what is happening in this context of Amateur Radio. The number of licences issued remains fairly constant around the 180 mark, but activity appears to be fairly low. Is it all part of the general lack of interest in the 70 cm. band, one wonders?

The usual group from the Lothians Radio Society adjourned to Green Lowther Hill in Lanarkshire for Field Day, and had another successful outing. Among the party was that well-known two-metre DX-er, David Guest, GM3TFY, for whom this was a happy prelude to his graduation ceremony at the Heriot Watt University where he has recently obtained a 1st Class Honours degree in Electrical Engineering. Another well-known Scottish amateur, GM3SAN of Glasgow, has delighted his many friends by duplicating the GM3TFY success, and should be on two metres shortly. Congratulations, chaps. One hopes to be able to congratulate similarly, and in due course, Brian Flynn, GM8BJF, who is going for the same ticket, and should be through next year.

There was considerable activity from Cairn O' Mount during the recent contest. No less than three stations were operating from there, one manned by a couple of Sassenachs, G8BCZ and G3ZFP, who finished their stay by a visit to GM6XI in Edinburgh, and were successfully talked *out* to the Border by him. One of the best signals in the South from there was that of GM3TLA/P, who has been on two and seventy. Other transmissions of

note were from the Aberdeen boys, GM8BNH, GM3ZBE, GM8BRM and GM8CBQ. From Kincardineshire, Charlie Sherritt, GM3EOJ has been putting out his usual rock-crusher; GM3UAG in Banff; GM8BDX in Berwick; GM3GUI in Friockheim (pronounced *Freekham*), a fine DX operator; and GM3HLH in Fifeshire were all welcome signals in the South-East.

The extended tropo. opening in June has been reported elsewhere in this piece, but it may be of interest to have a look at it from the point of view of GMZBE, Alec Allan, in Aberdeen. The opening was first observed at 1930z on June 11, when the DL0PR beacon was heard at 59+, and the DJ7PP beacon, a new one, at 57. The first DX contact came at 2020z with DK1ZD, followed by OZ9OR. After that, all Alec had to do was sit back on his frequency and answer the calls as they came in, mostly from D and PA0. Conditions on June 12 were perhaps even better than they were on the 11th, and produced another fine crop of Continentals, plus some G stations. Most signals were of the order of 59. Contacts on the 13th included a 59 QSO with ON4RY, solid copy and no QSB, and several French stations. To finish off a good DX spell, Alec received a belated report of reception of his signals from 3Z5AD in Warsaw, who gave him 56A for his transmissions during the March aurora. Well over the 1000 km. mark, and very nice going!

Another interesting report comes from Ian Petrie, GM8BRM, who, whenever he was heard in Herne Bay, seemed to be knocking off the Continentals at a rate of knots. He worked altogether 186 of them, 101 on the Sunday, of which 38 were German, 109 Dutch, 9 French, 3 Danish, 3 Swedish and ten British. *Phew*!

Finally, the Scottish VHF Convention on Sunday, October 11, at the Queen's Hotel, Dundee: Tickets for the full Convention, including dinner, cost 35s. Dinner only is 30s., and the afternoon session only is at 7s. 6d. A full programme of lectures, displays and associated side-lines has been arranged, and full information and tickets may be obtained from G. C. Somerville, GM3KYI, 73 Balerno Street, Dundee.

EI/GI/GD Activity

The indefatigable Albert, EI6AS, has been at it again, this time with a claim for the first EI/TF contact on four metres. This took place on the evening of July 6 at 2230 GMT when the Icelandic beacon was heard at RST 589. A quick call in that direction was answered without delay by TF3EA on 70·245 MHz and reports of RST 569 were exchanged both ways. Nice going. EI6AS also experienced a good extended tropo. opening on two metres on June 14, when 15 PA0 and two German stations were worked on SSB. He will be mobile/portable in the Essex/Herts. area during August 2-14 using his G call of G3JLA, and will be QRV during the SSB contest on August 10.

* * *

GI5ALP finally made it on two metre M/S with OK1VHK. The QSO took place over 0500-1000z on June 27, when reports of up to S7 were exchanged. Bursts of up to 15 seconds were observed, and this was long enough for Jack to identify. He had to rely on some very fast hand-keying as he has no automatic sender available, so conditions at the OK end must have been a bit fraught, since the longest bursts there were of five seconds duration only. The July 6 opening also produced some fine DX for him as he worked four DM and several West German stations. The GI/DM contact looks like a "First," although GI3GXP may have something to say about that! Conditions were very unstable at the time, with propagation into G poor, so this looks rather like ducting again. Had it been Sporadic-E, the ionisation would have had to be extremely dense, and even then, the distances, 800-900 miles, look too short for

THREE BAND ANNUAL VHF TABLE

January to December, 1970

Station	FOUR METRES Counties	FOUR METRES Countries	TWO METRES Counties	TWO METRES Countries	70 CENTIMETRES Counties	70 CENTIMETRES Countries	TOTAL pts.
G3DAH	18	2	66	14	10	5	115
G3OHH	40	6	47	5	14	2	114
G8ATS	—	—	51	10	28	8	97
G2JF	—	—	49	12	23	5	89
G2AXI	26	3	47	9	3	1	89
G3COJ	—	—	43	11	22	6	82
EI6AS	12	7	50	10	—	—	79
G8APZ	—	—	42	8	23	3	76
GD2HDZ	—	—	49	8	14	3	74
GI5ALP	6	4	36	10	—	—	56
G8BKR	—	—	38	5	7	2	52
G3EKP	14	4	18	5	4	3	48
G3IAR	14	1	26	5	—	—	46
G8BWW	—	—	35	6	—	—	41
G3FIJ	—	—	30	5	—	—	35
G8AUN	—	—	26	8	—	—	34
G3ZIG	—	—	27	7	—	—	34
G8BHD	—	—	27	4	—	—	31

This Three-Band Annual Table shows total claims to date for the year commencing January, 1970. Entries should be sent to: SHORT WAVE MAGAZINE, BUCKINGHAM. Summaries by bands will be published as space allows. This is not a competitive Table—it is intended only to show individual progress by bands as time goes on.

that type of propagation. The only other explanation is that it was very good extended tropo., such as was being experienced in the South of this country around that time. Sadly, we must wish Jack *bon voyage*, since he is due to return to the U.S. on August 1 to take up an appointment at U.S. Navcommsta, Rough and Ready Island, Stockton, California 95203. To quote from his letter . . . "Please send my regards to everyone I have worked on Two and Four. I really have enjoyed my stay over here, and I can honestly say that I have never met a bunch of better amateurs in the world as I have here." Well, that goes both ways, Jack. We were very pleased to have you here, and you have the thanks of many SSB operators to whom you gave a first contact with GI. Vy 73, and all the best for the new job.

* * *

GD2HDZ puts in a claim for the first GD/D QSO on two metres following his contact with DJ2HF on June 13. Unfortunately, he was unable to take full advantage of this opening, as he lost a mains transformer, and by the time he had a replacement organised, the opening was over. However, he managed some EI/GI contacts eventually, which was rather pleasing, as, until then, it had appeared an impossible direction, with Snaefell up at over 2000 feet directly in the path. The QSO with EI6AS had to be completed on the key, but that with GI3VPK/P was solid phone copy. Arthur finished the July contest with 132 contacts averaging rather better than ten points a time, which should put him fairly well up the list. (His only one-pointer was with GD3FOC /M, at a range of half-a-mile). He moves into the new QTH within the next couple of weeks, and the address will then be: Ashfield House, Old Laxey Hill, I.o.M.

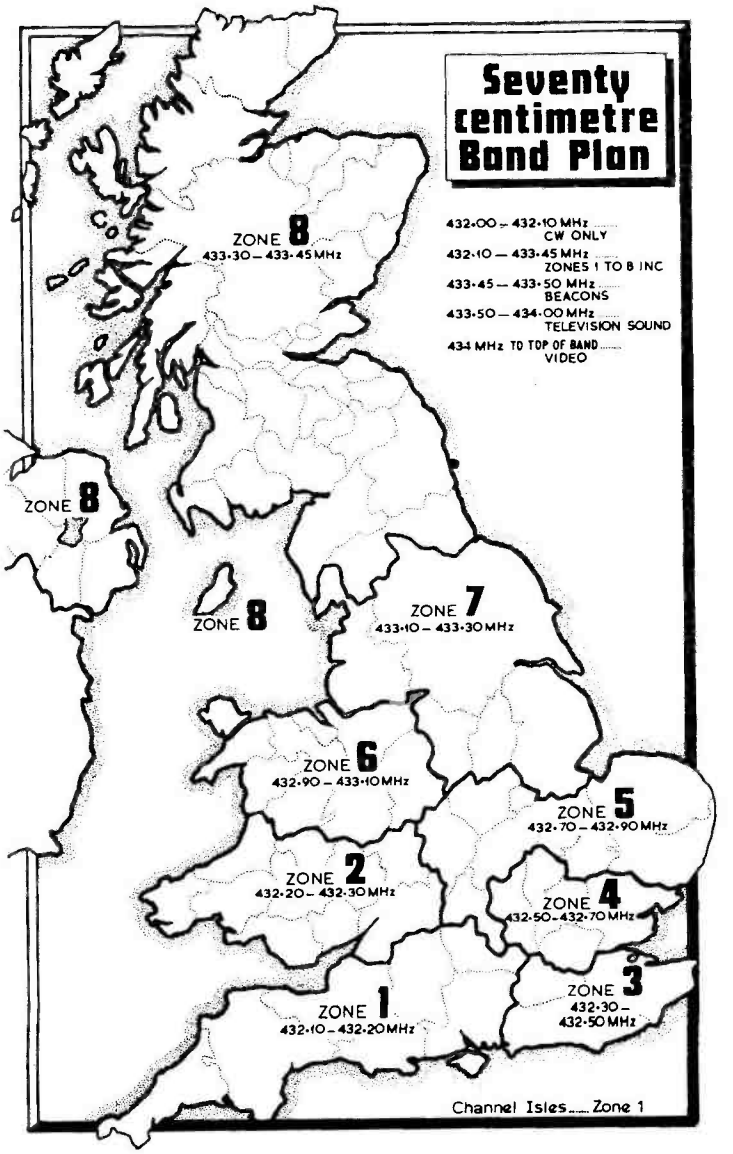
Contests

The rules for the BARTG VHF RTTY contest on October 24-25 have now been published and are available from Ted Double, G8CDW, *QTHR*. Briefly, the bands to be used are 144 MHz and 432 MHz for international contacts, and 70 MHz in a separate section for the U.K. only. Scores are based on number of contacts and distance, with multipliers for the various bands.

Forthcoming events are: August 10 for the Two-Metre SSB contest; August 15-16 for the 70 MHz CW event; and, of course, September 5-6 for the IARU Region 1 VHF/UHF/SHF contest and VHF/NFD.

News Items

Both G3OHH (Mow Cop) and G2AXI (Basingstoke) report hearing I1FCL on 144·75 MHz at around 57 during the latter part of the two-metre contest on July 5, but neither could raise him, so there was a 50-pointer that got away! GW8BEB/P reports hearing a YU1 at about the same time. This *must* have been spor-E, since the extended tropo. propagation, good though it was, was not extending as far as Italy from the U.K. As mentioned above, the Es was very good on four metres



Acknowledgements "Region 1 IARU Newsletter"

around that time, as it was on the following day when both these operators worked TF3EA, at which time TF3VHF was about S8. G3FDW must have been feeling particularly frustrated about this, as all he was hearing at the time were a few meteor pings.

ZB2BO has been finding conditions on Four better this year than last, but not as good as 1968, and notes the connection between the spor-E openings and the 27-30 day cycle of sunspot activity. This relationship is even more marked over the G/TF path. A further indication of better openings in 1970 than 1969 is the increase in phone QSO's, which have gone up from 25% to 60% of all contacts.

* * *

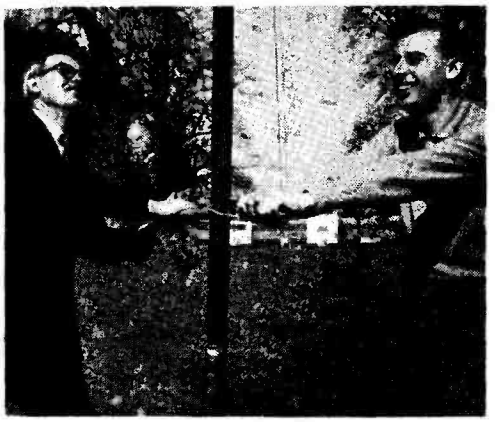
OY2BS worked HB9AIC on two metres for a new record at 1900z on July 6. He also heard five German and one Austrian station on the same evening.

A new beacon has been radiating on 145·975 MHz from County Durham. Callsign is GB3DM and it is on test only at the present time. The signal is averaging RST-549 in Herne Bay, and should be a very useful indicator of propagation to the North. This is a solid-state device radiating 30 watts and beaming North and South. Reports may be sent to Bill Burton, G8ANQ, *QTHR*. GB3ANG has been back in operation again on the usual frequency on 145·950 MHz.

* * *

Many claimants for the various Awards which require the production of QSL cards for verification purposes, and who complain bitterly about the length of time which they have to wait for confirmation of some contacts, may care to note that in the last batch of cards which G2JF received from the QSL Bureau, one was dated 1960, another 1962, one 1965 and two 1967! It only takes patience! One hastens to add that these were all in respect of other than U.K. contacts.

Referring to out-of-zone operation, a correspondent asks since when has Cheltenham been in the North of England and Worcester in London. During the June 12-13 openings to GM, the same type of geographical poser might have been put to five other stations South of the Wash, which were logged by your scribe as causing QRM in the top 200 kHz of the two-metre band. All right! So the Band Plan isn't mandatory, but as yet another sufferer put it, " If they can afford a licence, surely they can afford a suitable xtal "!



Handraulic power was used to swing the beam for the two-metre talk-in station at the Tulip Time Rally, Spalding, Lincs., on May 3. Left, G3XBS, with G3VPR.

* * *

G8BKR, Bristol, is looking for two-metre skeds with stations in the London area. He runs 15 watts to a QQV03-10 at present, but will shortly have 90 watts and a Skybeam at 40ft. He is on every Sunday morning between 1000 and 1230 clock, and most Saturday evenings. However, skeds can be arranged outside these hours if required. G8CQJ of Morley near Leeds, draws attention to an incorrect QRA Locator which he used during the July contest; the correct one is ZN22b (the other gives a position somewhere out in the North Sea!). G3ZIG, Attleborough, Norfolk, has been QRT during the last month with Tx trouble, but is now back on the two-metre air. He has worked 180 different stations during the *nine weeks* that he has been on.

G3COJ has formulated a new (Murphy) law which states that conditions are never actually as good as you expect they are going to be. This after the opening on Two and 70 cm on June 12, when DL, ON and PAØ were all worked on both bands, and yet the following day which, from all the indications available, should have been productive of some really good DX, only brought some unworkable OZ and SM, although DM3SBL near Dresden was worked on CW at around 2300z. Brian was pleased to work GI3VPK/P in Antrim during the contest, and on the morning of July 6, made it with F1OP/A and F1VI, both in the Biarritz area, around 0630. He now has plans for taking the antennae down for overhaul, and that should guarantee some good conditions. (It's like washing the car. That usually brings on the rain!).

The next meeting of the South Bucks. VHF Club takes place at the usual venue on August 4, subject is a rag-chew. The September 1 meeting will hear a talk on the conversion of surplus VHF equipment.

His many friends will be sorry to hear that your scribe's colleague Jack Hum, G5UM, is in Leicester General Hospital, and is likely to be there for a few more weeks. Our best wishes go to him for a speedy recovery.

Deadline

Deadline for the next issue is **August 8.** The address for claims, news and comment is: "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM. 73 *de G3DAH.*

Always use our Small Advertisement section—see pp.377-384, this issue.

COURSES FOR THE R.A.E.

Following is the first list of centres at which Courses of Instruction are offered for the next Radio Amateur's Examination—Subject No. 55 in the City & Guilds of London syllabus—this being the exam. in which a pass is required to qualify for a radio amateur transmitting licence in the U.K.

Hundreds of candidates come forward every year—for the May 1969 sitting the total was over 1,700—and for it local education institutes, technical colleges and centres for further education up and down the country offer courses of instruction, mainly in the evenings on one or two days a week. Fees are usually nominal and course instructors are often themselves holders of an amateur licence.

We regularly publish in this space details of such courses as are notified to us. For the next list, in the September issue of SHORT WAVE MAGAZINE, the latest date for appearance is *August 8*, addressed: R.A.E. Course, SHORT WAVE MAGAZINE, BUCKINGHAM. And *please* keep it as a separate notification, *not* mixed in with correspondence on some other matter.

Aldridge (Staffs.): At Tynings Lane County Secondary Schools, on Fridays 7.0-9.30 p.m., commencing on September 18, enrolment Sept. 11. Course instructor: G. Coffin, G3XFN.

Barry (Glam.): At the College of Further Education, Colcot Road, on Tuesday evenings (Theory) and Thursdays (Morse and Practical Work), 7.30-9.30 p.m. starting September 22. Enrolment evenings Sept. 9-11. Fee 35s. over 18 years of age, 10s. for juniors. The College also operates its own amateur-band station GW3VKL and students are encouraged to participate in its activities. For prospectus and other information apply: The Secretary, College of Further Education, Colcot Road, Barry, Glam., CF6-8YJ.

Birmingham: At Lea-Mason Technical College, Bell Barn Road, class commences September 21, 7.0 p.m., Morse instruction from Sept. 24 same time. Enrolment at the College during week Sept. 14.

Brighton: At the Technical College, two evenings a week, for Theory (under G6YJ) and Morse (G2CMH), enrolment Sept. 14-16, 5.30-8.0 p.m., at Richmond Terrace office. Brighton Technical College is an important educational centre and offers many other courses of interest to students wishing to qualify in electronics and engineering subjects.

Canterbury: At the Technical College, New Dover Road, starting on September 21, enrolment evenings Sept. 8-10. This College is a centre for City & Guilds Examinations. Course lecturer will be D. J. Bradford, G3LCK.

Farnborough (Hants.): At Cove Further Education Centre, commencing mid-September. Full details from: The Principal, Further Education Centre, St. Johns Road, Farnborough, Hants.

Glasgow: At the College of Nautical Studies, 21 Thistle Street, Glasgow, C.5, on Tuesday and Thursday evenings, 7.0-9.30 p.m., starting September 15. Enrolment at the College that evening, fee 60s. but free for juniors under 18. Course will cover R.A.E. Theory, Licence Conditions and Morse, and no prior knowledge is assumed or required.

Leicester: At the Polytechnic, evenings 7.15-9.15 p.m. (R.A.E. Theory), 6.30-7.15 p.m. (Morse) starting September 23. Enrolment at the Polytechnic Sept. 16-17. Fee 38s., but free for schoolboys with headmaster's written permission. Course instructor: R. G. Titterington, G3ORY.

London (Chingford): At the Community Centre, Friday Hill House, Simmons Lane, E.4, starting on Monday September 28, 7.30-9.30 p.m., enrolment week commencing Sept. 21, 8.0 p.m., at the Centre. Fee 45s., and 20s. for juniors. Also available preliminary crash course in *elementary* maths., available for prospective R.A.E. students only, starting Monday, August 24, evenings 7.30-9.30 p.m., fee 8s. Early enrolment advised as numbers last year exceeded facilities available. Details from: E. Johnson, G2HR, *QTHR, telephone 01-529 2932.*

London (Cranford): At Cranford School, Woodfield Road, starting September 21, 7.15-9.15 p.m., enrolment Sept. 14-15, 6.30-8.30 p.m., at the School, fee 60s., under 18's 30s. (OAP's 2s. 6d.). Details and prospectus from: Principal of Adult Education, Hounslow Manor School, Holloway Street, Hounslow (*Tel: 01-572 0698*).

London (Ilford): At the Ilford Literary Institute, Cranbrook Road, starting on September 23, enrolment Sept. 7-10, 7.0-8.30 p.m., at the Institute, for R.A.E. Theory and Morse tuition. Fees from 50s. to 25s. for juniors. This course has been passing its students successfully through the R.A.E. for over 20 years. Apply, with s.a.e., to: W. G. Hall, G8JM, 48 Hawkdene, North Chingford, London, E.4.

Sheffield: At Western Road School, on Wednesdays at 7.0 p.m., commencing on Sept. 30. Particulars from: J. Bell, G3JON, 30 Alms Hill Road, Sheffield, S11-9RS. (*Tel: Sheffield 367774*).

Slough: At the College of Technology, William Street, on Thursday evenings, 6.30-9.30 p.m., Theory and Morse; instructors G3FVC and G3WQC. Enrolment Sept. 9-11, 2.0-8.0 p.m. Also available an advanced class for students either already holding a licence or up to R.A.E. standard, covering UHF/VHF techniques, SSB working, constructional practice in the workshop, design of solid-state equipment and antennae, with comprehensive laboratory facilities (class taken by G3VCT) and fully-equipped on-the-air amateur station G3XPL, operating AM/CW/SSB on all bands. Further details from: E. C. Palmer, G3FVC, Dept. of General Studies, College of Technology, William Street, Slough, Bucks.

Taunton: At the Technical College, classes on Thursdays, 7.0-8.0 p.m., starting September 17. Details: A. T. Stiby, Dept. of Engineering, Taunton Technical College, Wellington Road, Taunton, Somerset.

Wolverhampton: At the Wombourne Evening Institute, Ounsdale School, Wombourne, to commence in September, enrolment Sept. 7-8. Course lecturer: R. W. Tonkys, G3NOW. Apply the Institute.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for September issue: August 7)

(Please address all reports for this feature to "Club Secretary," SHORT WAVE MAGAZINE, **Buckingham.)**

MANY of the lectures which appear in the Club programmes we discuss here each month are given by chaps who make a round trip of anything up to a couple of hundred miles or more, which is no mean drive on top of a day's work.

Your conductor was therefore somewhat surprised to hear from at least one of the well-known "star turns" that he is getting so fed up with the lack of courtesy shown him at some of the Clubs he has visited as seriously to consider refusing requests in the future.

Surely it is only a matter of ordinary decency to make sure that someone is told off to look after a visiting speaker, to offer him at the least a cup of tea or a drink before he starts his talk, and to see him safely on his way when it is all over? Surely it is no more than courtesy to offer to contribute something towards the petrol expenses or train fare on behalf of the Club? In most cases such an offer would be brushed aside—but if the offer is not made it leaves a nasty taste, to put it mildly.

The Competitive Aspect—MCC

Once again the time comes round for the first preparations to be made for MCC; the dates chosen for the Contest this year are **November 7-8.** This is the big Club event of the year, the 25th of the series, with up to a hundred clubs lining up for the chief honour, or battling it out for a regional first place; or even entering with the idea of training the upcoming new operators in the group in the arts and crafts of contest working.

In general the rules will be the same as in earlier years, also the operating periods. This preliminary announcement, therefore, gives adequate time for the gear to be prepared and arrangements made, the aerials to be tested and proved out, and the operators to be selected and trained.

Seems hardly possible that we have been running this contest for 25 years—but that's what the record shows, and the same hand that is penning these particular lines wrote the rules for the first MCC, in 1946.

The Reports—by Regions

The first pile to be looked at this time includes the nation-wide, as distinct from purely local, groups.

By the time this reaches print the **BATC** Convention on Amateur Television at Churchill College, Cambridge, will be just a memory for those who attended this two-day event. A visit to a local TV manufacturer, and later a session of off-air reception of Amateur TV stations was to be followed by the Convention Dinner, leaving Sunday morning for lectures on topics of ATV interest, and the BATC General Meeting in the afternoon. Anyone with the remotest interest in the amateur television field should become a member of BATC, and so keep in touch with the current developments in the art.

A somewhat different group is catered for by our next club. The **Ex-G** members are drawn from people anywhere in the world who were born or naturalised Britons now living abroad. A majority of members, of course, are in Canada and America, but there are lots of members in other areas. They get together by running a Club net on Twenty—1900 GMT, 14347 kHz on the first and third Sundays in August, and from then on weekly, same time and frequency. U.K. stations who may care to call in will be especially welcomed.

R.A.I.B.C. looks after the amateur interests of handicapped and blind licensees and SWL's. There are nets on 3·65 MHz at 1000 on Tuesdays and 1400 on Wednesdays plus of course the monthly bulletin *Radial.* Apart from the full members, there are always the supporters—new members in both categories are welcome and wanted.

Next, the **Royal Air Force** Amateur Radio Society, who will be having their AGM in an upstairs room, at 1130 clock on the last day of the Amateur Radio Show, not to mention having a stand in the main body of the show, staffed throughout the four days.

(over

The Sully & District Short Wave Club station GW3ZIT at a local fete, when over 30 stations were worked on 40m. On that day, June 13, conditions were not good on the other bands. The Sully Club—its name-place is near Penarth, Glam.—has been in existence about two years and has some 30 members, several of them holding licences. The hon. secretary is Glyn Maggs, 3 Thorley Close, Cardiff.

London and South-East

It is quite a time since we heard from the **Baden-Powell House Scout** group, but no harm seems to have befallen them during their period of silence. The Hq., as the group name implies, is at Baden-Powell House, in Queens Gate, South Kensington, where they will foregather on August 20 to hear Alf Watts, G3FXC, on Simple Direction-Finding.

Oddly enough, the next one is **Dartford Heath D/F** Club, who have hunts organised for August 2 and 23. The meeting-place is at the "Horse and Groom," Leyton Crossroads, Dartford Heath, and the last arrangements are finalised on their club net at 1100 clock on 1920 kHz.

Now to **Verulam,** who look forward to a visit from G3DAH on August 19, to talk about VHF Propagation. The venue for this one is the Council Chamber in St. Albans Town Hall.

Surrey have their home in the Swan and Sugarloaf, Brighton Road, South Croydon, where they have a monthly get-together. However, sad to say, we can't give you the date of their next meeting, and so a call to the Hon. Sec. seems indicated, at the address in the Panel, p.370.

It looks like the second and fourth Fridays for the **Greenford** crowd, at the Community Centre, Oldfield Lane, Greenford, if the July dates are anything to go by; but as we have not got the latest information at the time of writing a call to the Hon. Sec.—*see* Panel—would be the right move.

Every Friday at Friday Hill House, Simmons Lane, Chingford, is the form for the **Silverthorn** crowd, and visitors are always welcomed, except on the third Friday which is devoted each month to a business session.

For the **Echelford** chaps there is a date on August 10 for a Construction Night, with prizes for the winner and the runner-up, at the Hall, St. Martins Court, Kingston Crescent, Ashford, Middx.

If you want to meet the **Bedford** boys, go to the Dolphin, Broadway, Bedford; on August 6 there is a VHF night, and on August 13 a discussion on the pros and cons of insuring one's gear. The following week shows a blank—presumably a trip to the Show—and on August 27 comes a talk on Mobileering at HF and VHF.

For **Crystal Palace,** August 15 at Emmanuel Church Hall, Barry Road, London, S.E.23 will see G3IIR and G3COX sorting out a matter of prime importance at any amateur transmitting or SWL station, namely Aerial Erection.

The programme for the **Cray Valley** group was finalised just in time to catch the deadline; G3UFR has been persuaded to talk to them about Direction-Finding on August 6. As for the other meeting on August 20, this is to be a discussion and natter night; both dates are for the Congregational Church Hall, Court Road, Eltham, London, S.E.9.

Both the **Reading** meetings are a little unusual in their theme. On August 4, they are having an "Informal Book Night," when members will be bringing along an assortment of interesting books, such as pre-war TV, American Amateur Radio magazines, and anything a little out of the ordinary. In addition there will be more recent copies of various periodicals for disposal. Turning to August 18, the idea here is to bring along the /M or /P gear, hang up aerials and see what can be worked; HF-band mobiles will be particularly welcome. Talk-in will be provided on Top Band and Two.

Acton, Brentford and Chiswick next; the lads plan to try and work member G3CCD, who will be in France, signing FØUT. The date for this is set as August 18, at their Hq., Chiswick Trades and Social Club, 66 High Road, Chiswick, London, W.4.

Like so many groups, **North Kent** have an outdoor activity this month. August 13 is devoted to members current projects, while the 27th is down partly for the settling of points concerning VHF NFD, and partly to members VHF/UHF projects. Then on August 31 comes the Erith Show and Sports, at which the lads will be "among those present."

It seems the Hon. Sec. of the **Chilterns** crowd has been sternly rebuked by the committee for not writing in about their doings. However, he has been very active in other directions, if the rise in membership, of over a third, is anything to go by. You will have to contact the Hon. Sec.—*see* Panel for his address—anyway if you propose to make a visit, as there is some doubt about the venue—they are temporarily homeless while the Hq. is being redecorated, but hope to be back by the time this reaches print.

Full attendance is a requirement of the **Dorking** chaps, at least on August 25, when the jobs to be done for VHF NFD will be allocated. Prior to this there is an informal on August 11; both dates are at the Wheatsheaf in Dorking.

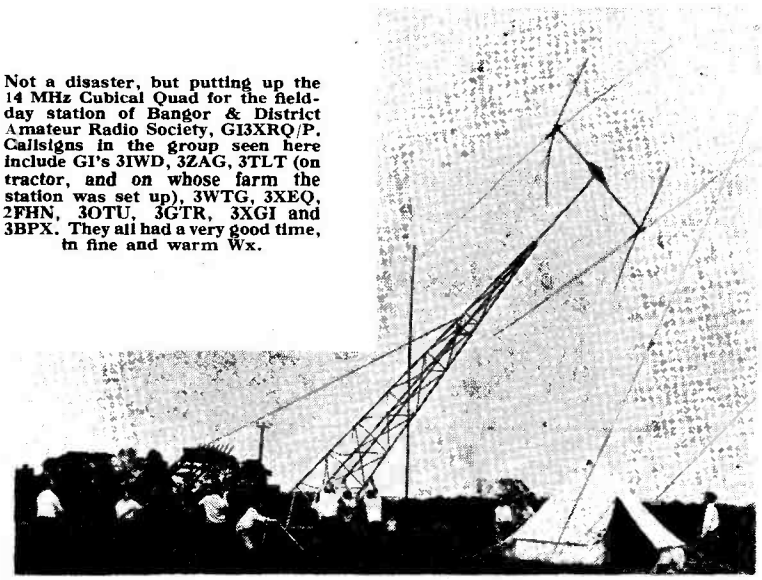
The **Farnborough** pattern is to get together on the second and fourth Tuesdays each month, at the Model Railway Enthusiasts' Club, 310 Farnborough Road. They make a special plea for new members or visitors, who can be sure of a warm welcome.

Kingston will be initiated into the mysteries of Soldering by Numbers, or kit-building, on August 12—this talk, and examples of the results, will be by G8CLF. For further information contact the hon. secretary.

It is pleasant to hear again of a Club after a long silence; it is difficult to recall when last your conductor heard from **Wessex.** However, they seem to be going strong with meetings down for August 7 and 24. All the former and part at least of the latter will be devoted to matters VHF/NFD.

Nothing firm, only informals during July and August, is a rule applied by **Maidenhead** each year, because of the numbers of members away on holiday. They have their bookings at the Victory Hall, Cox Green, Maidenhead, set for August 3 and August 18, and there is hope that in addition an outing of some sort will materialise. The full normal programme is to be resumed in September.

Harrow are meeting every week, with dates for August 7, 14, 21 and 28. Of these the first is devoted to the W1BB tape lecture, the second is Practical, the third one a talk by G3HBW on Transistor Transmitters, while the last is a Mobile Ramble. As to the venue, this will probably be Harrow County School, Gayton Road; but this was not absolutely firm at the time they wrote, which means they possibly will be at the old Hq. in Roxeth Manor School, Eastcote Lane, South Harrow.



Not a disaster, but putting up the 14 MHz Cubical Quad for the field-day station of Bangor & District Amateur Radio Society, GI3XRQ/P. Callsigns in the group seen here include GI's 3IWD, 3ZAG, 3TLT (on tractor, and on whose farm the station was set up), 3WTG, 3XEQ, 2FHN, 3OTU, 3GTR, 3XGI and 3BPX. They all had a very good time, in fine and warm Wx.

A late flash from **Southgate** advises that they are having an Open meeting on August 13, at the usual place, the Civil Defence hut, opposite Arnos Grove Tube station.

Wales and West

North Devon first; they have "scrubbed" their August 12 meeting, leaving them only August 26, when they will assemble at Crinnis, High Wall, Sticklepath, Barnstaple, to hear a talk, the subject of which is not disclosed.

Weekly meetings are the form at **Hereford,** who have their home in the County Control, Civil Defence Hq., Gaol Street, Hereford, which they use every Friday evening. For latest details it is necessary to refer you to the Hon. Sec.—*see* Panel, p.370.

It's all out-of-doors stuff for the **Saltash** chaps this month—August 7 sees them off on another Fox Hunt, an event which they have found popular in the past, and on August 21 there is a barbecue on Kit Hill starting at 8 p.m. Incidentally, the Fox Hunt already mentioned starts at 7.30, from the Club Hq. at Burraton Toc-H Hall.

The chaps at **Plymouth** seem to have their hands full, at least during the first part of the month, for during the period to August 15 the GB2USA station they are putting on is to run virtually continuously, from the club-room shack in Virginia House. For further information, contact G3SPI, as Panel.

Bristol members have a project running at the moment, to build themselves 2-metre transceivers. This group have Hq. at 41 Ducie Road, Bristol, 5, where they get together on various evenings. One highlight in August will be G3ZCT talking about Radio Controlled Models. Details from the Hon. Sec.—*see* Panel.

Having disposed of their own Mobile Rally, the **Cornish** chaps are out for a few converts by putting on a demonstration station at the Steam Traction Engine Rally on August 22 and 23. The "home" meeting is on August 6, for a natter and discussion on the R.A.E.

Nailsworth just about comes into our impromptu "Wales and West" category; they get together at Nailsworth Boys Club, Bath Road, covering all aspects of electronics interest each Tuesday evening, starting at 8 p.m. To judge from their newsletter they are quite active and lively, with something on the go all the time.

The Midlands

Here we open with **Mansfield**, still getting together on the first Friday in the month, at the New Inn, Westgate, Mansfield, the starting-time being 7.45. A new activity here is a Morse class for the aspirants to a ticket, conducted by ex-SP2VB, who makes a special point of helping along the SWL's.

Every Friday the **Coventry** chaps convene at the City of Coventry Scout Hq., 121 St. Nicholas Street, Radford. Thus on August 7, M. Kinsella will talk about Aerials, and on August 21 there will be a tape lecture. The remaining two evenings—August 7 and 14—are devoted to operating, using the Club's own call and rig.

A slight change occurs in the **Lincoln** arrangements for August, in that the meeting scheduled for August 4 has been deleted; this leaves August 11 for a Quiz; the 18th for a Treasure Hunt; and the 25th as an Open Night. They are still using their Hq., which is No. 2 Guardroom, Sobraon Barracks, Breedon Drive, Burton Road, Lincoln, and they emphasise that visitors and potential members are very welcome.

Midland will be sitting down on August 11 to listen to G3DO—a long-time member—telling them about the 33 years since first he came on the air. This is at the Midland Institute, Margaret Street, Birmingham 3.

At **Wolverhampton** the current copy of the *Newsletter* has a total of nineteen events during June and July, but unfortunately only one in August, this one being a Shack Visit. This means that for details of the August arrangements we have to refer you to Hon. Sec. G3UBX, address as in the Panel.

If we leave out of account the intermediate outings each weekend, the **Derby** programme boils down to something like this: August 5, a Junk Sale; August 12, Preparations for the Derby Mobile Rally at Rykneld School; August 19, a D/F Practice, the Clubroom being

MAGAZINE CLUB CONTEST—MCC

Annual Magazine Top Band Club Contest (MCC) takes place over weekend November 7/8, for the 25th occasion. Rules and full details in the October issue.

left open for anyone who does not wish to go out hunting; and August 26 when they have a tape-and-slide lecture booked. In between these come the week-enders—Woburn Abbey Rally, their own one on August 16, a trip to the Radio Communication Exhibition on August 22, and so on. The home base is Room 4, 119 Green Lane, Derby.

The weekly gathering at No. 2A, Racecourse Road, Oakhill, is only one form of activity for the **Stoke-on-Trent** chaps, who also have at least three interesting visits in the pipeline. For August mention must be made in particular of the Junk Sale on August 6, and the fact that the group has a coach organised for a visit to the Show on August 22.

Solihull will have a "Free-for-All" question and answer session at their meeting on August 18, when anyone can pick the others' brains. The usual place, of course—the Manor House, High Street, Solihull.

If you want to make contact with the **Lowestoft** gang, you can either go to their group meeting, which is on alternate Fridays, or alternatively, if you care to get in touch with G3JMU—*see* Panel—they may well be able to set up an impromptu gathering of the clans. They have in mind holiday visitors to the district.

A Junk and Equipment Sale is going to be held on August 18 at 7.30 at 10 Drury Lane by the **Rugby** crowd. Visitors, preferably with loaded wallets, will be very welcome to this effort.

Scotland and the North

Lothians first, with a change of Secretary and also a change of venue to report. The new place is at 66 Hanover Street, Edinburgh, and during August there will be Open Nights there on the 13th and 27th, when it is hoped to have a station operational on Two Metres.

York have regular bookings each Thursday, starting at 7.30, in the British Legion, 61 Micklegate, where meetings are reported as being well-attended—a good sign, this, of a healthy group.

A pretty full programme appears in the **South Manchester** diary for the month of August. On the 7th there is D/F Practice and an activity night, while the 14th is given to G3MXV to display and talk about his home-built solid-state Oscilloscope. The same G3MXV is back on the stand again on the 21st, this time putting "Aerial Theory into Practice" as a corollary to a talk given the previous month by G3HZM about aerials. Finally, on August 28, G8DNQ is up at the top table, to describe and discuss his Transistorised Stabilised Power Supply.

One evening each month seems to be devoted to the SWL's at **Hull,** usually the first. Thus, August 7 is for the

Names and Addresses of Club Secretaries reporting in this issue:

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.
BADEN-POWELL HOUSE: A. Watts, G3FXC, 8 Thornycroft Court, Kew Road, Richmond, Surrey.
BEDFORD: J. Bennett, G3FWA, 47 Ibbett Close, Kempston, Bedford.
BRISTOL: E. J. Davies, G3SXY, 72 North View, Westbury Park, Bristol (*33284*), BS6-7PZ.
B.A.T.C.: I. Lever, G8CPJ, 65 Dynes Road, Kemsing, Sevenoaks, Kent (*Otford 2945*).
CARLISLE: A. Treanor, G3FZG, 117 Scotland Road, Carlisle, CA3-9HE.
CHILTERN: R. A. Fowler, G3IQF, 85 Oxford Road, Marlow (*6421*), Bucks.
CORNISH: J. Farrar, G3UCQ, Elm Cottage, Ventonleague, Hayle, Cornwall.
COVENTRY: C. Jaynes, 20 Belgrave Road, Wyken, Coventry.
CRAY VALLEY: D. MacLennan, G3KGM, 52 Pinewood Avenue, Sidcup, Kent (*01-300 0747*).
CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, S.E.23 (*01-699 6940*).
DARTFORD HEATH D/F: Mrs. M. Worbey, G3XVC, 13 Havelock Road, Dartford (*22889*), Kent.
DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby (*21931*), DE3-7GE.
DORKING: R. Greenwood, G3LBA, 8 Deacon Close, Downside, Cobham (*2628*), Surrey.
ECHELFORD: R. Hewes, G3TDR, 24 Brightside Avenue, Laleham-on-Thames, Middx. (*Staines 56513*).
EX-G: F. W. Fletcher, G2FUX, 53 St. Ives Park, Ringwood (*3561*), Hants.
FARNBOROUGH: A. L. Stretton, G8BVM, 10 Sinhurst Road, Camberley (*22867*), Surrey.
GREENFORD: F. C. Reid, G3VMD, 34 Carlton Avenue, Harlington, Middx. (*01-848 0235*).
HARROW: R. H. Medcraft, G3JVM, 134 Dulverton Road, Ruislip Manor, Ruislip, Middx., HA4-9AG.
HEREFORD: S. Jesson, 181 Kings Road, Hereford (*3237*).
HULL: Mrs. M. Longson, 4 Chester Road, Wold Road, Hull, HU5-5QE.
KINGSTON: R. S. Babbs, G3GVU, 28 Grove Lane, Kingston-on-Thames (*2801*).
LINCOLN: G. O'Connor, 61 Steep Hill, Lincoln (*24113*).
LOTHIANS: D. E. Ferguson, GM3YMX, 1 Braidburn Crescent, Edinburgh, EH10-6EL (*031-447 2858*).
LOWESTOFT: L. Taylor, G3JMU, 121 London Road North, Lowestoft (*3119*).
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NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (*44329*).
NORTH KENT: A. Watt, G3WZJ, 67 Glenhurst Avenue, Bexley (*Crayford 22564*).
PLYMOUTH: L. D. Dawe, G3SPI, 345 Crownhill Road, Plymouth (*31055*), PL5-2LL.
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ROYAL AIR FORCE: Sqn-Ldr. C. F. Selwood, R.A.F.A.R.S, Hq., R.A.F. Locking, Weston-super-Mare.
RUGBY: J. L. Wood, G3YQC, 73 Hillmorton Road, Rugby, Warks.
SALTASH: J. A. Ennis, G3XWA, 19 Coombe Road, Saltash, Cornwall, PL12-4ER.
SILVERTHORN: R. J. Lock, 9 Forest Road, Woodford Green, Essex (*01-505 2336*)
SOLIHULL: H. D. L. Clark, G3YOY, 18 Marsland Road, Olton, Solihull, Warks. (*021-706 0485*).
SOUTHGATE: A. F. Hydes, G3XSV, 6 Glenbrook North, Enfield (*01-363 7847*).
SOUTH MANCHESTER: D. Holland, G3WFT, 7 Alcester Road, Sale, Chester, M33-3GW.
STOKE-ON-TRENT: E. W. Fair, 10 Wilfred Place, Hartshill, Stoke-on-Trent, Staffs., ST4-7LL.
SUNDERLAND: D. Mitchinson, G3XID, 32 St. Aidans Avenue, Grangetown, Sunderland.
SURREY: S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon, CR2-8PB (*01-657 3258*).
VERULAM: W. C. Dennis, G3NCK, 129 Colney Heath Lane, St. Albans, Herts.
WESSEX: G. A. Moore, G8BBN, 15 Stanfield Road, Bournemouth.
WOLVERHAMPTON: J. P. H. Burden, G3UBX, 28 Coalway Road, Wolverhampton, WV3-7LX.
YORK: J. A. Rainbow, G8BOK, 14 Temple Road, Bishopthorpe, York, YO2-1QN.

A contingent of the very active Silverthorn Radio Club journeyed by minibus to the Anglian Rally at Ipswich on June 21. It was a trip they all enjoyed.

non-licensed members; the 14th a talk on Colour TV; 21st G3MVO talking about the use of the BC-221 wavemeter; and a Constructional Night on August 28.

The **Northern Heights** chaps are settled in the Peat Pitts Inn, Ogden. August 12 is an Open Night, and on the 26th the lads will be asked just what they are doing to help the recruiting drive for new members. September 2 sees the evening start with a Junk Sale and end up with a Pie Supper.

Sunderland are closed down completely until September when they resume their first and third Tuesday routine at Sunderland Polytechnic.

A New Formation

Finally, it is a pleasure to mention a new group, which is in the process of formation in **Carlisle.** While they have, as yet, only a caretaker committee which is involved in preparing for a formal inauguration, they have already made a start with R.A.E. and Morse classes. They want, obviously, to rope in anyone interested in the area, so would appreciate contact *via* the Hon. Sec., G3FZG, address as in the Panel. For ourselves, we will all be wishing them the best of luck and success in their venture.

Sign-Off—and Deadline

Well now, that is it again. For next time the deadline is **August 7,** and it should contain your September programme, also the hon. secretary's name, address and telephone number, not to mention a note of the Hq. address. All this in a letter addressed, as always, to "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM. Meantime, start thinking how you are going to tackle MCC!

SPECIAL-ACTIVITY STATIONS

The season for fêtes, fairs, shows and similar public-interest events is drawing to a close. There are only a few special-activity stations to list here this time.

GB3CRC, August 1: Chiltern Amateur Radio Club summer outing to Cheddar Gorge, Somerset, working phone only on 2-4-80-160m. A special QSL card will confirm all contacts.—R. A. Fowler, G3IQF, 85 Oxford Road, Marlow, Bucks.

GB3SFS, August 7-9: Organised by the South Shields & District Amateur Radio Club on the occasion of the annual Flower Show at Bents Park, South Shields, working all bands 10-160m., AM/SSB and 2m. AM. As in previous years, a special card will be used for QSL's.—D. Forster, G3KZZ, 41 Marlborough Road, South Shields, Co. Durham.

GB3RSH, August 29-31: Operated by the Radio Society of Harrow at the annual Harrow Show, Pinner Park, Headstone Manor Recreation Grounds, operating all bands Top to 70 cm. simultaneously. There will also be an RTTY station and an A/TV exhibit. Talk-in for visitors on 2-4-160m.—R. H. Medcraft, G3JVM, 134 Dulverton Road, Ruislip Manor, Ruislip, Middlesex, HA4-9AG.

GB3WRA, September 5: Operating from the 24th annual Wycombe Show, on The Rye, High Wycombe, on all bands 10-160m., AM/CW/SSB. Visitors will be very welcome.—A. C. Butcher, G3FSN, 70 Hughenden Avenue, High Wycombe, Bucks.

GB3MAN, Sept. 26-Oct. 17: Put on by the University of Manchester Institute of Science & Technology to coincide with the intake of new students for the forthcoming year. Operation on all bands 10-160m., CW/SSB, and on two metres with AM. It is intended to mint a special QSL card for the occasion. Further enquiries (particularly from prospective students holding licences or interested in Amateur Radio) to: A. M. Davies, Amateur Radio & Electronics Society, UMIST Union, P.O. Box 88, Sackville Street, Manchester M60-1QD. *(Tel: 061-236 1281).*

EDDYSTONE 990R RECEIVERS FOR THE MET. OFFICE

For use with their radiosonde equipment—weather balloons and free-fall rocket type sounders carrying small transmitters sending back Wx data—the Met. Office has ordered 22 general-purpose VHF receivers from Eddystone Radio, their latest 990R. This is completely solid-state with a continuous tuning range of 27 to 240 MHz. Nearly 500 of these fine receivers have gone for export since their introduction just over two years ago. Incidentally, in the U.K. they are a replacement for the highly successful Eddystone 770R, another excellent VHF receiver—so some of these should be appearing as "surplus" in due course.

THE OTHER MAN'S STATION

G3ZDD

STATION G3ZDD is owned and operated by Derek Dewey, Ivordere, Catteshall Lane, Godalming, Surrey, who was licensed in February this year, having been interested in Amateur Radio, on and off, since 1947. His first Rx was a Type 18 Mk. III, tuning 6·0-9·0 MHz, and with this Derek began what he calls " my long apprenticeship as an SWL on the 40-metre band." A local amateur started him on Morse and later an R.1155A receiver was acquired.

Full of hope and expectation, the exams were taken in 1954—but though Derek passed the Morse Test, he failed the R.A.E.

There was then a hiatus of a few years until a CR-100 Rx became available, and this time the bug bit good and hard. With help from a member of the Guildford Club, the R.A.E. was finally passed in December last year.

Operation at G3ZDD is mainly on Top Band and 3·5-7-21 MHz, CW being the favourite mode. AM phone is used only for a morning net on 80 metres. The Tx is a K.W. Vanguard and the receiver an Eddystone 840C, the CR-100 now being kept as stand-by.

G3ZDD describes his aerial arrangements as " rather make-shift at the time of writing "—a 100ft. wire, which is end-fed through a home-built ATU for Top Band, and a 40-metre dipole made from stranded p.v.c. covered wire, centre-fed through flat twin plastic flex of the variety obtainable from Woolworth's. For 80-metre working, the feeder ends are strapped and the whole thing tuned against ground through a K.W. E-Zee Match. Aerial plans for the immediate future include a new mast to support a K.W. Trap Dipole.

Though as yet rather new on the air, G3ZDD has made a good start and is working towards some of the operating awards available. Being keen on CW he hopes eventually to qualify for membership of the F.O.C. And all through his narrative is emphasis on how much help he has had from fellow-members of the Guildford & District Radio Society.

CONTRIBUTIONS FOR THIS PAGE

For many years now—since before the last War, in fact—" The Other Man's Station " has been a regular, and popular, feature in SHORT WAVE MAGAZINE. We are glad to see contributions from new timers or old timers, whether recently licensed or with years of experience, irrespective of gear used. The prime requirement is a good, clear photograph, with full descriptive notes covering such points as equipment and antennae; bands and modes mainly used; results obtained; and such personal notes regarding the owner of the station as may be permissible for publication, *e.g.*, age, occupation, etc. We write the story to fit the space from the information given, and payment is made immediately on publication for all material used.

NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. callsigns, as issued, or changes of address of transmitters already licensed. All addresses published here are reprinted in the U.K. section of the "RADIO AMATEUR CALL BOOK" in preparation. QTH's are inserted as they are received, up to the limit of the space allowance each month. Please write clearly and address on a separate slip to QTH Section.

EI9BG, T. Donnellan, Rosmadda, Parteen, Co. Clare, *via* Limerick.

EI9ONE, I.R.T.S. Region 1 Radio Club, c/o J. Klinkenbergh, Proby Square, Blackrook, Co. Dublin.

G2FUB, K. W. Viles, 27 Cresta Gardens, Mapperley Rise, Nottingham. NG3-5GD. (*re-issue.*)

G3XFD/A, R. B. Mannion, B.R. Control Room, Ryde St. John's Station, Ryde, Isle of Wight.

G3YRM, C. H. Stanley, M.B.E., Glen Haven, Elm Tree Road, Locking, Weston-super-Mare, Somerset.

G3YSG, M. Taylor, 22 Shortbutts Lane, Lichfield, Staffs. WS14 9BT. (*Tel. Lichfield 4954.*)

G3YWD, E. Darlington, Dawn Wind, Mill Lane, Storrington, Pulborough, Sussex.

G3ZAY, M. J. Atherton, 7 Wood Ride, Petts Wood, Orpington, Kent. BR5-1PZ.

G3ZHR, K. McGuckian, 82 East Street, Warminster, Wilts.

G3ZJK, C. J. L. Milner, 32 Park Road, Thornbury, Bristol.

G3ZJL, R. B. Kenyon, 127 Anchorsholme Lane, Cleveleys, Lancs. FY5-3BS.

G3ZJX, B. A. Castle, 159 Elmers End Road, Beckenham, Kent.

G3ZJZ, J. P. Mason, 432 Westborough Road, Westcliff-on-Sea, Essex. SSO-9TJ.

G3ZKD, W. L. Ball, Hollingdrakes, Warrington Road, Penketh, Warrington, Lancs.

G3ZKH, I. Bateman (*ex-G8BUP*), 17 Ennerdale Drive, Bradford, Yorkshire. BD2-4JD.

G3ZKO, P. F. Lee, 116 Sylvan Avenue, Timperley, Altrincham, Cheshire.

G3ZKR, L. Hawkyard, 100 Shirley High Street, Southampton. (*Tel. Southampton 73378.*)

G3ZKS, F. W. Webb (*ex-G8BRI*), 37 Alwyne Grove, Shipton Road, York. (*Tel. York 25798.*)

GI3ZKT, T. E. Harding, 29 Springhill Avenue, Bangor, Co. Down.

G3ZKV, A. L. Andrews (*ex-G8ATW*), 163 Golf Green Road, Jaywick, Clacton-on-Sea, Essex.

GW3ZKY, A. O. Buss (*ex-GW8CTI*), 106 Corporation Avenue, Llanelli, Carms.

G3ZLA, G. S. Hall, 17 High Street, Needham Market, Ipswich, Suffolk. IP6-8AL.

G3ZLE, D. J. Ward, Beccles, Burrator Road, Dousland, Yelverton, Devon. (*Tel. Yelverton 3681.*)

G3ZLO, L. Jones, 34 Cheyne Walk, Horley, Surrey. (*Tel. Horley 3123.*)

G3ZLS, S. Craske, 18 Coppice Road, Solihull, Warks.

G3ZMC, K. M. Hawkins, 110 Coulsdon Road, Old Coulsdon, Surrey. (*Tel. 01-660 0080.*)

G5AQH, R. E. Mueller (*DJ1CF*), 63 Salisbury Road, Worcester Park, Surrey.

G8ADP/A, C. G. Elliott, 37 Seymour Road, Bristol 7.

G8DPE, V. T. Brooks, 8 Sutherland Road, Worsley Mesnes, Wigan, Lancs.

G8DRZ, H. Butterworth, 57 St. Martins Street, Rochdale, Lancs.

G8DSL, K. R. Diamond, 209 Allerton Road, Liverpool, 4. L18 6JC.

G8DTS, B. L. Norcliffe, 2 Hoylake Road, Birkenhead, Cheshire. L41-7BX. (*Tel. 051-652 6854.*)

G8DUB, A. W. Redman, 46 Tukes Avenue, Bridgemary, Gosport, Hants. PO13 OSE.

CHANGE OF ADDRESS

G2DXS, D. L. C. Creedy (*ex-GW2DXS*), "Rose and Crown," Bell Street, Wellington, Salop. (*Tel. Wellington 2708.*)

G2FT, J. W. Marlow, Elton, Dymoke Road, Mablethorpe, Lincs.

G3FYX, R. W. Emery, 30 Station Road, Winterbourne Down, Bristol. BS17-1EP.

G3FZG, A. Treanor, 171 Scotland Road, Carlisle, Cumberland. CA3-9HE.

G3IUZ, Rev. H. R. Davis, 10 Crossway, Harpenden, Herts. (*Tel. Harpenden 3007.*)

G3LEX, R. J. V. Reed, 208 Blackshots Lane, Grays, Essex.

G3LGK, B. M. Sandall, Amber Croft, Higham, Derbyshire. DE5-6EH.

G3NMZ, G. N. Bath, 87 Stanmore Crescent, Luton, Beds. (*Tel. Luton 0582, 591749.*)

G3NYA, L. D. Strange, 374 Moor Green Lane, Moseley, Birmingham, 13.

G3ORK, R. A. Talbot, 52 Duke Street, Formby, Liverpool, L37-4DL. (*Tel. Formby 74263.*)

G3POI, C. S. Penna, 10 Highview, Anerley Grove, London, S.E.19. (*Tel. 01-771 9263.*)

G3RDC, A. F. H. Wood, 73 Hillmorton Road, Rugby, Warks.

GM3RXU, I. R. Macpherson, 12 Hawick Avenue, Paisley, Renfrewshire. (*Tel. 041-884 5365.*)

G3TIS, J. A. Clarke, 52 Grosvenor Road, Kennington, Ashford, Kent.

G3VIT, R. Stancliffe, Park Place School, Henley-on-Thames, Oxon.

G3VMC, T. L. Sadler, 61 Bingham Park Road, Greystones, Sheffield, Yorkshire. S11-7BE.

G3VO, J. R. Brierley, 12 Lingfield Avenue, Clitheroe, Lancs. (*Tel. Clitheroe 4434.*)

G3VPS, P. J. Lennard, 20 Salternes Drive, Hailsham, Sussex.

G3VSD, J. Rimmer, 16 Buttermere Drive, Oswaldtwistle, Lancs. BB5-4RE.

G3WMA, W. P. Shepperd, 24 Troughton Walk, South Witham, Grantham, Lincs.

G3XLB, M. R. Giddings, B.Sc., 24 Park Avenue, Formby, Lancs.

GI3XLK, W. R. Magee, 6 Cherryvalley Park West, Belfast, BT5-6PU.

GM3XTR, B. P. Dunn, 59B Newton Street, Greenock, Renfrewshire.

GI3YBZ, J. McCann, 91 Shandon Park, Omagh, Co. Tyrone.

G3YWS, J. M. Smith, B.Tech., 16 Woodlands, Winthorpe, Newark, Nottingham. (*Tel. Newark 2413.*)

G8AQT, F. W. J. Neale, Pines Edge, Forest Dale Road, Marlborough, Wilts.

SMALL ADVERTISEMENTS

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SEPTEMBER Issue: Appears August 28. Single-copy orders, 4s. (4s. 3d. "first-class" mail) to reach us by Wednesday, August 26, for posting on August 27.—Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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SITUATION

INTERNATIONAL Voluntary Service (the U.K. branch of Service Civil International) urgently requires a Radio Engineer for service in the Seychelles, starting September/October, 1970. Fares and pocket money paid. Further details from **I.V.S., 91 High Street, Harlesden, London, N.W.10.**

READERS ADVERTISEMENTS

3d. per word, minimum charge 5/-, payable with order. Add 25% for Bold Face (Heavy Type). Please write clearly, using full punctuation and recognised abbreviations. No responsibility accepted for transcription errors. Box Numbers 1/6 Extra. Replies to Box Numbers should be addressed to The Short Wave Magazine, 55 Victoria Street, London, S.W.1.

READERS

REQUIRED: Super Sky-Rider, Sky Challenger or other pre-War Hallicrafters receiver.—Litherland, G8CFB, 11 Birch Grove, Chippenham, Wiltshire.

SALE: Codar A.T.5 with AC/PSU, £15; KW-160 Tx, £15; Withers two-metre Nuvistor Converter, £8; Heathkit AA-11 stereo amplifier, brand new, £22—Garrard AT6 deck given to buyer if collected. Valves: 5R4GY, 5U4G, 5B254/M, QQV03-20A, 7s. 6d. each—Tibbert, 397 Uttoxeter Road, Derby.

SELLING: Power Supply, DC, for KW-2000 A.B, as new and little used, complete with leads, £30.—Scales, G3NRS, 15 Westfield Avenue, Scarborough, Yorkshire. (Tel: 61238 day, 60623 night.)

RTTY: Teletype Corporation composite Nineteens, TT7FG Printers with Perf. and E.O.L., £8 10s.; TT14 Transmitter Distributor, 80s.; PSU for motor, local loop and punch supplies, input 90-160v. AC, 25-60 Hz, price 30s.; complete wired and fused table, recently taken out of service, 20s. View by appointment.—Sanders, G3CRH, Mill Cottage, Hammerwich, Walsall, Staffs. (Tel: Burntwood 6364.)

FOR SALE: R.C.A. AR88LF Rx, switched AM, FM and product detectors; fast/slow AGC muting circuit; recently realigned; front panel in white enamel with black lettering. In good condition, £40 or near offer; prefer buyer inspects and collects.—Watkins, G8CEC. 9 Deakins Road, South Yardley, Birmingham, 25.

SALE: Heathkit Mohican GC-1U receiver, factory built, at £28.—Koester, 12 Collington Rise, Bexhill-on-Sea, Sussex. (Tel: Cooden 2177.)

WANTED: Morse auto-transmitter (tape reader), Creed Type 11, G.N.T. Type 112 or similar. Also information on Cossor 'Scope Type 1049.—Whitchurch, G3SWH, 21 Dickenson Grove, Congresbury, Bristol.

DISPOSING: Eddystone 940 receiver, with Type 899 speaker, 732 mains filter, Codar PR-30X preselector, all immaculate, for £80. Prefer buyer inspects and collects.—Gray, 15 Fairfax Avenue, Ewell, Surrey. (Tel: 01-393 5587.)

SELLING: At give-away prices, Marconi FM deviation meter, new with leads, also crystal filters 10·7 MHz, 12·5 and 25 kHz bandwidth. WANTED: 50 kHz bandwidth filters, also 9- and 12-volt DEAC battery packs.—Adamson, Woodend, Victoria Road, Kingsdown, Deal (3788), Kent.

SALE: K.W. Valiant AM/CW Tx, in very good condition, price £20. Also National HRO with nine coil packs, including bandspread, PSU/speaker, unmodified and excellent. £25. WANTED: Mohican GC-1U receiver—Ring Adkins 01-794 3098 (London).

EXCHANGE: Marlin lever-action 0.22 calibre repeating rifle for radio gear value £16. SALE: Class-D Wavemeter with handbook and headphones, 80s. Two 813 valves with bases, 20s. each. Heater transformer for 813, 40s. — Watmough, G3WXB, 128A Baldwins Lane, Croxley Green, Rickmansworth, Herts. (Tel: Watford 27499.)

SELLING: Star SR-200 SSB receiver, covers amateur bands 10-160m. only, with built-in xtal calibrator and xtal filter, as new in original carton, bargain at £22. Also Joystick and ATU, 60s.—Pople, 133 Upton Road, Bexleyheath, Kent. (Tel: 01-304 0518.)

SALE: Virtually unused Heathkit RA-1 receiver with matching Q-multiplier; first £36 offer secures.—Cawthorne, G3TXF, 01-546 0841.

DISPOSING: Marconi CR-150/2 receiver (all-same B.39) in good working order and unmodified, £22 10s. or near offer.—Debney, 111 Penn Lea Road, Bath, Somerset. (Tel: 0225, or 23562 evenings.)

SALE: Command Receivers, Type BC-454 3·0-6·0 MHz, mint, unused and unmodified, £5; MW Type BC-946, coverage 550 to 1600 kHz, used, modified for 12v. heaters and extra audio, 80s. Gear for 23 cm, K6AXN converter, 29 MHz IF, £6; 2C39A tripler, flat plate type with blower, £6; colinear stack, 16-ele, for 23 cm, 40s. All items postage extra.—Bastin, 40 Stamford Avenue, Coventry (67133), Warwickshire.

WANTED: High-class communication receiver, coverage 500 kHz to 30 MHz, such as Racal RA-17, Plessey, Eddystone or others. Please write, or ring.—Giazotto, 183 Ashworth Park, Knutsford (4804), Cheshire.

SALE: HE-30 receiver, £22. LM-14 frequency meter, as new, £20. AVO valve tester. £6. Tape recorder, 60s. Home-built 160m. Tx, AM/CW, with PSU, relay switching and SWR units, dummy load, price £10. Handbooks: ARRL, SX-28, 20s. "Short Wave Magazines", 1963-'64, 20s.; 1964-'65, 20s.; 20 assorted copies, 20s.—Paterson, 2 Hallam Fields, Castle Donington, Derby.

SELLING: Top Band mobile rig, all-transistor 12-volt pos./neg., 10-watt C.S.E. Tx, with relays and microphone, Codar T.28 Rx with internal LS and connecting cables. Asking £40, less than cost of Tx alone! — Coles, G3NYD, 113 Berrow Road, Burnham-on-Sea, Somerset.

TRANSISTORS: VHF/UHF types by SGS, BLY-74 silicon power amplifier, 11·6 watts at 25°C, usable to 500 MHz, V_{CEO} 40v., 25s.; BFW-76, microwave oscillator to 4000 MHz, 20s.; also CF24 and VP28, "n" and "p" channel FET, low noise 0·1 dB at 1 kHz, 7s. 6d. Command Rx, 190 to 550 kHz, Q5'er, £6 10s.; also 3·0 to 6·0 MHz, price £6, plus 7s. 6d. postage.—Blanshard, 2 Barnfield Crescent, Sale, Cheshire.

WANTED: Working or faulty Pye F27 base station and Westminster AM10 mobile Tx. Also, to buy or loan, handbook for Sommerkamp FR-500 Rx and Sommerkamp FT-500 Tx. Please write, or phone (24-hour service).—Eaton, G3SMK, 79-80 Mole Street, Sparkbrook, Birmingham, 12. (Tel: 021-772 0248.)

OFFERING: Lafayette HA-350 Rx in mint condition, 240v. version, with crystal calibrator and speaker, £50 or near offer. AR88 speaker. 35s. WANTED: Manual for Hammarlund SP-600JX receiver; also "QST" for March '62. All replies answered.—Watson, 19 Frances Road, Basingstoke, Hants.

SALE: National HRO Rx, miniature RF valves, five coil packs for 900 kHz to 30 MHz, PSU, speaker, headphones, manual and Joymatch ATU, The Lot for £17.—Skinner, 34 Whitehall Park, London, N.19. (Tel.: 01-272 7963, evenings).

SELLING: Eddystone EC-10 Mk. I receiver, in good condition and without mods, price £35.—Ring Downton, 01-330 1128 (London).

EMIGRATING! So I have For Sale a Heathkit DX-40U transmitter plus HBW VFO for 40-80m. and two crysals, £22. And a DA-1 E-Bug, £10.—Sear, G3VOK, 21 Priestleys, Luton, Beds.

SALE: R.C.A. AR88LF Rx, £35. R.1475 receiver, tunes 2·0 to 20 MHz, £5; PSU for the R.1475, 60s. ART-13 Tx, coverage 2·0 to 18 MHz, £12 10s. W.S.12 transmitter, 1·2 to 17·5 MHz, 40w. output, for 230v. mains, £9. All gear complete with valves. —Ring Jay, 021-454 8305 (Birmingham).

FOR SALE: Oscilloscope Tubes Type VCR-X393 (CV2286), 3in. diameter face with PA, new ex-Govt., price 36s. each, post and packing free.—Ritson, Wragmire Cottage, Scalesceugh, Carleton, Carlisle, Cumberland.

WANTED: Pye Radiotelephone Equipment, Types F.27 base station; AM10B and AM10D; Westminster mobiles; and AC-10PU power unit.—Austen, 28A Valebridge Road, Burgess Hill (3409), Sussex.

TOP quality polypropylene non-rot rope. Diameters, ¼in., 1300 lbs. breaking strain; 5/16in. + 1890 lbs. B/S; and ⅜in. dia., 3100 lbs. B/S. Send s.a.e. for sample.—Powell, GW3HUM, 21 Tanybryn Estate, Valley, Anglesey.

SEPTEMBER Issue Short Wave Magazine, due out August 28. Single-copy orders 4s. (or 4s. 3d. "first-class") post paid to reach us by Wednesday, August 26, for despatch on Thursday, 27th. These copies are sent flat in an envelope.—Orders, with remittance, to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

OFFERING: Synthetic guy-line, ¼in. dia. polypropylene, 2d. per foot. First-grade ¼in. dia. terylene, non-stretch, high Govt. specification, 4d. per foot (any length), post free. Nylon thimbles, 10d. each; immediate despatch, or 5d. stamped envelope for samples. Flat-twin feeder, 75-ohm, 6d. per yard, any length, post 2s.—Warrick, G3VCJ, Rigging Locker, 50A Queens Road, Buckhurst Hill, Essex.

SELLING: BC-221, with charts and PSU, £15 BCC base station, 4 metres, tunable Rx, with xtals, £18. BBC Type 69D, 4 metres, tunable, with xtals, £12. E.M.I. Type RE-321 professional tape recorder, battery, £35. Lots of transformers, cabinets and miscellaneous units, send s.a.e. for list. Advance audio signal generator, £8. Geloso two-metre VFO/xtal osc./driver, case, PSU, £5. Three professional microscopes, details on request. 5 x 4 speed graphic sliders, flashgun, £30. B.O.C. gas welding gear, £10.—Pike, G3WDY, 27 Cintra Park, Upper Norwood, London, S.E.19.

CALLERS Only, Please: Selling R.107, rather shabby but working OK, 60s. No. 31 Set, as seen 10s. EHT transformer, Lowe Electronics, 150v. in, 1860v. out, 10s. Truvox RE-15 tape recorder, suitable spares or rebuild, 50s. Cabinet, 22 x 12 x 10in., complete with chassis, FB for large 'scope, etc., ex-H. L. Smith, 80s. C.R. tube 6in. with base, 5s. Many other items, e.g., valves, bases, variable capacitors, rotary PSU, 19 Set 12-point connectors, variometer, etc., etc.—Clyne, 59 Rydal Gardens, Hounslow, Middlesex. (Tel: 01-894 1930, evenings.)

GOING UP! Met. balloons, 3ft. diameter, 11s. each. Aluminium wire, 20g., 275ft. reels, 11s. each. Suitable for erection of balloon-supported verticals. Prices include postage.—Stratton, 15 Avenue Road, Brentford, Middlesex. (Tel: 01-560 8671.)

FOR SALE: R.C.A. AR88D Rx, in good condition, £30, buyer to collect.—Clark, G8BXC, QTHR, or ring 01-504 4984 (London), after 7.0 p.m.

SALE: Hi-Fi Armstrong A.10 Mk. II mono amplifier and preamp., 20 watts output, self-powered, with Partridge transformers, etc., £8. Also twin speaker, Goodman's 12in. plus tweeter, assembly if required, £5. Carriage by arrangement.—Michaelson, G3RDG, QTHR, or ring 01-455 8831.

FOR SALE: Limited quantity UHF head amplifier/converter units, ex-equipment, comprising Cyldon UHF tuner and chassis containing oscillator, multiplier and output circuits; can be used as 435 MHz TV converter; price less valves and crystal, 30s., plus post/packing 5s. Set of six valves and one 72·185 MHz STC xtal for same, 15s. extra. PSU components to match, 10s. extra.—Box No. 4925, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: R.216 receiver with matching PSU, offers? RTTY reperferator 44 Mk. II, for 230v. AC, £5. Teleprinter Type 3X, good copy, can be seen working, £9. R.113/A, mint, in crate, £8. Coil set for B2, 60s. Rotary generator, slip rings, 24v. DC in, 230v. AC out, £8. Bolex H16 camera, three lenses, octameter view-finder, eye level focus, filter slot, £78. Specto projector, 8/16 mm., £28.—Whorwel., G3CTR, 65 John Kennedy House, Rotherhithe Old Road, London, S.E.16.

CRYSTAL BARGAINS: See Senator Crystals, p.374

OFFERS Accepted for copy of "Short Wave Magazine" No. 1, Vol. 1, also No. 3, Vol. 1.—Begg, Decca Station, Whithorn, Wigtownshire, Scotland.

DISPOSAL: Imminent house purchase forces sale of the following equipment in mint condition—temporarily QRT, but I shall be back! Labgear 160-Twin Top Band Tx, complete with Codar DC/PSU and Shure 202 noise-cancelling p-t-t microphone, £22. Heath HW-17 two-metre transceiver (17A specification) with Heath DC/DC PSU and four 8 MHz crystals, £70. Shorrock Developments aircraft band (136-144 MHz) transistor Rx, snip at £12. Two Hudson FM high-band mobile transceivers, both working on two metres, complete with dash-mounting remote control unit, ⅝th-wave base-loaded high gain whip antenna and service manual, £55 The Lot. Attention QRO buffs: Two 4X150A power tetrodes, brand new and unused in maker's wrappings (list price £11 8s. 6d. each) going at £5 each to first comers; ditto pair of 4CX250B tetrodes (list £16 7s. 6d.) at £7 10s. each. Heath QPM-16 Q-multiplier for the RA-1 receiver, needs a bit of tweaking, but only 50s. Codar PR-30 self-powered preselector, £4 10s. Eddystone 898 dial and drive unit, brand new and boxed, £5. Heath C-3U R/C Bridge, mint, £8. Heath FM-4U BC band FM tuner, works fine, £6. C.S.E. ATMA-5 160m. mobile whip antenna, window or body mount, £5. Geloso 4/103 VFO/drive unit for two metres, new and unused, 60s. Heath V7-AU VTVM, complete with 309-CU RF probe and all test leads, almost unused, £15. Home-built 160m. Rx, matches Labgear 160-Twin cabinet, it's no Racal but it works, after a style, £5. Cash-and-carry, buyers to collect—Barnett, G8BAM, QTHR, or ring 01-556 9366 after 7.0 p.m.

SELLING: New KW-2000B and PSU, still in guarantee, £195.—Fox, G3HID, 26 Manor Road, Burnham-on-Sea, Somerset. (Tel: 2511).

SALE: Two alloy tubes, each 20 ft. long, one 3-in. dia., one 4-in. dia., with 3mm. walls. Mast built with similar tubes may be seen, raised and lowered with cable, rotatable, very strong. Tubes, £25. Also a BC-221N frequency meter, mains, with charts, £25. Callers preferred.—Longmire, G3TKL, Thornton 2363 (Nr. Blackpool).

WANTED: Eddystone 770R VHF receiver in good condition. Details and price, please.—Box No. 4922, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Eddystone EA-12 receiver with plinth speaker, £125. Eddystone 888A Rx with speaker, £55. Green two-metre converter, IF 28-30 MHz, £6. Two-metre 6-over-6 J-Beam, with 10ft. 2in. mast, £5. All in first-class condition. Prefer inspection and collection (West Country).—Box. No. 4927, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: AR88D Rx with handbook, cabinet, meter, new set of valves, and spares, £30. Also Electroniques valve-type amateur band front-end with unmarked Eddystone 898 dial, £8. Will deliver to 50 miles.—Goadby, G8BZN, QTHR, or ring Hinckley 4500 (Leics.).

OFFERING up to £35 for a recent Eddystone 840C or EC-10, to be delivered in Essex.—Box No. 4926, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Non-working or damaged Govt. surplus radio equipment; condition unimportant; top prices paid; please give details.—Bell, 32 St. Catherines Avenue, Luton, Beds.

SELLING: Eddystone EC-10 receiver in brand new condition, in carton, with manual, £40. Wanted: An EC-10 Mk. II.—Box No. 4924, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: AR88D receiver, brand new, including set new valves, headphones and manual, tested and perfect. price £75, buyer to collect.—Newey, 23 Lea-House Road, Causway Green, Oldbury, Warley, Worcs.

GOING QRT: CR-100 Rx, rough externally, OK electrically, price £8. Drake-2B, with Top Band coverage, £60. Heathkit DX-60U Tx, £30. Avometer in wooden fitted case, £5. Battery/mains two-speed tape recorder, £5. Philips portable mains record player, £5. Buyers to collect, please.—G3ZDR, 67 Medhurst Crescent, Gravesend, Kent. (Tel: Gravesend 63284, evenings.)

SELLING: Hallicrafters S.20R receiver, coverage 550 kHz to 43 MHz, perfect condition and alignment, £20. B.44 Mk. III, as new, working, with Tx xtal for 4 metres, £7. TCC high-pass filters, 38 MHz, 17s. 6d. each.—Bleaney, GW3VPL, 300 New Road, Porthcawl, Glam., South Wales.

FOR SALE: Sommerkamp FR-100B Rx, in fine condition and little used, with handbook, £80.—Kitching, 30 Lowson Street, Harrowgate Hill, Darlington, Co. Durham.

FOR SALE: K. W. Vanguard, Mk. II, covering 10 to 160m., with spare valves, £35. Also Eddystone S.640 Rx, spare valves, £15. Both in first-class order.—Williams, G3ILT, 28 Sunmead Close, Leatherhead, Surrey. (Tel: 2834, after 7.30 p.m.).

WANTED: Crystal Calibrator with 10 and 100 kHz frequencies.—Neale, 98 Bustleholme Lane West Bromwich, Staffs.

OFFERING: Eddystone 680/2A receiver, continuous coverage from 480 kHz to 30 MHz in five switched bands, in very good condtion, price £40 or offers. Also Heathkit DX-40U Tx, with VF-1U VFO, both in excellent condition, £30 or near offer.—Worthington G3ZBM, 2 Hardy Close, Wistaston, Crewe, Cheshire.

FOR SALE: Philips Trans-World de luxe portable radio (listed £120 new), 13 months old, in mint condition; scan the whole world with this fantastic receiver. Genuine reason for selling. Price £85 carriage paid.—Box. No. 4928, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Urgently. R.1475 receiver, first-class condition essential. State whether any modifications and if technical details available. also price.—Ross. 24 Raby Road. Stockton. Tees-Side. TS18-4JA.

WANTED: Hallicrafters S.27 Rx, 19 to 144 MHz. or Eddystone 770R VHF receiver, 19 to 165 MHz. Must be in good working order.—Bush, River View Hagg Bank, Wylam, Northumberland.

FOR SALE: K.W. Viceroy Mk. II, with separate PSU, seen working, £60. AR88D receiver, new case, FB condition, £30. BC-221 freq. meter, with charts, £15. Top Band Tx and Command receiver, £6. Robuk tape recorder, £12. Heathkit Mohican GC-1U receiver, £18. AVO-8 Test meter, working all ranges, £8. Various ex-Govt. meters, five for 20s. Codar Tx and mains PSU, £15.—Stonehouse, G3HPC, Woodford Bungalow, Plymouth Road, Marsh Mills, Plymouth, Devon.

SELLING: Heath SB-100 Transceiver, professionally built, little used, condition as new, hear it on any band.—Mitchell, G2AMG, telephone Great Chatwell (Shropshire) 276.

WANTED: U.S. Navy-type ATU for Rx; also Joystick and tuner. EXCHANGE or SELL: Complete 19 Set installation, including Rx/Tx Mk. III. RF amplifier Mk. III, PSU, control unit, H/D accumulators, phones, microphone, leads, key and aerial, in bag with tools; also Mk. II Tx/Rx. All in excellent condition. (South Midlands.)—Box No. 4929, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Eddystone EC-10 receiver, Mk. II, purchased May 1970, in mint condition and hardly used, £50, buyer to collect.—Shilvock, 14 Green Lane, Lye, Stourbridge, Worcs.

FOR SALE: CW/SSB transmitter, copy of K.W. Viceroy Mk. II, with 2/6HF5's in PA, capable of 450 watts p.e.p. input, with built-in PSU, Vox, Mox, CW break-in, ALC, etc.; coverage 10-15-20-80m.; excellent audio quality; requires slight attention, price £28. Also Lafayette KT-340 Rx, 550 kHz to 30 MHz, 9 valves, in immaculate condition, £12.—Glenn, G3YCU, QTHR, or ring Woking 4292.

WANTED: Eddystone round-type diecast speaker; also Eddystone S-meter; and two-metre converter; your price. SALE: KW-2000A with PSU, £160.—Handy, 105 Humber Avenue, Coventry (22201), Warwickshire.

SELLING: G2DAF-type Rx, £30. G2DAF Tx, Kokusai filter with G2DAF linear, heavy-duty PSU's, all in 4 ft. high rack, lot for £35. Cossor DB 'scope, Type 339, £7. AR88D with matching speaker, £35. W.1191A wavemeter, built-in mains PSU, 60s. Wavemeter Class-D Mk. II, complete with spare valves, headphones, etc., £7. AM table-top Tx with Geloso VFO, runs 50 watts, coverage 10 to 80m., £8. T.W. two-metre converter, £6. T.67B two-metre Tx, £10. Quud amplifiers, pair plus control unit, no valves, £25. Mast, 30 ft., three-section triangular lattice, £6. Transformer 2000-1500-0-1500-2000v. at 300 mA, very heavy duty, £8. Master Oscillator unit for ET-4336 Tx, 60s.—Parrott, G3YTB, 174 Penns Lane, Sutton Coldfield, Warwickshire.

SALE: Two-metre transmitter, converter, Eddystone 940 receiver, 5-ele Yagi beam, rotator and control, microphone, complete station £120. Buyer collects.—Turner, G3UOT, 96 Cippenham Lane, Slough, Bucks.

WANTED: LG.300 RF unit; Labgear E.5033 pi-tank assembly; heavy ceramic 5-position progressive shorting switch; Radiovision Commander receiver or HRO Senior Rx with correct bandspread coils plus (home-made) 21 MHz BS coil. All items to be in good condition, pse. EXCHANGE or SELL: SR-200 bandspread Rx, covering 10 to 160 metres, plus WWV xtal calibrator, xtal filter, product detector, handbook, etc., £30 or near offer, or W-H-Y?—Stone, 39 Purrett Road, Plumstead, London, S.E.18. (Tel: 01-854 6646.)

SELLING: K.W. Viceroy Mk. IIIG, £75. G2DAF Tx, Mk. II. with metered PSU, speaker, £45. CT.38 electronic multimeter, £12.—Thorburn, G3WBT, 27 Banklands, Workington, Cumberland.

FOR SALE: Colour TV receiving tube, 21-inch 3-gun, shadow mask, unused, U.S. made, in original carton, with data sheets, £20. Pye 4-metre base station P.T.C.702. 15-watt Tx, sensitive receiver, with handbook, £12. Both items to be collected.—Cockle, 14 Leewood Way, Effingham, Leatherhead, Surrey. (Tel: Bookham 5439.)

FOR SALE: R.C.A. No. 29 transceiver, 50 watts AM/CW over 2 to 8 MHz, complete with ATU and 12v. PSU; Rx side needs some attention and is not working, but Tx section excellent; price £15 or near offer, or would EXCHANGE for HRO receiver. —Thomas, GW3YQM, 4 Green Park, Pentlepoir, Saundersfoot (3351), Pembrokeshire, West Wales.

OFFERING: Eddystone B.34/358X receiver with PSU and ten coils for coverage 40 kHz to 30 MHz, £15 or near; Trio 9R-59DE Rx with speaker and xtal calibrator, £38 or near. (Both these in good working order, with circuitry and instructions.) Wearite dual-channel simultaneous tape recorder, in rack cabinet, £45 or near. Two Mullard Type 5-10 amplifiers (Grampian and Philips), also speakers and various other items. Delivered free within reasonable distance Leeds. Lists and details. —Box No. 4923, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Grid-dip oscillators, Heathkit "tunnel dippers", 3 to 260 MHz, as new, £17. Transistorised GDO's, 2 to 30 MHz, also act as absorption wavemeters, £6.—Thomas, GW3YQM, 4 Green Park, Pentlepoir, Saundersfoot (3351), Pembrokeshire, West Wales.

SALE: Ranger low-band, £8. Hudson radiotelephone Tx on 4 metres, £5 10s. G.E.C. VHF base Tx, £5. BC-620F transceiver, 40s. R.1155 receiver, 20 to 160m., £9. No. 52 Set Rx, 20 to 160m., £12. No. 52 Set Tx, with 813, £14 10s. No. 52 Set 12v. PSU, 1200/300v., 80s. B.44 Mk. III transceiver on 4 metres, tunable, £8 10s. Four-metre crystals, FT-243, 5850 and 5875, 15s. each. QQV03-10 valves, used but good, 5s. 6d. each. All carriage extra, s.a.e. with enquiries, pse.—Raybould, 16 Brookbank Road, Gornal Wood, Dudley, Worcs.

SALE: Ranger 4-metre, £5. B.44 mod. transformers, 15s. Pair 88 Sets with microphone, etc., 90s. Cannonball 160m. AM/CW/SSB Tx, with stabilised PSU, £22. Home-built 50w. transmitter for 2m.-70 cm.-23 cm., with PSU and KT88 modulator, £25. 2C39A valve and cavity, 20s. HRO with all coil packs and PSU, £12. Four-metre Tx, 35w. with modulator, £6 10s. Various PSU's, 20s. to 60s. Dynamotor, 10s. TV camera parts, £5. Receiver, 100 kHz to 4·5 MHz and 10 to 20 MHz, £6. DET-24 valve and 70 cm. cavity, 70s. ACT-22 and 70 cm. cavity, 100w. input, £7. Rx for 3 cm., with 723 A/B and 723 A/B Tx, £7 10s. Dummy load for 3 cm., 10s. APS-13, 50s. All must go so will haggle, s.a.e. details, etc.—Woodhall, 5 Summerville Avenue, Staining, Nr. Blackpool, Lancs.

WANTED: By student, single-sideband Tx or transceiver; anything considered. SELLING: Lowe two-metre converter, 10m. IF, as new, £7.—Palmer, G3ZDY, 59 Meadowbank Road, Fareham, Hants.

SELLING: Eddystone EA-12 receiver, in perfect condition, £140.—Coltman, G3TTH, Sutton Bonington, Loughborough, Leics., LE12-5NN. (Tel. Kegworth 2402. 6.30 to 7.30 p.m.)

FOR SALE: RCX Panadaptor for 450-475 kHz IF, 240v. 50 Hz, with copy manual. spare CRT and some tubes, Recently realigned. Price £20.—Addie, G8LT, Spring Hill, Wappenham, Towcester, Northants., NN12-8ST. (Tel: 0327-32 321.)

SALE: Joystick aerial, standard model, also Type 3A ATU, in perfect condition, £4, buyer to collect.—Potter, 37 Wykeham Hill, Wembley, Middlesex.

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