

The

# SHORT WAVE

Magazine

4/-

VOL. XXVI

NOVEMBER, 1968

NUMBER 9

*choose*

## KW SSB EQUIPMENT

*for reliability*



### KW 2000A

SSB TRANSCEIVER  
180 watt PEP, 10-160  
metres, complete  
with AC psu, VOX,  
P.T.T

### KW VESPA MARK II

TRANSMITTER  
For all HF Bands.  
220 watts PEP SSB,  
AM, CW

### KW 1000

LINEAR AMPLIFIER  
1200 watts PEP with  
built-in psu and SWR  
indicator

### KW 201

AMATEUR BANDS  
COMMUNICA-  
TIONS RECEIVER  
SSB CW, and AM;  
10-160 metres

Write for illustrated detailed specification on the above  
and our list of KW Tested, "Trade-in" equipment

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CABLES: KAYDUBLEW DARTFORD

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**KW**  
ELECTRONICS  
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# Eddystone



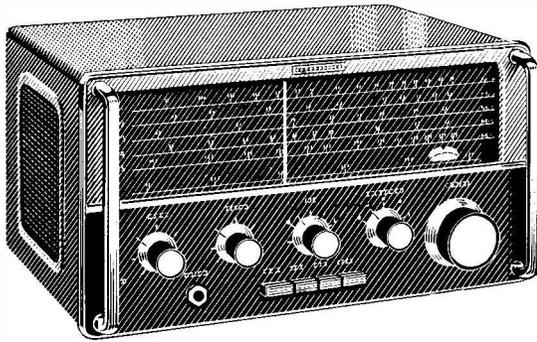
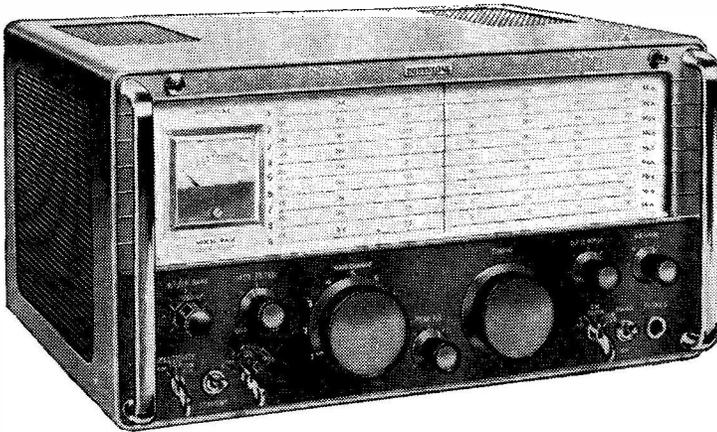
BRITISH MADE

## Amateur communications receivers

### EA12

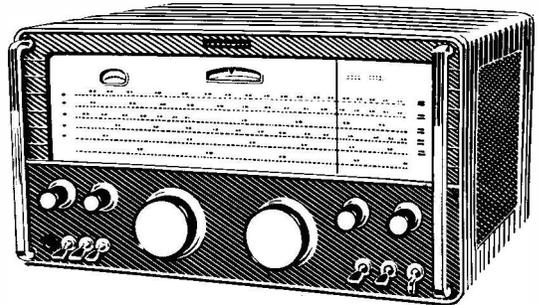
An amateur bands double-conversion superheterodyne receiver, for a.m, c.w, and s.s.b reception. For all amateur channels between 1.8 MHz and 30 MHz in nine 600 kHz bands with 28 MHz to 30 MHz in four bands.

**Primary features.** Crystal-controlled 1st oscillator, 2nd oscillator with continuously variable selectivity to 50 Hz, muting switched or by external relay, twin noise limiters, for a.m/c.w, and s.s.b, short-term drift better than 20 Hz and less than 100 Hz in any one hour, 'S' meter calibrated in nine levels of 6 dB and dB levels beyond 'S9', two a.g.c time constants, deep slot filter, independent r.f, i.f, and audio gain controls with outputs for f.s.k and panoramic adaptor.



### EC10 communications receiver

The fully transistorized EC10 communications receiver, supreme in its class, covers both medium-wave broadcasting and all shortwave service to 30 MHz. Incorporating the famous Eddystone tuning drive, with logging scale and auxiliary vernier, shortwave reception is particularly simple. Battery-operated or from optional a.c mains unit.



### 940 H.F communications receiver

An outstanding 13-valve receiver with two r.f and two i.f stages, silicon diode noise limiter circuit and high quality push-pull output. Built to a professional specification, facilities include provision for c.w, a.m, and s.s.b reception over the range of 480 kHz to 30 MHz in five bands. Suitable for 110/125 V and 200/250 V. 40-60 Hz a.c mains.

**Comprehensive information from your Eddystone distributor or: Eddystone Radio Limited, Eddystone Works, Alvechurch Road, Birmingham 31. Telephone: 021-475 2231. Telex: 33708**

**THE MOST RELIABLE SERIES OF TRANSCEIVERS EVER OFFERED**

# SWAN EVOLUTION

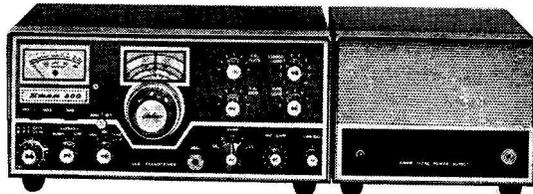
**ASK THE AMATEUR WHO OWNS ONE**

The new model 500C is the latest evolutionary development of a basic and well proven design philosophy. From the very beginning, with the introduction in 1961 of the first single band SSB Transceiver, Swan has followed a steady course of improvement by evolution. You might think that we would finally reach the point of leaving well enough alone, but with some 18 licensed hams in the engineering, sales and production departments of our organisation, it just isn't possible. Thus, the new model 500C, with greater power and additional features for even more operator enjoyment.

RCA recently introduced a new heavy duty "blast rated" tetrode, the 6LQ6. With a pair of these rugged tubes the final amplifier operates with increased efficiency and power output on all bands. PEP input rating of the 500C is conservatively 520 Watts. Actually, an average pair of 6LQ6's reach a peak input of over 570 Watts before flat-topping!

Further refinement of the famous Swan VFO results in even greater mechanical and thermal stability and more precise dial calibration. Custom made planetary drives, machined to extremely close tolerance, provide velvet smooth tuning.

The 500C retains the same superior selectivity, of course, that we have been offering. The filter is made specially for us by



## THE NEW SWAN 500C 5 BAND - 570 WATT TRANSCEIVER

C-F Networks, and it's no secret that it is a better filter than is being offered in any other transceiver today. By moving the I.F. to 5500 KC, and increasing the number of tuned circuits in the receiver, we have achieved substantial improvement in image and spurious rejection. These improvements, coupled with additional TVI filtering, result in what we believe is the cleanest transceiver on the market.

For the CW operator the 500C includes a built-in side-tone monitor. Also, by installing the Swan Vox Accessory (model VX-2) you will have break-in CW operation. Thus, the model

VX-2 now fulfils a dual function, both automatic voice control and break-in CW keying. Grid block keying of a pure CW carrier is employed with off set transmit frequency.

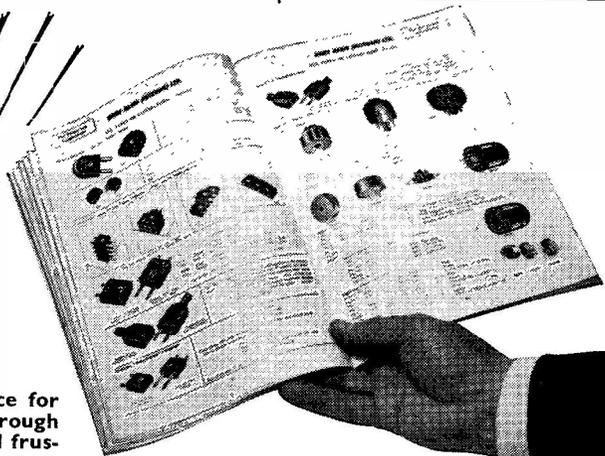
The 500C embodies the Swan's well known dedication to craftsmanship, performance and reliability, with a service policy second to none. When you visit your Swan dealer and look over the 500C, we are sure that you will be glad we couldn't "let well enough alone"

SWAN 350C. Our improved standard model, now in production, 570W  
ACCESSORIES ..... £216 0 0  
MATCHING AC POWER SUPPLY 230XC ... £65 0 0

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We are taking orders for the Eddystone 990R Receiver at £380. These are now coming through at a steady pace.

In second-hand line we have a Panda Cub at £22 ; KW Vanguard at £27 10s. **and our Bargain of the Month is a VICEROY TX at £80.**

WANTED : Eddystone EA12's, 640's, KW2000, KW2000A.

Part exchanges.

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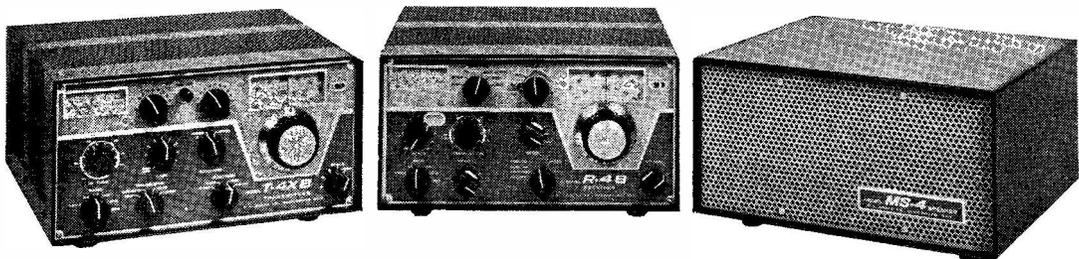


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All the rest of the Drake equipment including 2-NT CW Transmitter and the TR-4 transceiver.

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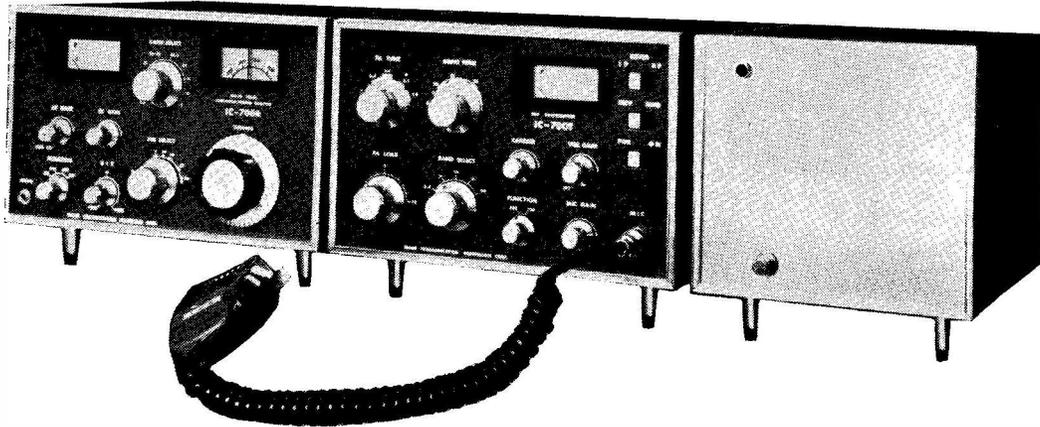
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## INOUE 700 SERIES

Although this comprises three separate items IC-700R Rx, IC-700T Tx and IC-700PS power supply, the three are designed as a transceiver in that the TX uses the Rx V.F.O. (with RIT) and does not have its own. Taking the Rx first:—

**IC-700R** — This is an all transistor Rx for Amateur Bands and makes wide use of F.E.T.'s in the r.f. and oscillator stages to ensure maximum sensitivity and low cross-modulation. It uses a top quality 9 mc/s. xtal filter for excellent image rejection and a single conversion chain for minimum noise.

MODES :	AM, SSB, CW, (L.S.B. on 80 and 40, U.S.B. on 20, 15 and 10).
COVERAGE :	3.5-4.0 mc/s.; 7.0-7.5; 14.0-14.5; 21-21.5; 28-28.5; 28.5-29; 29-29.5; 10-10.5 mc/s.
SELECTIVITY :	2.4 kc/s. at -6dB; 4.5 kc/s. at -60 dB (1.8 shape factor). 500 cycle audio filter for CW.
SENSITIVITY :	Better than 1 microvolt for 10 dB.
SPURIOUS SIGNALS :	Below noise level.
IMAGE REJECTION :	Better than 60 dB.
STABILITY :	100 cycles.
POWER SUPPLY :	240v. A.C. or 12v. D.C. built-in.
DIMENSIONS :	11in. wide x 6½in. high x 9½in. deep.
WEIGHT :	12 lbs.

The design of this Rx has obviously been very well thought out. The v.f.o. is followed by no less than three buffer amplifiers—the r.f. tuning capacitor is ganged to the r.f. coil slugs for optimum L/C ratio over the full tuning range (I don't know of any other Rx that goes to this degree to squeeze the last drop

out of the antenna!) Product detector for SSB/CW, separate detector for AM. Dual power supply built-in either 240v. A.C. or 12v. D.C. Built-in relay for Rx muting on transmit if used with another Tx. Provision for xtal control. Where you would get better Rx value than this I just don't know, **£85**.

**IC-700T** — The companion Tx to match the above Rx is the same midget size. Again it is all transistor except driver, PA's and v.f.o. mixer. It uses the Rx v.f.o. and of course, covers the same frequency range, with again, provision for xtal control if desired. The 2-6146B's in the final are very conservatively operated with only 500v. on the plates for 120W p.e.p. This ensures excellent linearity, freedom from distortion products and long life. To those plagued with TVI this may well be the answer. There's a lot to be said for operating the final well within its rating rather than pushing it to the limit—and certainly this little beauty sounds very nice indeed, **£80**.

**IC-700PS** — Matching psu/speaker unit, **£30**.

As a package deal, the lot for **£180**. Bought separately they'd add up to £195 and still be top value.

We can supply the manuals by themselves for 8/6 each or 15/- the pair. Postage extra, 1/-.

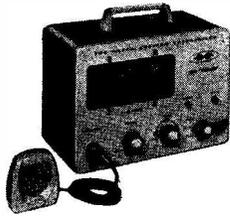
In addition to the above little crackerjack, we stock the complete Sommerkamp range as well as the choicer bits of Star, along with a good range of second-hand stuff.

Also mikes, keyers, test gear, speech compressors, etc., etc., which you saw at the Exhibition to say nothing of piles of resistors, capacitors and other small bits and pieces. Well worth your while sending a s.a.e. for blurb.

If you can't manage to get to Matlock to see all this lovely stuff, Alan Whitford G3MME has a goodly selection at 37, Chestnut Drive, Polegate, Sussex. Evenings and weekends. Telephone number Polegate 4659.

# HEATHKIT Amateur Radio Equipment

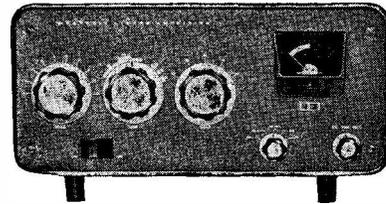
DEFERRED CREDIT TERMS BY ARRANGEMENT (OVER £10 U.K. ONLY)



**HW-30 2 Metre Transceiver** . . . For fixed, portable, or mobile. Ideal for local and RAEN purposes. Input 5 watt. CC. Tunable regenerative RX. Size 9 $\frac{3}{4}$ "w. x 8"h. x 6" deep. (For 230v. operation if required).

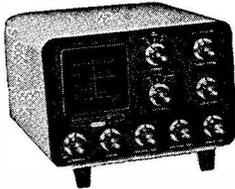
Kit K/HW-30, 6 $\frac{1}{2}$  lbs., £26 . 8 . 0. P.P. 6/-.  
Ready to use A/HW-30, £36 . 8 . 0. P.P. 6/-.

Kit GP-II (Power Supply 6 or 12v. D.C.) £10 . 13 . 0.  
Ready to use £13 . 12 . 0. P.P. 4/6.



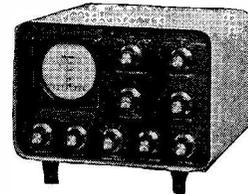
**SB-200 KW SSB linear Amplifier** . . . 1200 watts PEP input SSB, 1000 watts CW on 80 through 10 metres. Built-in antenna relay, SWR meter, and power supply. Can be driven by most popular SSB transmitters (100 watts nominal output).

Kit K/SB-200, 41 lbs., £120 . 18 . 0. P.P. 10/6.  
Ready to use A/SB-200, £145 . 18 . 0. P.P. 10/6.



**SB-610E Signal Monitor Scope** . . . operates with transmitters on 160 through 6 metres at power levels from 15 watts through 1 kw, shows transmitted envelope. Operates with receiver IF's up to 6 Mc/s., showing received signal waveforms. Spots over-modulation, etc.

Kit K/SB-610E, 14 lbs. £41 . 14 . 0. P.P. 10/6.  
Ready to use A/SB-610E, £51 . 14 . 0. P.P. 10/6.



**SB-620 "SCANALYZER" Radio Spectrum Monitor and Analyzer.** New narrow sweep widths with crystal filter for single channel analysis. 10 Kc/s., 50 Kc/s. Variable width to 500 Kc/s. Styled as SB series.

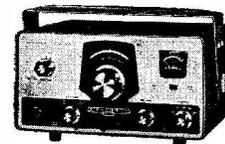
Kit K/SB-620, £64 . 14 . 0. P.P. 10/6.  
Ready to use A/SB-620, £77 . 4 . 0. P.P. 10/6.



**DX-100U Transmitter** . . . 120 watts CW, 100 watts Phone. Built-in VFO and all power supplies. Band coverage: 160, 80, 40, 20, 15 and 10 metres.

Kit K/DX-100U, £95 . 0 . 0. P.P. 19/6.  
Ready to use A/DX-100U, £120 . 0 . 0. P.P. 19/6.

MODELS  
HW-12A  
(80m.)

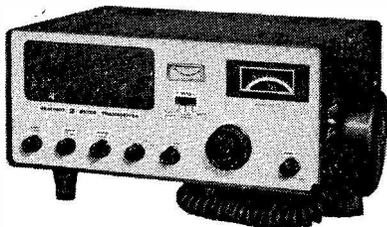


HW-32A  
(20m.)

**HW-12A and HW-32A Filter-Type SSB Transceivers** . . . 100 watts PEP input TX. 1 $\mu$ V sensitivity RX. PC Board. Pre-aligned circuits. Power required: 800v. D.C. at 250 mA., 250v. D.C. at 100 mA. —125v. D.C. at 5 mA., 12v. A.C. or D.C. at 3-75A.

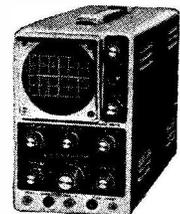
Kit, either model, £60 . 3 . 0. P.P. 10/6.  
Ready to use £74 . 13 . 0. P.P. 10/6.

GH-12 Push Talk Microphone. Ready to use £4 . 3 . 0.



**HW-17 2 Metre Transceiver** . . . For local ragchewing. NETS DX. Solid state circuitry. Built-in speaker. PTT operation and gimbal mount included.

Kit HW-17, £69 . 2 . 0. P.P. 6/- D.C. supply HWA-17-1 £13 . 18 . 0.

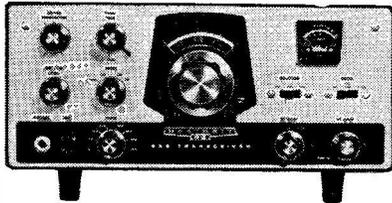


A complete line of test instruments for the Amateur Radio Station. The V-7A VFM and RF probe. The MM-1U Multi-meter. The OS-2 Portable Oscilloscope and many more instruments are fully described in the latest Heathkit catalogue.

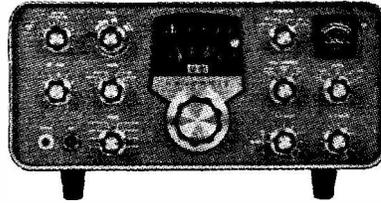
SEE HEATHKIT MODELS AT GLOUCESTER-Bristol Rd. Tel: 29451. LONDON-233 Tottenham Ct. Rd., Tel: 01-636 7349

# HEATHKIT Amateur Radio Equipment

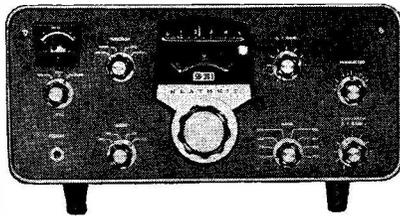
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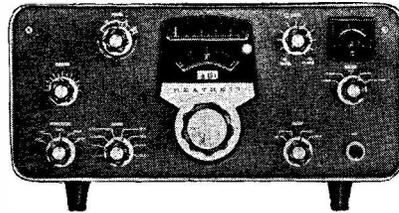
**HW-100 5 Band SSB-CW Transceiver** . . . Solid-state FET VFO. Covers 80-10 metre bands. Switch selector USB, LSB or CW. 180 watts input PEP SSB—170 watts input CW. Crystal filter.  
**Kit K/HW-100**, 18 lbs. £125 . 0 . 0. P.P. 9/-.  
 Ready to use **A/HW-100**, £165 . 0 . 0. P.P. 9/-.



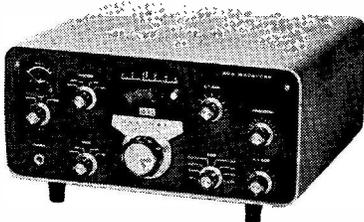
**SB-101 80 Through 10 Metre SSB Transceiver** . . . 180 watts PEP SSB, 170 watts CW (the practical power lever for fixed/mobile operation). Features USB/LSB on all bands, PTT & VOX. CW sidetone and more. Unmatched engineering and design.  
**Kit K/SB-101**, 23 lbs., £185 . 12 . 0. P.P. 9/-.  
 Ready to use **A/SB-101**, £225 . 12 . 0. P.P. 9/-.



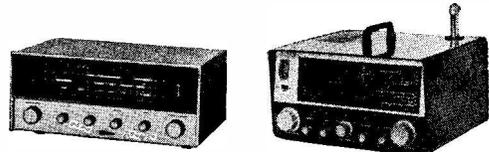
**SB-301E Amateur Band Receiver** . . . SSB, AM, CW and RTTY reception on 80 through 10 metres. 15 MHz WWV reception. Tunes 2 metres with SBA-300-4 plug-in converter.  
**Kit K/SB-301E**, 23 lbs. (less speaker), £140 . 12 . 0. P.P. 9/-.  
 Ready to use **A/SB-301E** £170 . 12 . 0. P.P. 9/-.



**SB-401E Amateur Band SSB Transmitter** . . . 180 watts PEP SSB, 170 watts CW on 80 through 10 metres. Operates "Transceive" with SB-301—requires SBA-401-I crystal pack for independent operation.  
**Kit K/SB-401E**, 34 lbs., £157 . 10 . 0. P.P. 10/6.  
 Ready to use **A/SB-401E**, £192 . 10 . 0. P.P. 10/6.  
**SBA-401-I** crystal pack, 1 lb., £17 . 3 . 0. P.P. N.C.

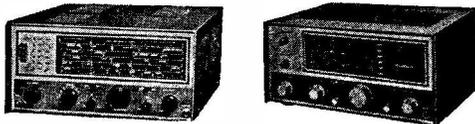


**SB-310 Professional SW Receiver** . . . Designed for the connoisseur. Covers ten bands including 80, 40 and 20 amateur bands. Product detector for SSB. 5 kHz crystal filter included for AM, SSB and CW listening.  
**Kit K/SB-310**, 17 lbs. (less speaker), £138 . 12 . 0. P.P. 9/-.  
 Ready to use **A/SB-310**, £168 . 12 . 0. P.P. 9/-.



**GR-64 Short Wave Receiver** . . . Covers 1 MHz. to 30 MHz., plus 550 kHz. to 1620 kHz. AM band. Many special features for such a modest price. For 115-230v. 50/60 Hz. A.C. mains operation.  
**Kit K/GR-64E**, £22 . 9 . 0. P.P. 9/-.  
 Ready to use **A/GR-64**, £29 . 9 . 0. P.P. 9/-.

**GC-1U "Mohican" General Coverage Receiver** . . . 10 transistors, 5 diode circuit. Tunes 580-1550 kHz. and 1.69-30 MHz. in 5 bands. 6" x 4" speaker.  
**Kit K/GC-1U**, £37 . 17 . 6. P.P. 10/6.  
 Ready to use **A/GC-1U** £45 . 17 . 6. P.P. 10/6.



**RG-1 High Sensitivity General Coverage Receiver** . . . High performance at lowest cost. Covers 600 kHz. to 1.5 MHz., 1.7 MHz. to 32 MHz. Full specifications available.  
**Kit K/RG-1**, 18 lbs., £39 . 16 . 0. P.P. 9/-.  
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**RA-1 Amateur Bands Receiver** . . . Covers 10-160m. Half-lattice crystal filter at 1.6 MHz. Switched USB and LSB for SSB. Provision for fixed, portable or mobile uses.  
**Kit K/RA-1** £39 . 6 . 6. P.P. 9/-.  
 Ready to use **A/RA-1** £52 . 10 . 0. P.P. 9/-.

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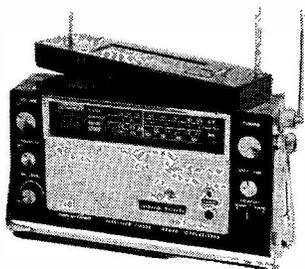
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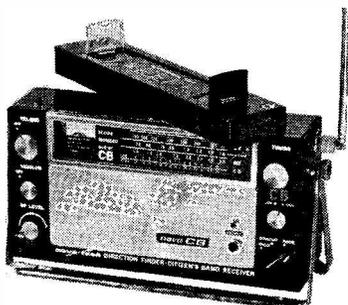
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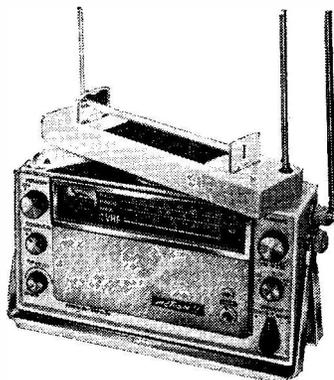
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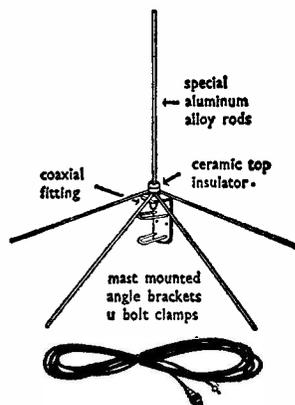
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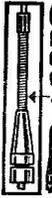
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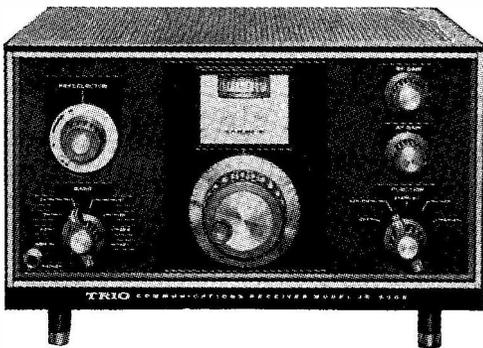
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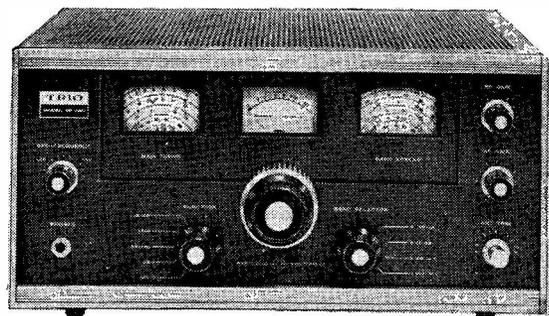
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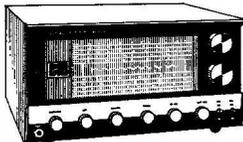
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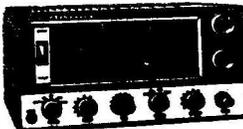
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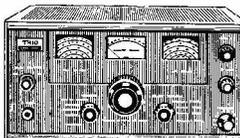
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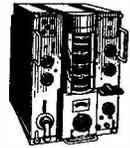
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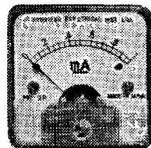


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# The SHORT-WAVE Magazine

## EDITORIAL

**Post** *Whatever the Postmaster-General may have said in his statement to the House of Commons to justify the current operation of the postal service—now worse and far more expensive than at any time in living memory—the fact remains that the original undertaking “to delay 2nd class mail for not more than 24 hours” has simply not been honoured.*

*Our direct-subscriber copies of the October issue, stamped 6d. (which is “second-class” even at that price) went out as usual on the morning of Thursday, September 26. Some were delivered on Friday, others on Saturday, a great many not till the Monday, and the remainder as late as Tuesday—this to subscribers, of many years’ standing, who previously had their copy on the Friday, or by Saturday first post at the latest!*

*It seems that this differential delivery is because, depending on how many main sorting offices wrapped mail has to go through to reach the addressee, each handling point applies its own “24-hour delay” to what is put aside as second-class. Hence, after any initial hold-up at the point of posting, a cumulative delay—dictated by the number of sorting offices through which the item has to pass—can build up, amounting (as in the case of many of our subscribers) to several days!*

*This is totally at variance with the Post Office explanation of how the two-tier system would work. In fact, it has now become quite evident—taking not only our own but also the general experience—that the difficulties and anomalies that could arise from the two-tier system were never really understood nor foreseen: A double-sorting procedure for the postal staff, involving 100’s of hours of expensive overtime; the confusion caused by the similarity between the 5d. and 4d. stamp—who ever chose those colours!; and the interpretation of the 24-hour delay rule as understood by different main sorting offices.*

*While it is fair to say the present PMG, John Stonehouse—a keen and efficient young man, only recently promoted to a Department of his own—inherited this preposterous state of affairs and therefore cannot be personally blamed for it, the fact remains that as PMG he must accept full responsibility, before the public and the House of Commons.*

\* \* \* \*

*It seems that all we can do about it where our direct subscribers are concerned is to offer them first-class posting (9d. per copy per issue) at option, this adding 3s. to the present annual subscription of 45s. (on which we already pay the 6d. postage). Thus, with immediate effect, our direct-subscriber rate becomes 48s. for 1st-class mailing. Accordingly, subscribers who wish to have their copies on the day of publication (last Friday in the month) are asked to remit the extra 3s. postage charge as soon as may be, so that we can start the differential mailing system as quickly as possible.*

*Austin Forth,  
G6FO.*

## GETTING ON FOUR METRES

WITH A TRANSISTORISED  
TRANSMITTER-RECEIVER  
— CIRCUITRY AND  
CONSTRUCTIONAL NOTES

J. R. HEY (G3TDZ)

**I**N order to join in with the locals who were equipping themselves with 4-metre gear, and also to get a taste of VHF, it was decided to try to knock up a Tx/Rx fairly quickly. The requirements were that it had to be self-contained and portable, and to cost as little as possible.

The resulting circuit Fig. 1 was evolved by a little theory and much experiment, and could be juggled to suit the individual's junk box or pocket.

### The Transmitter

In the junk box was a 7806-667 mc crystal which had been there years. Having heard that these FT-243 types went off on their third overtone without difficulty, this was the obvious thing to try. A bread-board circuit was duly lashed up and indeed the 23-42 mc output could be easily recognised on a nearby receiver. The coils were wound on 0.2in. slugged formers removed from old TV tuner biscuits. Whilst the circuit shows a feedback tap on L1, it was easier whilst experimenting to use a two-turn link which could be moved in or out, avoiding the somewhat fiddling job of tapping the coil.

A two turn link of 24g. p.v.c. connecting wire was used to couple the oscillator Tr1 to the tripler Tr2. Here a few snags were met. There was not enough drive voltage from the link to turn on the silicon transistor chosen, therefore it was decided to give the oscillator a little more hammer. Reducing the emitter resistor from 1.2K to 680 ohms increased the collector current from 2 to 4 mA. This did the trick and the tripler showed a (miserable) 1.5 mA; the tank circuit did however resonate. Perhaps a better thing would have been to insert a Class-A amplifier between oscillator and tripler but because size was an important factor, the decision was to press on and try to extract a few more ounces from the oscillator.

Adjusting the LC ratio of the oscillator tank was considered but increasing the value of the capacitor drove the tripler to 2.5 mA. Next the bias was re-checked by inserting a 100K potentiometer in series with R2. Surprisingly, as the bias was reduced, the output went up, peaking at a total of 100K where 27K had been originally fitted. Oscillator current was now back to below 2 mA but the tripler was now running a glorious 4 milliamps. The GDO established a solid 70 mc output from the tripler, at L3.

It was hoped one stage of amplification would drive the PA to one watt, the desired output power, but only 50 mA could be obtained. Therefore, an extra stage Tr3 was wired in. Now there was gain in hand so two transistors were fitted to a home-made heat sink and

wired in parallel. The final input was then a full 1.5 watts and each stage operated more conservatively. The gains of each individual stage could be adjusted by varying the emitter resistors and the drives to each, varied by the link coils as described earlier.

Having proved the values in lash-up form, the whole circuit was condensed on to a printed board 1.2in. wide and 4.25in. long. It is intended for 12v. operation and for PSU uses two PPI dry batteries. A positive earth makes for easy connection to a vehicle battery.

Small copper screens are soldered to the board between each stage. The PA heat sink is made from 0.25in. aluminium and measures 1.2in. x 0.75in. and is mounted on the printed board by self-tapping screws. Driver and PA coils are wound on ¼-inch formers cut from old TV IF cans. A link couples the PA to the aerial switch. L9/L10 in the circuit opposite.

### The Modulator

The modulator is fitted alongside the Tx board and its circuit follows convention, using germanium transistors. A DC-coupled microphone amplifier and driver is sufficient to flat-top the Class-B modulators from a moving coil microphone. The driver transformer is a transistor radio type from the junk box, previously stripped from a Japanese portable.

The modulation transformer T4 is home wound and surprisingly easy to make. An old mic. transformer measuring 1.25in. x 1in. x 0.4in. was stripped, leaving just the core and bobbin. By running a spool of 30g. enamelled wire three times down the room, and winding all three lengths on together by hand, a tri-filar wound transformer of 1+1:1 with very low leakage inductance results. This is exactly right as the PA and modulators share the same 12v. supply.

Modulation is applied to both driver Tr4 and PA to prevent loss of efficiency due to feedthrough.

### The Receiver

The very mention of super-regenerative detector or "swoosh-box" causes something between mild amusement and horror in some quarters, whilst those of us who *know* how to use them know better. This circuit has been used because of the size limitations with what was available, and for no other reason.

The super-regen.—still the most sensitive detector extant—got its bad name for radiating RF and being somewhat temperamental with squeaks and dead-spots everywhere. In the early days, amateurs tended to pick an ex-Govt. valve of the two-top-cap variety, stack on about 250v. at a few milliamps, and although results *could* be good, it is hardly surprising that the re-radiation blotted everything out for miles. At the peak of the quench cycle, bursts of 1.5w. could be shot up the feeders, causing widespread chaos!

The suggested quench-detector design used in this unit is suitable for both 4m. and 2m., variations in appropriate component values being shown in the Table with Fig. 1. Operating at voltages down to 2.5v. and only burning on microamps., it is obvious that the radiation from even a directly coupled aerial can hardly be detected the other side of the room. Many of the squeaks and other undesirable happenings associated with the super-regen. are caused by RF getting into the

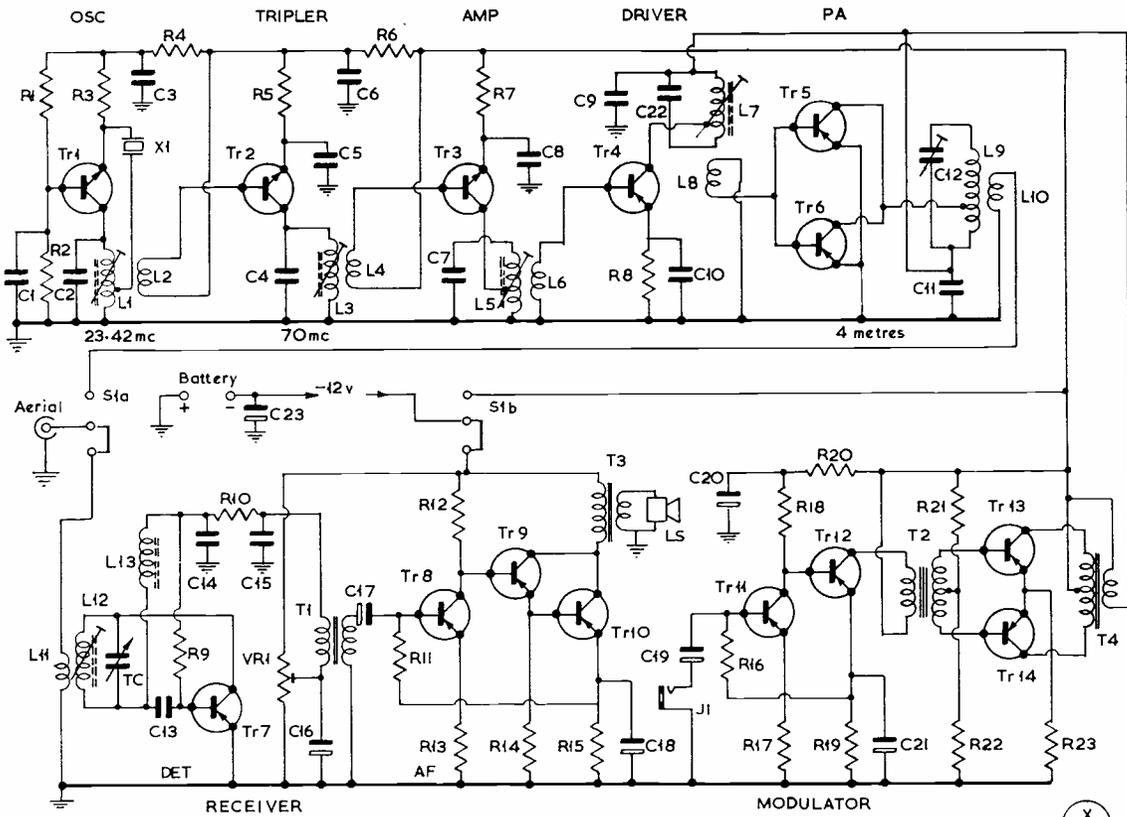


Fig. 1

X  
287

**Table of Values**

Fig. 1. Circuit of Tx, Rx and Modulator

- C1, C9 = .002  $\mu$ F, disc
- C2 = 56  $\mu$ F, tub.
- C3, C5 = .01  $\mu$ F, min. foil
- C4, C7, C22 = 15  $\mu$ F, tub.
- C6, C8 = .022  $\mu$ F, min. foil
- C10, C14, C15 = .047  $\mu$ F, min. foil
- C12 = 30  $\mu$ F, trimmer
- C13 = .0015  $\mu$ F (for 4m.)
- 470  $\mu$ F (for 2m.)
- C16, C20 = 15/80  $\mu$ F, 16v. elect.
- C17, C19, C21 = 10  $\mu$ F, elect.
- C18 = 25/50  $\mu$ F, elect.
- C23 = 500  $\mu$ F, 16v.
- R1 = 15,000 ohms
- R2 = 100,000 ohms
- R3 = 680 ohms
- R4 = 100 ohms
- R5, R6 = 47 ohms
- R7 = 15 ohms
- R8 = 4.7 ohms
- R9 = 680,000 ohms (for 4m.), 390,000 ohms (for 2m.)
- R10 = 220 ohms
- R11, R16 = 330,000 ohms
- R12 = 8,200 ohms
- R13 = 120 ohms
- R14 = 3,900 ohms
- R15 = 560 ohms
- R17 = 270 ohms
- R18 = 6,800 ohms
- R19 = 1,000 ohms
- R20, R21 = 2,200 ohms
- R22 = 22 ohms
- R23 = 3.3 ohms
- VR1 = 10K min. pre-set potentiometer
- Xtal = 7806 kc (see text)
- T1, T2 = Driver xformers (ex-Jap portable) see text
- T3 = Speaker o/p type, neglect centre-tap
- T4 = Mod xformer, home-wound, 130 turns 30g. by 3, tri-filar (see text)
- Tr1, Tr2, Tr3 = BC108
- Tr4, Tr5, Tr6 = 2N2904
- Tr7 = NKT675, OC171, or equiv.
- Tr8, Tr11 = OC44
- Tr9 = NKT275, OC75
- Tr10, Tr12, Tr13, Tr14 = AC128 or NKT281

Notes: All resistors rated half-watt. TC, small capacitor, one moving and two fixed vanes, ex-TV tuner. Modulator transistors Tr13, Tr14 should be fitted with heat dissipating clips. Crystal can be FT-243 type for easy starting in third harmonic mode.

**TABLE OF COIL DATA**

- L1 — 16 turns 30g. enam., tapped 1½t. from cold end, close-wound on 0.2in. diam. former.
- L2 — Two turns 22g. p.v.c., wound over L1.
- L3 — Seven turns 26g. enam., on 0.2in. diam. former.
- L4 — Two turns 22g. p.v.c., loosely wound on L3, and adjustable.
- L5 — Seven turns, 26g. enam., centre-tapped, on 0.2in. diam. former.
- L6 — Two turns 22g. p.v.c., loosely wound over L5, and adjustable.
- L7 — Seven turns, 22g. enam., spaced to 0.6in., 0.25in. diam., tapped 3t. from cold end.
- L8 — Two turns p.v.c. link, wound over cold end L7.
- L9 — Seven turns 22g. enam., 0.25in. diam., no slug, tapped 3t. from cold end.
- L10 — Two turns p.v.c., tightly wound within cold end of L9.
- L11 — One turn, link wound over L12 at base end.
- L12 — 14 turns, 26g. enam., on 0.2in. diam. slugged former.
- L13 — Ferrite rod, half-inch long by 5/32in. diam., filled with 32g enam. wire. (An ex-TV width coil would be suitable.)

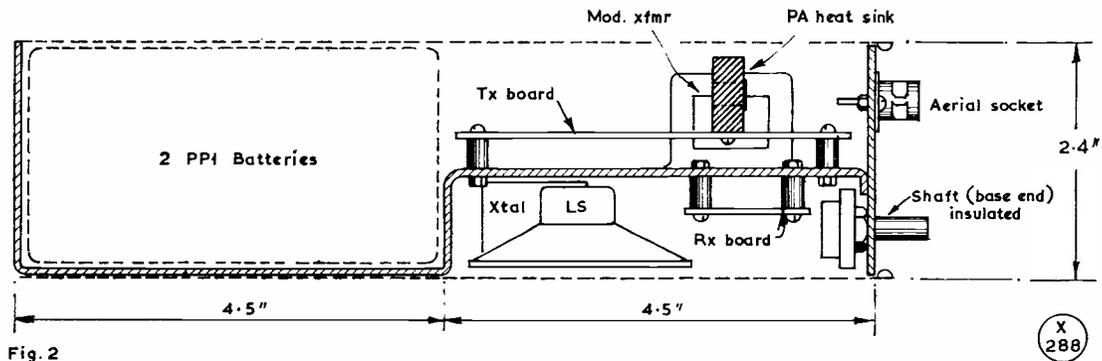


Fig. 2

Fig. 2 Constructional layout for the G3TDZ Transmitter/Receiver

audio stages, being amplified, and fed back by inadequate decoupling or blocking further stages.

The RF filter in this circuit after the choke is a  $\pi$ -network R10, C14, C15, and coupling is by a transistor driver or interstage transformer similar to the one in the modulator. A pre-set potentiometer sets the regeneration level, which is fairly critical. Too high a voltage setting, and hence current, causes a harsh hissing regeneration; the smooth rushing where greatest sensitivity is obtained is the correct adjustment.

The two-metre version cuts out sharply below a certain working voltage whilst the 4-metre detector dies away more gradually. A point somewhere between these settings produces the best results. (It should be noted that varying the voltage pulls the frequency, therefore this must be allowed for if a signal generator is used during setting up.)

A tightly-coupled one-turn link feeds the input from the aerial switch. The audio amplifier is a simple three-stage DC-coupled Class-A circuit using the minimum of components consistent with good results. A 2½ in. Jap 8-ohm speaker, *ex* portable radio, is coupled by a push-pull output transformer, T3, the centre-tap being neglected. No volume control is provided as the gain is set to optimum by adjustment of R13. Total receiver current is less than 10 mA.

### Construction

The somewhat curious mixture of germanium, silicon, p.n.p. and n.p.n. transistors is not for any technical reason but only that the junk box offered no alternative. All the devices used were originally obtained for use in Hi-Fi amplifiers.

No chassis details are given as that at G3TDZ was previously a Hi-Fi output heat sink. Individual constructors will have their own (and probably much better) ideas on layout. The front panel being only 2.4 in. x 2.6 in. gave little room for two slide switches, the receiver tuning, aerial socket and microphone jack. A strip of 14-gauge aluminium 2.5 in. wide was bent in the manner shown above. On the top of forward chassis are the Tx and modulator whilst underneath are the Rx, LS, and crystal unit. The two PPI batteries are housed at the rear of the electronic platform. A wrap-round cabinet holds all these in place.

Had a three-pole, two-way slide switch been available, the speaker could have been made to double as microphone. Printed boards are mounted on metal tubular spacers with 8 BA screws and nuts. The on/off switch actually switches between internal batteries and a socket mounted at the rear for connection of an external power pack. The send-receive switch changes over the HT line and aerial; no interaction has been experienced.

Two holes were drilled in the PA heat sink described earlier and these make a snug fit for the TO-5 cans. Various transistors have been tried in the Rx and those suggested are OC170, OC171, NKT675 and NKT676, which are relatively inexpensive.

### Setting Up

The receiver side has already been dealt with. It is only necessary to make the one adjustment when the aerial is inserted and then the slug can be set so that the 4-metre band falls around mid-mesh on the tuning capacitor. A signal generator left running on 70 mc can easily be picked up from the other side of the room. The rushing noise dies away when a station is tuned in.

When switching to "transmit" have a milliammeter inserted in the unmodulated HT line and withdraw the microphone. Bring the oscillator coil L1 into resonance, indicated by a rise in current as the tripler receives drive. Switch off and on once or twice to make sure the oscillator is self starting, adjusting the slug as required. The current will now be almost 6 mA. Then bring L3 into resonance, indicated by a further rise in current up to 15-20 mA. A GDO or absorption meter should be used to check each stage as it comes into line.

Next connect aerial or a quarter-wave wire or rod, and place a FSM or GDO a short distance away. It is suggested that during this last stage, the meter be transferred to the PA and driver supply lead. Here the current may reach 150 mA but should not be allowed to go beyond this point. Bring L7 the driver and C12 the PA into resonance as indicated by the FSM, peaking the previous coils L3, L5 and then L7 and C12 again for maximum indication. The links may be withdrawn from the coils of individual stages to adjust drive and if need be the values of R5, R7 and R8 can be altered as mentioned earlier.

If your FSM (field strength meter) has a phone jack,

the modulation can be tested under running conditions. The prototype modulator was checked on a dummy resistive load with an oscilloscope and on-the-air reports have confirmed the quality of output of the completed transmitter. When using dry batteries it is important to include C23, which can be some 250 to 1000  $\mu$ F, as without this the envelope shape is decidedly grim.

The trial run on load brought back G3PTJ/M,

G3WOB/M, G3WSZ who gave favourable reports. Using only the whip aerial, the Rx side performed very well indeed with excellent quality and absence of noise on the station tuned in.

The foregoing represents one amateur's attempt to get on four metres. Perhaps this suggested design will encourage others to reach for their soldering irons and make an attempt likewise.

## VARIATIONS ON THE HE-30 THEME

### MORE MODIFICATION NOTES

R. W. BUNNEY

THE HE30 is a general coverage receiver which has been sold in many thousands in this country, and indeed in other parts of the world. *Short Wave Magazine* for August 1964 and January 1965 contained excellent articles dealing with possible modifications to this series of receivers. The purpose here is to describe further treatment for one of these receivers—in this case the Trio equivalent of the HE30, Model 9R-59.

A number of changes were made to the front-end section, below. The 6BA6 pentode RF amp was replaced by an ECC84 double-triode in cascode. The existing valve base is changed to the B9A, using a screened type fitting base. Necessary circuit data are given in Fig. 1. The mixer, local oscillator and Q-multiplier stages were made somewhat more stable by feeding their HT from a stabilised HT line, the feed being taken from the junction of R7, R11—see Fig. 3. The alterations made to the RF stage will necessitate re-peaking of the RF circuits. As in the Trio operating manual no alignment detail is given, this has been set out in Table I p.546. Fig. 2

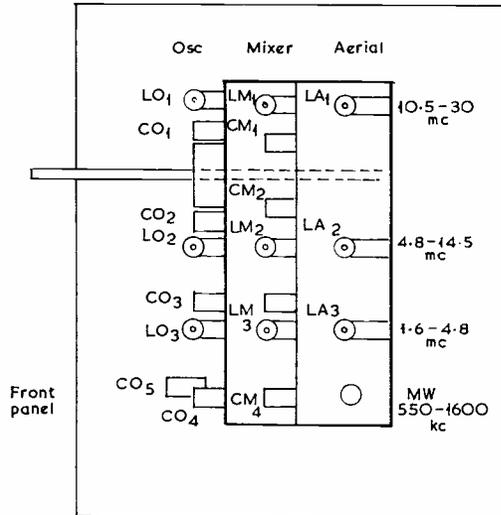


Fig. 2

R 493

Fig. 2. To show the coil and trimmer layout in the HE-30 receiver, viewed from underside.

will show the coil and trimmer layout, as viewed from underneath.

Biasing to the IF stages was altered slightly. Referring to the valve voltage working values, it appeared that the anodes could run at a higher HT than the present 110 volts. Accordingly, the anode supply to the two IF valves was modified, as indicated in Fig. 3. The cathode bias resistors did seem unnecessarily high, and changes were made to these. R13, in the first stage, is reduced from 330 to 110 ohms. The second stage has the S-meter zero adjustment potentiometer in the cathode circuit. This is shunted with a 330-ohm resistor, effectively reducing the value to around 195 ohms. The AF amplifier stage was left as it stood, but the audio output stage was changed to that of the circuit in the August 1964 issue, which worked very well. The power supply needed some attention, due to hum, and also for the addition of a stabilising circuit for HT to the front end. In order to obtain more HT for smoothing/dropping, two BY-100 silicon rectifiers were fitted, as in Fig. 3. These found their positions across the base of the valve rectifier, this valve having been removed, together with the heater connections from the transformer. Fig. 3 (over) details the modifications to this stage. The choke Ch. was from a TV receiver, and had a DC resistance of 44 ohms.

If modifications are carried out as mentioned here,

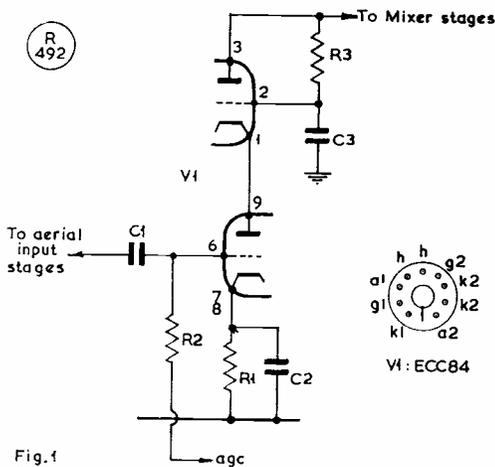


Fig. 1

Fig. 1. New RF stage for the HE-30. Values are C1, 250  $\mu$ F; C2, C3, .01  $\mu$ F; R1, 100 ohms,  $\frac{1}{2}$ w.; R2, 470K  $\frac{1}{2}$ w.; R3, 47K,  $\frac{1}{2}$ w.; and V1, ECC-84.

in conjunction with the articles already detailing such work, the owner of such a receiver should find himself with a very much improved piece of equipment.

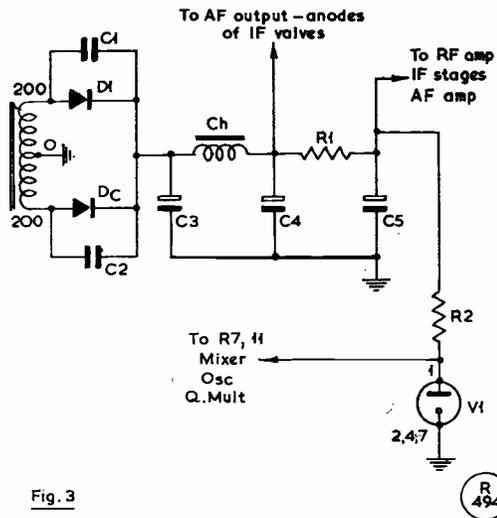


Fig. 3

Fig. 3. The PSU modification, for which values are: C1, C2, .0018  $\mu$ F, 1 kV; C3, C4, C5, 32  $\mu$ F, 450v.; R1, 1.2K, 10-watt; R2, 1.7K, 5-watt; D1, D2, BY-100; and V1, OB-2.

## IDEAS FOR AN EL-BUG

### HOME-BUILT UNIT FOR GOOD CW TRANSMISSION

H. ALLISON (G3XSE)

HAVING always had a yearning to be able to use a bug-key (because it all looked so simple) and having been privileged to watch G3SZF send word-perfect for hours on end with no apparent signs of fatigue when using a bug, the writer vowed to have one.

Thumbing through back copies of various publications, most of the el-bugs suggested were designed round valves, with their accompanying PSU problem, so obviously they could not be conveniently portable. One day, while wiring up a relay-controlled change-over system, an error in the circuit started one of the relays buzzing, and a stream of *dits* came out. Having located the fault, and with the el-bug requirement still in mind, the circuit of Fig. 1 on p.547 was evolved. A "prototype el-bug" was born.

The circuit is remarkably simple, and certain—almost any relay will work provided it has the requisite contacts. In the "dash" position, the relay is actuated by the supply, and on the "dot" side the relay energises, thus breaking its own supply, the capacitor introducing a time delay. Thus, by varying the condenser value

TABLE I

R.F. Alignment Table for the HE-30 Receiver

STAGE	BAND SELECT.	SIGNAL GEN.	MAIN TUNING	ADJUST	RE-MARKS
1	.55- 1.6 mc	0.6 mc	0.6 mc	CO-5 (Osc)	Peak
2	.55- 1.6 mc	1.4 mc	1.4 mc	CO-4 (Osc)	"
<i>Repeat steps 1 and 2 until correct reading Fit Bottom Cover</i>					
3	0.55- 1.6 mc	1.4 mc	1.4 mc	CM-4 (Mix)	Peak
4	1.6 - 4.8 mc	2.0 mc	2.0 mc	LO-3 (Osc)	"
5	1.6 - 4.8 mc	4.0 mc	4.0 mc	CO-3 (Osc)	"
<i>Repeat steps 4 and 5 until correct</i>					
6	1.6 - 4.8 mc	2.0 mc	2.0 mc	LM-3 (Mix)	Peak
7	1.6 - 4.8 mc	4.0 mc	4.0 mc	CM-3 (Mix)	"
<i>Repeat steps 6 and 7 until correct</i>					
8	1.6 - 4.8 mc	2.0 mc	2.0 mc	LA-3 (Ant)	Peak
9	4.8 - 14.5 mc	5.0 mc	5.0 mc	LO-2 (Osc)	"
10	4.8 - 14.5 mc	14.0 mc	14.0 mc	CO-2 (Osc)	"
<i>Repeat 9 and 10 until correct</i>					
11	4.8 - 14.5 mc	5.0 mc	5.0 mc	LM-2 (Mix)	Peak
12	4.8 - 14.5 mc	14.0 mc	14.0 mc	CM-2 (Mix)	"
<i>Repeat steps 11 and 12 until correct</i>					
13	4.8 - 14.5 mc	5.0 mc	5.0 mc	LA-2 (Ant)	Peak
14	10.5 - 30.0 mc	13.0 mc	13.0 mc	LO-1 (Osc)	"
15	10.5 - 30.0 mc	28.0 mc	28.0 mc	CO-1 (Osc)	"
<i>Repeat steps 14 and 15 until correct</i>					
16	10.5 - 30.0 mc	13.0 mc	13.0 mc	LM-1 (Mix)	Peak
17	10.5 - 30.0 mc	28.0 mc	28.0 mc	CM-1 (Mix)	"
<i>Repeat 16 and 17 until correct</i>					
18	10.5 - 30.0 mc	13.0 mc	13.0 mc	LA-1 (Ant)	Peak

N.B. Aerial Trimmer must be set at half full mesh for the above, and bandspread at 100°.

different speed effects can be obtained. However, as it is more convenient to have the speed continuously variable, a potentiometer-type resistor is put across the capacitor. A low-voltage, low-current relay should be used, preferably a miniature type.

Encouraged by this early success, the circuit of Fig. 2 was then worked out. This will give automatic dashes, putting it one up on the normal mechanical bug key. Closing S1 returns the circuit to manual dashes. It happened that the only relay available with two normally-closed (NC) contacts demanded an operating current of over 200 mA—not very economical in comparison with the relay used for Fig. 1, which only needed 20 mA at 9v., a miniature STC type with a coil resistance of 400 ohms, and having two change-over contacts. So to make use of this relay, the circuit shown at Fig. 3 emerged—see opposite.

#### Operation

Upon moving the paddle so that it makes contact with either emitter, current flows through R1 (18K) and VR1 (50K), via the closed relay contact NC, to both

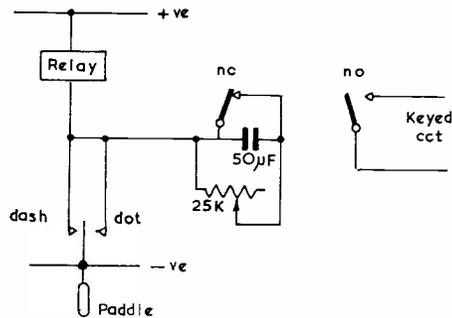


Fig. 1

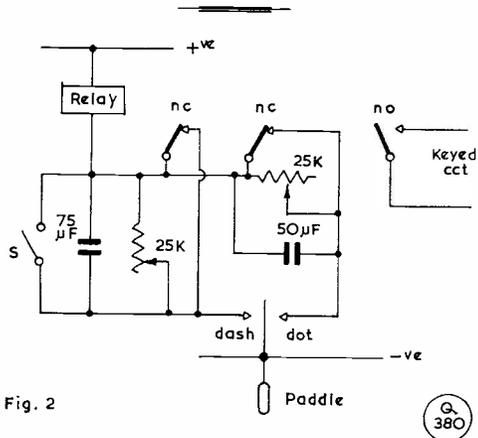


Fig. 2

bases. This causes the transistor to conduct, thus energising the relay itself. When the relay opens, the base current is lifted, but once again the relay is prevented from falling back by the capacitor which holds the relay while it charges. When charged, the relay falls back, and the cycle repeats itself, the time taken being determined by the setting of the 50K variable resistors. The 18K resistor (R1) prevents excessive base current, and again S1 permits manual dashes to be made.

Choice of transistor is unimportant, so long as they will take the energising current and voltage required for the relay, and are not too leaky. Most of the usual AF types would be suitable. Since the circuit draws no current when the paddle is at rest, an on/off switch is not necessary.

**Construction**

Constructors will have their own ideas about layout and so forth, but it is perhaps worth mentioning that the writer's final version was built into a plastic lunch-box type of container, bought in a local chain-store, and after the work was completed, was covered with *Fablon* to hide the scratches inflicted during fabrication. The box itself is 5½in. by 3in. by 2½in. (not including the paddle) and is fitted with rubber feet to prevent the bug crawling about the bench when in action!

For the paddle itself, plastic wood (obtainable from

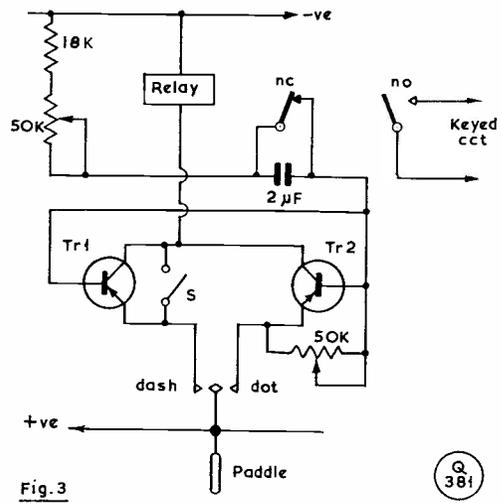


Fig. 3

Fig. 3. The El-Bug as finally evolved.

most D-I-Y stores, with instructions) was used. It should be modelled into shape quickly, building it up layer by layer. By squeezing the plastic wood (while still moist) from opposing sides of the paddle with thumb and first finger, a "tailor-made" paddle shape results, any remaining roughness being smoothed out with sandpaper when the plastic wood has dried glass hard.

For effective action, obviously it is necessary to spend some time on the adjustment of the two variable resistors, more particularly to get the dot-dash ratio right at the operator's own normal sending speed. Then there is the question of practice in use—which demands a little time spent, not splashing about on the air with a live Tx, but with an audio oscillator on closed-circuit, so that a clean and steady CW signal can be radiated.

**ENTRIES FOR "NEW QTH" PAGE**

When sending in a Change of Address for the regular "New QTH" page, it helps us a lot if you make it clear whether you are or are not a Direct Subscriber—this is not for "canvassing purposes" (as some people apparently think) but to save valuable office time, as if not a direct subscriber we have no need to check the subscriber card-index. Incidentally, we accept entries for "New QTH's" from all U.K. amateurs, even if not readers—because we keep the *Radio Amateur Call Book* people up-to-date with the U.K. section of their quarterly publication, known as the *Call Book, DX Listings*. The current (Autumn) edition of this is available for immediate delivery, from stock, price 42s. 6d. post free. It covers the world outside the U.S.A., and lists—by callsign, name and address—more than 140,000 licensed amateur stations, in all civilised countries.

To ensure a regular copy, become a Direct Subscriber—45s. post free (48s. first class posting), year of twelve issues, starting any month.

## *JMM in Witchcraft*

MARITIME MOBILE  
ON TWO METRES

A. R. BOND (G8BJP)

**P**ICTURE p.549 shows the 30ft. auxiliary ketch-rigged yacht *Witchcraft* owned by Architect Leslie Dale who, having taken delivery of the bare hull, spent four years in carrying out the rest of the construction and fitting-out himself, to produce a most comfortable four-berth boat with excellent sea-keeping qualities. The two-metre halo aerial can be seen above the mizzen cap and this is fed by 75-ohm coax from a TW "Communicator" which, being compact and rugged in construction, functions extremely well, often under conditions of violent movement and vibration.

The operating position is directly over the chart table, the transceiver being clamped to the deckhead with due allowance for ventilation; below this, is the control box, constructed of perspex, and containing an on/off switch for a 12-volt PSU, a Tx/Rx switch and a switch for selection of audio reception on speaker or phones.

Our owner is very amenable to having his yacht festooned with wires, cables and hardware, so a collapsible 5-element Yagi is also carried for more efficient directional use in harbour.

Working out of Ramsgate this year, various passages along the coast and to the Continent have been made with the navigator/operator G8BJP signing as G8BJP/MM, PA9GQ/M, or F0IC/MM as appropriate, and accompanied on occasion by G2DCG whose long operating experience is a great asset. Fixed skeds are arranged beforehand, usually with G2JF, G3BHW and G2DCG (when not aboard).

### Results /MM.

Interesting contacts have been made, many for the first time, including PA0LLV, PA0GL, PA0NAP, PA0PAL and PA0PN on several occasions during a visit to the Netherlands in June. It was PA0PN in Middelburg who, on hearing of our magneto trouble, met us on arrival and arranged for the defective component to be repaired—in a magneto factory conveniently situated nearby! He entertained us at his home, gave us an intimate knowledge of his town and of the Island of Walcheren and all this, together with his immense sense of humour and great pride in his country, made for us a most memorable visit. It is sincerely hoped that one day there will be an opportunity to return his very kind hospitality.

During a recent cruise to Calais, contacts were made with G3OGX, G3IMV, G8BJZ, PA0HSW, G3VPI, G3REH, F9NJ, F1CW (and later as F1CW/M) and F1XY. Whilst in harbour at Calais, personal visits were made by F1CW, F1XY and two youngsters complete with a neat and portable

2-metre receiver—all resident in the Calais area.

It is intended to carry out a series of tests shortly to investigate the propagation of the present halo under conditions of pitch and roll on all bearings, as no information seems to be readily available. As a point of interest, apart from the usual navigational equipment, a "Sea Fix" is also carried. This very portable instrument is completely transistorised and, incorporating a long ferrite rod, gives a very fine null. As it incorporates its own compass, accurate bearings are available at once, thus avoiding the errors resulting in the translation of relative bearings when working in a seaway under small-boat conditions. Radio beacon coverage on MF over the whole area is most adequate.

To the often asked question—"I say old man, what is that circular thing on top of the mizen," the usual (serious) reply is—"Actually, it's a Type 998." This is invariably received with an understanding nod and the questioner proceeding on his way wearing an intelligent expression. (It just wouldn't be worth the time and effort to go into explanations about two-metre /MM!)



At upper right on the opposite page, ketch "Witchcraft" with everything up and all a'blowing. The two-metre halo is at the top of the mizzen mast. The kite-like object is their radar reflector, an essential safety measure when in the shipping lanes, and if sailing after dark. "Witchcraft" is 30ft. overall, berths four, and is equipped for sailing beyond coastal waters. The radio amateur gear is installed at the navigator's position, and consists of a T.W. "Communicator" for two metres.



*Aux. Yacht "Witchcraft", G8BJP/MM*

#### OBTAINING THE /MM LICENCE

To those who may be contemplating taking their gear abroad, the following information will be of assistance in properly bringing this about:

(1) Write to the authority of the country concerned stating that you intend visiting that country on a certain date, that during the period of your stay you would like to operate an amateur transmitter and requesting that a form of application for a temporary reciprocal licence be sent to you.

(2) The application form will duly arrive and this should be carefully completed. You will be required to state the duration of your stay and to give a complete technical description of your Tx, together with the usual personal information. This must be returned accompanied by a photostat copy of your current *home* (not *Mobile*) G.P.O. Amateur Licence.

(3) No fee should be sent until this is asked for. As a guide, in the writer's case the Dutch Government made a charge of ten Guilders (approximately 24s.), but the French Government issued their licence free of charge. Both licences covered a period of June to September inclusive. A Belgian licence was not finally applied for so the fee here is not known

—other than this, the application requirements are the same. The Netherlands and Belgium do not issue /MM licences, but their /M licences allow the operation of waterborne stations on their canal systems. France will issue both /MM and /M licences.

(4) The addresses of the Authorities concerned are as follows:—

*France*—Le Ministère Des Postes et Télécommunications, 20, Avenue de Ségur, Paris-7.

*Belgium*—Le Directeur Général Des Radiocommunications, Régie Des Telegraphes et Des Telephones, 42, Rue Des Palais, Bruxelles-3.

*The Netherlands*—The Chief of the Radio Control Service, Kortenaerkade 12, The Hague.

(5) A period of 30 days' notice is required in all cases before issue of the licence, but it is advisable to allow for a longer period than this to ensure that all formalities are completed in good time prior to your departure date. You will also receive a copy of the Amateur Radio regulations, the requirements of which are similar to those of our own.

## Amateur Radio Exhibition

### SOME NOTES AND COMMENT

*London, October 2-5, 1968*

THIS exhibition—properly called the International Radio Engineering & Communications Exhibition—was on a somewhat disappointing scale this year. Fewer exhibitors making a true engineering, production or technical impact in the context of Amateur Radio, and a somewhat reduced attendance through the doors. The lecture-sessions—a new feature at this Exhibition—were, in general, rather poorly supported. Nevertheless, the Show, was, as ever, a worthy event in the calendar of the year's activities on the Amateur Radio front.

The exhibition was declared open, at noon on October 2, by Mr. W. J. Sharpe, CBE, who has the very important job of Director of Communications, Diplomatic Wireless Service, Foreign Office. In a felicitous speech, he drew attention to the importance of the amateur effort in the field of radio communication.

Our reviewer's comments follow:

One gained the impression this year that the Show, good though it was, lacked the comprehensiveness of previous years. For one thing, there were some prominent absentees. Of the amateur gear, perhaps the most interesting was the K.W. "Atlanta" transceiver, which was mentioned last year, but this time was on show in all its glory; 500 watts p.e.p. on five bands, an equivalent CW performance, and facilities for coupling in an outboard VFO accessory, styled in the American manner, quite different from the usual run of K.W. rigs in appearance, and obviously aimed in the main at the export market—but nonetheless well worth considering in the U.K. at the price. Among other items on the K.W. stand one noticed an eighty-metre vertical for use above a rotary beam or similar (although your reviewer was not able to get any literature on this one). A useful new item is the aerial switch-box, as mentioned on p.501 of our October issue. On the smaller K.W. stand a notice pointed out that the firm is prepared to offer advice and assistance by way of a kit to help in the avoidance of TVI (and its cure) to buyers of K.W. equipment. A sound scheme, this, which will help many people.

And talking of TVI, the Post Office exhibit was in two halves, one demonstrating the correct method of measuring the power when using SSB, and the other showing how TVI could be tackled with the aid of various filters and so on; this was certainly extremely popular, and the staff on the stand were kept busy, demonstrating and answering questions.

Daystrom, Ltd., of Heathkit fame, had a very comprehensive display, and of course the HW-100 transceiver raised a great deal of interest among the HF-band enthusiasts, as did the well-known single-band transceivers and the SB-line equipments.

An interesting new SWL type of Rx is the Heathkit SB-310, a general coverage receiver giving six short-

wave bands plus the U.S. Citizens' Band. This receiver will be reviewed in these pages in due course. Unquestionably, the Heathkit range is unsurpassed in its completeness.

Among the retailers, Peter Seymour and Radio Shack had a joint stand, with a range of new and used gear for sale, as well as various bits and pieces of ancillary equipment. A lot of attention was being paid to the Drake equipment here, and there was quite a bit of sighing over the R4B receiver—and its price, which was even more pronounced as far as this reviewer was concerned in that he had the pleasure of motoring it home (to someone else's shack!).

On the aerial front, there was not much new as far as the HF bands were concerned, save possibly the fact that Peter Seymour was actually seriously listing rotary beams for Forty—which at least indicates interesting possibilities on that band. J-Beams, of course, were showing mainly VHF aerials, but they do list a rather nice array for 10 metres.

J. B. Lowe, known throughout the U.K. amateur world as Bandit Bill, had to assist him well-known DX operator G3IAR. The stand carried an assortment of Japanese equipment, Sommerkamp and so on, and gave many their first glimpse of the latest additions in the latter range, as well as some of the other mouth-watering items Lowe's advertise.

### Interesting Demonstration

Technically, the star of the show was undoubtedly the Diplomatic Wireless Service stand; a touch of nostalgia here with their early station set-up of CW transmitter and HRO receiver right alongside the "Piccolo" equipment now in use—named after the characteristic sound it emits while working—and giving reliability unheard of a few years ago, using relatively low-power gear. An extremely high order of stability in the link is allied with the ability to maintain communication with a very low signal level.

One of the fundamental processes in the construction of electronic equipment is soldering; in fact the newer commercial techniques of wire-wrapping or welding are unlikely ever to be serious competitors of the time-honoured method. Thus it was a pleasure indeed to note the attention being applied to the basic tool of the job—the electric soldering iron. Both Weller and Adcola irons were on view, some of the former being extremely ingenious temperature-controlled devices; the cheaper Adcola irons are suitable for use in all normal amateur soldering applications.

For those concerned with the inculcation of the basic practices of construction the Lock stand had much to offer in their Locktronics system which enables a circuit to be built up on a board using components fitted in a holder marked with the appropriate symbol; as the circuit is put together so also is the diagram—and when all is done measurements can be carried out without disturbing the operation of the circuit.

Royal Signals were well represented, albeit in less arresting fashion than some of the displays they have put on in past years, but nonetheless of considerable interest. The Royal Air Force was conspicuous by almost total absence—the stand they did put on hardly did justice

to anybody, and let us make clear that it was *not* the fault of the R.A.F. Amateur Radio Society. Because of the pedantic interpretation of some obscure regulation, the R.A.F. authorities just will not co-operate.

Comment on the bar and refreshment-room facilities can only be that the present venue of the Exhibition is such as completely to overlook the fact that it is not so much a show as a social event, particularly on the Saturday, meaning that facilities which are barely adequate for the mid-week days become intolerable on the Saturday.

Summing it all up, one can say that, as ever, the Saturday is when all the amateur world comes together, to meet old friends and make new. But for those who came to this year's Amateur Radio Exhibition there was

rather less than in previous years to see and to handle.

\* \* \*

As usual, the Exhibition was organised and managed by Phil Thorogood, G4KD, who is in fact also its proprietor, in the sense that he accepts the financial liability—one way or the other. The cost of this Exhibition to any regular trade exhibitor paying the proper price for his participation is not inconsiderable, and it is rather disappointing that some of them at least were saying that this year's effort was scarcely justified.

So far as we of SHORT WAVE MAGAZINE are concerned, the results overall were not at all unsatisfactory, even if the volume of business done was down a bit on last year.

## RTTY STATION CONTROL SIMPLIFIED

### DESCRIBING A PRACTICAL SYSTEM

R. W. ADDIE, M.A., F.I.E.E. (G8LT)

(Chairman, British Radio Teleprinter Group)

**M**ANY beginners are deterred from launching into the world of RTTY by fears of complexity and because, unlike other modes, there has been less published information about it. Undoubtedly, however, RTTY has such attractions that there will be many who will want to try their hand and to them this article may be of some use if only to avoid some of the pitfalls into which the author from time to time has fallen head first! For the old hand it may be encouragement to tidy up that electrified bird's nest which so many RTTY stations become after a year or two of operation and numbers of bits of additional gear have been added.

RTTY is now about the only mode where it is not possible at anything like a reasonable price just to go out and buy the lot to get going. Many of the units have commercial origin but they have to be made to operate as a *system* and sooner or later an understanding of the mechanical as well as the electrical and electronic components will be required; the scope for ingenuity is unlimited.

In operation, RTTY is capable of giving communication under conditions only marginally better than needed for CW. It is very economical of frequency space and recent trends to even narrower shifts will make it one of the least exciting in this respect.

What is described here is strictly from experience and while it is not suggested it is the ideal arrangement, it has the merit of working well and may start others thinking of improvements. An

attempt has also been made to remove some of the mumbo-jumbo with which such subjects invariably become invested—remember when SSB was first coming in.

A few years' operation at G8LT had resulted in a "system" which depended as much on a swivel chair as anything else, to which had to be added long arms and a good state of physical fitness! Thus, one day patience became exhausted and a new system more ergonomically suitable was started.

To begin with, it seemed the right thing to do to sort out the physical layout of the equipment needing frequent attention in use, leaving the less often touched in the more remote positions.

#### General Considerations

Clearly the Printer must occupy the centre of the stage and the rest follows from there. Placing the Printer correctly will add much to subsequent comfort. A keyboard height of 22in. to 24in. has been found suitable, a bit lower than one might place a normal typewriter. Get it on to a good solid base or table as a teleprinter is a heavy thing and the motion of carriage return alone can soon loosen the legs of a good table. At this station it is placed so that daylight comes from the right and there is room to put one's legs under as well. If it backs on to a wall leave enough room to open the silence cover for paper changing and cleaning.

You need to have the receiver placed near the printer (on the right if you are right handed) then space must be found close by for the Terminal Unit, Auto Sender and Shift Monitor (if one is used).

Fig. 1 shows the layout finally evolved after much shifting around. Relay racks may seem "old hat" but they do conserve floor space and enable a lot of things to be kept under the hand; even Autosenders and a Reperforator can be accommodated on shelves bolted to the rack.

The Printer is shown at "B" to which a narrow switch panel has been added, bolted in front of the

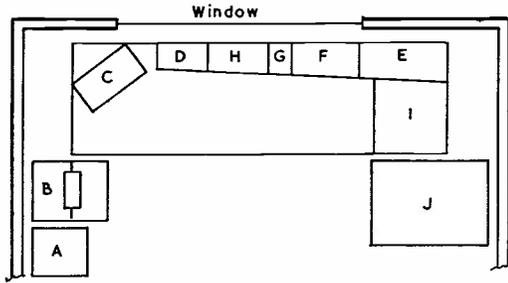


Fig. 1

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space bar and containing all the basic switches for the control of the station. The rack "A" holds:—

- a) 80 + 80v. loop PSU. Jack Field for Repeater, Autosenders, Transmitter key line, Loop current meter and T.D.M.S. if used.
- b) Creed 7TR Repeater.
- c) Creed 6S and Teletype TD-14 Autosenders for 50 and 45 speeds.
- d) DL6EQ Terminal Unit.
- e) AP-100386 Terminal Unit and PSU.
- f) CRM-1 Waveform Monitor.
- g) CRT Shift Monitor. (See SHORT WAVE MAGAZINE, April 1968).

- C is the main receiver,
- D second receiver, stand-by etc.,
- E is a Telegraph Distortion Measuring Set. This is not an essential bit of equipment but if you are lucky enough

to find one at the right price, it can be extremely useful,

- F Unit containing relays and PSU for the remaining part of the station control, i.e. the part not associated with the RTTY equipment itself. Clearly, this is an entirely individual matter.
- G PSU for the SSB transmitter,
- H is the SSB transmitter,
- I is the RTTY transmitter. This is driven from the VFO in rack J.
- J 6ft. rack containing:— (a) VFO, and (b) Frequency Shift Unit keyed by the Printer loop circuit by a relay built into the Shift Unit.

This then settles the geography of the main pieces of gear for which room has to be found. We may now turn attention to wiring the Control System itself. At this stage it is necessary to make the basic decision whether to use single or double-current working for the RTTY machinery. A few thoughts on this matter may therefore not be out of place.

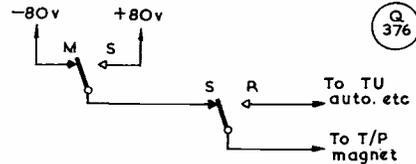


Fig. 3 Connections for using S/R switch

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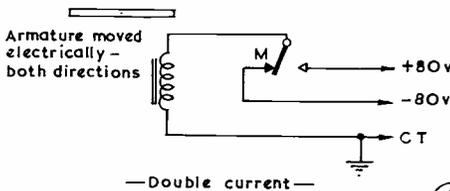
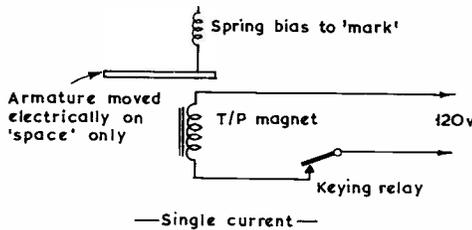


Fig. 2.

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**Operating Mode**

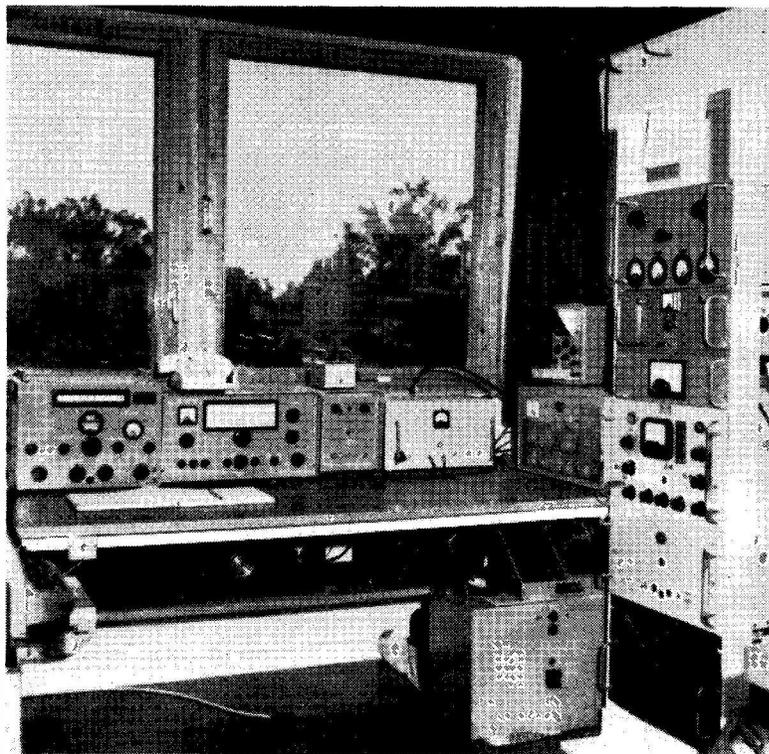
If you are using Teletype or other American gear in the main then single-current operation will be preferred, since it is for this mode that it will have been designed to work. British equipments such as Creed are normally in double-current, although little modification is needed to operate them in conjunction with single-current machines.

Fig. 2 shows the basic difference between the two modes. In the author's opinion, where Creed machines are used the double-current mode is the more elegant of the two, being more amenable to balance and the removal of certain distortion. At the same time, as will be shown, it adds no more complexity to the switches required, and only singlepole versions need be used for either mode. Only the centre contact of relays, keying contacts, etc., are switched, the 80v+ and 80v- being wired to the fixed contacts, rather like a heater supply to valves.

The Teleprinter, which is at the heart of things, is in reality two separate mechanisms—a receiving printer for copying incoming signals, and a keyboard unit for the generation of outgoing signals.

Invariably one requires a local copy of any outgoing signal and it is very seldom that a

Part of the station layout at G8LT Wappenham, Northants., with the T/P keyboard just visible on the left. A keen and regular operator on the RTTY frequencies, his station is organised for easy and efficient teleprinter operation. In this view, the TDMS unit is above the Heathkit DX-100U Tx (used for RTTY transmission) and in the rack at right are the VFO and frequency-shift units.



requirement to work duplex will turn up. For this reason it is convenient to interconnect the two so that it works more in the manner of a conventional typewriter.

Many Printers have a send/receive switch either fitted or allowed for, which can be used automatically to connect the keyboard to the receiving printer as soon as any key is pressed. The connections are shown in Fig. 3. The S/R switch remains at R except when a key is operated. If your printer is not so fitted then a manual changeover switch can be added to perform the same function but it adds yet another control to be operated during station changeover from "receive" to "send." The Contacts marked "M" and "S" are the keyboard contacts keying the signals to the local loop but are of course out of circuit when receiving incoming copy.

The overall control system is shown in Fig. 4. Switches S1 to S5 are all mounted beside the keyboard and connected to the PSU and Distribution panel *via* multi-way cables and connectors—this is important so as to release the printer for maintenance from time to time unencumbered by a lot of switchery! It is advisable to use separate cables and connectors for the signal circuits on the one hand and the power carrying cables feeding the printer motor, transmitter control, etc., on the other, as otherwise fault conditions can become spectacular! (See p.554).

It will be seen that S1 and S2 work in conjunction and both are overridden by the S/R switch in the printer. S1 selects whether the printer is connected to either the Terminal Unit or one of two Autosenders, selected in turn by S2. S1 is a useful control and is best mounted alongside S5, the transmitter control. If the autosenders are arranged to be on "mark" when at rest then S1 has only to be thrown to "auto" to hold the printer at rest when perhaps there is no signal incoming *via* the T.U. and the printer would then run "loose."

S3 switches in a reperforator on demand to produce perforated tape copy of either incoming or outgoing signals since it is permanently in the printer loop. S3 can be operated so as to energise the reperforator only on those parts of the incoming traffic of which a copy is needed and can be taken out of circuit without interrupting the rest of the copy. The 300-ohm resistor keeps the loop current constant in either condition.

Following the local loop circuit from the printer magnet as shown in Fig. 4 *via* the Reperforator, three break jacks have been provided in series to ground. These jacks accept Post Office plugs Type 310 which have tip, ring and sleeve connections and can be used for connecting the remote transmitter keying relay, a loop current meter and a T.D.M.S. if required. The resistor R is adjusted on test to give a current of -20 mA "mark" to

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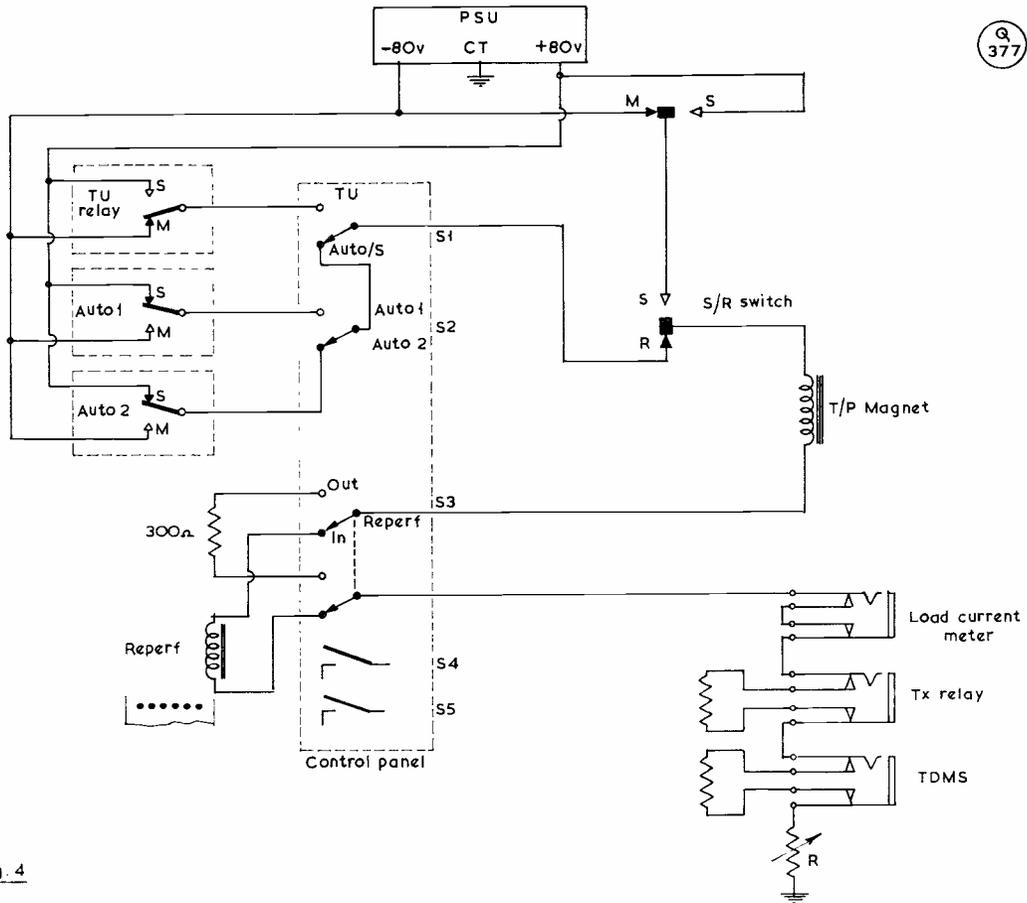


Fig. 4

Fig. 4. Main change-over switching, G8LT/RTTY.

+20 mA on "space."

There remain a few points which may be helpful to the beginner who has read thus far—all of which have been introduced from time to time at G8LT for good practical reasons.

As such a system evolves, notwithstanding its inherent simplicity, a surprising number of interconnecting cables come into being. The introduction of a Station Records Book is highly recommended. If each end of a cable is identified by number and then entered in the book much time can later be saved. Either proper coloured PVC sleeves with numbers or tie-on labels can be used. The book should record not only what units it joins but what function it performs, and should also record any colour coding of the cable wires and pin numbering of the terminal connectors. At G8LT this book has grown to include design data and circuits of all home-brew gear, as well as technical data of commercial equipment together

with local modifications. Even whole articles from SHORT WAVE MAGAZINE have found their way into its pages, so that it should be possible for any technician to find his way about in the minimum of time.

(to be concluded)

**PSE USE THE RIGHT QTH!**

What might be called the strictly business side of SHORT WAVE MAGAZINE affairs is conducted from our London Office at 55 Victoria Street, London, S.W.1 (ABBEY 5341/2)—"business" in this context meaning subscriptions and the subscribers' index, circulation control and orders, all matters connected with advertising, and book sales. The editorial side, which means the contents of the Magazine and everything relating thereto, is managed through our Editorial Office, the full and correct address of which is, simply, SHORT WAVE MAGAZINE, BUCKINGHAM—add England if writing from outside this country.



## SHORT WAVE LISTENER FEATURE

### MANY R.A.E. PASSES REPORTED — NOTES AND COMMENTS BY READERS — THOUGHTS ABOUT AERIALS — THE HPX LADDER

By *Justin Cooper*

A PLEASANT duty this time is to offer congratulations to all who have passed the R.A.E., and in particular to those who have also obtained the coveted full call sign by passing the Morse test, or by taking out a "B" licence. To all these, may the effort made be repaid a thousand-fold in the pleasure to come in the future.

And this is as good a point as any to remark that our hobby, like any other, derives its vitality from the constant influx of novices; so it behoves us all to put back into it something of what we have received, by way of a helping hand to the SWL's new to the game, and by our consideration for others in the enjoyment of either operating or SWL'ing. While it is accepted that it is not given to all of us to coach newcomers through the Tests, we can all gain some pleasure out of even the small word of encouragement that can lead newcomers to the local Technical College, or to making the extra effort to get up the Morse speed when the student is sweating it out to get over the "hump" which always occurs in the Code learning process—or even by trying to ensure that the general public does not gain an idea of licensed radio amateurs as irresponsible incompetents causing wanton interference. Your scribe can well remember how, when he first got his ticket, the old-timers in the local group seemed almost god-like in their mastery of the arts and crafts of operating or construction. And it came as something of a shock to him to realise, years later, that certain of the younger element of the (different) Club he belonged to regarded him in a similar light, to judge by a conversation accidentally overheard.

#### Reports and Comments

However, enough of the sermonising, and to our muttons. Our first letter is from *Mrs. M. F. Worbey (Dartford)*, who has been quietly climbing up the HPX Table for some years now; she sends in a final entry for the best reason of all, G3XVC being the new call. OM G3WOC, having had a year at the rig will now have to yield place on 80 and 160 metres for a while to let G3XVC get at the DX herself, the while settling down to the bench to build them an HF-band transmitter. Lucky pair!

*Charles Ekberg (Grimsby)* is an old-timer who came back to the game a couple of years ago, and in his letter this time he brings up the question of the standard required for a licence. He notices that it is generally those who have already got a call who feel the standard should be raised, and the aspirants who want it dropped; but adds a very good point when he says the old-timer

view that an ounce of practice is worth a pound of theory is valid; and he considers that part of the R.A.E. could well be a practical test. One could hardly disagree; J.C. knows many licensees just not able to build even a simple little gadget for use around the shack, even though they have passed the R.A.E. On the other hand this is often because of lack of confidence, which shows up in a reluctance to investigate new bands or techniques even though equipment be available commercially.

A change of address for the *Rev. D. P. Brewster (Oxford)* means an improvement in the aerial facilities and a small but significant lift in the Ladder, thanks to a temporary wire, soon to be replaced by a dipole for the favoured band, Twenty.

In a moment of aberration last month J.C. removed ZM6 from the HPX list of *D. J. Reynolds (Dudley)*, and in the piece did not say that the reason for so doing was that, while ZM6 is valid as a prefix—Western Samoa—he was not aware of any recent activity from there and no station in ZM6 is noted in the *Call Book*. This month a valid point raised by *D.J.R.* concerned the use of a number suffix on a call such as OE7UT/7. This is a method used in several countries, notably of course by the W's, to signify what in this country would be /P—portable—operation. W1BB/1 is therefore W1BB operating from a site away from home but in the W1 call area; were he in W6-land the call would become W1BB/6, and so on. Incidentally, M1B, which is doubted by several, included among them our correspondent, is perfectly legit.

#### Aerial Points

A regular overhaul of the aerial and earthing system is always a good thing; *R. Bagwell (Frimley)* found his downlead almost corroded through when he checked it, and of course was quite pleased when the noise level at his receiver dropped after repairs were completed.

Talking about aerials, *Allan, G3IDG*, writes in to comment on the remarks we made last time about long wires and their relation to the frequency in use. Allan feels the use of the term "longwire" as the word to describe an aerial end-fed and more than a half-wave at the operating frequency would discriminate it from the statement "a so-many foot long wire end fed" regardless of the frequency. Possibly a subtle difference, but certainly the cause of a lot of confusion.

Some people have room for aerials and some do not; and it is quite amazing how those with lots of room just cannot see the problem faced by lack of aerial space. Thus it is refreshing to hear from *R. Lewis (Trefflach, Nr. Oswestry)* who has been experimenting

with small-space aerials although he has all the room in the world for what the Yanks would call "an antenna farm," with trees in most of the convenient places.

Still in relation to aerials, *M. A. Beeny* (Newport, I.o.W.) uses his CR-70A mainly for BC SWL'ing, with only four feet of wire tacked on to the aerial terminal, but he is also interested in getting started at DX/TV reception, and wonders if there is a club which caters for this interest. The answer is a little difficult. On the purely technical side there is, of course the British Amateur Television Club, whose hon. secretary is G6OUO/T, 67 West Hill, Wembley Park, Middlesex, but for reception pure and simple there is no formal organisation, although most of the enthusiasts are in contact. Perhaps some of them would care to drop M.A.B. a line at Wynton, Ningwood, Nr. Newport, Isle of Wight.

Conditions on the HF bands have been looking up, in the view of *A. P. Scragg* (Stockport, Cheshire) who has found Fifteen and Twenty quite fair of late. However, Phil bewails the fact that he is shortly to go to Northern Ireland, and then on to a course at Stanmore, which will convert him into a weather forecaster, but will of course rather eat into his time for hobbies.

*T. W. Hyder* has made a couple of visits to the Plumridges over at Eastleigh and spent some pleasant hours with them comparing notes on the HRO receiver. Incidentally, J.C. was amused to read that reader T.W.H., after doing some work on his receiver, re-aligned it, and was checking by putting a finger on the first RF stage grid cap—just imagine his surprise when the first signal he tuned in was 3V8AA at R5S8 for a new prefix!

In *Singapore*, *J. M. Dunnett*, has at last got his AR88D back from the servicing bench, and has modified it along the lines of the article in SHORT WAVE MAGAZINE for October 1965, but has found his listening time somewhat reduced by the need to catch up on the paperwork side of the station. Jim passes on a possibly useful tip in identifying new prefixes if they do not appear in the Prefix list. He finds that usually a good idea of their whereabouts can be obtained by a look at the list of International three-letter fixed-station prefixes; amateur calls often follow this list pretty closely. It should be noted that the full Prefix Lists published in the October issue of the *Magazine*—the most complete and up-to-date available in print—also include the Numerical Prefixes, where the number precedes the letter in the prefix configuration—see p.514, October.

Fair comment from *M. Toms* (Ilford) when he says that some years ago there was a washing-machine on the market which did not produce an S9 noise-level all round it, but he wishes someone would do the same in the vacuum-cleaner business. Motion *definitely* seconded!

*I. Poole* (Leeds) installed an earth and found it made quite a difference on three bands and little or none on the other three, which is quite possible, depending on the impedance of the aerial on a particular band. However, there is no doubt at all that it also has its effect in reducing the noise-level, insofar as the coupling to earth in the absence of any actual earth connection is usually through stray capacitance to earth of the mains lead, largely, and of course the mains are usually pretty noisy and so couple quite a bit of extra noise into the receiver.

Quite an event, these days, to hear from a new entrant to the SWL game who has progressed from the BC receiver through various stages and is at the moment using an *O-V-1 receiver on Twenty*. Those one or two-valve receivers were pretty good in terms of sensitivity, provided the user applied skill in operating them, and the progression through practical experimentation with receivers in this kind of way undoubtedly gave the sort of practical background which results in outstanding signals from many of the pre-war call signs still on the air today. The owner of this receiver is *R. W. Jones* (Bristol), who has amassed a first entry to the Ladder at 258.

Another new correspondent with an entry to HPX is *J. Austin* (Birkenhead), who uses an RA-1 and PR-30 preselector. John has already passed the R.A.E. and is now hard at work on the Morse. Construction of a transmitter is programmed to start in the near future, but as with most of us, funds have to be accumulated first.

Last time, *W. Mantovani* (Doncaster) was bewailing the lack of a local SWL—the note duly turned one up and so now they are in contact! Since last time, W.M. has had a month's holiday back home in Italy, and taken up a spare-time job which has further eaten into his listening hours—so much so that he would like to know if anyone knows of a portable Rx which gives Top Band coverage so that at least he can listen to the locals when he is out. One suggestion is the Perdio "Town and Country" and, of course, the "Nova Pal," which gives both LF bands, and other facilities (such as D/F) as well.

\* \* \*

There are quite a few new entries to the HPX lists to note this time and most have something interesting to say in the covering letter. Once again giving precedence to the fair sex, *Mrs. G. E. Austin* (Bearsted), who has all the advantage of being married to G3REM and can therefore use his EA-12 receiver and aerial farm; this includes an inverted-Vee trap dipole with the



“... Just modifying the front-end here ...”

centre at 52ft., for 20, 40 and 80 metres, plus dipoles for the other two HF bands. She often "sits in" with G3REM, but sportingly has not included the prefixes heard during these sessions.

A Trio 9R59 and a 45ft. wire is the gear used by *J. Seddon (Manchester)*, who comes into the Table at 224; however, John has hopes of a trap dipole in the foreseeable future.

At 15 years old *K. Haywood*, who also hails from *Manchester*, has already been interested for 2½ years. Once again a Trio receiver is used, this time a JR-60, covering Top Band through to Two, plus a converter for 70 mc. On the aerial side there is 70ft. of wire run around the side of the house. Keith seems to be quite keen on Forty, a band where there is plenty on tap, always given that one has the patience to winkle it out.

Quite obviously a keen type is *L. Harwood (Wirral)* who uses a home-brew Rx based on the G3RKK design; in his logs—which, incidentally, he was spurred into entering by seeing the name of a friend already in the Table—L.H. has noted the main bands on which various parts of the world were heard, which gives him a useful insight into the way the aerial reacts on various bands, skip conditions, and so on.

A first entry from an old-timer comes in from *G. K. Upton (Nottingham)*, who would be considerably further up the Table were his prefixes logged before 1960 eligible; a pity, since after doing his time in Royal Signals, the next six or seven years were mainly devoted to listening to commercials, CW and SSB stuff. However, listening on the amateur bands has once again been taken up, and after all these years Keith has made up his mind to go the whole hog and take the R.A.E.

In twelve days *A. Vest (Durham)* managed to run up 217 prefixes, having once made the decision to start collecting them. About 100ft. of wire, which wanders around the garden, is fed into one of the Electroniques coil-packs, which in turn feed a CR-100.

A 19 set, with a RF-24B unit modified to act at a 20m. converter—the latter was bought, ready modified, for half-a-crown at a Harrow club Junk Sale—provides the essential parts of the set-up used by *Neill Taylor (North Wembley)*.

*N. Peacock (Tonbridge)* has got the job of QSL manager for the GB3TDS special-activity effort, in addition to SWL'ing with his AR-88LF—no doubt the local lads will be very pleased to have found a volunteer for the QSL chore!

Up in *Alnwick* lives *I. Cooper*, who has received the desired result from the R.A.E., and also with his A-level G.C.E. efforts. Progress now is on the Morse and learning to drive, which should set him really swinging—



SWL station of Alan Wood, 4 East View, Hushwaite, York, whose main Rx is an extensively modified, and modernised, R.1155A (one of the very good surplus designs). His version now has a pre-amp., converter, S-meter, tunable BFO and PSU incorporating o/p amplifier. Alan is getting very good DX results with this Rx, aerial being a half-size "5RV," which, he says, "really brings the stuff in."

although J.C. would admit that he reckons the *worst* thing he ever did in his life was learning to drive—even the pleasure of the odd foray with the /M gear does not cancel out the hours spent keeping the vehicle in road-worthy condition, when it is known the bands are open!

Harking back to those RF Units, *S. Haseldine (West Bridgford)* made himself a converter out of one; in his case it was the RF-26, now covering 21 mc in two bites and 28 mc in three, which gives a very fair band-spread when coupled into the RF input plug of the R.1475 main receiver. To help matters along there is a dipole for Ten added to the collection of aerials.

*D. Sapsworth (East Ham)* has now received his pass slip, and is going hard after Morse, so that for the moment at least the claims of the HPX Ladder must take a back seat.

And talking of HPX taking a back seat, we have *A. Hydes (Enfield)* telling us he has now not only passed R.A.E., but also the Morse—indeed, he is the proud owner of G3XSV, and frantically building to get that new call on to the bands. From us, best wishes and much pleasure from your callsign.

Where or what was 7Z3AB, asks *B. Geary (Leicester)* in his letter? Saudi Arabia, name of Henry, and QSL manager W4YDD, is the quick answer. Incidentally, it is these sort of queries that justify the existence of the *Call Book*, and particularly the regular subscription to one of the DX papers. Perhaps the best for the U.K. amateur and SWL is Geoff Watts' weekly *DX News-Sheet* which contains not only late news, but much of interest besides. Write to him at 62 Belmore Road, Thorpe, Norwich NOR-72T.

The "skill" of DX-hunting lies in being able to come on late at night or early in the morning, and no more, avows *A. Wood (Hushwaite, Yorks.)*. This is

#### SWL'S TO NOTE

Next appearance of this feature is in our January 1969 issue, due out on December 27. Closing date for all SWL correspondence is Friday, November 15, addressed "SWL," Short Wave Magazine, Buckingham. Remember also that we are always interested in good photographs of SWL stations (and operators), any that can be used in these columns being paid for on publication—but they must be clear, sharp prints.





Down in South Wales, a keen SWL is Raymond Bence, at 12 Ladysmith Road, Penylan, Cardiff, who runs two good receivers—a KW-201 (left) and an AR88D. With a Tx licence in prospect, he is already at 15 words per minute, and is aiming to achieve 20's before taking the Test. You can see his Morse key in this picture.

attention to its innards, so as to get the best possible operation out of it.

*John Fitzgerald (Gt. Missenden)* is quite definitely "taken" by the doings on 7 mc, and seems to have spent most of his listening time there. However, it does not look as though John will be able to do much more, as he will be started on his post-graduate course by the time this appears.

A familiar handwriting which has been missing for some time eventually appeared to have been from G3UYK, who used to be a follower of the Table before he was licensed. Peter wrote to comment—as indeed did several others—on the "HP6CC" mentioned last time out. From the several letters there seems to be little doubt now that it was indeed a misreading for 8P6CC, who was around at the material time, and was laying quite a fair signal into U.K.

From *T. Walsh (Elland)* comes a long and interesting letter, the gist of which is that he feels that if the chance were offered he would jump at any opportunity to study R.A.E. at a Technical College rather than by home study; Tony wonders how many actually do study for R.A.E. at home. To that, J.C. would comment that it is a constant source of amazement to him that of the folk who come to his R.A.E. class, so few are members of the local Club—and that when the exam. is being taken how many faces there are that have not been seen before either at class of Club—and how few of the R.A.E. takers actually get round to taking Morse, and actually

coming on the air. All very puzzling!

It's quite a long time since your scribe has heard from *Alloa*, where *J. Inglis* has unfortunately been "horizontally polarized" for a couple of weeks, and so found a little more time to write. Jock took the R.A.E. course last time out in Glasgow—and a glance at the map shows just how tough that must have been in the winter evenings. However, he is going to have another go if it is possible, and we wish him every success.

Over in the island of *Guernsey* the summer is, of course, to a great extent taken up with tourists and holidaymakers—thus *R. Allisett* had less time for listening, as he spent so much time on the beach. Lucky lad!

*S. Krol* hails from *Preston*. Stanley built himself a transistor superhet covering Eighty and has been hard at it ever since, amassing so far over the hundred prefixes on 80m. alone. Contests, such as the recent WAE affair, the *CQ WW*, and similar are most prolific of prefixes, 20 new ones for a few hours, listening being the haul during WAE.

*R. Bence (Cardiff)* queries 4Z4 as a prefix; this is the same as the 4X4 series and emanates of course from Israel.

*C. Morgan (Wallsend)* has been learning Morse, and bewails the fact that he has got up to sevens, reading, without ever touching a key, due to lack of the essential wherewithal to buy one; Charles can thank his lucky stars for that, as there is no doubt at all that if you want

to send *good* Morse, then one should not even think of touching a key until the test speed has been reached on reception, the reason being simply that anyone can make their keying hand move and form characters faster than can be read—but how can they check the quality of the sending accurately if they cannot read at the speed of the sending? Incidentally, some readers may have seen the piece on TV about “Sight and Sound” learning; at a local Technical College they managed to teach typewriting to a good speed in a fortnight, and as the head of the department is an SWL who has never got

around to passing the Morse Test, naturally thoughts are being turned to a method of similarly teaching Morse!

#### Deadline

There you have it for another time. Those who have not been mentioned in the text have had their Table claims taken in, as usual. For next time we have a deadline of **Friday, November 15**, addressed as always “SWL,” SHORT WAVE MAGAZINE, BUCKINGHAM. Till then, good hunting and good DX.



## THE OTHER MAN'S STATION

**G3XSA**

**M**ANY whose daily tasks involve them in telecommunications might think that Amateur Radio was very much a “busman’s holiday.” Not so with Dave Standley, G3XSA, 212 Westward Road, Chingford, London, E.4, who blossomed forth in August last.

As an SWL he was an ardent listener on the massive and weighty R.206 which still does sterling service. Wisely, Dave decided that the transmitter must be home-built for Top Band, on which a start usually poses few problems.

Despite the well-tried Clapp VFO, buffer and PA, plus a normal modulator set-up, chirp and FM at first defied all efforts to beat. The text-book was followed

to the letter, but all to no avail.

Then by chance the PA coil, effectively screened from the other inductances, was turned into the same plane as the coils in previous stages. All the early troubles disappeared—and we are all still scratching our heads!

Although the station is at a low a.s.l., co-operation of neighbours has enabled an aerial to be erected of a length approaching a quarter-wave on 160 metres. This, added to the burying of rods and multitudinous old chassis, has proved its worth. Apart from telephony, G3XSA is a keen CW man, and plenty of GDX is worked. The approaching winter should add some real DX to the G3XSA log.

# COMMUNICATION and DX NEWS

*E. P. Essery, G3KFE*

FOR those of us in the South-East, at least, the event of the month had nothing to do with DX, but rather with the problems of dealing with flood waters and weather conditions, which caused a lot of time to be spent clearing-up when the OM would far rather have been in the shack. The writer has not actually heard of an amateur having his gear drowned but certainly there were several near to that unhappy state of affairs.

Conditions during the month under review have shown the expected upswing, with lower noise levels on Top Band, right through to good openings on Ten.

## Contests and Awards

Advance notice of the REF Contest, which takes place over the weekends January 25-26 (CW) and February 22-23, 1969, for the Phone leg. Exchange the usual five or six-figure RST plus serial number. Score 3 for each contact, and a multiplier of one point for each F Department and DUF country. Multiply total QSO points by total multiplier, to obtain final score. Logs to REF, B.P. 42.01, Paris R.P., France.

One hopes the recent events in Czechoslovakia will not cause a drop in the activity for the OK Contest, which is due on November 10—all 24 hours of it. Mailing deadline is December 31, to the Central Radio Club, Box 69, Prague 1, Czechoslovakia.

On the certificate front, we are asked by ZE1JE to mention the Bulawayo 75th Anniversary Award. The object of the exercise is to work at least three Bulawayo stations during the period November 1—30, two-way CW or Phone, on any amateur band. Claims for the certificate, in the form of a certified log extract, and three IRC's, must be sent to: Matabeleland Branch, Radio Society of Rhodesia, P.O. Box 1372, Bulawayo, or to the RSR QSL Bureau, Box 2377,

Salisbury, and in either case post-marked not later than December 31.

## Pirates Again

One G, one DX one, and one big question mark. The latter is the origin of the dud QSL's your scribe has received of late! One such described him as the strongest SSB U.K. signal on the band in VK during a contest—and to add to the injury, at a time when G3KFE was composing a piece for the *Magazine*, sitting at his typewriter with a cold towel round his brow—*Grrr!*

TF2WKI reports, *via* G3WQA, that he is being pirated; the real one operates SSB on the HF bands, and CW on Forty—but *never* on 80m. So—watch out for the phoney one. Now for the other G, namely G3WNT, who has a pirate who signs "Graham" on 3.5 and 7 mc CW, and would appear, to judge by comment on incoming cards, to be operating from the Nottingham area. All cards are being returned to sender, with an explanation.

## Here and There

How pleasant, during the period under review, to meet so many correspondents in person at the Show—and indeed some of them took the trouble to drop their reports in personally, and amplify their written comments.

A problem attached to DX-chasing is getting the cards to the right place, particularly with the wide-spread adoption of the QSL manager procedure. One needs a "directory of QSL managers" to ensure maximum success, so as to point the cards in the right direction before firing, unless one is to take the long and, on occasion unsuccessful, easy way out by sending all cards *via* the bureaux. W6GSV has for some time produced such a directory, giving the QSL-manager (and his location) for no less than 2500 DX stations, together with an up-to-date list of all the QSL bureaux of the world. By a special arrangement,

W6GSV now sends them to Geoff Watts in bulk, which enables the latter to offer them at a reduced rate of 20s. for U.K. stations, and the same plus 3 IRCs for Europe. Contact Geoff Watts at 62 Belmore Road, Norwich NOR-72T, for further information.

From ZE1JC comes an interesting letter about this-and-that; he goes back to 1924 in the "wireless" game, but did not actually get on the air till 1955 with an amateur call, although the interest never flagged. ZE1JC mentions his first-ever contact with a real live amateur and his shack, back in about 1932, in the person of G2SB, and the growth of a local Club, followed by emigration, war service and, in the end a licence as ZE1JC. A look at the call-book says that the call G2SB is still in use—wonder if it is the same holder?

G3SWH/MM writes in to mention that he has now obtained the maritime mobile permit, and can be found on the bands; 29 kc up from the low end of each band on CW, and 300 or 320 kc up from the lower band edge on SSB. Operation is on 7, 14, 21 and 28 mc, with an SB-101 running barefooted to a V4-6 trap vertical which is mounted at a height of 70-90 feet above the water-

## ALL-BAND ZONES AND PREFIXES TABLE

Starting date: January 1, 1968

Station	Zones	Prefixes
G3IAR	40	330
G3LZQ	40	240
G3AAQ/M	26	239
G3PQF	26	193
G3VPS	24	203
G3SED	24	110
G3IDG	23	102
G3WJS	19	216
G3WPO	18	149

line, depending whether the ship is loaded or in ballast. G3SWH/MM is on the Tanker *Ottawa*, which is 851 feet long and draws 50 feet of water when laden with 93,000 tons of oil. Phil is always on the lookout for U.K. contacts, and QSL's via bureaux, but is willing, if a card is wanted specially, to accept one to the home QTH, marked "Please Forward."

On the Mobile scene, we hear from G2DHV that he has recently been operating as PA9DHV, ON8IR, and, of possibly greater interest, as F0KI, the latter being a new permit for portable and mobile working.

If anyone has heard strings of numbers emanating from G3XMG or GW3TMH on the high end of Top Band, and been puzzled, here is the answer—they were playing draughts over the air! G3XMG has emerged triumphant from the battle, and we hear that both are ready to accept challenges to see who can become champ. "Way back

in the distant past, when your scribe was an SWL, he seems to recall someone playing chess in this way, but with a DX station, perhaps in ZS if memory is correct.

#### Scanning the Bands— Eighty Metres

Here there is DX to be worked, but not to everyone's taste is the band, for some reason. One of those who does use it quite a bit is G3IGW, who still sticks mainly to CW in spite of having SSB available in the shack. Mike mentions contact with DL7NS/OH0, EA6AR, OY1R, UA9KUA in Zone 18, UH8AE, VE1ZZ at 2215z, W1, 2, 3, and 4, 9H1W, ZL1DV, ZL3GQ and ZL4IE. The ZL lads seem to be workable most mornings, but only a small group on each side appears to be interested. However, the VK skeds have so far drawn a blank.

G2DHV, mentioned earlier as operating under PA9DHV, ON8IR

and F0KI, used mainly 3.5 mc SSB. G3WJS (Halstead) has been on the band, and had contacts with VO1AW, who says he has the impression that conditions this year are not so good as last. In addition to VO1AW, W3ZBG and VE1ZZ were worked, but 7X0AH got away.

The activity from G2DC has been rather low this month, as the aerials have been down for checking and overhaul; the aerial for the LF bands is a Top Band half-wave, end fed, and is now coupled in through a Z-Match, which is used on all bands. Jack finds the latter has made quite an improvement on the LF bands with signals quite a bit up over the previous arrangement.

On now to G2HKU (Sheppey), who mentions SM5WI/OY (apparently a keen stamp collector) worked on SSB, while CW gave UQ2KCS for a new one on the band. LX1RG has been 59 plus on 3796 kc of late, calling DX only.

#### Forty Metres

Another grossly neglected band is this, where DX may be found at all sorts of odd times and called without having fear of a knock on the shack door. G2DC noticed that the new Z-Match arrangement has perked up the performance of his longwire on Forty no end; VK3APN was coming through at good strength most days.

From various people we have heard of the activity of VP2GBR, who can sometimes be found around 7032 kc CW between 2000 and 2359, clock; G3KGM says that the location is: D. G. Smith, VP2GBR, c/o Presentation College, St. Georges, Granada, West Indies.

Another of those darned ZA calls has turned up; G2HKU worked him on Forty SSB, giving name of Toti, call "ZA2AB," and QSL under cover to "Box 1031, Tirana." No doubt a pirate, but why the heck should he give a QSL address?

Forty was given a going-over by G3WJS from his new location at Halstead, and occasionally John found a gap big enough to insert his signal, whence he emerged with W1, 2, 3, 4, and 8, VE1, 2, and 3, VO1AW, UA9DL, UV9DN, UW9KDH, UQ2, UC2, OY6MO, EA6AR, GD(!), UA's, LX1CF and UF6DF. Among the gotaways

SIX-BAND DX TABLE  
(All-Time Post War)

Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc	1.8 mc
G2DC	335	169	307	327	163	108	20
G3IGW	204	123	152	167	122	86	42
W6AM	348	131	140	347	116	54	7
G3DO	334	189	231	327	90	83	9
G3PQF	143	82	40	80	83	49	11
G3IAR	217	106	156	191	82	65	11
G8DI	187	80	132	164	77	46	8
G3LZQ	246	119	153	194	71	38	8
G3VPS	93	0	28	70	50	28	14
G3VDL	137	47	48	100	45	22	0
G3NYQ	147	35	70	107	40	30	21
G3SED	85	2	18	55	38	32	37
G3WJS	57	0	8	46	35	36	12
G3NOF	311	158	207	295	34	39	2
G3IDG	121	72	88	55	27	19	10
G3EJA	106	93	23	50	22	12	2
G3MDW	115	46	66	82	20	15	7

Note: Placings this month are based on the "7 mc" Column.

## Reporting the HF Bands

were VK and ZL, ET3USA, ZD8J and JA4AK.

### DX Snippets

It is understood that Gus, W4BPD, is going on his travels again in the New Year. After the meeting of the NCDXC in Fresno, California over the period January 26-27, at which he is to be the guest speaker, he starts off on February 1, on another world-wide DX-pedition which may last up to *five years*, depending on funds. Operation is to be all bands from Top to Ten, both CW and SSB, and donations should go to W4ECI (*QTHR*) cheques being made out to the "World-wide Radio Propagation Study Association." W4ECI, incidentally, will be QSL manager to the expedition, the avowed aim of which is to make the sport of DX-chasing once again what it was a few years ago.

Several people have queried the prefix OM, heard on various bands; this one is a special, being used by OK's during the period October 1 to December 15 to celebrate fifty years of independence. Another unusual one is 9I4, used by the 9J2's during the period October 18—27 to celebrate the fourth anniversary of Zambia.

And if you have not yet worked 5X5, try the period 1200 to 1430 GMT on December 7, when the Uganda Technical College have an open day and the Amateur Radio gear will be operated by 5X5JK. As he says, with only a couple of 5X5's at all active, and the Exhibition station looking for the U.K., he should be pretty busy. The frequencies proposed are 28600 and 21300 kc, as conditions permit.

The lost logs of OX5AP covering the period June 1966 to July 1967 have now been recovered, so anyone wishing for a card should QSL with two IRC's and an s.a.e. to H. E. Leggans, Box 12, RCAS-BMEWS, APO New York 09023.

By the time this reaches print DU1FH hopes to be on 40m. with 2 kW of SSB and a two-element

Quad, with the intention of making a serious try at DXCC on the band—and talking of Quads, the one that VK3BM will be putting into use must be a corker. Admittedly not rotatable, this one is cut for *Eighty* and has three elements aimed in the direction of Europe. Look out for him on 3697 kc about 2000z—and, lest anyone think he should go higher in frequency, let it be remembered that their allocation on Eighty stops at 3700 kc.

### Top Band

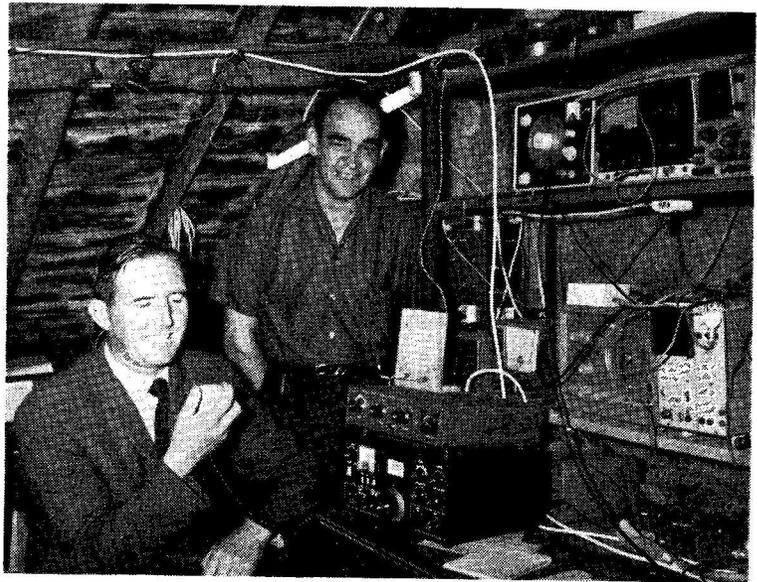
Naturally, the big news here is of forthcoming DX operations by W4BPD, as mentioned elsewhere. VK3BM hopes to be on 160m. this winter, around 1805 kc, and VP2BGR has got crystals for 1981 and 1822.5 kc, with every intention of using them. Anyone interested in making skeds should look out for him on or about 14185-14200 kc

after midnight GMT to organise things. G2YX, who mentions this latter frequency, also says that he is usually around and can help if the going is rough.

On the domestic front, G3XGD (Sheffield) has an intermittent fault in the receiver which rather upset things, but luckily it cleared itself up. Glyn has been working on the aerial system, and now has turned things around so that the radiating part is up in the air over the roof, with the voltage section going through the passage through the house, and back up to the bedroom; this rearrangement of a difficult run seems to have paid off with better signals down south, to G3XTB in Essex and G8SI.

G2HKU says he feels rather sad now that the DX-pedition season is over, and wants some hardy types to activate Bute and Ayrshire for him, or even Hereford, which he believes hides all its licensed amateurs away in some cupboard or other. However, consolation came with QSO's on SSB with GM3TSL/P, Kirkcudbright, and PAØPN, CW yielding GM3OXX and GM3PFQ in Fife.

[over



When G3ESP (seated) was in Luxembourg he was able to visit the shack-workshop of LX1SK, who has a great variety of communications and test equipment. This is only a corner—the radio room proper is downstairs, very comfortably laid out, of which the central feature is a Galaxy Transceiver. Another AT-station visited by G3ESP was LX1RB—who has to contend with birdsies, generated through all amateur bands, by the multi-kW Radio Luxembourg transmitter a few hundred yards away!

Off to university is G3WJS, who managed to have quite a good final fling on Top Band before departure. That aerial and earth John described last month has produced an SWL report from SM4, giving his AM RS55 when working G3SVK/A. G3WJS also had contacts with GM3MTQ/A for Ross and Cromarty; GW3SCG/P for Cardigan; GM3FGJ, GM3TNT, PA0PN, DL3FF, GD8TNS, OM1AB and OM1NQ.

A revised score is entered for the Table by GW3WWN (Neath), who lacks Cumberland, Caernarvon and Armagh to clear up the G, GI, and GW counties before making a start on the tough GM ones, which will involve doing things about the aerial and earthing system first. GW3WWN set himself a target when he started on sixty counties; this has now been achieved and so he has informed friend GW3VPL that the next target is to overtake *him* in the ladder—which means he has some work to do to reach GW3VPL's present score of 85/18, let alone overtake him—but it should be a good enough incentive.

Your scribe has not been very active on Top Band of late, thanks

to another blow-up in the /M gear which gives him most of his Top Band operating.

An entirely different reason for low activity is given by GI3WSS (Holywood, Co. Down) who is in the midst of decorating and also has the task of taking an R.A.E. class in Bangor. However, he did manage to connect with GW3WKL /P, in Merioneth and GM3MTQ/A for Ross and Cromarty to help the scoring along.

A first letter from G3XWI (Rothwell, Leeds) mentions that he has achieved his goal of a full licence at last, and that he has been helped by the *Magazine* and its contents. We gather he is around on the bands, as he mentions the OM prefixes as having been heard on them, so we will have to look out for him and see how he gets on. G3TSS (Corbridge-on-Tyne) is also rather puzzled about these OM's, having worked OM2DW—see further back.

Last month we mentioned that G2NJ (Peterborough) had gone up in the Phone Table nearly to the top; this time he has actually done it and now sits triumphantly on top of *both* CW and Phone Tables, with 98/98 in both modes. Congratulations!

#### Bits and Pieces

A station to look out for, from mid-December onwards, is VK3AMM, this being the call that has been issued to Arthur Edwards, G6XJ, for his stay in Australia. He is to air it from the home of Bob Cunningham, VK3ML, and will use mainly CW on the 14 and 21 mc bands, with a KW-2000A which he will be taking out with him, into VK3ML's aerials—a Tri-band beam at 45ft. is among those mentioned, so VK3AMM/G6XJ should be quite audible over here during his holiday.

We have mentioned before that G3AAQ/M came back to radio after a lapse of some years, spent listening to the disappearing sound of steam railways; and now we have another in G3XFD (Southampton) who not only works for British Rail, but spends his holidays on the Ravenglass and Eskdale. During such a busman's holiday, Bob identified a couple of PA0's, three W's, a VK, and two G's who were

passengers on the line and attracted to the sight of a /M whip on his car.

#### The HF Bands

Considering the conditions, the paucity of HF reports this month is quite amazing, compared with the Top Band clip; even Eighty and Forty seem to be getting almost as much in the way of reports! Perhaps everyone has been on working the staff.

Starting with the 28 mc activity, which has demonstrated a welcome—the more so since so long awaited—upswing, we find even G2HKU taking time out from building and listening to the “technical” types on Eighty, actually to have a contact on Ten; this was with 9J2XZ, who is G3SXZ.

A *nil* report for 28 mc comes from G3WJS, which is very simply explained. John has his Top Band half-wave end-fed, which valiantly loads up on all bands *except* Ten—and there the thing just refuses to acknowledge the existence of its partner! However, that is a problem that can be fairly simply solved.

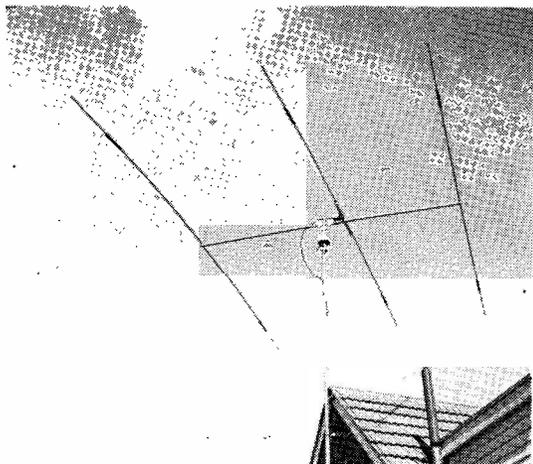
The possession of a beam is undoubtedly a great help, and makes it far more interesting if you know from which direction the stuff is coming in—which obviously is not always the same as the direction in which the country lies. One of those with a beam is G3NOF (Yeovil), who found he could aim it at the States and hear W's from noon till as late as 2200, as well as using it short-path to South-East Asia and VK during the mornings. SSB was the preferred mode, of course, and Don accounted for HP0A, KR6TAB, OD5BZ, UJ8KAJ, UV9PI, TG9CD, VP8KD, VP9DL, all W wall areas including W7HEF and K7NEQ (both in Arizona) ZD9BE, ZS's, 9J2RV, 9M2DQ, 9M2NF and 9K2CC.

A somewhat similar story is told by G2DC (Ringwood), who has a Quad; he has had it down during the month for its biennial overhaul, and was surprised to find very little sign of deterioration after a total of four years' exposure. When it went back up, Ten was found to be “giving” quite well, with VK, for instance, audible from as early as 0700z till as late as noon on some days.

#### TOP BAND LADDER

(G3V-- and G3W-- stations only)

Stations	Counties	Countries
G3VMW	97	21
G3VGR	94	16
G3VYF	92	19
G3WUD	88	14
G3WQQ	87	16
GW3VPL	85	18
G3VLX	85	10
G3WDW	83	9
G3WPO	82	18
G3VLT	80	16
GI3WSS	78	10
G3VMK	74	17
G3VMQ	73	16
GW3WWN	67	8
G3VES	63	16
G3VOK	61	15
G3WJS	55	10
G3VPS	49	14
G3VWC	40	8



Trevor Baines, 11 Dale Crescent, New Tupton, Chesterfield, Derbyshire, is ex-MP4TBO, Trucial Oman, Arabian Gulf. He has a Mosley TA-33 beam (left) and Heath SB equipment. He is expecting to come up with a U.K. call any time now.

The county-chasing fever still holds G3DO (Sutton Coldfield) in its grip—U.S. counties, that is, where there are thousands to chase—and so not much activity of any other sort was recorded. However, Doug has both the experience and the knack, so that if anything strays within reach it can be snapped up very easily—as was the case with ZD9BE, taken on 28 mc for a new country on the band. A look at the table shows G3DO goes up therefore to 189 on 28 mc.

#### Fifteen Metres

Naturally, the improved 28 mc condx have also made themselves felt on this band, to be delight of all concerned. G3VDL (Chalfont St. Giles) worked SVØWN for his best DX of the month—QSL via K3EUR.

G2HKU was rather cross at the escape of JH1GMJ, who appeared one morning with a cracking signal, but turned a deaf ear to the G2HKU calls. Consolation was forthcoming with VK2QL and UAØGF.

Quite a long screed on the events on 15m. comes in from G3NOF, who found the VK, ZL and JA signals appearing as early as 0700 over the long path, and by 0900 the same areas were coming over short-path. VK2FA was heard controlling a VK net on 21382 kc, into which some of the VK9 chaps were reporting. For variety, S.E.

Asia could be heard in the afternoons around 1500z. It all added up to SSB contacts with DU1AP, EP2KB, ET3USA, HKØBKW, JA's, KX6DR, MP4BGU, a piratical TA3AB (as was subsequently demonstrated when his alleged "QSL manager," W1MQT/TA, was heard over the air complaining that his name, the rig details, and QTH were all being filched by the pirate); an assortment of VK's, including the following in *New Guinea*: VK9BJ, VK9KS, VK9LR, VK9WD; also VS6DR, VU2OLK, W4EUB/KG6 (who was CN8GB), XW8AL, XW8CAL, ZD8Z, ZL's, YA5RG, 4JØAH, 4S7PB, 4Z4HF, 5N2AAF, 6W8AL, 9M2DQ and 9M2NF.

The aerial at G3WJS, although it loaded up on 15m., appeared to place a good strong signal into YO, LZ and UA3 but nowhere else! However, a little stray RF did percolate into other places, to raise 4Z4NHF, W's, W6MSM and KZ5NG. The band seemed quite good, as over a period of twelve days a total of 78 countries spread over 31 zones were heard.

#### A Good Point

As good a place, this, as any, to bring in a point made by G3IDG (Basingstoke) who has been chasing counties for years and still lacks five of the cards. Imagine, then, his feelings when a card came in confirming a contact made with a

station in Merioneth—but it gave the power as 26 watts and completely failed to specify which band the QSO was on! This sort of sloppy inattention to detail on the part of what was avowedly a DX-pedition to give Top Band contacts is rather shattering—but imagine what would happen were a major international DX-pedition to send out cards like this!

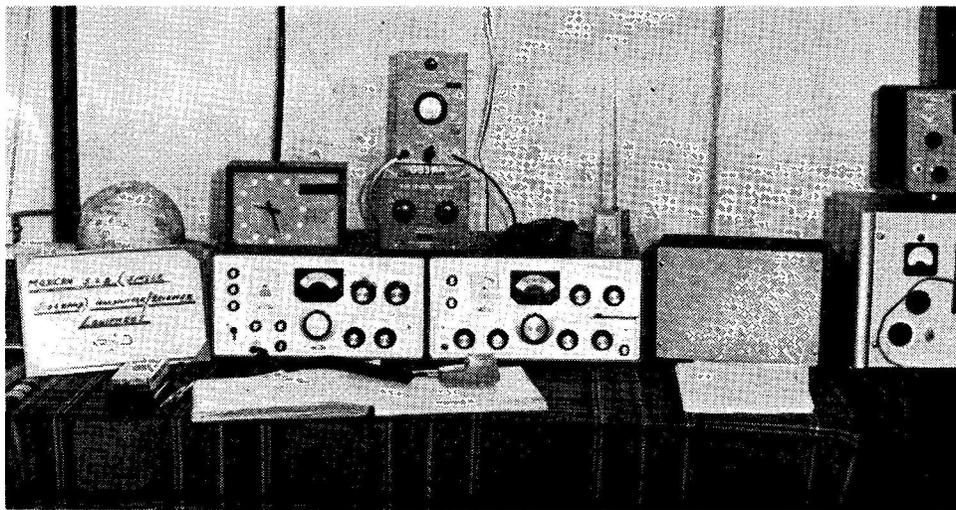
#### Table Entries

Here we must mention G3EJA (Reading) who missed last month's piece; he uses a single "W8JK" aerial cut for Twenty, which gives him a bias in favour of the HF Bands and is reflected in the score. We hope to see him in the Table for a long time, and steadily climbing.

#### Twenty Metres

G2DC again, and on 20m. we find he had UA1KFT (Novya Zembla) UAØYT (Tannu Tuva), J7IAH, PYØAPS on Fernando de Noronha; also VK2GD (using one of the suitcase transmitters and a piece of wire slung up a tree) and VP8JZ in Halley Bay, who is always looking for G contacts but seldom finding them; incidentally, the latter is all tee'd up ready to go with RTTY and would welcome skeds in this mode, especially with the U.K.

The Joystick as a transmitting aerial is highly thought of by G3KGM (Sidcup), who has one at



Recently, the Aberdeen Radio Society signed GB3AF on the occasion of the grand finale of the Aberdeen Festival, when more than 8,000 people were given an impressive demonstration of Amateur Radio. Considerable effort was put in by the local A.R.S. members to ensure the success of the event. They provided a large amount of radio amateur equipment, both home-built and commercial, to make a comprehensive display attractive to anyone with an interest in radio communication. The Aberdeen Club's own gear includes Sommerkamp equipment, used with a Hustler vertical aerial system.

32 feet, and another at ground level, coupled through eight feet of feeder.

### TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
<i>Phone and CW</i>		
G2NJ	98	98
GM3UVL	96	98
G3APA	95	96
G2HKU	90	94
G3WQQ	74	87
G3WPO	74	82
G8HX	68	83
G13WSS	66	78
G3VLX	55	85
G3IDG	55	61
G3WJS	40	78
G3XGD	25	54
<i>Phone only</i>		
G2NJ	98	98
G3VGB	77	90
G3WPO	51	67
G3PQF	42	73

(Failure to report for three months entails removal from this Table. Claims may be made at any time.)

The former results in 599 reports from Stateside, while the latter has netted a 579 from Asiatic Russia. Another point of interest is that stations raised on the higher aerial continue to read him when he switches to the other one.

Such activity as there has been at G3VPS (Wartling) has been all on Twenty; the slow-down in DX chasing has been caused by a serious attack of 70 mc mobilitis—a disease for which the only cure is to place the head under a cold tap till the feeling passes off! Nine new countries were booked in during the month, in the form of CX, ET, PY0APS, VU2, and VS6, all during the WAE affair, 3V8 and 9K2 on SSB, and FY7 plus ZD8 on CW in non-contest sessions. In addition to these, Peter rang the bell with QSO's with 9J2, PY and W's on the key, plus ZB2, VK's, 4X4, ZC4, MP4B, 4J0AH, UW9, YU, LU, PY, OD5 and JA. Perhaps the most pleasure was gained out of the contact G3VPS had with 9M2DQ, partly because 9M2DQ was originally a local man, and partly because of the RSS9 report he got.

G2HKU seems to have spent rather more time on Twenty than on other bands, and he worked

SV1BN, VK2ARZ, ZC4MO, as well as the normal sked contact with ZL2KP, ZL3JQ and ZL3SE. Sometimes the latter QSO has a breaker, and one morning recently G2HKU was delighted to have VP8JR drop in on the net. There are now five active stations in Port Stanley on SSB. CW was not completely neglected, as VK3GA appearing in the log testifies.

There seems to be something a little awry about the G3WJS logic, which runs something like this—have QSO with UA0CF, who comments that his 80m. locals are JA's; so why can't G3WJS work JA? Incidentally, UA0CF came across with the card for the contact (he is in Zone 19) with commendable promptitude. Other contacts included OH0AA, PY, LU, YV (but not a single CE even heard), W's except 5 and 7, F6ACZ/MM, ZD8Z, TA1AV, VE1, 2, and 3, VO1AW and UA9's.

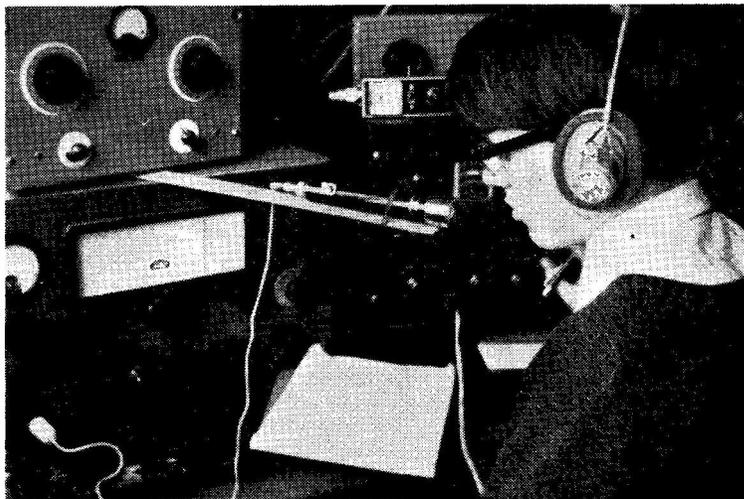
G3NOF considers that 20 metres has not been quite as good as in past months—which may be due in the main to the heavier traffic being carried on 21 and 28 mc. The morning W6 and W7 gleanings were not so numerous and the VK/ZL ones have also fallen off. The only

DX contacts Don made which he considers worth mentioning were with EA6AR, JA's, MP4BGU, VK9LR, VP5AB and VP8FL.

A final word comes in from G3VDL (Chalfont St. Giles) who uses 60 watts of CW to dipoles for each band, and wields them very effectively, if his Table position is anything to go by. This month he mentions SV0WN, UA1KAE/7 (name Leonid, who said he was in the South Shetlands) and PY0APS, QSL's for whom should be directed to PY7APS.

#### W9WNV—Last Word

The comment last month stirred up some reaction—indeed, some letters came in all charred round the edges!—but all of them indicating that they felt we had let W9WNV off too lightly. Perhaps we were misread—because we certainly did not intend to be too light there. Others took exception to our allegedly anti-ARRL bias—but this we refute. The point here is that the ARRL handling of the whole affair was such as to make the Amateur Radio movement throughout the world look a bit ridiculous. But let it all rest. Neither side has come out of it with any credit, and all one can hope for is that the same



Station of Allan Papworth, G3WUW, 25 Station Road, Over, Cambridge-shire, who came on the air in September last after four years as an SWL—during which he learnt a great deal. The gear shown here, home-built, covers all bands 10 to 160m., with an AR88 as main receiver. Aerials include a 10-15m. Quad, and inverted-Vee's for 10-20-80m. G3WUW is also interested in VHF (2m. AM/CW and 4m. mobile), and is building for SSB on two metres.

sort of situation does not arise again.

#### Deadline

And there you have it once again; deadline next month will be **Monday**,

**November 11**, first post, addressed to CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM, and containing the news, the views, and the comments and particularly the HF band news. Till then, 73 *es DX*.

#### “TWO-METRE TRANSISTOR TRANSCEIVER”

Arising from correspondence with reference to this article in our October issue, GW3UUS says that there must be a 330-ohm resistor, by-passed with  $.001 \mu\text{F}$ , in the emitter of Tr1, circuit p.476. The AF boards can be Eagle EG-2004. T1 has a 3-ohm primary, 100-ohm secondary, and can be a *Radiospares* miniature choke-output transformer. VC5 is  $10 \mu\mu\text{F}$  variable, and covers about 130-150 mc when L8 is of 3 turns 20g. tapped one turn from the cold end. L7 is 4t. 20-gauge on a  $\frac{3}{8}$ in. slugged former, tapped one turn up.

#### HIGH NOTE FROM ZS

Reference that item “Low Note from ZS,” on p.414 of the September issue of SHORT WAVE MAGAZINE, we were very glad to see—from the July *Radio ZS*, recently received—that production and publication is to be carried on from Cape Town, with ZS1P as the new editor-compiler. He is a well known South African amateur. It is interesting that when *Radio ZS* was first started, in May 1928 (under the title of *QTC*, meaning “I have radio-telegrams for you,” in the Q-code) the editor was one R. S. Perry, FO-A9Z, “FO” then being the prefix for the Union

of South Africa. At the present time, the South African Radio League (S.A.R.L.) has about 1500 members.

#### MAGAZINE CLUB CONTEST—NOVEMBER 9-10

Single-operator non-Club stations interested in fast CW working under real contest conditions are reminded that they can join in MCC—the Magazine Top Band Club Contest—to give Club stations the valuable single-point contacts that often in the past have decided the winner. MCC will be in full blast evenings November 9-10. Rules and relevant details pp.505-507, October issue, SHORT WAVE MAGAZINE.

#### BOOKS—AND CHRISTMAS

There is no question that—of all presents most appreciated by an SWL or licensed radio amateur—books come high on anybody's list. The selection offered in these pages covers a very wide range of practical interest. We hold adequate stocks of all titles. Prices quoted are post free. And we aim to despatch orders on the day received. Write, with remittance: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

# VHF BANDS

A. H. DORMER, G3DAH

THE VHF bands have been very quiet, with few exceptions, since the September Contest. The highlight of the period was certainly the appearance, on two metres on October 3, of EA2HX in San Sebastian, and on October 4 of the Spanish stations in Santander. Both EA1AB and EA1CP were particularly good signals on two metres that night and gave many stations as far North as Nottingham (G6CW) their first EA contact. The type of propagation was interesting in that it was a perfect example of a duct, since the French stations lying along the path were *not* audible, as would have been the case if normal tropospheric propagation, or even extended tropo., had been the mechanism involved. Certainly, on the 3rd, stations as far down as the Pyrénées were to be worked, as were the Paris stations, but this represented only slightly above-average tropo conditions, with irregular extended tropo at long intervals. EA2HX was a badly fading signal on that night also, as was F9NL from the same general area.

A word on the mechanism of ducting might be of interest here, for those who have not experienced this phenomenon before. Under normal conditions, there is a steady drop in the air temperature with an

increase in height above the surface of the earth, in fact 20°F for each mile of altitude. However, under favourable conditions, it happens that the air at a certain height is warmer than that at the surface, and a *temperature inversion* is then said to exist, which may have the property or refracting VHF signals back to the ground. But that is not the whole story. At the same time, there is likely to be a correlated change in the *water vapour density*. A *humidity duct* may then be formed and this will frequently produce not only stronger than normal signals in the 30 to 100 mile range, but will extend weak signal ranges considerably, and to a greater extent than a temperature inversion could alone. It seems likely that this is the mechanism which accounted for the reception of the EA stations. It is to be noted that high, steady barometric pressure *alone* is not an infallible pointer to good DX conditions.

Although one frequently hears this type of propagation referred to as a temperature inversion, it should be remembered that the main advantages may well accrue from the associated humidity effect, dependent as this is upon the temperature inversion. Ducts do, of course, occur at various heights above ground level and have accounted for some of the anomalous propagation experienced in aircraft radio communication, but these are not of great significance for the radio amateur. We are interested in the duct which has as its boundaries the surface of the earth and a layer of air some few hundreds of feet above it. Tests during last summer between G2JF and G3DAH showed that under some ducting conditions, stronger reception of weak, distant signals was possible at Herne Bay (100 feet a.s.l.) than at Ashford (625 feet a.s.l.), although the reverse is usually true. These were probably instances of low-level ducting. Many of us will be familiar with the frustrating experience of hearing stations to the north of the QTH working French stations which are inaudible to us. High-level ducting is probably the answer here. So it was with the EA's. G3GZJ (Redruth, Cornwall) probably as well placed as anyone in the country

for raising DX to the distant South, was heard working the EA's when they were completely inaudible in eastern England. Shortly afterwards, stations in Hampshire and Gloucester were in contact, and it was not until around 1900z that the Spaniards were getting into the north and east of the country at reasonable strength, except in certain isolated instances.

While on the subject of unusual two-metre propagation mechanisms, the Aurora of the afternoon of September 8 certainly gave some G stations a number of good DX contacts both on that band and on four metres, but the record must surely be held by SM3AKW, who made no less than 70 *Ar* contacts including OH, UA, UR, OZ and SM7. Of great interest also is the report from G3JHM that on October 1, ZB2BC and ZB2BO in Gibraltar heard ZE1AZC at around the RST-339 mark, and on October 3, were copying the Rhodesian 4-metre beacon at RST 559. On October 5, there was a QSO between ZS3BE and ZB2BC and ZB2BO, the former at RST-559 and the latter at RS 59+. Frequency was 50 mc (6 metres) and this is the first reported TE/F2 QSO during the present solar cycle.

G3JHM advises that the Gibraltar 4m. beacon is now off the air for routine maintenance and that a new transmitter is being constructed for the station. The Malta beacon was heard by G3JQI (Norwich) on August 28 at RST 589. Very fine! (It is unserviceable at present).

\* \* \*

This section of "VHF Bands" all started with a mention of the September Field Day and the intention was to elaborate somewhat on that event, but from listening round the bands recently, it seems that most of the leading scores are already known, and anyway, after this interval it is all rather old-hat. Mention should be made though, of the British party who put on FÖKP/P for the Contest. Their original intention had been to operate from HB, but at the last moment there was some difficulty with a licence, and they were obliged to transfer to a site at Grand Ballon, some 5000ft. up near Mulhouse. Conditions were such that

no U.K. stations were worked, the best DX being F8RZ in Bordeaux, at 625 km. The gear ran 50 watts of AM and CW to a ten-over-ten, and a total of 209 contacts was made for about 44K points. G3POI, a member of the party, was surprised to be invited to view the set-up of a French team who were sharing the site, and was shown the FØKP signal on a spectrum analyser. What are these /P events coming to? *Apropos* this matter, there is, at the moment of going to press, still no news of the outcome of the Swiss reciprocal licensing brouhaha. It seems that one of the stumbling blocks is the presence on Swiss soil of 4UIITU, and in spite of the efforts of G3NMR and his wife to reassure the Swiss authorities that the grant of licences to visiting amateurs does *not* mean operation on the scale of the Geneva set-up, they remain unconvinced. It is to be hoped that this situation will be cleared before too long so that we can get some more /P or /M operation going on Two by DX-expeditions from this country, a hope which must surely be shared by G3POI and company.

Finally, the Contest leaders: Overall winners were the Mid-Essex VHF-UHF Contest Group operated by G3VPK, G3ORL and G3LTF. Runners-up were the combined Worcester and Loughborough Groups (GW3TQD, GW3NUE and GW3XP), followed by the Reigate Amateur Transmitting Society operated by G3REI, G3PNA and G3RIN. Band winners were:—70 mc—Cumberland and Westmorland VHF Group; 144 mc—Worcester and Loughborough Group; 432 mc—Mid-Essex VHF/UHF Contest Group; 1296 mc AERE (Harwell); 2300 mc—G3MCS Contest Group. And finally the Purley and Addiscombe Group who made one contact on 10 Gc (gigacycles) to become the winners on that frequency. Their operator, G3WZR, was heard to remark that the band was rather quiet! Leading Groups in each country were:—England — Mid-Essex; Wales—Worcester/Loughborough; Scotland—Pennine VHF Expedition Group; and Northern Ireland—Mid-Ulster Group. Congratulations to all concerned.

The 70 cm. Contest over the weekend of October 5/6 was not characterised by any startling open-



G3WZR/P, of the Purley & District Amateur Radio Club, on Kenley Common in Surrey for the recent VHF field day, when they ran a complete set-up for three-centimetre transmission and reception ('way up in the gigacycle region). Those in view here are G3WDY (10m. walkie-talkie for local talk-back), G3VYI and G8ASV. And they did have a QSO—with G3GKF/M, in a van not far away.

ings. If anything, conditions may have been slightly above average on the Saturday, but had returned to average, or just below, by Sunday. There was a certain amount of Continental activity, largely from PAØ, although ON4HN was, as usual, much in evidence. Best EU signals in the south-east were PAØPCR/P in "BL20g" and PAØEZ in "CM66b." It was noted that there is an increasing amount of SSB coming from the Continent on 432 mc these days. Best G scores heard were from G3NNG and G3AKE, both with around the 70 contacts mark.

#### News Items

Following the note last month about activity on Two in Scotland, it was pleasing to get further information on operations in that area from both GM3WML and GM8AZS. Apparently, there are four stations at least who beam south every night, looking for G contacts. They are GM3JFG (Invergordan), GM3WML (Lossiemouth), GM8AGU of Findhorn near Forres, and GM8AZS (Elgin). Operation is between 2100 and 2300z on weekdays and longer during weekends. That they can get out well from up there is evidenced by the fact that during the

VHF Field Day activities, GM3WML and GM8AZS, operating from Kincardineshire, worked two French, two Dutch, one Welsh, 24 English and 32 Scottish stations, all on two-metre phone. 'WML and 'AZS also have 70 cm. gear and the former should be on Four by December. One of the snags about working the GM's from the deep south is that one never really knows whether they tune the top or the bottom of the band when working CW. Greater use of QLF/QHF would help here.

The GB2NI party were disappointed, and so were many G's, that conditions were so bad during their stay there. The only days when there was anything like a lift were the first and last days of operation. Their best DX was with G3GXP in Cornwall, and on 4m. the outstanding signal came from G3EKP in Sutton Coldfield. However, GB2NI managed to knock up about 150 stations all told on Two and Four, and the Wx at least was perfect.

Another amateur "First" was set up on the night of September 19 by a contact between an American and an Englishman on four metres. No, you are *not* dreaming! G5AGX of Hounslow, Middlesex, worked

G3TXB of London N.W.2 to accomplish this feat, using a simple dipole in the shack window, a JXK converter and a Drake R-4 receiver. Welcome, Karl.

\* \* \*

That the schism between those who work SSB on the VHF and those who do not still exists, is emphasised by G3WW (Cambridge) who again comments that AM stations do not reply to his calls in spite of the fact that he announces that he is tuning the entire band. It is a little difficult to understand this dichotomy since, surely, most stations are now able to receive Sideband, and just as surely it must be well known by now that the SSB devotees are not operating a closed shop. Perhaps if there were more transmissions in Zone areas and less on the international calling frequency matters would improve. There would certainly be a welcome reduction in the QRM on 145.41 mc! Of course, it is very easy to miss a

weak station on SSB when one is tuning for an AM signal without the BFO on, but then if one is looking for DX it pays to have it on anyway.

Those who still contend that symmetrical modulation is the only thing for an AM station, may care to bend an ear in the direction of Ilkeston in Derbyshire one evening and hear the signal emitted on two metres by G8BMC from there. He is using asymmetrical modulation with high-level speech clipping and off-set bias, to prevent carrier breaks due to choke ringing, and can be read down to S3 at Herne Bay without difficulty.

G3FJK (Romford, Essex) is now back on two metres after five years spent mainly on the HF bands. He would welcome contacts with old friends. He runs 25 watts to a QQV03-20A, a Drake 2B receiver and a 4/4 at 20 feet. G8ACI, (Fareham, Hants.) has a new transistor set-up with a VFO on 17-19 mc and a xtal mixer using a 63.5 mc

plate. The final stage is a QQV03-30A with 40 watts input and an 8-ele Yagi at 40ft.

G8BSH (Notts.), is coming up in the lists. He worked 100 stations between July 17, when he was first licensed, and September 17. Not bad in two months and all on Two. The two-metre link used between the Royal Horticultural Hall and Crawley, Sussex, during the recent Exhibition to carry HF-band traffic caused a bit of consternation to some listeners. Original plans to operate the link on 70 cm did not work out, and special approval was sought and obtained from the GPO to operate on 145.8 mc approximately. To hear a QSO going on with a WA5 on that frequency was quite novel. One G called the Exhibition station for about twenty minutes before he realised that they were calling "CQ Ten" and not "CQ Two."

Kentish amateurs staged another successful two-metre foxhunt during the month. The fox on this occasion was G3TDP assisted by G2-John Fox himself, and the winner of the event was G3EMU from whom details of future occasions of this nature may be obtained. G8BMI (Keighley, Yorks) now runs an HW-30 to an 8-ele element beam from a site 300 feet up and just South of the well-known Ilkley Moor, but has 1,000ft. hills to the south which make things a little difficult—would welcome skeds with London stations. SM7BAE and K6MYC made it by E-M-E on September 9 and 11th. The American end was running 600 watts on 23 cm to a 16ft. dish! G3VFC (Gillingham, Kent) has now exchanged pictures with G6NOX/T (Saffron Walden, Essex) and G6KKD/T (Ely, Cambs.) using an output of 500 mW peak-white to an 18-element beam. Quality was good both ways although the paths were a bit noisy at the time.

G8BBB (Littleport, Cambs.) is just about ready to go on 23 cm. He has three watts of RF into a 23-over-23 slot-fed beam. The converter is well on the way, and he hopes to be looking for QSO's within the week, operating from the 100ft. tower of G3REH (Spalding). A sidelight on G8BBB and G3REH and the latter's contact with EA2HX on two metres on October 3: 'REH

### THREE-BAND ANNUAL VHF TABLE

January to December, 1968

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Countries	Countries	Countries	Countries	Countries	Countries	
G3LAS	41	5	51	15	17	3	132
G8BBB	—	—	53	13	32	6	104
G3DAH	23	2	50	14	10	2	101
G3COJ	8	3	41	8	18	3	81
G8AUE	—	—	33	4	29	3	69
G2AXI	18	2	34	4	5	1	64
EI6AS	17	7	32	6	—	—	62
G8AAZ	—	—	34	6	16	1	57
G3FIJ	3	1	16	3	17	2	42
G3AHB	—	—	28	5	7	2	42
G8BNR	—	—	35	6	—	—	41
G8BJK	—	—	33	6	—	—	39
G8AUN	—	—	26	8	—	—	34
G3XFW	—	—	15	4	11	2	32
G8APJ	—	—	20	4	2	1	27
G8AYN	—	—	13	1	5	1	20
G8BLC	—	—	12	3	—	—	15

Scores are from January to December. Position overall is shown by the total in the last column. Scores for individual bands are shown in a separate Table. Entries may be made for a single band, any two or all three. Claims should be sent in as often as possible to enable the Tables to be kept up-to-date.

has a point-to-point link with G8BBB which opens on receipt of a signal from Littleport; following a phone alert that the EA was there, '8BBB called in on the link while the QSO was in progress with the Spanish station and got a RS-56 report *via* the link loudspeaker. Don't think that one will count, though!

A story of enthusiasm: G8APX has a young friend who has become very keen on Amateur Radio and in order to give him a better idea of what it was all about, Bill loaned him his 70 cm. /M Rx, together with a 6/6 beam. A sked was arranged but, alas, the 'APX signal from Bushey was not audible in Muswell Hill. Nothing daunted, and certain of eventual success, the lad cycled all the way to Bushey (a four-hour trip), complete with all the gear and the six-over-six swaying in the breeze. There he picked up the signal and started on the return journey, Bill transmitting at intervals to give him checks. Finally, some few hundred yards from home, the G8APX signal faded out. Reason—a large block of near-by flats right in the path. Young John is now out with a map and a compass looking for a place where the reflected signal will be audible since the direct one is not. While held up in a traffic jam on the way, a motorist wound down his window and asked if the aerial was for TV reception. Having learned it was not, he wanted to know what it was for. By then the traffic was moving again and there was no time for long explanations: "For combing my hair" was the distant reply as our intrepid adventurer pedalled painfully on his way. Ask a silly question . . . ? Good luck with the next R.A.E., John.

On August 14, G3VWK was called by an OK1 station operating on 70-17 mc and at 1655 GMT they exchanged reports of RS-57 both ways. The distant operator was using a low-power BC transmitter during the troubles in that country. The QSO has since been confirmed by card. OX3DJ, Thule in Northern Greenland, is interested in 70 mc and is going to apply for a licence. In the meanwhile, he is to test with TF3EA in Iceland.

A tip from G3AHB. The arrangement used sometimes on the HF

## THREE-BAND ANNUAL VHF TABLE

January to December, 1968

## SCORES BY BANDS

FOUR METRES			
Station	Counties	Countries	Total
G3LAS ... ..	41	5	46
G3DAH ... ..	23	2	25
EI6AS ... ..	17	7	24
G2AXI ... ..	18	2	20
G3COJ ... ..	8	3	11
G3FIJ ... ..	3	1	4
TWO METRES			
Station	Counties	Countries	Total
G3LAS ... ..	51	15	66
G8BBB ... ..	53	13	66
G3DAH ... ..	50	14	64
G3COJ ... ..	41	8	49
G8BNR ... ..	35	6	41
G8AAZ ... ..	34	6	40
G8BJK ... ..	33	6	39
G2AXI ... ..	34	4	38
EI6AS ... ..	32	6	38
G8AUE ... ..	33	4	37
G8AUN ... ..	26	8	34
G3AHB ... ..	28	5	33
G8APJ ... ..	20	4	24
G3FIJ ... ..	16	3	19
G3XFW ... ..	15	4	19
G8BJC ... ..	12	3	15
G8AYN ... ..	13	1	14
70 CENTIMETRES			
Station	Counties	Countries	Total
G8BBB ... ..	32	6	38
G8AUE ... ..	29	3	32
G3COJ ... ..	18	3	21
G3LAS ... ..	17	3	20
G3FIJ ... ..	17	2	19
G8AAZ ... ..	16	1	17
G3XFW ... ..	11	2	13
G3DAH ... ..	10	2	12
G3AHB ... ..	7	2	9
G8AYN ... ..	5	1	6
G8APJ ... ..	2	1	3

bands of two, one turn, coax Faraday links in the TV receiver downlead to clear TVI can be applied equally successfully on VHF. The links must have a diameter of at least 4 inches to avoid insertion loss and are taped together to give tight coupling. This arrangement gives the discontinuity required in the TV downlead braiding and takes care of both fundamental and harmonic QRM.

G8AUE (Shottle, Derby) comes up with a request for 23 cm results to be included in the Annual VHF Tables. It is perhaps a little late to do it this year, but if details are sent in to "VHF Bands" they will be published as a separate item. G8AUE claims at the moment 17 Counties and two Countries, G and GW. Who can beat this? Do readers want a Table for the 1296 mc band?

### Equipment

There seems to be a dearth these days of new equipment of interest to the VHF man and the stands at the Radio Communications Exhibition reflected this view. Withers were not showing at all, which was a pity after the success of the Phase Two Transverter. Although not limited to VHF applications, one useful gadget was being shown by Weller Electric; this was a desoldering accessory which can be fitted to an existing iron without modification and which requires no external supply of air. Very handy for those who do a lot of printed circuit work. The GPO were demonstrating apparatus for checking the performance of linear amplifiers and it was stated that they would be quite prepared to come along and set up the gear for those who were about to put a linear on the air. They would rather do this than deal with the complaints of radio/TV interference afterwards. This should be a very useful service. A comprehensive range of filters and traps for the suppression of TVI was also on display and convincing demonstrations of the comparative ease with which, given the correct apparatus, cures can be effected, attracted much attention.

Failing to find much new in the British market, a look was taken at what Continental manufacturers were doing, and two items of interest came to light. Many British

amateurs will have heard the very fine two-metre signal put out by F9FT of Rheims, but not all will know that in fact he uses sixty-four elements (4 x 16), of Yagi made by his own Company "Antennes Tonna." The sixteen-element beam has a gain of 18 dB over an isotropic radiator, a beam-width at the half power points of 30°, and achieves a VSWR of not more than 1.5; 1 over the whole of the two-metre band. An unusual form of construction for the boom, square section extruded dural, gives good rigidity with light weight.

The second item of interest concerns the Sencoset range of VHF equipment, made in Holland, about which one hears much talk. This is all-transistor gear and includes two-metre FET converters, 9 mc filter exciters for SSB, low power transmitters, and IF and AF amplifiers and modulators. Construction is all on printed-circuit boards and items are available cased or uncased depending upon whether it is wished to incorporate them in existing equipment or not.

Back on the home front, Mullards have produced a new m.o.s. tetrode, type BFS-28, which sounds like a good bet for converter front ends. It has a gain of 18 dB and a NF of 2.7 dB at 200 mc. The inherently linear characteristics greatly improve cross-modulation performance and help to reduce spurious responses. The dual-gate construction can, in addition, provide a useful linear mixing capability. Price, in quantity, is 11s. 2N3823 FET's are now also available from Mullards at around the 16s. mark for quantities. With a NF of 2.5 dB at 100 mc, high input impedance and low feedback capacity, this is another useful tool for the home constructor.

### VHFCC

It is a pleasure to record that the first of the VHFCC certificates have now been issued. These go to G8AAZ (now GC8AAZ), G3JFO and G3AGN.

GC8AAZ achieves the distinction of making it on both 144 and 432 mc, which is very nice going for a newcomer to the lower band. Details of his equipment for 70 cm were given in the June issue of *SHORT WAVE MAGAZINE*. Information in detail on the two-metre equipment is not

to hand, but it is known that a TW Communicator and a 4-*ele* beam were used on that band. All his 70 centimetre contacts were with G8/3 or Continentals with it, it is noted, the one exception of G3DAH—a delicate compliment. G3JFO of York used a QQV03-10 in the final of his two-metre transmitter with 12 watts input. The beam is a 6/6 Yagi at a mean height of 28 feet. The QTH is 70ft. a.s.l. The receiving set-up consists of a 6CW4 converter tuning 2-4 mc into an Eddystone 750 receiver. Best DX with this gear was DLØZW in "GJ76b" at around the 1100 km mark, during the March Contest.

In Felixstowe, Suffolk, G3AGN first became interested in VHF in 1959 and has been on the two-metre band ever since although activity in the last few years has been somewhat curtailed. However, some 360 stations have been worked in 15 Counties and 51 Counties. The best DX is YU and HG during the famous opening some years ago. It has taken nearly two years to collect the 100 cards for VHFCC. The rig is mostly home-brew, and consists of a much modified SCR-522 exciting a QQV06-40A PA running about 50 watts input, and modulated by a pair of 807's in Class-B, zero bias. The aerial, also home-built, is a six-over-six slot at 25 ft. rotated by a prop-pitch motor with selsyns driving the indicator. On the receiving side, a Nuvistor/ECC88 converter feeds into an AR88 tuning 28—30mc. This may sound a fairly modest set-up, but with all the gubbins in the way of power supplies, SWR bridges, etc. that go with it, a rack has been pressed into service to make a neat installation and this may be seen, together with Jim himself, in a picture on p.166 of *SHORT WAVE MAGAZINE* for May, 1968.

### Three Band Annual VHF Tables

Two Tables are published this month to show the overall position and the scores by bands. Readers are reminded that these Tables close at the end of the year, and that claims should not be delayed too long.

Contests coming up are the Seventh 144 mc (SSB) event on

November 11, times 1900 to 2100z, and the Fourth 70 mc (CW) affair on December 1, times 0800 to 1400 GMT.

**Late Flash:** Conditions for the further series of G3LTF/WB6IOM and WB2NFA E-M-E tests over the period October 11-13 were far from good. The American signals on 1296 mc were heard by G3LTF at 5-8 dB over noise during 0550-

0630z on the Saturday, and at 10 dB above noise on the Sunday, 0625-0812z. It is possible that further tests will take place over the week-end November 9-10.

It is noteworthy that no less than 11 stations participating in the October tests were equipped with both receive and transmit facilities on 1296 mc, while another ten had Rx only—such is the up-

surge of practical interest in E-M-E working.

### Deadline

Deadline for the December issue is **Saturday, November 9**, so please let us have your reports, claims and comments by that date. Address is "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM. Cheers for now and 73 de G3DAH.

## REPORT ON THE "JOYSTICK"

DOES IT WORK — CAN IT ?

G. C. MOORE (ZC4GM/G3MCY)

**I**N view of the controversy which appears to rage—with voices raised in anger on both sides—over the excellence, or otherwise, of the "Joystick" Variable Frequency Antenna, perhaps a practical report on its performance, for one user at least, might be of interest.

The writer acquired one of these devices some eighteen months ago. It consists of about eight feet of alloy tube (collapsible into three sections) with an encapsulated loading coil at one-third of the total length from one end. The unit is well finished in pale grey cellulose, and has protective rubber ferrules at each end.

The antenna is accompanied by a sheet of clear and precise instructions which (from what one hears and reads) appear to be totally disregarded by a large number of users (including, initially, the writer!) The makers emphasise that an SWR meter should *not* be used, and that the aerial should be loaded using *maximum indicated field strength* as the criterion. A minimum of eight feet of single wire feeder is recommended, and it is stressed that the "Joystick" should not be located in the near vicinity of other aerials.

Thus instructed, the writer positioned his "Joystick" on a window ledge immediately adjacent to a multiband dipole, and proceeded to load it using a Z-Match and a Heathkit SWR meter. The piteous lamentations which followed the absence of dramatic results on *any* band would have wrung the stoniest heart (sympathetic helpers has to assist the crestfallen experimenter to bed). His dry sobs continued far into the night.

Such were the psychological scars left by this traumatic experience that for several months the "Joystick" was not even mentioned again in polite conversation. However, shortly after arrival in Cyprus, it was decided to review the case of the V.F.A.

This time, the aerial was mounted horizontally below the ceiling of the shack, about 10 feet above ground level, with 12 feet of single-wire feeder. More important, *it was decided to follow the maker's instructions carefully*. A Mk. 4 "Joymatch" tuner (which has a built-in RF meter) was used to load the antenna. The first CQ call, on 14 mc, produced a report of R5-S8

from a DL5. Thereafter QSO's were plentiful on all bands.

All continents have been worked on SSB using the indoor "Joystick," reports varying between S2 and S9+, the best reports from far afield being R5-S8/9 from Brazil, and R5-S7 from Japan. OZ and PAØ have been worked on 80-metre SSB, and one SWL reports having heard signals on *Top Band*, although no QSO has resulted.

It must be admitted that the reports received with the "Joystick" are inferior to those from the TA-33 beam; but no doubt the TA-33 would look sick beside a Sterba Curtain! However, when one considers the size of the "Joystick"; its portability; its adaptability; and the fact that in the present case it was used *indoors* at a height of 10 feet, with the rocky Cyprus subsoil as an "earth," then the results obtained speak for themselves.

In short the "Joystick" does work when it is used as recommended.

### JAMBOREE-ON-THE-AIR

Those AT-station operators who took an active part in the recent Scout event are reminded that we would like to have reports—mentioning the Scout group entertained, bands used, results achieved, DX worked and, if possible, including one or two good pictures—for incorporation in a general discussion on the Jamboree as a QSO party, to appear in an early issue.



"... says we're drifting ..."

# THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for December Issue: November 8)

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

FIRST point this month is to remind you about MCC, November 9-10. Rules in full and identification codes appeared on pp.505-507 of the October issue of SHORT WAVE MAGAZINE. There is a supplementary list of identifications—covering Clubs not included in the October columns—on p.576 of this issue. While any further requests for identifications are being accepted, it will not, of course, now be possible to publish them before the Contest. Any such additional identifications (you may hear or work during the event) will be allotted in the same sequences as those already listed.

MCC has become *the* Club event of the year—it is fun, fast and furious, and it takes a team of good operators to put a station into the first six or ten in the overall placing. It is also a Contest from which much can be gained, as it gives an opportunity to join in competitive CW working under real conditions. Indeed, many Clubs look upon MCC as a training ground for their contest operators of the future. On the other hand, there are plenty of Clubs who enter just for the fun of it—and perhaps with the intention of doing a bit better than their neighbouring groups in the same zone.

For the information of all concerned, the Contest will be closely invigilated throughout both periods. We shall be looking, in particular, for out-of-time working and consistently poor-quality notes, and the invigilators have authority to cut points or recommend disqualification accordingly. So take an accurate GMT time check, and monitor the Tx.

Finally, on the subject of MCC: Please do not fail to let us have your entry, logged strictly as Rule 7, p.505, October, by or before the final date for entries, which is **Friday, November 22**. We have had to disqualify late entries before—but we do not want to have to do so again.

And to all entrants—Have a Good Time!

\* \* \*

For those groups who have not facilities for running an R.A.E. class at the local Technical College for one reason or another, an interesting idea is being tried by the Otley crowd. They have, at the moment, nine amateurs "on the strength" and this year they are dividing the work of the R.A.E. class between the nine chaps. Thus each Tuesday, one of the members will talk on the part of the syllabus he has chosen, and with the load so spread, no-one will have to do more than about three of the talks. This means that even though some of the nine are no doubt "not technical" they still will have adequate time to learn up on those parts

of the syllabus with which they have to deal. It sounds a very good scheme, and we wish them the best of luck with it; and at the same time commend the idea to other groups who may not otherwise be able to organise a class.

## The National Groups

The first and third Tuesday in each month sees the **Civil Service** chaps foregathering in the Civil Service Sports Association Hq., Monck Street, Westminster, London, S.W.1, where they have very good facilities with a lecture room and shack. They have a hospitality scheme whereby licensed amateurs and SWL's are accommodated free of charge at the homes of members in London and the suburbs, on a reciprocal basis. As for lectures, in the next few weeks these are to be on Soldering, Model Control and Computers, all by outside lecturers; members are also doing their share, with talks on the Early Days of Radio, Transistor Circuits—including that of the Tx with which W6TYP set up a record of a million miles per watt of power, and Joystick aeriels. Full details from the hon. sec., at the address in the Panel, p.577.

**BATC**, which caters for the Amateur Television interest, have recently had their 1968 Convention; they also issue a magazine, called *CQ-TV*, which is of great technical interest and also gives news of members doings.

**A.R.M.S.** is for the /M fraternity. This is the crowd who have so much to do with organising Mobile Rallies, and generally looking after the interests of the Mobileers. Again there is a magazine, this one being *Mobile News*, which is circulated to members each month.

Those who were at the Show will no doubt have seen the **WAMRAC** stand; this group comprises mainly Methodists, but also includes many who are of other denominations, who share in the objectives of the group, which are, broadly, to advance Christianity through the fellowship of Amateur Radio.

Every couple of months, the **Ex-G Club** issue their *Bulletin*, which caters in the main for those who were born British but are now living abroad. In addition to the bulletin, they have a net every Sunday at 1900 GMT on 14346 kc.

**RAIBC** this time have the sad task of recording the loss of their president, G2BSA, Douglas Clague, who died on September 9. G2AOX, Bill Browning, has been elected in his stead, and G3WJT acts as m.c. of the regular Club nets on Eighty. G3KQK performs a similar service for the Cheshire Homes net on Thursdays.

The last on this clip is the Royal Navy gang; the newsletter this month has details of the conversion of a KW-2000A to crystal-controlled operation (as is needed for /MM operation) in addition to various other matters of interest.

### The West Country

Yeovil first, where the activity includes quite a lot of things; one was amused to read that the reason offered for running a Junk Sale was that the Hq. was getting so full that there was little room left for members or visitors! For all the details, a call to the hon. sec. is indicated—see Panel, overleaf.

Alternate Wednesdays at the Penhill Junior School, Penhill, is the form for the Swindon gang. Thus, on November 6, there is an informal, with a talk on Frequency Measurement, and on the 20th, the formal meeting, at which members of the Oxford group will be going over to tell the chaps all about Direction Finding.

The Saltash crew also get together every other week; in their case on Fridays, at the Burraton Toc-H Hall, Warraton Road, Saltash. To judge by the tone and content of their newsletter, they are a fine crowd; but you can find out from the hon. sec. just what is on the current programme, and go along and meet them.

Right down in the West is Cornwall, and the Cornish club, a group which has a reputation for being one of the liveliest in the country. We had the pleasure of meeting their president, Mrs. Edna Cooper, G3UGO, at the Exhibition, with her husband, G3VJB. There is a "main meeting" which is down for November 7 at the SWEB Clubroom, Pool, Camborne, when G3UGO will talk about kite-flying, and G3WJP will continue the talk about his African experiences. There are, in addition to the main group, separate VHF and SSB sections who get together at Truro; however we have it that there is a slight problem over accommodation for the latter, and so for up-to-date information we have to refer you to the hon. sec. at the address in the Panel.

### The South

First, a trip to Maidenhead, where the routine is to assemble on the first and third Monday in each month, with the latter date being an informal. November 4 will see them enjoying a demonstration of the abilities of the Racal RA-17 receiver, by G3FGF.

"The History of Radar" is to be the theme of the Crawley main meeting in November, which is down for the 27th at the Trinity Congregational Church Hall, Ifield, near Crawley.

Quite a crowded agenda is in store for the Fareham lads, who get together on Sunday evenings at Portchester Community Centre. November 3 is set aside for MCC preparations, including a "dummy run," while the Contest itself will occupy the time the following weekend. A practical talk in their "How?" series is about the Signal Generator and Its Uses, on November 17. Finally, on the evening of November 24, G6NZ is to give a lecture entitled "Amateur Radio."

November 1 will see the Hemel Hempstead chaps watching a demonstration on the proper use of various items of Test Gear; this is followed up on November 15



Where is he? The two-metre talk-in station for the Harlow Mobile Rally on September 29, seen operated here by G3WOX, with G3WLQ checking the position of a /M contact on the map. About 200 people signed in (including six YL operators), it was a pleasant and enjoyable day for the 400 or so present, and £13 was collected as a donation to R.A.I.B.C.

by a lecture-demonstration on Aerials. Both these events are booked for Rucklers Lane Hall, Kings Langley.

It doesn't need a lot to describe the doings at the Farnborough Hq. this month, but the meetings are very important nonetheless. Tuesday, November 12 is a Junk Sale, and on the 26th there is the serious matter of the AGM to be attended to. The venue for both is 310 Farnborough Road.

Harlow next, where there has been a lot of work done of late, so that there is now a separate room set up for Morse tuition, enabling a class to go on even though a lecture may be taking place in the main room.

Just North of Harlow is Bishops Stortford, where the lads get together on the third Monday of each month at the British Legion, Windhill, Bishops Stortford. November 17 sees the last in a series of three talks on Receivers.

There are four sessions at the Brickmakers Arms, Sprowston Road, Norwich, in November for the Norfolk

### MCC—MAGAZINE CLUB CONTEST

By the time you see this, MCC (the "Magazine Club Contest") will be upon us—evenings November 9-10, Top Band CW only, rules and identification procedure as in the October issue, pp.505-507. Closing date for log entries November 22. Take an accurate GMT clock check before starting—and Have a Good Time!

lads; on Monday, November 4, the Junk Sale; on the 11th an informal natter evening; and on the 18th a lecture on Modulation Checking at VHF. The month is nicely rounded off by a Technical Film Show on November 25. Visitors, of course, will be welcome at all these; starting time is given as 7.30 p.m. in each case. We were sorry to hear from G3IOR, at the Show, that production of their newsletter has run into difficulties—everyone wants it, but nobody wants to do anything about it!

**Stevenage** get together at Hawker Siddeley Dynamics, Gunnels Wood Road, twice each month. A full programme has been set up by the hon. sec., and from it we see that in November they have G2DUS talking about Amateur TV on the 7th, and G2UJ discussing Oscillators on the 21st. Starting-time is given as 8 p.m., and the lecture begins thirty minutes later, so as to allow time for a natter before the serious business of the evening is attended to.

For long now the **Cambridge University** Wireless Society has been an active body, and they intend things to remain that way; October 29 has a talk on Transistorised SSB equipment by a representative of Labgear. On November 12, Mr. Hands of the BBC Planning and Installation Department is to lecture, although the subject is not disclosed. To round off the month, Peter Blair, G3LTF, will be giving them a session on his moonbounce efforts. All these will be at the Psychology Department Lecture Room, Downing; and for the rest of the details of the group we refer you to the hon. sec.—see Panel, opposite.

It is a little difficult to decide whether to put **Shefford** in the South or the Midlands—but whichever it is does not alter the fact that here is a Club that is a model of its kind, operating as it does in an area somewhat remote from sources of live outside lecturers. For the November evenings (each Thursday at the Church Hall, Amphill Road, Shefford) they have, on the 7th, G2DPQ talking about the practical side of constructing air-spaced coils. G3ROL is next, on the 14th, when he takes Transistor Transmitters as his topic. November 21 is given over to a Construction Contest, and one of their favourite "Any Questions." A film, from ICL, about digital computers, occupies November 28. One other meeting is down on the programme—the annual dinner, which takes place on November 30.



"... Yes, we're running a Trio here ..."

## IDENTIFICATION CODES FOR CLUBS IN "MCC"

### Supplementary List

A10	Albright and Wilson	M16	Manchester Univ., "B"
B24	Blackwood		
B25	Barking	R11	Reigate "B"
C24	Chester "B"	R12	R. Aux. A. F., Northwood
C25	Crawley "B"		
C26	Crawley "C"	R13	R.A.F. Abingdon
D07	Dursley	S38	Staffs. Coll. of Technology
E11	E. Surrey Contest Group	S39	Standard, Harlow
E12	Echelford "B"	W11	Woking
J01	Jersey	W12	West Riding
K04	Kent University		
M15	Marconi Apprentices		

**N.B.**—This list includes all additional requests for identifications received up to October 9. Any received subsequently will have been allotted but cannot now be published before the Contest. These "unlisted" identifications will be in the same sequences as the published lists.

A pity that **Echelford** should be having trouble with the duplicating machine, which makes our copy of their *Newsletter* rather difficult to read; however this is merely a temporary problem. They have Hq. at the Hall, St. Martins Court, Kingston Crescent, Woodthorpe Road, Ashford, Middlesex. The programme for November 11 is yet to be announced, but on our copy the date for the second session, when G3UNV is leading a "Tour of the Shacks," is unfortunately not given—so it would be best to contact the hon. sec. direct (see Panel).

Apart from the details of the meetings, the **North Kent** group *Newsletter* has several points of interest. Of three new licensees, two, G3XVC and G8BTF, are YL's; in addition it is understood that they are dropping the G3ENT club call in favour of G4CW, which originally was the callsign of a founder-member who passed on in 1965. They get together in the Congregational Church Hall, adjacent to the Clock Tower, Bexleyheath, Kent, where on November 14 they are to hear G3FRB talk about the modern developments in the professional communications field.

**Mid-Sussex** foregather at Marle Place Further Education Centre, Leylands Road, Burgess Hill, twice in each month, but, sad to say, we seem to have got a little "out of sync," as the TV men would say, with their excellent *Newsletter*, and so for the details we have to refer you to the hon. sec.

A change of Secretary is indicated by **Medway**, but at the time of writing we have not heard who the new incumbent is. However, we have a name and address to put in the Panel for the moment, and it is to him that we must refer you for all the information on the autumn programme.

**Verulam** have a couple of get-togethers each month, one informal and the other a formal affair. Both are run off at the Cavalier Hall, St. Albans. It is believed that G8ASP may be the speaker at the formal in November. Further details from the hon. secretary.

### Scotland and the North

Lothians recently operated a special-activity station at the Edinburgh International Festival, which they reckon to have been well worth while; this of course is only one of many activities of the chaps, and for information on the rest, contact the hon. sec.—see Panel below.

And that advice—contact the hon. sec.—is the same in connection with the Pudsey group's doings. We do, however, know that the line of attack is lecture evenings alternating with operating sessions on the Club station. Incidentally, the Pudsey lads did quite well with their R.A.E. class—out of twelve entrants nine passed. Well done!

We hear that Wirral have just had the annual general meeting, and as a result G3FOO takes over the job of hon. sec. No doubt his first duties will include compiling the programme, and so it is suggested you contact him, at the address in the Panel for the latest information.

“Getting on Two Metres” is the subject at Culcheth where the speaker is to be G2BNZ on November 8, December 13—a Friday as well!—sees G3FGI braving

the omens to give a talk on Receivers. Not that these are the only items; the lads get together every Friday evening, at the Chat Moss Hotel, Glazebury.

Among the many and varied attractions at Northern Heights, November 20 will be given over to Sound Recording, the speaker being Mr. Thislethwaite. For the latest detail, once again we suggest you contact their hardworking hon. secretary, G3MDW, whom also we were very pleased to see at the Exhibition.

York are to be found in the British Legion, Micklegate, every Thursday evening. In addition, they have a visit to the local Sugar Factory laid on for November 8, and the annual dinner on the 27th, at the Ainsty Hotel.

We have already mentioned the Otley lads; it only remains to say that they have G3XNO on the air every Tuesday, and several other activities are projected. For details, and how to find their well-hidden Hq., a line to the address in the Panel is the right approach.

Scarborough are just putting the finishing touches to their new Hq. at 3 Westover Road, where they assemble on Thursday evenings. They also have ideas along the

### Names and Addresses of Club Secretaries reporting in this issue :

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 ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.  
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 BATC: D. Mann, G6OUO/T, 67 West Hill, Wembley Park, Middlesex.  
 BURY & ROSSENDALE: A. Cooper, G3VVQ, 411 Holcombe Road, Greenmount, Nr. Bury.  
 CAMBRIDGE (University): M. G. Pritchard, G3VNO, K2 St. Mary's Court, Caius College, Cambridge.  
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 CRAWLEY: R. G. B. Vaughan, G3FRV, 5 Filbert Crescent, Gossops Green, Crawley (23359), Sussex.  
 CRAY VALLEY: D. Buckley, G3VLX, 234 Halfway Street, Sidcup, Kent. (01-850 6945.)  
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, S.E.23. (FORest Hill 6940.)  
 CULCHETH: K. Burgess, 32 Stendon Street, Leigh, Lancs.  
 EAST WORCS.: T. H. Westbury, 49 The Slough, Crabbs Cross, Redditch, Warks.  
 ECHELFORD: M. Clift, G3UNV, 45 Fordbridge Road, Ashford (59268), Middlesex.  
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 FARNBOROUGH: D. G. Arigho, G3NVM, 6 Frensham Close, Yateley (2174), Camberley, Surrey.  
 FAREHAM: F. A. Rampton, G3VFI, 23 Oxford Close, Fareham, Hants.  
 HARLOW: R. Sinclair, G3VAD, 244 Stanstead Road, Hoddesdon (66806), Herts.  
 HEMEL HEMPSTEAD: D. W. Hill, G8BEH, 3 The Orchard, Kings Langley (5434), Herts.  
 HEREFORD: B. Edwards, G3RJB, 5 Powys Walk, Hereford.  
 HULL: Mrs. Mary E. Longson, 4 Chester Road, Wold Road, Hull.  
 LEICESTER: N. Tomlinson, G8BOA, 33 Merton Avenue, Leicester.  
 LOTHIANS: A. F. Masson, GM3PSP, 20 Merchiston Park, Edinburgh, 10.  
 MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead (20107), Berks.  
 MANCHESTER (International Marine): R. J. Constantine, G3UGF, c/o Overseas House, Brooks's Bar, Manchester, 16.  
 MEDWAY: R. D. Dadds, G3TXJ, Fiesta, Bush Road, Cuxton, Rochester, Kent.  
 MID-CHESHIRE: A. Greenwood, G3SIQ, 83 Ash Road, Cuddington, Northwich, Cheshire.  
 MID-HERTS: I. A. G. Gurton, G8ASP, 28 Blomfield Road, Harpenden (3770), Herts.

MIDLAND: C. J. Haycock, G3JDJ, 29A Wellington Road, Handsworth, Birmingham, 20.  
 MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill, Sussex.  
 NORFOLK: M. J. Cooke, 76 Falcon Road West, Sprowston, Norwich (46093), NOR-73R.  
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (44329), Yorkshire.  
 NORTH KENT: P. T. Baber, 64 Lathams Court, Bexleyheath, Kent. (01-303 8655.)  
 OTLEY: M. Powell, G3NNO, 82 Forest Avenue, Starbeck, Harrogate, Yorks.  
 PUDSEY: P. Conway, G3XLV, 10 Tyersal Grove, Tyersal, Bradford (64220), 4.  
 PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.  
 R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 331 Wigan Lane, Wigan, Lancs.  
 ROYAL NAVY: R/S W. Metcalfe, G3TIF, H.M.S. Mercury, Leydene, Petersfield, Hants.  
 SALOP: W. A. Lindsay-Smith, G3WNI, 22 Kingswood Crescent, Copthorne, Shrewsbury.  
 SALTASH: J. A. Ennis, 19 Coombe Road, Saltash, Cornwall.  
 SCARBOROUGH: P. Briscoe, G8KU, Roseacre, Irton, Scarborough.  
 SHEFFORD: M. B. Goodwin, G3WKR, 16 Roe Close, Stotfold, Hitchin, Herts.  
 SILVERTHORN: G. E. Fenner, G3VMO, 80 Larkshall Crescent, Chingford, London, E.4. (01-529 6613.)  
 SOUTH BIRMINGHAM: R. Brice, 60 Corolin Close, Chemsley Wood, Birmingham.  
 SOUTHGATE: R. Wilkinson, G3TXA, 23 Ashridge Gardens, Palmers Green, London, N.13.  
 SOUTH MANCHESTER: W. M. Furness, G3SMM, 16 Coniston Avenue, Sale, Cheshire. (061-973 6676.)  
 STEVENAGE: D. R. French, G3TIK, 98 Austen Paths, Stevenage, Herts.  
 SURREY: R. Morrison, G3KGA, 33 Sefton Road, Croydon CRO-7HS, Surrey. (01-654 5982.)  
 SWINDON: E. J. Andrews, G3JAP, 56 Windsor Road, Swindon (21402), Wilts.  
 VERULAM: J. Thomas, G3RXA, 9 Highland Drive, Hemel Hempstead (55136), Herts.  
 WAMRAC: Rev. A. W. Shepherd, G3NGF, 52 Thanet Street, Clay Cross (2184), Chesterfield, Derbyshire.  
 WIMBLEDON: K. Alexander, 23 Pepys Road, West Wimbledon, London, S.W.20.  
 WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebbington, Cheshire L63-5NE.  
 WOLVERHAMPTON: J. P. H. Burden, G3UBX, 28 Coalway Road, Wolverhampton.  
 WORCESTER: R. L. Avery, G3TQD, 24 Alexander Drive, Droitwich (3943), Wors.  
 YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset.  
 YORK: J. A. Rainbow, G8BOK, 14 Temple Road, Bishopthorpe, York, YO2-1QN.

lines of instructional and constructional evenings at Hq., on different evenings, plus possibly an R.A.E. class for which they are badgering the local Technical College.

Right up north now, to **Aberdeen**, where they get together at 6 Blenheim Lane, as follows: November 8 for the annual general meeting; 15th, Activity on 144 mc; 22nd, the presidential address; and on the 29th a Quiz Night. Visitors are always welcome.

**Hull** next, where they seem to have quite an interesting build-up for November. It starts off with G3OHT and G3SSA—Will you mend my receiver?—on November 1. Then there is a tape lecture on the 8th, and G3OHT talks about Linear Amplifiers on the 15th. November 22 is booked for Part Three of their exercise in comparing the performance of receivers, and on the 29th G3FCY will talk about Natural Gas Exploration. The Hq., incidentally, is at 592 Hessele Road, Hull.

### The London Area

**Southgate** will be at Bounds Green Secondary School on the evening of November 14, when they play off, as they have done each year for a long time now, their G6QM Trophy for Home-Constructed equipment. The Hq. is quite easy to find—first turning on the right down Bounds Green Road after leaving the Tube station of the same name.

Once again we hear of G3FRB giving a lecture this month; this time it is to the **Cray Valley** lads, on November 7, when his chosen topic will be "Recent Developments in Transistor PA stages." This one is at the Congregational Church Hall, Court Road, Eltham, S.E.9. In addition, November 21 sees an informal, at the All Saints Church Hall, Berct a Road, New Eltham.

**Silverthorn**, as we have indicated before, have Hq. in a "stately home" with a long history. Recently, a production of "Son et Lumiere" detailing the history of the building since Roman times was staged, and the chaps in the group volunteered to lay on communications, lighting and a P.A. system for the show. While not a specific Club effort, those who helped had a rewarding return for their efforts. Details of the Silverthorn crowd can be obtained by reference to the hon. sec.—see Panel, p.577.

November 1 is down for a Natter at **Purley**, and it rather looks as if the 15th will be a continuation of the Junk Sale—recent experience suggests they never get through it all in one evening! Hq. is at the Railwaymen's Hall, 58 Whytecliffe Road, Purley, where they are to be found on the first and third Friday in each month.

November for the **Surrey** crowd is probably to mean an evening devoted to demonstrations of receiver performance measurements by G2RD, at Hq., which is the "Blue Anchor," South Croydon. For the other details, contact the hon. sec.—see Panel.

Over at **Crystal Palace**, they have G3GWD talking about Electronic Colour Sorting on November 16. Unfortunately, we do not have a note of the venue, so G3FZL.

**Acton, Brentford** and **Chiswick** must be among the

most regular reporters to this piece. For November, no 19th they are at Hq., 66 High Road, Chiswick, to see a demonstration of Audio Waveforms and Stereo Sound. Visitors, as always, welcomed.

The second and last Friday of each month, at the St. John Ambulance Hall, 124 Kingston Road, South Wimbledon, is the time and place for the **Wimbledon** crowd, with whom are associated the **South London Mobile** chaps. This makes November 8 the date for the formal meeting at which we understand there is to be a Film Show.

The **Mid-Herts** group had their AGM in October—outcome of which not yet reported—and a "forthcoming event" is the annual dinner, provisionally booked for January 17—not so far off as you might think. The committee is working hard to produce an attractive lecture programme. In their current *Newsletter*, a comment on the recent Amateur Radio Exhibition is "... not very inspiring this year ... surely the Show should be the place to stimulate new ideas ... the lectures were three-quarters empty, while a seething throng fought to get at the junk stalls ... " Dear, dear—we hope they don't mean us!

### Midlands

**Wolverhampton** first, with the December, rather than November, story. This shows December 2 for a lecture by N. A. Lockley, formerly of A.T. & E. at Bridgnorth, who will discuss the use of transistors in Transmission Circuitry. A week later, on the 9th, there is a general natter evening, when the Club station will also be put on the air. December 16 sees a Symposium on Propagation by various members, who are booked to give short talks on various aspects of the subject, both at HF and VHF. All the meetings are at Hq., Neachells Cottage, Stockwell Road, Tettenhall, Wolverhampton.

Not so far away is **Coventry**, where there are three nights-on-the-air on the November programme, on the 1st, 15th and 29th. November 8 is down for a tape-and-slide lecture by G2YS, while on the 22nd the president, G2FTK, puts on a Criss-Cross Quiz.

Most of the details on the **Leicester** events for November will have to be obtained from the hon. secretary, but it is possible to say that an R.A.E. Forum is to be run on November 11, and a lecture on Tape Recording on the 25th. For the venue, and other details, as already mentioned recourse will be necessary to the address in the Panel.

**Mid-Cheshire** have a change of secretary to report, as shown in the Panel; they are still running the pattern of weekly Wednesday meetings at Oak House Farm, Beeston Drive, Over, Winsford, and showing a rapidly-rising membership.

**Hereford** seem to have come to a stop, at least for the moment, in their search for a better Hq., and so we can say with some certainty they are at Trinity Hall this time. November 1st is the date to remember, when the lads are going to get cracking again on the Club Project.

**East Worcestershire** have November 14 at the Old

People's Centre, Park Road, Redditch, where they are to see a demonstration of *Electroniques* and *Hallicrafters* gear, which is being put on by Mr. Dawson of *Electroniques*, and G3FIK of *Amateur Electronics*, Birmingham.

Nice to hear that the **South Manchester** lads have managed to resolve their accommodation problem; they now have Hq. at the *Conservative Divisional Offices*, 449 *Palatine Road*, Northenden, Manchester 22, quite near the old place. They get together on Friday evenings at this venue; for all the other details, contact the hon. sec. at the address in the Panel.

As an opener for their participation in MCC, the **Salop** group have (on November 7) a talk by G3BMY on *Contest Working*—he should know, because in earlier years MCC was won several times under his callsign. There are also meetings, on November 14, 21 and 28, covering various activities of interest—*Transistory*, by G3UDA; operation of the Club station; and the *Project Night*. They meet at 7.30 p.m. at the *Old Post Office Hotel*, *Milk Street*, Shrewsbury.

Having had their annual general meeting, **South Birmingham** emerge with G3MXI as chairman and SWL Brice as hon. secretary, the chap who has to do the work. Next meeting is on November 6, at the *Scouts Hut*, *Pershore Road*, Birmingham, 29, when Bob Palmer, G5PP, will be giving his excellent lecture on mobile operating.

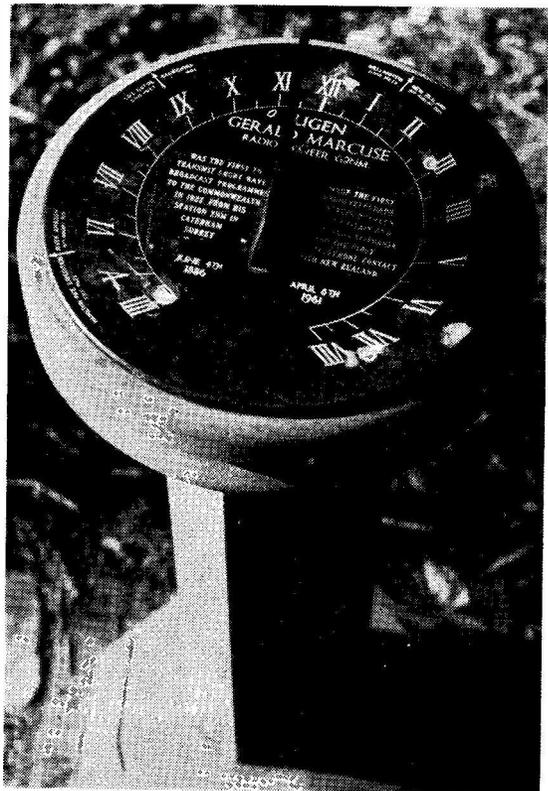
A new group in Manchester: The **International Marine Radiotelegraphic Communications Amateur Radio Society**, they are called, with about 15 members, who are students at the local College training sea-going radio officers for their Board of Trade certificates. It seems that quite a high proportion of the present entry consists of licensed radio amateurs and SWL's. The hon. secretary, G3UGF, remarks that he hopes that all this will result in a marked increase in British/MM activity—we hope so, too!

At the *George Hotel*, **Bury**, on November 12, the *Bury* lads are the hosts at a joint session with the *East Lancs.* crowd. The latter are to act as judges in a *Constructional Contest* and "the opposition" in the *Quiz*. Sounds quite pleasant, and the makings of an interesting evenings.

**Worcester** seem to have every Thursday and Saturday at 35 *Perdiswell Park*, with various items laid on; the programme secretary writes of a lecture by G6CL on October 30; "A History of Radio," on November 9; and "Amateur Radio as My Window" on the 16th, as

#### SPECIAL NOTICE TO SECRETARIES!

Closing date for December's "Month with The Clubs" will be November 8. No regular Club reports will appear in our issue for January 1969 because, as usual, the "Clubs" space will be given over to the write-up and discussion on MCC, the Magazine Top Band Club Contest (taking place over the weekend November 9/10, full details October issue). After December's "Short Wave Magazine," the next regular Club reports will be in our February issue, for which the closing date is Friday, January 10, 1969. Honorary secretaries (and those reporting for Clubs) are asked to note these dates carefully, because they ensure continuity in the Club reporting.



A memorial, in *Bosham Churchyard*, *Chichester*, to the late *Gerald Marcuse*, G2NM, who was a pioneer not only in *Amateur Radio* but in *short-wave radio* itself. Seen and photographed by G2FWA.

titles for some of the lectures. Where nothing is specifically laid on the meeting will be an informal matter evening.

The third Tuesday in each month seems to be the form at the **Midland** group, who assemble on the specified evening at the *Midland Institute*, *Margaret Street*, Birmingham 3. Details of the November programme may be obtained by getting in touch with the honorary Secretary.

#### Sign-off

So there you have it—possibly a little briefer than usual, and more terse, but by being so we have been able to mention every one who wrote, in spite of being at the Show and making personal contacts when the piece should have been going together—and how pleasant it was to chat at the *Magazine* Stand with so many of our tireless hon. secretaries. Deadline for the next issue will be first post on **Friday, November 8**, addressed "Club Secretary," *SHORT WAVE MAGAZINE*, *BUCKINGHAM*. Keep the fire in and the wheels turning!

Club reports too late for coverage were also received from: *Cheshunt*, *Taunton* and *Reigate*. Several others, though named this time in the feature, are those who were late for the *previous* issue.—*Editor*.

# NEW QTH'S

This space is available for the publication of the addresses of all holders of new U.K. call signs, 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.

**EI4BV**, Aer Lingus (Irish Air Lines) Amateur Radio Club, P.O. Box 180, Dublin Airport, Dublin.

**EI5BW**, P. Farrell, 1 St. Teresa's Terrace, Edenderry, Co. Offaly.

**EI8BV**, G. Logue, Ranny, Kerrykeel, Letterkenny, Co. Donegal.

**G3XHB**, G. A. Bentley, Greenhaugh, Ovingham, Prudhoe, Northumberland.

**G3XKN**, J. P. Hind, 100 Green Lane, Leeds 16, Yorkshire.

**G3XPF**, D. J. Oldham, 22 Wiltshire Road, Chadderton, Oldham, Lancs.

**GW3XQO**, P. M. Salomon, 15 Alyndale, Hope, Wrexham, Denbighshire.

**GM3XQY**, R. Rendall, 16 Weensgate Drive, Hawick, Roxburghshire.

**G3XRH**, N. B. Simmonds, 5 Bowling Green Road, Stourbridge, Worcs.

**G3XRW**, J. R. Worters, 29 Windmill Lane, Ewell, Surrey. (Tel. 01-393 8894.)

**G3XSE**, H. Allison, 34 The Dashes, Harlow, Essex.

**G3XSI**, T. Haslam, 49 Tyzack Road, Woodseats, Sheffield, Yorkshire S8 0GL.

**G3XSY**, T. Butterfield, 24 Bradshaw Drive, Honley, Huddersfield, Yorkshire. HD7 2EU.

**G3XTI**, J. G. Jarvie, 11 Guild Road, Aston Cantlow, Solihull, Warks.

**G3XTL**, C. H. Barlow, 31 Princess Avenue, Warsop, Mansfield, Notts.

**G3XTX**, J. R. Raffaelli, 98 Mattison Road, Harringay, London, N.4.

**G3XUE**, K. Beesley, 70 Fagley Lane, Eccleshill, Bradford 2, Yorkshire. (Tel. Bradford 639542.)

**G3XUM**, J. W. Moran, 30 Elsie Street, Farnworth, Bolton, Lancs.

**G3XVC**, Mrs. Maureen Worbey, 1 Spring Vale, Dartford, Kent.

**G3XVF**, R. G. Davy (*ex-G8BVW*), 7 Harbord Road, Colman Road, Norwich, Norfolk. NOR.61-F.

**G3XVH**, S. M. Franklin, 337 Hendon Way, London, N.W.4.

**GM3XVJ**, D. L. Richmond, Fairfield, Wellpark, Alloway, Ayr.

**G8BJL**, T. N. Tisdahl, Limehurst, St. Margarets Road, Altrincham, Cheshire.

**G8BKO**, J. E. Francis, 21 Hazel Drive, Spondon, Derby.

**G8BLP**, C. J. Bond, 29 Blackbrook Road, Lodge Moor, Sheffield, Yorkshire. S10 4LP.

**GW8BNS**, T. Sayers, 5 Wavell Crescent, Pembroke Dock, Pems.

**GM8BQY**, R. McLennan, 48 Larch Road, Rosehill, Aberdeen. AB2 5ER.

**GW8BRV**, D. Cooper, 23 Bishops Lane, Pembroke, Pems.

**G8BUJ**, J. T. Nightingale, 44 Palmerston Way, Alverstoke, Gosport, Hants.

**G8BUY**, C. R. Tremble, 1 Greengate, Kendal, Westmorland.

**GM8BVO**, J. B. Wilson, 4 Guthrie Street, Carnoustie, Angus. (Tel. Carnoustie 2154.)

**G8BVR**, G. Oddy, 11 Castle View, Sedgwick, Westmorland.

**G8BVZ**, T. Sargent, 19 Manor Close, Aveley, South Ockendon, Essex.

**G8BWC**, R. Smith, 32 Upper Dunstead Road, Langley Mill, Nottingham. NG16 4GR.

**G8BWH**, R. E. Robinson, 10 Thirlmere Road, Darlington, Co. Durham.

**G8BWL**, A. Fletcher, 221 Coalshaw Green Road, Chadderton, Oldham, Lancs. (Tel. 061-681 7813.)

**GM8BWT**, R. A. McC. Lapsley, Robela, Ogilvie Road, Stirling, Stirlingshire. (Tel. Stirling 2603.)

**G8BWW**, P. U. Briggs, 21 Blundell Drive, Birkdale, Southport, Lancs.

**GW8BXL**, P. G. Lindsay, Awali, Hundleton, Pembroke, Pems.

**GW8BXN**, J. D. Reader, 13 River View, Hundleton, Pembroke, Pems.

**G8BXO**, J. H. Stacey, 3 Westpark, South Molton, Devon.

**GW8BXQ**, T. Hordley, 85 Laws Street, Pembroke Dock, Pems.

**GW8BZO**, M. G. Gwyther, 19 Picton Place, Pembroke Dock, Pems.

## CHANGE OF ADDRESS

**G2AFB**, B. H. Douthwaite, 79 St. Cross Road, Winchester, Hants. (Tel. Winchester 61693.)

**G3AAQ**, S. Jacobs, Wayside, Rugby Road, Swinford, Rugby, Warks. (Tel. 0788-85 444.)

**G3ADZ**, D. W. J. Haylock, Bowyers, Bowyers Common, Street, Petersfield, Hants. (Tel. Liss 3314.)

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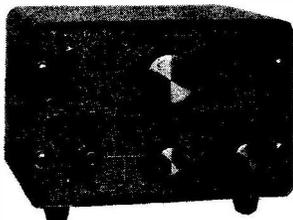
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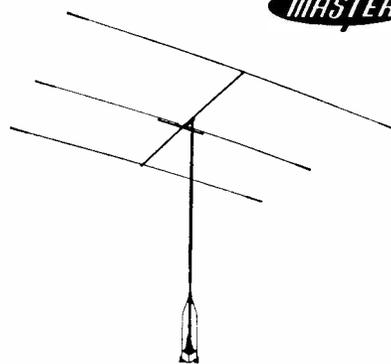
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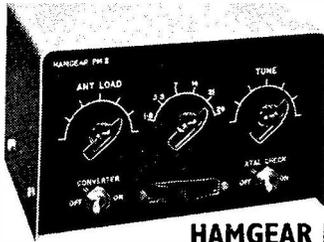
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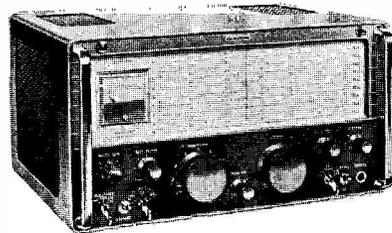
**DECEMBER Issue due for publication on November 29.** Single-copy orders, 4s. post free, should reach us by Wednesday 27th, for despatch on Thursday 28th. Add 3d. (total 4s. 3d.) for "1st class mail" if desired. — Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**Leicester G3ACQ:** Trio TS-500, JR-500, 9R-59DE, Cannonball SSB Top Band transmitter, Sphinx SSB transmitter, Codar, Joysticks, Nombrex, Eddy-stone, reconditioned Avometers, surplus Transistor Panels, all from:—May's, Churchgate, City Centre, Leicester.

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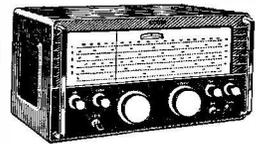
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**PARTRIDGE "Joysticks"**, etc. Lists and details on request. **TRIO EQUIPMENT**, Receivers, JR-60-U, 540 kc/s.-30 mc/s. and 2 metres, £61/19/- (25/-); JR-500-SE, bandspread, £68 (10/-); 9R59DE, 540 kc/s.-30 mc/s., £37/10/- (10/-); 9R-59, 540 kc/s.-30 mc/s., £34/13/- (15/-). Transceiver, TR-500-E, £165; PS-500-E A.C. p.s.u., £38; VFO-S v.f.o. unit (not essential for station), £28, OR enquire for package deal. Loudspeaker, SP-5D "Speaker-mate" to match trio receiver, etc., £4/7/6.

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**FOR SALE:** CR-100 Rx, £15. Minimitter converter, £8. Labgear LG300 Tx, £18. Enclosed 19in. rack, rear door 3ft. high, containing 1200v., 850v. and 300v. PSU, £10. Class-D wavemeter, 40s. Buyer must collect.—Baker, G2SB, 13 Castle Drive, Heswall (1364), Cheshire.

**WANTED:** Labgear E.5140 "160m. twin" or Codar A.T.5 transmitter. Must be in good condition.—Cutler, G3MXF, 8 Kings Avenue, Parkstone, Dorset.

**FOR SALE:** An Eddystone 940 Communications Receiver, in mint condition, at £75.—Heavysege, 50 Warren Drive, Wallasey, Cheshire. (Tel. New Broughton 4104.)

**SALE:** K.W. Viceroy Mk. IVA CW/SSB Tx, in excellent condition, with new 6146's, bargain at £90.—Mawdsley, 129A Metchley Lane, Harborne, Birmingham, 17.

**SELLING:** Wavemeter Class-D Mk. II, new with spares and book, £6. R.1933 Rx, coverage 60 to 72 mc, AM/FM, with control unit and cables, 60s. Parts of Type 53 Tx PSU, 1500v. 500 mA and 400v. 250 mA, mains input, £12. Sub-modulator, 2/807 output, 60s. VFO, tuning 1.5 to 17.5 mc, 70s. Dummy load, rated 350 watts, 50s. Tool set for Plessey Mk. IV; plugs, unused, 15s. Manuals: SCR-522, 25s.; BC-625AM, 7s. 6d.; BC-625C, 7s. 6d.; TCS, 20s. Send s.a.e. for list of other parts, 53 Set, etc.—Clarke, Copper Coin, Old Gaigorm Road, Ballymena, Northern Ireland.

**WANTED:** Circuit diagram for Philco Model 131 domestic radio.—Hall, 17 High Street, Needham Market, Ipswich, Suffolk.

**WANTED:** Codar A.T.5 with PSU, also Codar CR-70A communications receiver. (Units need not be together).—Econ, 31 Moscow Drive, Liverpool, 13.

**WANTED:** Handbook for National HRO receiver. Any reasonable price paid.—Spindler, 44 Kynaston Road, Didcot, Berks.

**EXchange:** Lafayette HA-350, coverage 10 to 80 metres, six months old and in mint condition, cost 75 guineas. Wanted good general-coverage receiver, such as Eddystone 680X, S.750, 940 or Hammarlund HQ-180, in similar condition. Please state age and full details; cash adjustment either way.—Adkins, G3SEV, 14 Buckingham Road, Tring, Herts.

**OFFERING:** K.W. Vanguard Mk. I, £25 or near. Trio Model JR-500S, still in box, £45 or near offer.—7 Osmond Street, off Braybrook Street, East Acton, London, W.12.

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SMALL ADVERTISEMENTS, READERS—*continued*

**FOR SALE:** At £25 each, AR88D receiver and Brinell Mk. V tape recorder. Both can be seen working.—McKay, 7 Hollywood Croft, Great Barr, Birmingham 22A. (Tel. 020-357 4150.)

**SALE:** R.1155B, Top Band converter, with voltage stabiliser, noise limiter, PSU and speaker in cabinet, at £10, buyer to collect.—Cobb, 14 Dale Road, Swanley, Kent.

**WANTED:** Your surplus modern miniature crystals, not necessarily amateur frequencies; also Woden modulation transformers.—Box No. 4703, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**FOR SALE:** KW-77 receiver, in good condition, £70. Also G2DAF-type all-band SSB transmitter, 150w. p.e.p., in good condition, £40. Or £100 the two.—Little, 28 Fitzgerald Road, Bristol, 3.

**WANTED:** Plug-in coils L20 to L24 for Marconi UHF Signal Generator Type TF-517, covering 0-300 mc, also manual. Interested in purchase parts for G3HTA Rx. **SALE:** Creed Type 3X teleprinter. Exchange, Cash or W-H-Y?—Whitehead, G3RDA, Downholme, Nutburn Road, North Baddesley, near Soton, Hants.

**SALE:** B2 transmitter and PSU, with all coils and one crystal, £5. An ideal beginner's rig.—Tee, G8UA, 33 Red Lees Road, Cliviger, Burnley, Lancs.

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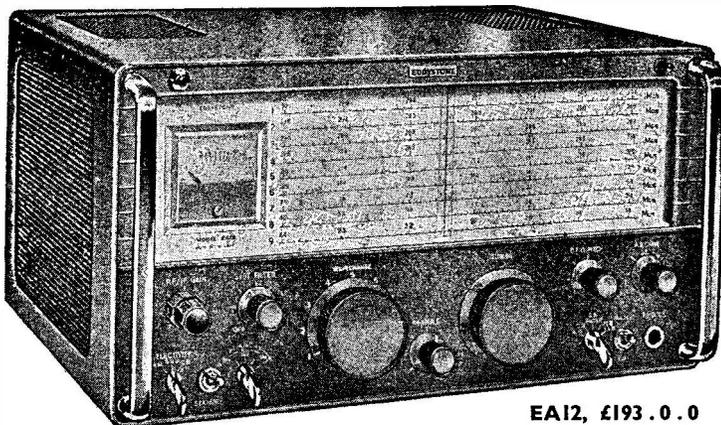
- 2 METRE FET CONVERTER.** TIS88A cascode front-end. NF less than 1.0 dB. 2 MHz. bandpass coupler ahead of 3N141 dual gate MOSFET mixer. Cathodeon VHF sub-miniature crystal. Silicon planar injection stages. High Q break. Power : 12v. at 9 ma. D.C. Positive earthn. IFs: 12-14, 14-16, 18-20, 20-22, 24-26, 28-30 MHz. £16
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Post and packing 3/9 per item

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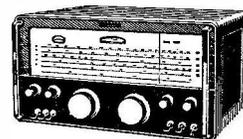


EA12, £193.0.0

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#### SMALL ADVERTISEMENTS, READERS—continued

**FOR SALE:** Eddystone 770R receiver, covering 19 to 165 mc, AM/FM, as-new specification, with handbook, £120, no offers. **WANTED:** Eddystone 888A.—Page, G3HKV, 16 Abbey Street, Crewkerne (2662), Somerset.

**SALE:** National HRO in good working order, with PSU, speaker, nine coil packs, rewired in p.v.c. and by-pass capacitors replaced, price £20.—Salomon, GW3XQO, 15 Alyndale, Hope, Wrexham, Denbighshire. (Tel. Caergwrlle 363.)

**SALE:** Eddystone Communications Receiver Model 940, original cost £133, used only twice due sudden bereavement. Will accept £85, buyer to collect or carriage extra.—White, 30 Giants Grave Road, Briton Ferry, Neath, Glamorgan, South Wales.

**SALE:** Collins 30L-1 Linear Amplifier, in good condition, price £150 or near offer.—Kendrick, G3RDW, QTHR. (Tel. 021 STR-7427.)

**SELLING:** CT-53 Signal Generator, with leads and original charts, £12 carriage paid, or nearest offer.—Cobb, G3UI, Moorlands Crescent, Cousin Lane, Halifax, Yorkshire.

**FOR SALE:** Heathkit SB-101 Transceiver, 10 to 80 metres, 180 watts p.e.p., 6 months old, without PSU, for quick disposal, £160.—Hirst, 56 Whinfield Road, Worcester.

**FOR SALE:** Eagle RX-60 receiver with separate PSU, in good condition, ideal for beginner, £11 or near offer and will deliver to 25 miles.—Hickey, G3WDX, 58 Mill Farm Close, Pinner, Middlesex. (Tel. 01-866 4011, evenings only.)

**SELLING:** Two-metre transistorised converters, low-noise AF239 front end, HC-6U VHF crystal, IF 20 to 22 mc, in aluminium case 4 x 3 x 1½ in.; also similar satellite band converters, IF 8 to 10 mc. Available for immediate delivery, £9 each, plus 3s. post/packing. Other IF's to order.—Grigg, G3PRX, 72 Elmstone Road, Rainham, Kent.

**OPPORTUNITY** for any owner of an SSB Transceiver to go RTTY: Two items, in full working order, comprising Creed 7B teleprinter with the complete DL6EQ terminal unit (including extras) and AFSK transmit section (built throughout from Spacemark kits), with all PSU's and control switching—well constructed and not grotty. Buyer inspects and collects; demonstration by appointment, price £30—or Exchange The Lot plus £10 for an SB-610E with its manual. Prices are crystal-controlled, no VFO adjustments!—Adrian, G3UZF, 178 Long Chaulden, Hemel Hempstead, Hertfordshire.

**MANUALS:** R.1475, CR-100, CR-300, 30s.; B.40, BC-348, TCS, 35s.; BC-312, S.27CA, R.1155, 25s.; AR88LF, AR88D, SX-28, 21s. All plus postage; many others, send s.a.e.—Brooks, 5 Farrant House, Winstanley Road, London, S.W.11.

SMALL ADVERTISEMENTS, READERS—continued

**EXCHANGE:** Trio JR-500SE amateur bands receiver, purchased in September, for a good AR88D receiver complete. (London area.)—Box No. 4707, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**SELLING:** Sobell 1968 FM transistor radio, at £15 10s. post paid. **WANTED:** Eddystone receiver, state age and details. (Essex area.)—Box No. 4704, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**LOOK** Brand-new QV03-20A valves, 22s. 6d. post paid. And I want a coil-pack, or front end unit.—Box No. 4705, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**OFFERING:** Swan-350 with PSU and microphone, in mint condition, unmarked and very little used; also Heath Cheyenne transmitter, with Hallcrafters electronic keyer and Vibroplex key. What offers? Must sell, as am giving up. Ring or write.—Allan, 2 Holding Lanrig, Chryston, Glasgow, Scotland. (Tel. Steppes 2303.)

**OFFERING:** Parallel 4E27's modulated by 805's in Class-B zero bias, driven by Panda PR-120V in professional custom-built table top unit; separate cabinet houses PSU (requires HV rectifiers). Also BC-221 frequency meter with built-in PSU, and Vibroplex bug key. Will listen to any reasonable cash offers. (Going SSB.)—Ring Queensbury 2542 (Yorkshire), 0930-1100 any morning Monday-Friday.

**EXCHANGE:** Unused Electroniques coil-pack QP-166, valved, bandsread model, FOR a R.1475 or CR-100 receiver. (London area.)—Box No. 4706, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**SALE:** KW-201 receiver, with calibrator, practically unused and in mint condition, at £80 or near offer.—Bence, 12 Ladysmith Road, Cardiff CF2-5DT, South Wales. (Or phone Cardiff 34700, 7.0 to 8.0 p.m.)

**CIRCUMSTANCES Dictate Sale:** An R.C.A. AR88LF, in good condition, £30. Trio 9R-59D, fitted voltage regulator, 3.5 mc calibrator and tone control, £32. Am moving QTH, so will haggle a bit over both.—Lamont, Hatton, by Bishopston (2401), Renfrewshire, Scotland.

**SELLING:** Eddystone 888A receiver, cascode RF etc., with S-meter and mounting blocks, in FB condition, £55 10s.; round Eddystone speaker to match, £40s. Solartron Type AS.517 stab. PSU, £5 10s. Oscillator Type G.44, 55 to 120 centimetres, less valves, 45s. Rotary generator, 12v. in, 250v. 60 mA out, 20s. Aerial switch Type 78A, 24v. actuation, 22s. 6d. Type C-52 Crystal Calibrator, 40s. Cossor Type 1324 Wobblator, 9.28 mc and 80-108 mc, £12 10s. Pair Eagle wireless intercomm. units, £8. Pair Eagle C/R substitution boxes, 40s. One box of 50 0.1 mF 1000v. condensers, 25s. Another of 40, same rating, 22s. 6d. One box sixteen .05 mF 750v. condensers, 10s. Prices include carriage, but callers preferred for large items—and would haggle.—Hunt-Duke, 18 Hawkins Road, Folkestone Kent, (Tel. Folkestone 75388, weekdays.)

**SWANCO PRODUCTS**

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<b>NEW EQUIPMENT</b>			
Sommerkamp F-Se, as Equipment: £ s. d.			
FR-DX 500 double conversion superheterodyne with crystal-controlled first mixer, 160-10 metres	...	130 0 0	
FL-DX 500 SSB/AM/CW transmitter, 240 watts PEP, complete with built-in power supply and antenna relay	...	145 0 0	
FL-DX 2000 linear amplifier, 960 watts PEP	...	100 0 0	
Sommekamp FT-DX 150 transceiver, 80-10 metres	...	215 0 0	
Sommekamp FT-DX 500 transceiver 80-10 metres	...	250 0 0	
<b>Swan Line Equipment:</b>			
Swan 500 SSB transceiver, 80-10 metres	...	250 0 0	
Swan 350 SSB transceiver, 80-10 metres	...	216 0 0	
Swan 230-XC power supply (to suit 500 or 350)	...	49 0 0	
Swan 410 VFO and adapter	...	61 15 0	
<b>Hallcrafters Equipment:</b>			
SX-130 Communications receiver	...	86 15 0	
SX-122 Communications receiver	...	148 5 0	
SX-146 SSB receiver, 80-10 metres	...	137 5 0	
HT-46 SSB transmitter, 80-10 metres	...	192 5 0	
HA-1 electronic keyer	...	42 15 0	
<b>Eddystone Radio Ltd.:</b>			
Eddystone EA12 Amateur bands receiver, 160-10 metres	...	193 0 0	
Eddystone 940 Communications receiver	...	143 0 0	
Eddystone 840C Communications receiver	...	70 0 0	
Eddystone EC10 receiver	...	53 0 0	
Eddystone EB35 receiver	...	62 10 0	
Eddystone EB36 receiver	...	56 5 0	
<b>Trio Communications Receiver:</b>			
Trio JR-60 14 tubes amateur communications receiver, 540 kc/s.-30 mc/s., plus 142-148 mc/s.	...	61 19 0	
Trio 9R59 9 tube communications receiver	...	34 13 0	
Trio 9R59DE 8 tube communications receiver	...	39 15 0	
Trio JR500SE Amateur bands receiver 80-10m.	...	68 0 0	
Trio TS-500 SSB transceiver complete with a.c. P.S.U. and split frequency V.F.O., 80-10m. 200 watts PEP	...	231 0 0	
<b>Lafayette Communications Receivers:</b>			
HA-500 Amateur bands receiver, 80-6 metres	...	44 2 0	
HA-700 Communications receiver (with product detector)	...	37 16 0	
HA-350 Amateur bands receiver, 80-10 metres	...	67 10 0	
<b>K.W. Electronics Ltd.:</b>			
K.W. 201 Amateur bands receiver, 160m.-10m.	...	111 0 0	
K.W. Vespa Mk. II transmitter (with P.S.U.)	...	135 0 0	
K.W. 200A SSB transceiver, 160m.-10m. (with P.S.U.)	...	232 0 0	
<b>Mosley Electronics (Beams):</b>			
TA-33Jr. Triband three element beam	...	27 5 0	
TA-32Jr. Triband two element beam	...	19 5 0	
TA-31Jr. Triband dipole	...	11 1 0	
V-3Jr. Triband vertical	...	8 5 0	
TD-3Jr. Wire trap dipole	...	6 15 0	
Channelmaster rotators	...	13 13 0	
Channelmaster rotators (automatic)	...	18 18 0	
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2 metre transmitter (complete with mic., etc.)	...	80 0 0	
Jet Set Aircraft receiver	...	12 0 0	
Sky Bandit Aircraft receiver	...	23 10 0	
Kurer Aircraft, short, medium, and long wave receiver	...	42 15 3	
<b>Swanco/CSE Equipment:</b>			
Swanco/CSE 2A10 solid state transmitter	...	43 7 0	
Swanco/CSE 2AR solid state receiver	...	44 0 0	
Swanco/CSE type II A.T.M.A. mobile/fixed/portable antenna	...	9 15 0	
Swanco/CSE safety mobile microphone, Type MM2	...	2 17 11	
Swanco 100 kc/s. calibrator	...	5 19 6	
Halsor Mobile antenna, new all weather, all bands system	...	6 17 6	
Extra coils (when more than one band is required)	...	3 17 6	
Swanco Quad Spiders (per pair)	...	6 10 0	
<b>Echelford Communications Equipment:</b>			
Echelford B1/4 transmitter for 4 metres	...	30 0 0	
Echelford M1/4 transmitter (mains or mobile)	...	40 0 0	
Echelford C1/4 4 metre converter	...	10 10 0	
Full range of Drake Equipment available to order.			
Full range of Heathkit Equipment available to order.			
<b>Codar Radio Company:</b>			
CR.70A receiver	£ 5. d.	CR.45RB	£ s. d.
PR30	19 10 0	AT5 transmitter	11 7 0
PR.30X	5 10 0	AT5 transmitter	16 10 0
R. Q.10	7 4 0	250 volt P.S.U.	8 0 0
R. Q.10X	6 15 0	12/MS P.S.U.	11 5 0
CC.40	8 8 0	12/RC control	2 7 6
CR.45K	6 10 0	T2B receiver	15 10 0
	9 10 0	Mini-Clipper	1 19 6
<b>Partridge Electronics:</b>			
Joystick std.	£ s. d.	Shure Microphones:	£ s. d.
Joystick de-luxe	4 19 6	Shure 201	4 10 0
Type 3 tuner	2 15 0	Shure 202	5 0 0
Type 3A tuner	3 12 6	Shure 444	10 12 6
Type 4 tuner	4 4 0	Shure 401A	5 10 0
Type 4RF tuner	6 6 0	Shure 2755SK	4 2 6
<b>SECOND-HAND EQUIPMENT</b>			
Many items in stock including: LG-50, DX-100, SB10, K.W.76, 840C's, etc. Your enquiries please.			
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Sommerkamp FLDX500	£145	PAROS 22 TR with psu	£105
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SMALL ADVERTISEMENTS, READERS—continued

**SELLING:** K.W. Vespa Mk. II transmitter and AC/PSU, purchased March 1968 and still in new condition, price £110.—Wickham, 9 Wensleydale Gardens, Hampton, Middlesex. (Tel. 01-979 8779.)

**BARGAIN!** B.40 receiver, coverage 640 kc to 30.5 mc, very good condition and performance, with circuit data, price £12 10s., no offers.—Ring Gallet (London) 01-788 8208.

**THE December Issue will publish on November 29.** Single-copy orders must reach us by Wednesday 27th November. If you want "1st-class posting" send 4s. 3d., otherwise 4s. All postings will be on Thursday 28th, early morning. For delivery, we are in the hands of the Post Office, but what is called "first-class" should ensure that you have your copy on publication day. Whatever way you want it, just send a note, with name and address, saying "December issue, please," enclosing P.O. 4s. or 4s. 3d. Your copy will reach you flat in an envelope. — Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**SELLING:** A BRT-402E, with 10 new valves and a fitting of new control knobs, a very nice Rx at £60 only. Buyer to inspect and collect.—Witt, 5A Fairview Parade, Mawney Road, Romford, Essex.

**OPPORTUNITY!** A Heathkit SB-301E, with CW filter and a SB-401E. Both in perfect working order, aligned and tested by Daystrom Limited, and still under guarantee. Price £275. (London area).—Box No. 4710, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**WANTED:** An R.C.A. AR88LF receiver.—Garrard, 232 Rectory Road, Grays, Essex.

**SELLING:** An Eddystone 940 receiver, in perfect condition, purchased 1967 and little used, price £90 or reasonable offer, buyer to collect (London area).—Box No. 4708, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**WANTED:** CR-100 receiver, state condition and price; will collect London area. — McDonald, 23 Milton Road, Ickenham, Uxbridge, Middlesex.

**FOR SALE:** Codar CR-70A communications receiver, in excellent condition, asking £14. — Smith, 2 Police House, Cheltenham Road, East, Churchdown, Glos.

**SELLING:** CR-100 receiver, in good condition, with speaker and built-in PSU; any trial, and will deliver to 25 miles. Price £18.—Ball, 76 Warrington Road, Penketh (2311), Nr. Warrington, Lancs.

**WANTED:** Any information, especially circuit, on U.S. Navy Aircraft radio receiver CZR-43AAAY, a unit of Aircraft Radio Receiving Equipment Type ABK-5. Also details of any known mods. — Box No. 4709, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.4.

**FOR SALE:** Eddystone 940 receiver, with speaker and headphones. Little used, and in mint condition. Price £100 or near offer. Delivery might be arranged.—Cassidy, 23 Elm Grove, Whitby, Ellesmere Port, Cheshire, L66-2PR. (Tel. Ellesmere Port 2837.)

**SALE:** Panda PR-120V transmitter, table-top model, covering 10 to 80 metres, running 150 watts input. Price £25, buyer to collect. — Chatterton, G3WYV, 13 Inchfield Close, Rochdale (58551), Lancs.

## SMALL ADVERTISEMENTS, READERS—continued

**FOR SALE:** Heathkit RA-1 receiver, with xtal calibrator and speaker, in as-new condition, price £40.—Donno, 6 Mincinglake Road, Exeter (78710), Devon.

**DISPOSING:** Trio SSB Transceiver and PSU, TS-500/PS-500, in mint condition, few hours' use only. (I'll be fair—this specimen has too many birdies on 21 mc, and is not stable on 28 mc.) Bargain price of £160, or would Exchange for KW-2000A, cash adjustment in your favour.—Morrison, G3MOU, 85 Sutton Road, Heston, Middlesex. (Tel. 01-570 6181.)

**SALE:** BC-221AF frequency meter, £22. Wavemeter Class-D No. 2, covering 1.2 to 19.2 mc, mains or 12v. DC, £14. (Both these items brand new and unused, complete with correct charts, spares and headphones.) Also a Hallicrafters S.27 receiver, 27 to 143 mc, at £21; and Oscillator Testing TMS, £4.—Bloom, 4 Langsett Avenue, Sheffield S6-4AA, Yorkshire.

**SELLING:** Hammarlund HQ-170 receiver, with speaker, manual and few (new) spare valves, complete and in excellent condition, price £60.—French, G3LGL, 54 Reddal Hill Road, Cradley Heath, Warley, Worcs.

**OFFERING:** Superb R.216 receiver, with matching PSU, coverage 19 to 165 mc, complete with all connecting cables. Sensible offers only, please, and best secures. Carriage extra.—Hayward, Sunnyfields, Lighthouse Road, St. Margaret's Bay, Nr. Dover, Kent.

**SALE:** National HRO-MX, tuning 900 kc to 30 mc, in excellent condition, unmodified, with PSU, manual and spare valves, £16. TCS-12 transmitter, partly modified but RF stages working, with circuitry, 40s. Delivered to 20 miles, otherwise buyers collect.—Ingram, 5 Springhill Cottages, Snowhill, Broadway, Worcs.

**SELLING:** Eddystone 940 receiver, with plinth mounted extra speaker, sundries, and as new, price £80.—Bernard, The Mission to Seamen, Victoria Dock Road, London, E.16.

**SURPLUS** Polypropylene non-rot rope, 5/16in. diam., 1inch circle, breaking strain 1980 lbs. Any call sign, send for sample, with s.a.e.—Powell, GW3HUM, 21 Tanybryn Estate, Valley, Anglesey, North Wales.

**WANTED:** Eddystone 940 receiver in Exchange for Sony TC-800 mains/battery tape recorder, little used, also Saba-Regie mixer, mono/stereo, matching into this tape recorder.—Adamson, 3 Etloe Road, Westbury Park, Bristol, 6.

**SELLING:** Codar CR-70A with PR-30 preselector, RQ-10Q, speaker and professional 4000-ohm headsets, including Joystick aerial and Type 3A tuner, cost new £55 in all and only two months old, asking £40 or near offer. Also Mini-Clipper, all accessories and headphones, cost £6, price 60s. Buyers to collect.—Kelly, 5 Langdale Walk, Market Harborough, Leics.

**OPPORTUNITY** Knocks! One of the top American receivers, Hallicrafters SX-122, brand new in March at cost of £160, asking £120 or near offer.—Morris, G4HU, 34 Birch Avenue, Romiley, Cheshire.

**G. W. M. RADIO LTD.****RECEIVERS**

**ADMIRALTY B.40.** 640 Kc/s. to 30.5 Mc/s. Speaker, A.C. power unit built in. Bandwidth switched 1, 3 and 8 Kc/s. Crystal calibrator. Large vertical calibrated illuminated dial. Circuit diagram. £22/10/—, also B41 low frequency version, 15 Kc/s. to 700 Kc/s., £10, carriage 30/- per set.

**MARCONI B28/CR100.** 60 Kc/s. to 30 Mc/s., £18/10/—, carriage £1.  
**MARCONI CR300.** 15 Kc/s. to 25 Mc/s. complete with power unit for 230 A.C. 230-24 volts D.C., £13/10/—, carriage paid.  
**MARCONI B29** low frequency, £10, carriage £1.

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**HARTLEY DOUBLE BEAM OSCILLOSCOPE** Type 13A. Time base 2 c/s. to 750 Kc/s., Y amp response to 2 Mc/s.. complete with leads and probe unit, £20, carriage £1/10/—.

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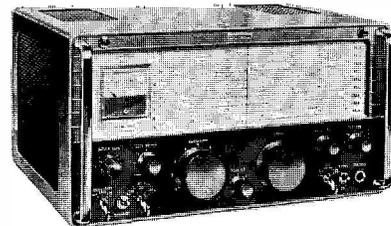
**HEADSETS** for 19 or 22 set with microphones, used 10/-, new 15/-, post paid.

**ROLLER INDUCTOR** tuners, 30 turns, 1 1/2" dia., 12/6, post 4/6.  
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All equipment offered is complete but not tested unless otherwise stated. Carriage charges quoted are for England and Wales only.  
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output meter £8 10s., carriage extra 10/-.

**DIRECTION FINDER**, ex. U.S. Navy, 200 Kc/s. to 1,500 Kc/s.  
in 2 bands, 6 volt P.S.U., £30, carriage extra £1.

**45/47 Eastborough, Scarborough, Yorks.**  
Telephone: SCAR 5402

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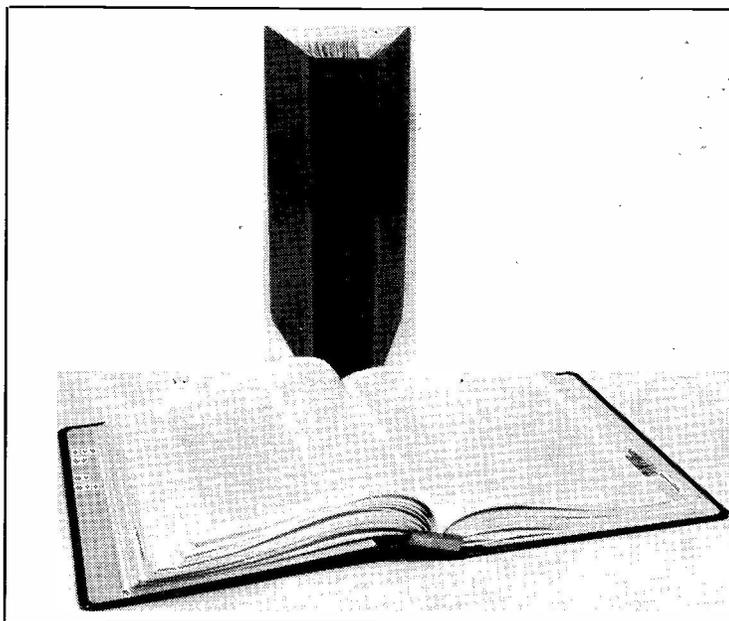
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