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The SHORT WAVE Magazine

VOL. XXVIII

NOVEMBER, 1970

NUMBER 9

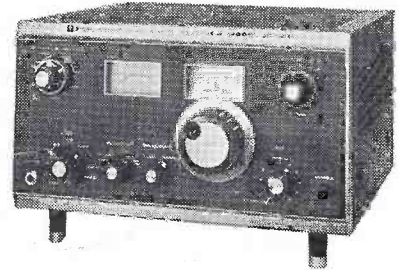
TRIO

Stand-by to receive



important announcement: Trio TS-510 and PS-510 price reduction to £180 the pair

Full information on these and all other Trio models including: VFO-5D (Variable Frequency Oscillator for TS-510) £25; JR-500SE receiver £69. 10. 0; 9R-59DS receiver £42. 10. 0; JR-310 receiver (illustrated right) £77. 10. 0; 5P-5D speaker £4. 7. 6 and HS-4 headphones £5. 19. 6 are available from your local Trio dealer or direct from us.

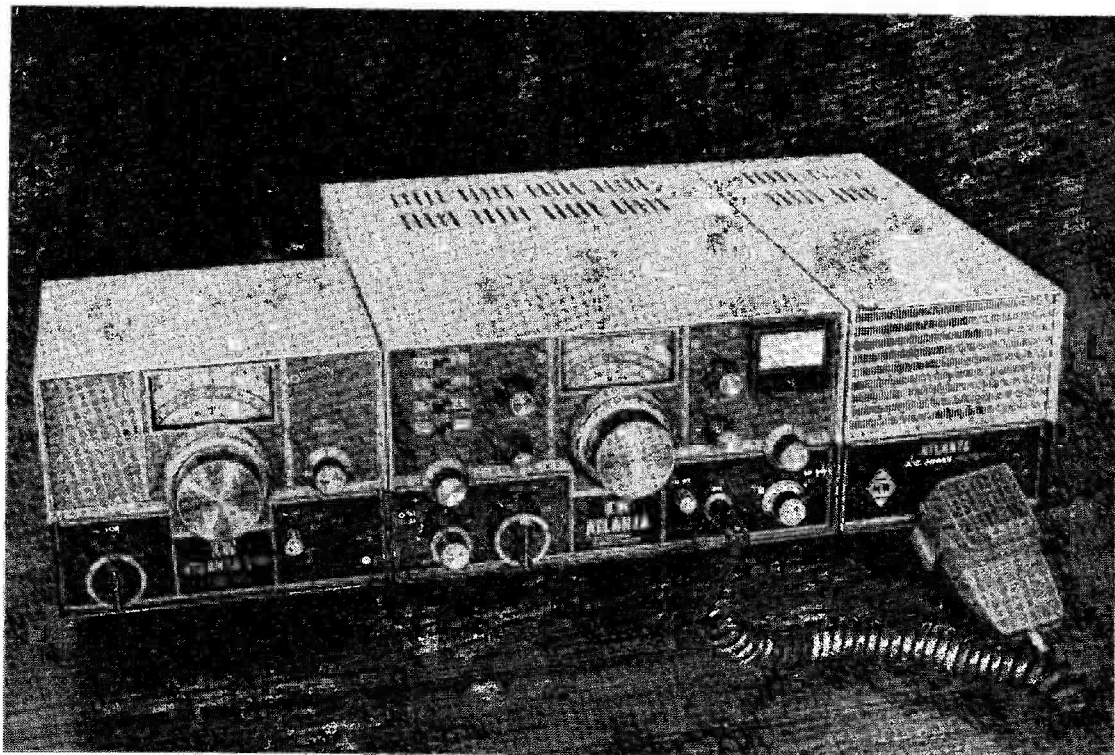


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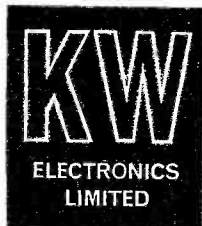
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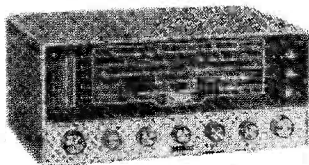
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To know more about the piece of Heathkit equipment which has captured your interest.

The first two will cost you letter postage only by requesting a free Heathkit Catalogue or a full specification sheet, or both. The third, at the nominal cost of only 10/- (50np) will bring to you the complete assembly manual of any model. This contains full assembly details plus technical and practical information.

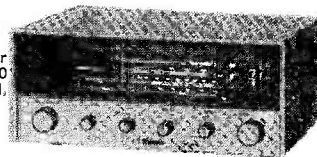
DE-LUXE 5 BAND RECEIVER GR-54



3 S/W bands covering 2 MHz-30 MHz plus medium broadcast band and aeronautical and radio navigation bands.

Kit K/GR-54 £49 Carriage 12s.

LOW COST 4 BAND GR-64

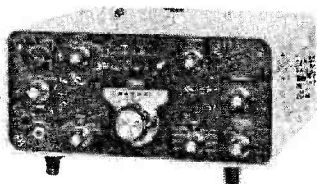


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SB-301 AMATEUR BAND RECEIVER

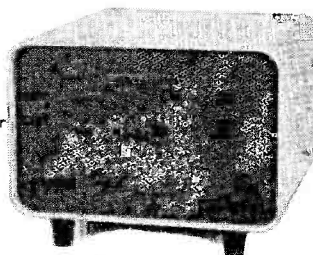
Full amateur band coverage (80-10 metres.) Optional AM and CW xtal filters.



Kit K/SB-301 £140 Carriage 14s.

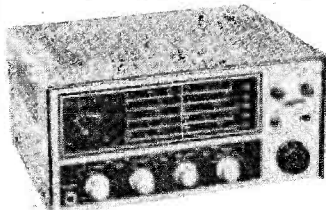
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Eminently suitable for use with SB-301.



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BASIC RECEIVER HR-10B

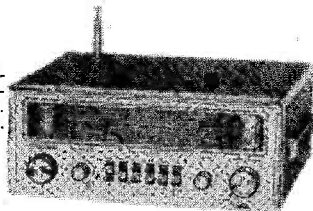


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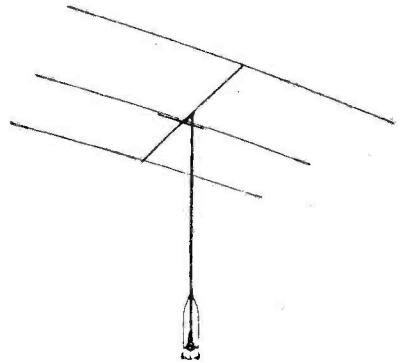
V-3 Jr.

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Carriage and Insurance Extra



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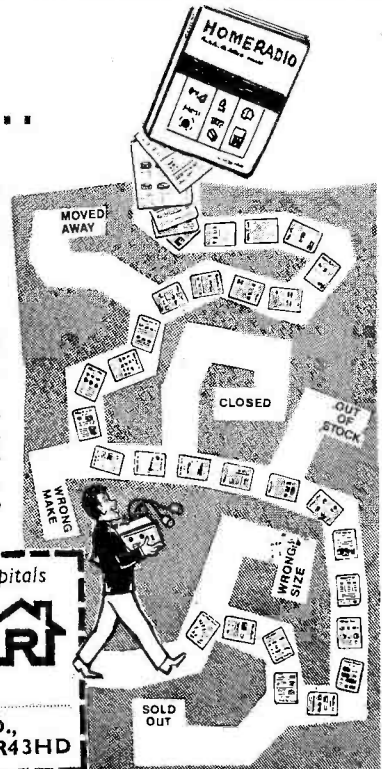
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WAY OUT— of the component finding maze.....

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HAMMARLUND HQ-170A Amateur Bands Receiver, 160-60m.	95	0	0
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HEATHKIT SB401 Tx with Crystal Pack, as new	150	0	0
HEATHKIT RA-1 Amateur Bands Receiver, 160-10m.	32	0	0
HEATHKIT GR-54 General Coverage Receiver	35	0	0
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J-BEAM 4 element 10m. Yagi, unused, as new	10	0	0
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BCC 69-9 2m. Transceiver. 12v. D.C. operation. Tx Crystal for 2m., with circuit diagram and mic., dash-mounting (carriage extra)	8	10	0
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TRIO COMMUNICATIONS EQUIPMENT. All items in stock from the ever-growing TRIO range of quality equipment with first-class demonstration facilities for the caller. Coming soon! A new solid state Amateur Band receiver by TRIO with a host of features and a coverage which includes 160 and 2 metres. Sorry we do not have more specific details for you this month but we shall, of course, announce these as soon as we have a full specification.

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EDDYSTONE 840C RECEIVER. Excellent order but marked case	35	0	0
STAR SR550 AMATEUR BAND RECEIVER. Very clean condition	45	0	0
HEATHKIT RG-1 RECEIVER. Excellent all round	35	0	0
HEATH SB300E RECEIVER. Complete with CW and SSB filters, very good condition	98	0	0
HEATH SB400E TRANSMITTER (Companion to the above) again, condition very good	132	10	0
HEATH SB-101 MOBILE PSU. HP-13A. Little used	26	0	0
TRIO JR-500SE AMATEUR BAND RECEIVER. With three months guarantee	50	0	0
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TRIO REMOTE VFO-5D. Brand new, very slight case marks, front panel perfect	20	0	0
HEATHKIT R-C BRIDGE MODEL C-3U. Unmarked	8	10	0
CODAR Q MULTIPLIER RG10. Nice condition ...	5	0	0
HEATHKIT HD-10 ELECTRONIC KEYSER (115v.)	15	0	0
HEATHKIT DX-40 TRANSMITTER	20	0	0
KW VALIANT. Very clean condition	20	0	0
HEATHKIT Q MULTIPLIER HD-11. Unmarked	5	5	0
SME3009 PICK-UP ARMS complete with ultra light shell S2. The current model absolutely brand new. A few remaining at	25	10	0
TRIO 9R59-DE RECEIVERS. Several in stock all in first-class unmarked order and electrically perfect ...	35	0	0
AR88D RECEIVERS. Brand new sets complete with all crimping tools, manual, headset and spare valves. Completely checked out before despatch	82	10	0
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HAMGEAR PMII PRE-SELECTOR. As advertised last month	7	19	6
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ECHO DUAL IMPEDANCE HEADPHONES. (8 ohm and 4k). These are a most useful unit around the shack	5	12	6
S. G. BROWN HIGH IMPEDANCE 'PHONES TYPE F	2	5	0
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TRIO JR-310	£70 (20/-)
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CODAR. ATS, £17 250/s, £9; T28, £16/10/-; PR30X, £8/10/-; CR70A, £22/10/-; 12/MS, £11/10/-; 12/RC, £2/10/-, etc., etc.

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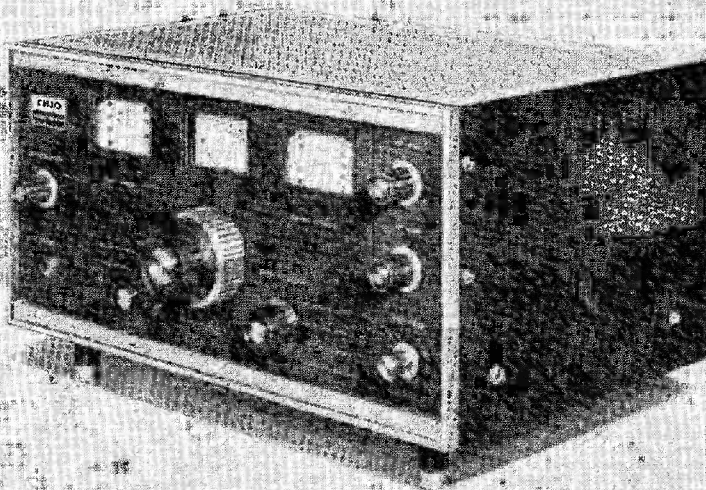
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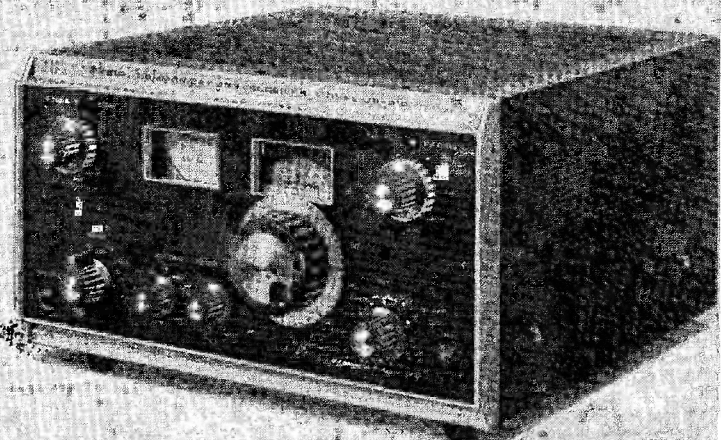
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Distortion's Down—Reception's Up TRIO's 9R-59DE and JR-310



9R-59DE



JR-310

Tune in for total communications reception. Tune in with TRIO's 9R-59DE and/or JR-310 SSB receivers. Amateur operators and short wave listeners the world over agree that TRIO's master engineers have ingeniously combined technique and design to achieve quality usually found in much higher-priced models. Distortion is hushed to an absolute minimum. Top-tone clarity at all times. Handy and expertly designed to help beginners easily enter the wide-wide world of communications.

9R-59DE

BUILT IN MECHANICAL FILTER 8 TUBES COMMUNICATION RECEIVER

- 4 Bands Covering 540KHz. to 30MHz.
- Two Mechanical Filters Ensure Maximum selectivity.
- Product Detector for S.S.B. Reception.
- Automatic Noise Limiter.
- Large Tuning and Bandsread Dials for Accurate Tuning.
- Calibrated Electrical Bandsread.
- "S" Meter and B.F.O.
- 2 Microvolts Sensitivity for 10dB S/N Ratio.

SSB COMMUNICATION RECEIVER

JR-310

- High-stability VFO of 2FET's and 2 transistors and easily handles QSO's for hours.
- Precision double gear dial—a TRIO innovation—with linear frequency variable capacitor. Possible to get finer reading 1 KHz. One dial rotation covers 25 KHz, makes SSB demodulation easier.
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Don't worry, Gentlemen, Alan G3MME has not deserted us—quite the reverse, he will now be based at Matlock and Lowe Electronics becomes a partnership between Alan and I. Business has grown to such an extent that I must have help to carry all the loot to the bank and I can't think of anyone I'd rather have than Alan. Those of you in the deep South will doubtless miss Alan, but he'll still be around on 80m. at some disgusting hour when he should be in bed!!

Fortunately, John Kirby G3JYG is ready to take up where Alan left off and you'll find him a jolly good egg and dead knowledgeable too, so start beating a path through the wilds of Lewes to his door.

So what else is new? IC-Zeffery is rampant in the London, Brighton, Glamorgan and Glasgow areas and it won't be too long before the gaps are filled in! "What," I hear you say, "is an IC-2F?"—well, old boy, listen around 144-48 or 144-6 to hear the tops in mobile or fixed FM. All transistor 25W transceiver. A selection of second-hand stuff includes the following:—

Receivers

Collins 5114 all filters, £300.
Collins R-390/URR digital readout, £300.
Hallicrafters SX130, £55.
Hallicrafters SX111, not mint but good performer, £50.
Eddystone 888A, £60.
Lafayette HA-350, £55.
AR881F, £25-£30.
BC348, £17 10s.
Trio 9R59DE, £35.
Inoue IC-700R, £70.

Transceivers

Drake TR3, as new, £200.
National 200, £100, less p.s.u., as new.
Heath HW12A & HP23 p.s.u./speaker, as new, £60.
Swan 350, A1, £160.
Hallicrafters Tornado, A1, £130.

In the accessory line, POST FREE —

Asahi Sangyo twin meter S.W.R. bridges, £6 16s. (Asahi Sangyo very much) Oh, no!!

Yaesu YD844 table mike, £10. Low impedance padded headsets, £2 8s. 12 hour digital clocks, £5 14s.

Lots of other goodies—regulated low voltage power supplies, electronic keyers, monitors, plain keys, mobile transistor p.s.u.'s, Tavasu whips, Medco L.P. filters, Medco H.P. filters, crystal filters, mechanical filters, meters, connectors, etc., etc.

In the small component line, we have just got a fresh lot of screw-in feedthroughs 1000 pF 500v., but sorry to say the price has gone up to 1/6 each, 15/- dozen.

We also have a few bags of resistors left—1 lb. assorted bags at least 200 per bag—an excellent buy at 10s., post free.

Other bits and bats:—

RF chokes. Small Rx type 6d. each, 5s. doz.
Brand new top grade 3000 mfd. 12 volt electrolytics, 1s. 6d. each.
Tubular trimmers 1-5 pF, 1s. each, 10s. doz., 2-15 pF same price, 1-6 pF N220 solder-in, 5s. doz.
20 pF air spaced, 1s. or 10s. doz.
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Discs 500v. .001, 4s. doz.
Ceramics N750 12, 15, 27 pF, 1s. doz.
Electrolytics 20 mF 12v., 6s. doz.

Plugs, Phono, 1s. 6d. 3-5 mm. screened, 2s. 3-5 mm. sockets, 1s. 6d., standard jack plugs screened, 2s. 6d.

Whole slew of small bits and pieces—why not send a s.a.e. for lists.

Please note POSTAGE IS EXTRA unless stated otherwise.

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PONENTS.

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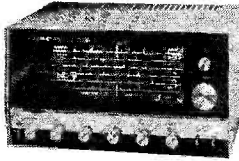
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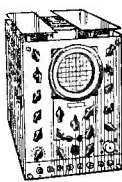
LAFAYETTE HA.800 SOLID STATE AMATEUR COMMUNICATION RECEIVER SIX BANDS 3.5-4, 7-7.3, 14-14.35, 21-45, 28-29.7, 50-54 Mc/s.



Dual conversion on all bands. 2 x 455 Kc/s. mechanical filters. Product detector. Variable B.F.O. 100 Kc/s. crystal calibrator. "S" meter. Huge slide rule dial. Operation 230v. AC or 12v. DC. Size 15" x 9 1/2" x 8 1/2". Complete with instruction manual, £57/10/-, Carr. paid (100 Kc/s. Crystal 39/6 extra).

TRIO TS 510 AMATEUR TRANSCEIVER with speaker and mains P.S.U., £180.
TRIO JR310 AMATEUR BAND 10-80 Metre Receiver, £77/10/-.

TYPE 13A DOUBLE BEAM OSCILLOSCOPE



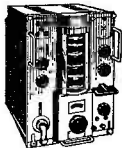
An excellent general purpose D/B oscilloscope. T.B. 2 cps-750 Kc/s. Bandwidth 5-5 Mc/s. Sensitivity 33 mv/cm. Operating voltage 0/110/200/250 v. A.C. Supplied in excellent working condition. £22/10/-, Carr. 30/-.

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Mains operated 1-5-30 Mc/s., £7/10/-, P. and P. 4/-.

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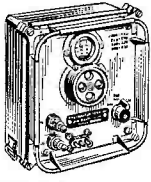
ADMIRALTY B.40 RECEIVERS



High quality 10 valve receiver manufactured by Murphy. Five bands 650 Kc/s.-30 Mc/s. 1/2 500 Kc/s. Incorporates 2 R.F. and 3 I.F. stages, band-
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Carbon 30Ω 35w., 5/6, P.P. 1/6.

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Small portable crystal controlled wavemeter. Size 7 x 7 1/2 x 4 in. Frequency range 500 Kc/s.-10 Mc/s. (up to 30 Mc/s. on harmonics). Calibrated dial. Power requirements 300v. DC. 15mA and 12v. DC 0-3A. Excellent condition, 89/6, Carr 7/6.

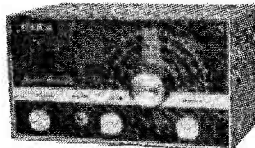
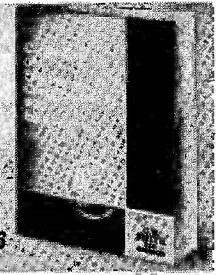


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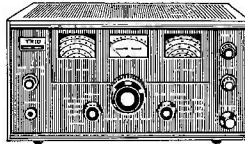


TRIO 9R-59DE

4 band covering 550 Kc/s. to 30 Mc/s. continuous and electrical bandspread on 10, 15, 20, 40, and 80 metres. 8 valve plus 7 diode circuit. 4/8 ohm output and phone jack. SSB-CW, ANL. Variable BFO. S meter. Sep. bandspread dial. IF frequency 455 Kc/s. audio output 1.5w. Variable RF and AF gain controls 115/250v. A.C. Size: 7" x 15" x 10" with instruction manual, £42, Carr. paid.

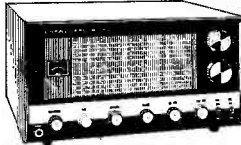
UNR-30. 4 BAND COMMUNICATION RECEIVER

Covering 550 Kc/s.-30 Mc/s. Incorporates variable BFO for CW/SSB reception. Built-in speaker and phone jack. Metal cabinet. Operation 220/240v. A.C., supplied brand new, guaranteed with instructions. £13/13/-, Carr. 7/6.



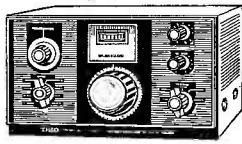
TRIO COMMUNICATION TYPE HEADPHONES. Normally £5/19/6, our price £3/15/- if purchased with receiver.

NEW LAFAYETTE SOLID STATE HA600 RECEIVER

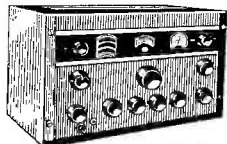


5 Band AM/CW/SSB amateur and short wave 50 Kc/s.-400 Kc/s. and 550 Kc/s.-30 Mc/s. F.E.T. front end. 2 Mechanical filters. Huge Dial. Product detector. Variable BFO. Noise limiter. S Meter. 24 1/2" Band-spread. 230v. A.C./12v. D.C. Neg. earth operation. RF gain control. Size: 15" x 9 1/2" x 8 1/2". Wt. 18 lbs. Exceptional value, £45, Carr. 10/-.

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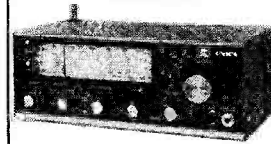
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5mA	27/6	300mA	27/6	50v AC	27/6
10mA	27/6	500mA	27/6	150v AC	27/6
750mA	27/6	3v DC	27/6	300v AC	27/6
1 amp	27/6	10v DC	27/6	500v AC	27/6
2 amp	27/6	20v DC	27/6	S meter 1mA	
50μA	40/-	200μA	35/-	2 amp	27/6
50.0-50μA	37/6	500μA	40/-	5 amp	27/6
100μA	37/6	500.0-500μA	20mA	27/6	150v DC
100.0-100μA	35/-	27/6	50mA	27/6	300v DC
		27/6	100mA	27/6	500v DC

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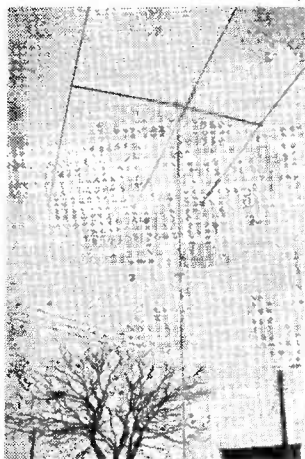
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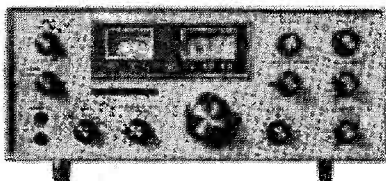
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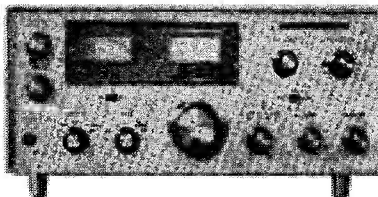
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500W PEP

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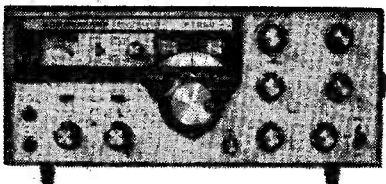
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The no compromise AM, FM, SSB and CW receiver for the man who wants the best. £160

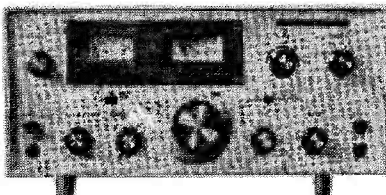
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VOX, PTT, MOX. 100 kHz marker. RIT Metered ALC. Again, usual extras are standard, £160, p.s.u., £45

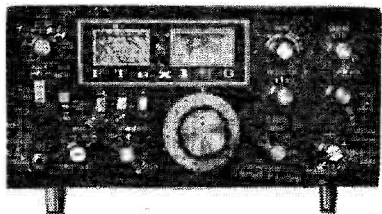
FL500



240W PEP

Companion to the FR-500 for transceive or split frequency. Matching it in quality and performance. £145

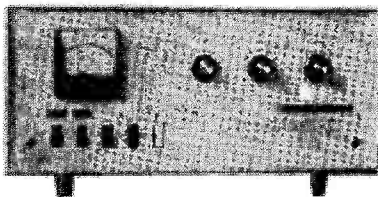
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FL2000



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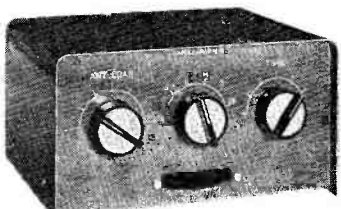
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The SHORT-WAVE Magazine

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If an SWL—young or old, shy or self-confident, professional or with only an amateur interest in radio—approaches you for advice, it is not only your duty, but also your privilege, to do all you can to help and encourage him and maintain his enthusiasm.

Austin Foster,
G6FO.

WORLD-WIDE COMMUNICATION

USING THE JOYSTICK

AS AN ALL-BAND DX AERIAL—
SOME RESULTS CAREFULLY
EVALUATED

E. H. CHAUDRI, C.Eng., F.I.E.R.E. (G3DCS)

Ever since the Partridge "Joystick" appeared in the amateur firmament—nearly ten years ago now, during which large numbers have been sold—it has been the subject of bitter, if not violent, controversy. There are those who maintain that the Joystick is no more than an elevated lump of inductance somehow brought to resonance—that

a plain piece of wire of the same length could be made to do just as well—that of course it is the "feeder" that does the radiating, and the longer the feeder the better the results—that an old bedstead resonated through an ATU could be made to work equally well—and so on, and so on. But the fact remains that numerous AT-station operators using the Joystick with its appropriate tuner unit report remarkable results, and are prepared to swear by what they can do with it. The very first "Report on the Joystick" was carried in SHORT WAVE MAGAZINE in our issue for February 1963. Here is the latest report—a careful evaluation of its capabilities—which once again will be of interest to a great many readers.—Editor.

HAVING eventually attained those pleasant circumstances which enable one no longer to have to construct one's own equipment from sheer financial necessity, the author has for some time been able to divert his attentions in greater detail than heretofore to the subject of antenna systems. The aerial at G3DCS had for many years been a general-purpose wire approximately a half-wave on 80m., resonated ultimately by a home-built L-network. Recently, an FT-DX500 transceiver was purchased, which for the first time provided G3DCS with equipment running reasonably high power and which contained a receiver expressly designed for amateur working. The writer had some time previously gone in for a Joystick antenna and 4RF tuner, which had given very satisfactory results when used with a K.W. Vanguard transmitter, but which had not previously been considered very seriously as the main aerial.

General Considerations

Difficulty has always been experienced in working real DX from G3DCS and it had long been thought this was due to a not particularly favourable QTH and the fact that the LW antenna could only be run due North/South and so its "end-on" radiation would be unlikely to cover the major land masses. It was reasoned that the Joystick VFA, if vertically mounted, would radiate in all directions and this might facilitate working areas not achievable with the long wire, but possibly with inferior results in those directions in which the LW exhibited more gain.

Earlier experiments with the Joystick VFA had shown that whilst it might be possible to resonate the system on all bands, it was not so easy to match well into the transmitter with the short length of feeder with which it was supplied. Standing-wave ratios were measured with 8ft. of feeder (as supplied) and with 40ft. of feeder, the latter being sufficient to allow the Joystick to be mounted on a pole of reasonable height and at a convenient position relative to the operating room. The Joystick was put up on an 18ft. pole made from three 6ft. sections of plastic drain-pipe cemented together, suitably guyed with polypropylene cord. The Joystick was fixed vertically and fed from the bottom. The SWR's obtained are shown in Table A (p.527). It should be noted that the manufacturer's comments regarding the

insertion of SWR bridges into the system apply only to the single-wire feeder between the ATU and the Joystick and that it is perfectly in order to insert the bridge in the coaxial feeder between the transmitter and the ATU. Both 50 and 75 ohm coax gave acceptable results. Fig. 1 illustrates a practical set-up for using the aerial. (The existing 130ft. antenna was left untuned during all tests).

In order to ensure the best possible earthing, this was achieved in two ways. A convenient lead cold-water pipe was available in the shack and this was used. In addition, a length of bare copper wire was taken through a ventilator and buried about two inches below ground for a length of about 50 feet, near the bottom of the pole on which the Joystick was mounted. The 4RF tuner was modified by fitting an earth terminal to it so that the antenna system could be earthed directly at the tuner; both earths were connected to this point.

It is known that earthing is highly critical with the Joystick VFA system and the author once experienced an example of this when a semi-local station using this antenna tuned up without connecting the earth; the signal dropped from a normal S9+ to about S5.

Aerial Drive

Both the K.W. Vanguard and the FT-DX500 have *pi*-output systems and it was found that the additional *pi* circuitry of the Joymatch 4RF tuner made tuning somewhat unwieldy. If the input capacitor of the tuner is set to minimum capacity the 4RF in effect operates as an L-network, all aerial Joymatch tuning being accomplished by the output capacitor of the tuner. The writer in fact incorporated a switch in series with the input capacitor so that it could be put out of circuit, to prevent the accidental possibility of changing this capacitance. Loading is accomplished by using the normal loading condenser in the transmitter.

Tuning Procedure

This was accomplished by setting the 4RF Joymatch band-switch to the position which gave the best received signals. The output capacitor was then rotated to peak the signals. A small amount of tone was injected into the transmitter and the PA resonated with the Tx load capacitor set in the unloaded position, *i.e.*, fully meshed. The SWR bridge was then switched to measure forward

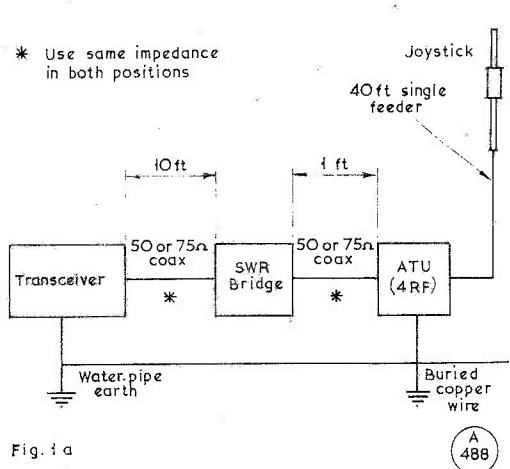


Fig. 1A. General layout arrangement — see text.

current and adjusted for full-scale deflection by means of its own control and by increasing Tx output as required. The bridge was then switched to measure reflected currents. The tuner output capacitor was now tuned for the lowest reflected current.

The selector switch was tried in positions on either side and the capacitor retuned until the best possible SWR was obtained, irrespective of the indicated waveband setting of the tuner.

Within the range of amateur bands 10 to 80 metres the SWR was better than 1.5 to 1. Accurate SWR measurements could not be made on Top Band owing to lack of power, but these approximated 2:1. The two HF positions of the 4RF tuner bandswitch are in fact common, and the tuner was modified by removing the strap and using the extra switch position gained to put in an additional tap at the HF end of the coil. It was hoped by so doing that the SWR on the 15-metre band could be improved, but in fact this was not so. It is possible that at some QTH's it may be advantageous and indeed it may help to use other blank switch positions for additional taps at the lower frequency end of the coil.

Results

Transmission tests were made over a period of 13 weeks in the early part of this year, at a time when DX conditions were probably average. Operation took place at week-ends only and, apart from Sunday morning ragchews, was confined to late afternoon and evening working up to shortly after midnight. No early morning or late night operating was done. Using the FT-DX500 on 10-80m., running 400w. p.e.p. on SSB, and a "Cornishman" for Top Band with a Trio 9R-59DE Rx, in about 160 operating hours during 42 days, 292 QSO's were obtained in 62 countries (excluding W/VE call zones as countries).

The break-down shows number of countries worked on SSB, 19, and on CW, 54. Taking Top Band, 29 U.K. contacts were made with signal levels around the S6/S7+ mark. The 36 QSO's on 80m. gave S8+. The 20-metre band produced 23 contacts, with W4 as best DX. On

15 metres, some 82 QSO's were obtained in 14 call areas, the best being W6, JA and PY, signal reports from these distances being S7-S9.

Received signal strengths varied from S9 for JA and PY, as best DX; S8 from KZ and ZM1; S7 from stations in AX, HS, LU, VP9 and YV; down to S4 from VP8 and ZE.

In terms of countries worked per band (DX and otherwise) 21 MHz have the best results, with 42 prefixes accounted for, the best being AX, CR, HS, HC, HP, HI, JA, W, YV, VP8 and ZM1.

For both transmission and reception, neither 7 MHz nor 28 MHz were much used, or tried.

On June 20 1970, the 18-foot high antenna was removed and replaced on a Joymast which elevates the Joystick to 25 feet to the bottom, i.e., 32 feet total height. This time the Joystick was fed from the top, as per manufacturer's instructions (see Fig. 1B, p.528).

The old 132ft. aerial was removed altogether. Up to that time 44 different countries had been worked. Since then 37 countries have been raised and Top Band results have been noticeably improved. There have been no signs that the LW antenna in any way affected results provided it was rendered non-resonant, but tuning it definitely caused a large fall in transmitted signal strength. (The LW was often compared with Joystick when in QSO with other stations).

On the lower frequencies the LW sometimes gave an improvement of one or two S-points, in particular on Top Band, but conversely on the DX bands it was

TABLE A

The following is a table of SWR's and the measured impedance at the input socket of the Joymatch 4RF tuner. The impedance bridge used was to a simple circuit. It is not expected that quoted figures are absolutely accurate but they should be near enough to provide very useful data.

It is interesting that those bands which show poor SWR's exhibit a particularly low impedance at the tuner input socket and so are not likely to match either 50 or 75 ohm feeders.

Joystick Antenna with 4RF Tuner

BAND MHz	JOYSTICK - 40ft. FEEDER		JOYSTICK + 8ft. FEEDER (As supplied)	
	SWR	Impedance at input to ATU, ohms	SWR	Impedance at input to ATU, ohms
1.8	Think	40	Worse than	20
	less than		2.0	
	2.0			
3.5	1.0	100	3.0	30
7.0	1.0	75	2.0	30
14	1.2	80	1.1	50
21	1.1	75	1.4	75
28	1.1	30	1.1	30

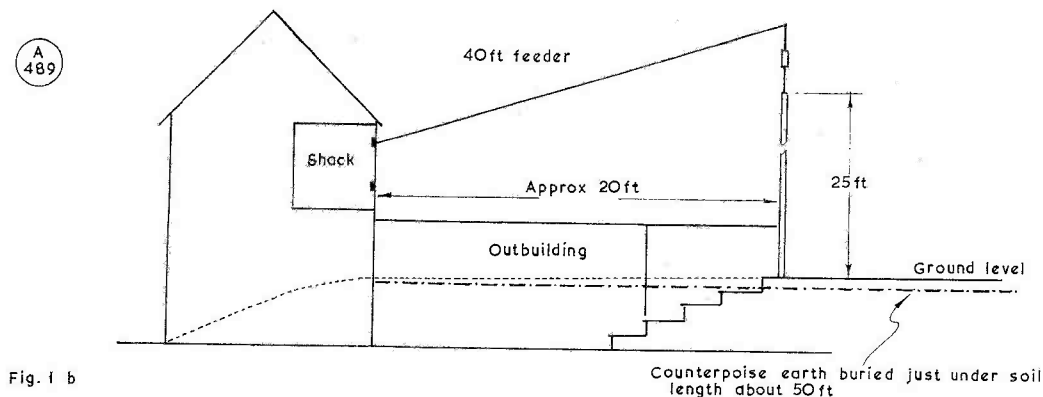


Fig. 1 b

Fig. 1B. Joystick aerial configuration discussed in text.

frequently not possible to raise stations until the Joystick was used, which only goes to prove you can't have everything.

The G3DCS₂ Beam

The fact that the Joystick is a compact antenna system gave the writer the idea that a number of elements could be used to form the basis of a fixed beam system. Whilst unlikely to compete with multi-element Yagis, sufficient gain might be achieved by erecting an "add-on Joystick" to the system to make it a reasonable proposition if the erection of a conventional beam is not "on" from the point of view of space or expense. Furthermore, it might be feasible to produce a low frequency beam.

It appeared to the writer that if two elements could be erected and fed in phase one had the basis for a two-element broadside/in-phase array. This might even be swingable electrically by suitable phasing. The most suitable spacing between elements might be about 0.7 wavelength but spacing between 0.3 w/l and one w/l might give a gain of up to 3 dB—which is worth having. A system should be possible where two Joysticks could be operated in phase with some overall gain on three amateur bands, say, 80-40-20m., 40-20-15m. or 20-15-10 metres.

The author has tried a quick hook up on the 15-metre band with such an arrangement, using the layout in Fig. 2. Two U.S. stations reported a fall in signal when one Joystick was disconnected and the system retuned, indicating there was some gain. Unfortunately, it has not been yet possible to devote serious attention to this system but the writer offers it as an idea for experiment. Very good signal reports were obtained during the short time the system was used but the author was unable to get both aeriels properly erected at a good height and clear of the house owing to lack of time.

The Joystick VFA is a compact all-band antenna system likely to give good all round results in the 10-160m. amateur bands. It will certainly give a good account of itself on all bands especially at QTH's where it is not practicable to erect long-wire systems for the LF bands. The performance on the HF bands is excellent

and many DX stations have assumed the writer was using a beam. There is no doubt that the feeder contributes to the performance of the system, but does this really matter? A 40-foot single-wire feeder together with a good earth should give good SWR's on all bands. More reliance should be placed on obtaining good SWR's than on the F/S meter incorporated in some tuners. Height is an important factor, particularly on the low frequencies. The aerial can be used indoors quite effectively on the DX bands. On 15 metres it is possible to use a Joystick with a 7ft. single-wire feed without an ATU, as it presents an impedance of approximately 50 ohms. The writer's first contact under these conditions was OA4KF (Lima) who gave R5-S6 and reported signals as one of the strongest from Europe. (At the time, the Joystick was in the shack leaning against the work-bench). The use of metal poles and mounting supports is to be deprecated.

It might be feasible to produce a beam system using

TABLE B
Joystick impedance measured between Feeder and ground (untuned) for various Feeder lengths

BAND	ANT. IN SHACK 7ft. FEEDER (As supplied)	ANT. ON 25ft. POLE, 40ft. FEEDER
	ohms	ohms
1.8	> 500	> 500
3.5	470	170
7.0	> 500	200
14	450	400
21	50*	470
28	30	30

* This impedance was confirmed as it was found possible to load Tx direct without ATU.

more than one Joystick. The addition of extra taps in the ATU could assist in obtaining better SWR's. Tuning procedure is simplified if the ATU is used as an L-network. It does not matter whether the antenna is fed from above or below. It is unlikely that the good results obtained at the writer's station are mainly attributable to the use of an expensive transceiver. Care has been taken to ensure this by checking that the DX could also be heard very well on a Trio 9R-59DE, a very reasonably priced receiver.

There is no technical reason why 7 MHz has not been used. It is a band not well favoured by the author but since the test period the writer has tried 40 metres on three occasions on CW. Five QSO's were obtained—one OK, two W's and two PY's. It would appear on this basis that DX results on this band would be quite acceptable!

Provided they are de-resonated there has not been evidence that adjacent antennae reduce or enhance the performance of the Joystick.

There is no reason why the Joystick should not be used with home-built ATU's provided correct matching is obtained. The cost of the system compares very favourably with any other multiband system.

The author acknowledges suggestions and assistance given by G3SGJ in these experiments outlined in this article.

Editorial Note: Since this material was prepared, G3DCS reports that his score of countries worked with the Joystick has been increased to 92.

POINT ABOUT JY1

The unfortunate and hard-pressed King Hussein of Jordan has attracted a good deal of publicity by reason of his radio amateur activities—of course, under such excruciating headlines as "Ham Hussein," "King talks to Hams," "Hussein bends the Ham Rules," "Hams help Hussein," and such like and so forth. The callsign he uses is JY1—but this is a prefix without a suffix, and as such is irregular under I.T.U. regulations, which lay it down specifically that the structure of an amateur callsign shall be the prefix to indicate nationality, followed by a numeral and a suffix to identify the individual AT-station. Hence, a callsign like JY1KH would not only be correct but also, one suggests, much more appropriate. It is a small point in relation to King Hussein's present troubles, but one worth making in the context of Amateur Radio.

G3BZU QRQ MORSE CERTIFICATES

Morse proficiency transmissions at 20, 25, 30, 35 and 40 words per minute are being made from G3BZU, the Hq. station of the R.N. Amateur Radio Society, at 1900 GMT on the first Tuesday of each month, on 3520 kHz. Only "perfect" copies of entries sent in for marking will be awarded a certificate for the basic speed of 20 w.p.m., with endorsement stickers for other speeds. From the latest issue of the R.N.A.R.S. *Newsletter*, we see that some 600 of these Morse Proficiency Certificates have been gained since the inception of the scheme—mainly, of course, at the lower speeds. However, G3KVV (Bexley, Kent) recently got his 20-40 w.p.m.

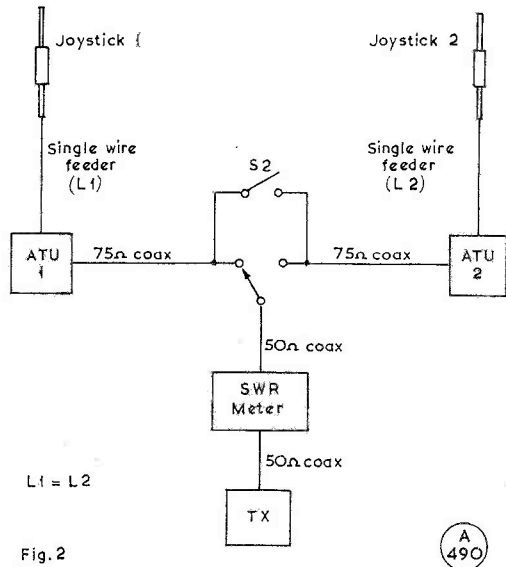


Fig. 2: Experimental beam by G3DCS using Joystick antennae. The system must be symmetrical. Vary the element spacing starting at about 0.7 wavelength (see text). Tune each Joystick separately then in parallel using S2. There will be a mismatch between the paralleled antennae and the 50-ohm coax feed. Hence, a matching system would improve results.

parchment, and hence the "gold endorsement," at the one attempt. Nice going! A charge of 2s. (10 NP) or two IRC's is made for the basic certificate, and 6d. (2½ NP) or one IRC for each endorsement sticker claimed. These modest charges are, of course, only to defray expenses. All entries should be sent to: QRQ Manager, R.N. Amateur Radio Society, H.M.S. *Mercury*, Leydene, Petersfield, Hants.

ANOTHER R.A.E. COURSE

We are asked to say that a course for Subject No. 55 is now running at the Adult Education Centre, 28 Beckenham Road, Beckenham, on Tuesday evenings, 7.0-9.0 p.m. Enquiries to The Principal, Beckenham & Penge Adult Education Centre, 244 Croydon Road, Beckenham, Kent. (Tel: 01-650 4208).

DO GET IT RIGHT!

Recently, in almost the same week, we had letters addressed, in the one case "Short Wave Magazine, Bucks.," in another "Short Wave Magazine, Buckinghamshire, Bucks." and, most incredible of all, "S.W.M., Bucks."!! Buckinghamshire, or Bucks., is one of the largest counties in England, covering several big towns. Buckingham is the name-town of the county, and that name must appear in our address, for it is from Buckingham that the Editorial Dept. operates. It is much to the credit of the Post Office that all these letters were ever delivered, with only a day or two's delay at that. The Editorial QTH is simply SHORT WAVE MAGAZINE, BUCKINGHAM, but those four words must appear in full.

SMALL BATTERY TRANSMITTER

FOR LF BANDS — PORTABLE OR /A OPERATION

F. G. RAYER, A.I.E.R.E. (G3OGR)

THE idea of building a battery-operated valve transmitter came when looking for a quick piece of apparatus for summer use, while in the act of stowing away as "permanent junk" two pre-transistor portables with 1.4v. type valves, and several spares of the same. The sight of a 3V4 recalled that this little valve had maximum input ratings of 18 mA at 150v., thereby capable of delivering 1.2 watts of RF at 50 MHz.

It was thought that one set of batteries would be more than enough for the whole summer, while the little Tx could be run at home from a mains HT pack. A transistor portable receiver covering 160m. and 80m. was to hand, so it was felt the whole project could be completed in an easy evening or two. This proved to be so. Everything worked properly from the instant of switching on, and numerous contacts were made, the

longest-distance solid QSO being at 100 miles on 80m. with a report of "good carbon microphone quality." The actual input normally used was about 0.5 to 0.75 of a watt. Some contacts of up to about 20 miles were obtained with a quarter of a watt, primarily to find out what this sort of power could do.

RF Circuitry

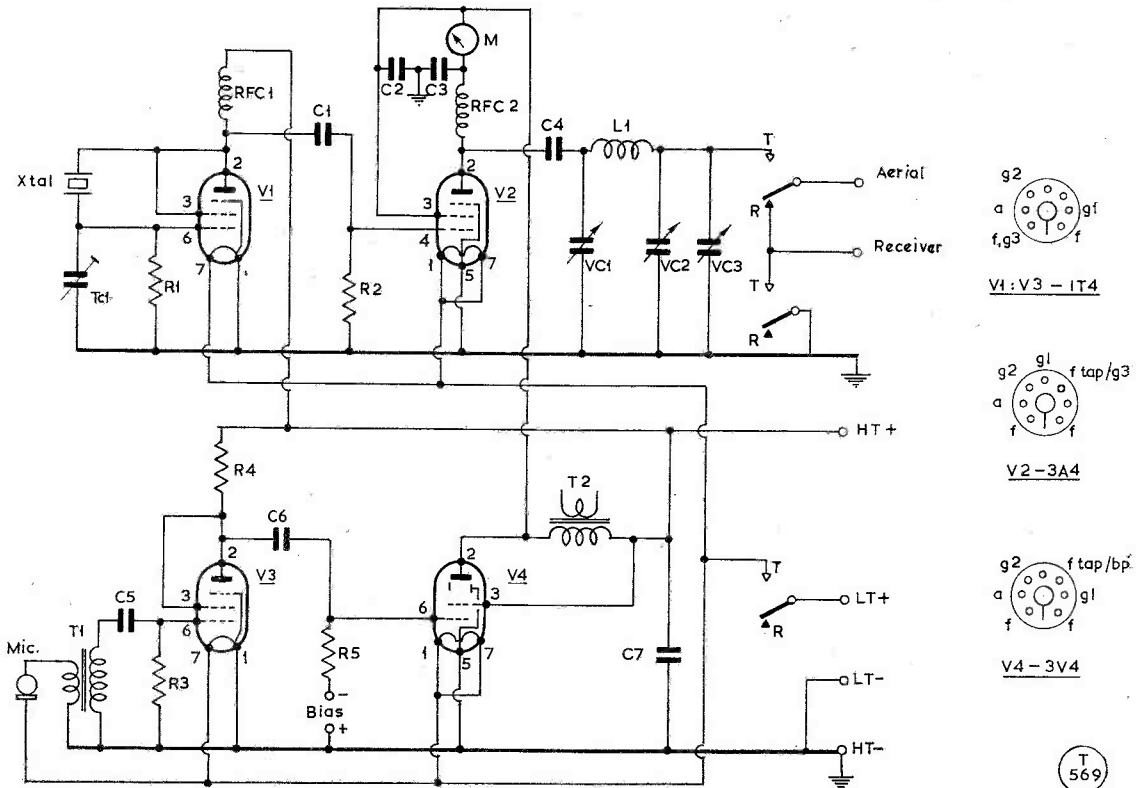
Below is the whole transmitter circuit, but the RF section alone might be of interest to a CW-only operator.

It was decided to omit any VFO, going straight for the utmost simplicity. V1 is a 1T4 (originally IF amplifier) used as a Pierce oscillator, triode connected. This needs no tuned inductors. The trimmer Tc1 is adjusted until every crystal plugged in oscillates well, as shown by grid current of a bit of a milliampere at the bottom of R2.

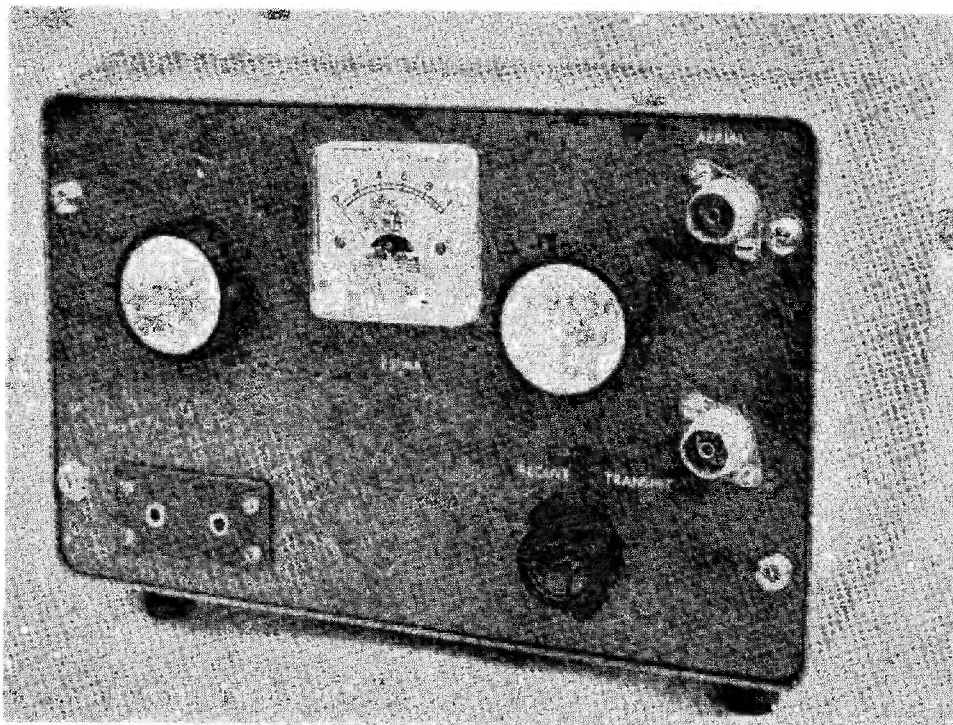
V2 is the PA, and its component parts and their purposes will be immediately apparent. L1 is the pi-tank, with VC1 tuning capacitor, and VC2/3 for aerial loading, in the usual way.

Since V1 only draws a very small current, RFC1 was a transistor type miniature choke. RFC2 was a receiver choke, and need only pass up to 18 mA, but should be effective at the working frequency.

The valves are wired for 1.5v. dry battery operation, and control of the equipment is simply by LT filament



Circuit of the Battery Transmitter.



General appearance of the Battery-Portable LF Band Transmitter.

switching.

RF output can be checked with a 70 ohm 1-watt carbon resistor, or similar load, with a 350 mA RF (thermo-couple) meter in series. A current of about 50-100 mA can be expected, according to HT voltage and loading. An alternative method of testing is to close VC2/3, dip VC1 to resonance, and bring a lamp loop near L1. The lamp loop can be one turn, soldered to a 3.5v. 0.3A bulb, which should light up nicely.

Any small meter reading around 15-20 mA, or shunted to do so, is suitable. A 90v. HT supply is often used, and 10 mA input is then nearly one watt.

Table of Values

Circuit of the Battery Tx

C1 = 500 μF	R3 = 10 megohms
C2, C3 = .002 μF	R4 = 68,000 ohms
C4, C6 = .005 μF	R5 = 2.2 megohms
C5 = .01 μF	RFC1,
C7 = 1 μF , paper	RFC2 = 2.5 mH RF choke
Tc1 = 30 μF trimmer	Xtal = For 1.8/3.5 MHz
VC1 = 365 μF , or	fundamental
similar Rx type	M = 0.25 mA meter
VC2,	V1, V3 = 1T4
VC3 = 2/500 μF , Rx	V2 = 3A4
type	V4 = 3V4
R1, R2 = 100,000 ohms	

Notes: Coil L1 is close-wound on a 1in. dia. paxolin tube, of 40 turns 24/26g. for 80m., and 75 turns *ditto* for 160m. Input transformer is as for carbon microphone, and o/p transformer is discussed in text. Variable condensers can be usual Rx types.

Modulator

A carbon microphone saves valves, and the microphone excitation current was obtained from the filament supply. T1 was ex-1154 transmitter, but other carbon microphone transformers should be suitable. In fact, with loud talking, fair modulation was possible without V3 at all, the transformer driving V4 directly. However, V3 is recommended.

V3 is another 1T4, and V4 is a 3V4 because it was to hand. The 3V4 maximum ratings are 90v. at 12 mA, with an audio power output of 0.27 watt, and this suited operation with the 90v. supply well. In the interests of modulation, DC input to V2 ought not to be much over twice the audio power available from V4. Bias was obtained from three 1.5v. cells in series, to avoid wasting HT on auto-bias circuits.

T2 was from an old mains receiver, and only needs to carry about 30 mA. A reasonably substantial component will avoid lost HT voltage, and the battery receiver type speaker output transformer is not very suitable.

The modulator could be tested by temporarily connecting a speaker to the secondary of T2. If the particular carbon mike used is better with 3v, V2 and V4 may be wired for 2.8v. operation, with the filaments of V1 and V3 in series. For other HT voltages, adjust the battery bias for V4 to suit.

Construction

Items were assembled on an old 3 x 7in. chassis, with

a panel to carry the crystal holder, meter, on/off switch and variable capacitors. No attempt was made to secure a "midget" layout.

The crystal holder, RFC1, and associated items were under the chassis, and RFC2, L1, VC1 and VC2/3, with C4, on top, a lead running through to tag 2 of V2. No trouble from back coupling or instability was ever experienced.

In the AF section, everything was underneath except T2, and grid leads and components are near the metal chassis.

It is probable that any reasonably sensible layout would prove satisfactory. A case large enough to take the batteries which will generally be required, fitted behind or below the chassis, is most convenient.

Notes on Use

For an initial test, adjust Tc1 as mentioned, not forgetting to dip VC1 to keep V2 anode current down, RF output being into a resistor. The signal should easily be found at the crystal frequency, but the receiver must be used with headphones, or the AF gain well reduced, so that feedback between speaker and microphone does not cause howling. Speech in the microphone should be clear and come through at good strength.

The transmitter was used with a dipole, and with

various end-fed wires. The adjustment of VC1 and VC2/3 follows normal lines. VC1 is *always* dipped for minimum anode current, while VC2/3 is opened *from* maximum capacitance, to increase loading, and thus DC input. Should proper tuning or loading be impossible with any particular aerial, one of the usual cures must be applied. The aerial length may be changed, or a tuner or matching unit employed, or a loading coil may be placed between the Tx and aerial.

It will be noticed that the on/off switch has contacts to change over the aerial, from L1 to receiver. This allows easy use of the same aerial. With the transmitter on, and feeding the aerial, there was leak through at about S8 to the particular receiver used. So, to avoid howling due to speaker feedback, it is necessary to switch off the receiver when transmitting, to keep speaker volume very low, or to plug headphones into the receiver. No special means of muting the receiver were adopted, because it was not felt really necessary, and internal connections to it were not wanted.

If much over 90v. HT is provided, V1 anode circuit can be separated and can take about 90v., while V4 can be a 3A4. For home use with mains available the HT was from an old 250v. 60 mA pack, dropped and stabilised at 108v. with an OB2, filament supply being from a 1½v. battery. The latter needs fairly large cells, but current is only drawn during transmission.

BETTER SIDEBAND RECEPTION

IMPROVING STANDARD RECEIVER CIRCUITS

J. S. CUSHING (G3KHC)

OLDER designs of receivers and some newer ones of the inexpensive type are intended to make a good job of AM reception. If a BFO is used CW or SSB are usually resolved sufficiently well to be copied, but with some difficulty.

There are three modifications which can be carried out to most receivers of this type and will greatly improve their performance when receiving SSB (as well as CW to some extent) at the same time retaining the ability to receive AM. Briefly, the modifications are first, to improve the selectivity of the IF stages by fitting a selective filter; secondly, to incorporate a product detector to allow better reception of SSB; and thirdly, to alter the AGC system so it will cope with SSB signals. This list may conjure up visions of a full-scale rebuild and indeed very elaborate circuitry *could* be used, but in fact the work suggested need only take a few hours, should not be found difficult, and will be interesting and instructive to anyone with a leaning towards constructional work.

General Approach

To be specific, the receiver on which these modifications were tried is a conventional valve superhet with an RF stage, frequency changer, two 455 kHz IF stages, ordinary diode detection with AGC, followed by two

audio stages. A BFO is of course included. Any set at all like the one outlined can have its selectivity improved out of all recognition, providing the IF is 450-470 kHz, merely by removing the first IF transformer and substituting a *Kokusai* mechanical filter. In other words, the work is no more difficult than replacing a defective IF transformer.

A product detector may be fitted next and to avoid disturbing the original wiring more than necessary a good plan is to build a small sub-chassis for the new detector. There seems little to choose between the various types of product detectors but that shown in Fig. 1 gave good results. Product detectors are essentially mixing circuits and this one takes a heptode valve (normally used as a frequency changer) with the IF signal applied to g3 and the BFO beat at g1. The result of mixing the IF and BFO signals produces a beat note in the audio range which, in the case of SSB, will be resolved as speech. Switching is arranged so that the product detector or existing diode detector may be used at will for SSB or AM respectively—though this is not entirely necessary because AM can be resolved with a product detector. To do this the main tuning is set to receive one sideband, and if the IF stages contain a selective filter this is no problem, so it follows that the signal reaching the product detector is in effect SSB and may then be resolved.

Although it is possible to receive AM in this way there is no doubt it is easier to avoid using a product detector to receive AM if possible. Switching from one detector to the other is at first sight a simple solution, but in practice may not be so. Ideally the switch is mounted close to the last IF transformer so leads carrying RF can be kept short, but a switch so sited will probably

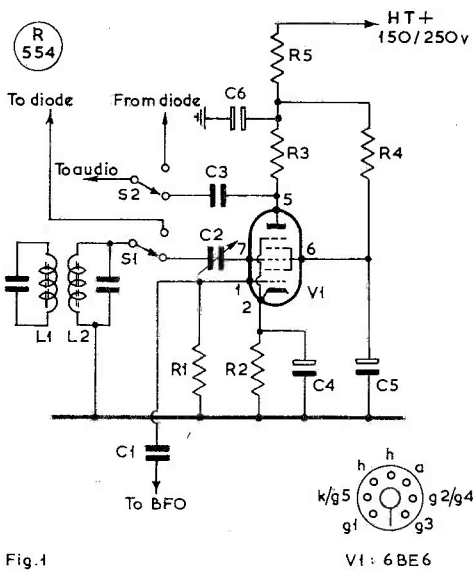


Fig. 1

V1: 6BE6

Fig. 1. A suitable Product Detector.

Table of Values

Fig. 1. Product Detector Circuit

- C1 = 100 $\mu\mu\text{F}$
- C2 = 3-30 $\mu\mu\text{F}$ trimmer
- C3 = 0.1 μF
- C4, C5, C6 = 8 μF
- R1 = 22,000 ohms
- R2 = 220 ohms
- R3 = 47,000 ohms
- R4, R5 = 10,000 ohms
- L1, L2 = IF transformer
- V1 = 6BE6

Notes: Some variation may be needed on C1, C2. Switches S1, S2 may be ganged.

need to be controlled *via* extension rods to the front panel, so may be difficult to contrive in an existing receiver. Alternatively, a position for a switch may be found on the front panel, but this means running hot leads to and from the switch, a course to be avoided.

An answer to these problems is to employ the slightly more elaborate circuit shown in Fig. 2. Switch S1 which changes from AM to SSB is single-pole double-throw, mounted on the front panel where there is room enough to fix a small toggle switch. This switch carries DC only so the lead from it to the detector is unlikely to cause trouble. As suggested earlier the circuit should be made up on a small sub-chassis including VR1 and VR2 (which being pre-set are not front panel controls) and this sub-chassis fitted near the last IF transformer.

Table of Values

Fig. 2. Improved Product Detector

- C1 = 100 $\mu\mu\text{F}$
- C2, C3 = 470 $\mu\mu\text{F}$
- C4, C5 = 100 $\mu\mu\text{F}$
- C6, C7, C8 = .01 μF
- Ct = Twice value normally used
- R1, R2 = 33,000 ohms
- R3, R6 = 100,000 ohms
- R4, R5 = 68,000 ohms
- R7, R8, R9, R10 = 470,000 ohms
- R11 = 10,000 ohms
- VR1 = 100,000 ohms
- VR2 = 500,000 ohms
- S1 = SPDT toggle
- L1 = IF xformer sec.
- V1A, V1B = 6AL5, or similar

There is perhaps one snag—it is necessary to remove the last IF transformer and cut out the internal capacitor. This is not a difficult job and should the worst happen, replacement transformers cost only a few shillings!

How It Works

The way the circuit in Fig. 2 functions is straightforward although initially it looks complex. With S1 at "SSB" it becomes a product detector with the BFO voltage injected at the capacity centre tap formed by Ct, Ct across the secondary of the last IF transformer. With S1 in the AM position a heavy positive bias (drawn preferably from a stabilised source) disables one diode and the other acts as an AM detector. VR1 is a pre-set control intended to provide little or no AM output when S1 selects SSB, and is adjusted for minimum output of an AM signal with S1 in the SSB position. The AM test signal is best provided from a modulated signal generator and the adjustment made at the same time as the IF transformers are aligned. Another pre-set (VR2) serves to control the level of audio applied to the receiver audio stages. Screened leads should be used for the input and output of the detector.

Audio-derived gain control can be either a very elaborate business or about the simplest circuit possible, as in Fig. 3. p.534. Although simple it functions very well and the only time it is necessary to reduce RF gain manually is for very strong local signals. Audio is taken from a suitable point *via* a blocking capacitor (C2) and applied to a potentiometer VR1, the slider of which is connected to a small rectifier. Negative voltage produced by the rectifier is taken to a capacitor resistor network, thence to the AGC line. Switch S1 is included as a suggestion.

Points of Detail

The order in which the modifications are done is of little importance but it is recommended that the filter be installed first, as such a marked improvement results. Proceed by removing the IF transformer immediately following the frequency changer then, after any small amount of chassis work found necessary, mount the

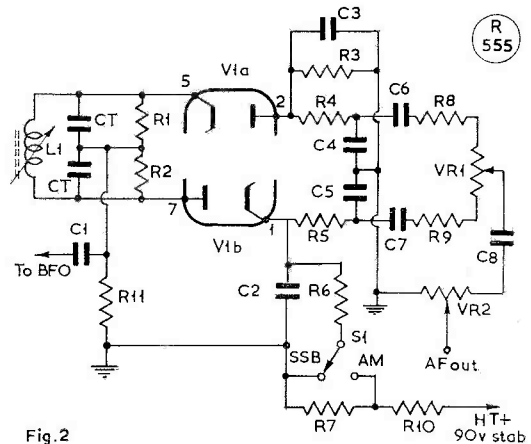


Fig. 2

Fig. 2. Improved Product Detector — see text.

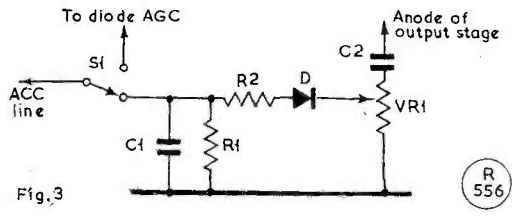
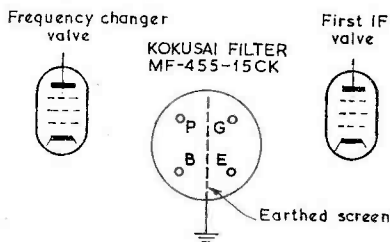


Fig. 3. Audio-derived gain control circuitry. C1 is 0.5 μ F, C2, .001 μ F; R1, 5-10 megohm; R2, one megohm; VR1, 250-500K; diode D, BY-100; S1, SPDT.

filter and screening plate as indicated in Fig. 4. Rewiring follows using the outline circuit of Fig. 5. It is important to include the isolating capacitor C2 which means the AGC line now goes to g1 of the IF valve (V2 in Fig. 5) rather than the base of the removed IF transformer secondary, as is fairly common practice. Failing a wobulator and 'scope or other elaborate equipment a signal generator or GDO will serve to align the IF stages. Apply the signal to the frequency-changer signal grid and tune the generator around 455 kHz. Once the filter frequency is found, ignore the generator tuning scale as it is unlikely to be accurate enough. Then set the generator to as near the centre of the passband of the filter as can be judged and peak the remaining transformers. Follow this by aligning the BFO, first setting its variable capacitor at half mesh, and then adjusting the coil slug to zero beat. A practical point is to mark the knob of the variable capacitor with a spot of coloured paint so it is at "twelve o'clock" when the plates are at half-mesh.

When the receiver is tried on the air, due to the narrow bandwidth of the filter, AM signals will almost certainly sound bassy if tuned on the nose, but speech will be perfectly readable, though it may be found that slightly pleasanter audio will result by adjusting a shade either side. SSB signals are resolved by the usual method: Reduce RF gain, advance AF gain and switch in the BFO. Trial and error will establish two fairly critical settings for the BFO, one being at, say 10 o'clock and the other may be 2 o'clock. Experience will show which setting to use for upper sideband and which for lower.



Note position of terminals on filter and location of screening plate.

Fig. 4

Fig. 4. Kokusai filter connections and mounting.

R 557

The reason for marking the BFO knob should now be clear.

Having experienced the delights of a good IF filter work should begin fitting a product detector. Once one is installed there is very little to be done in the way of adjustments, but it may be wise to vary the injection from the BFO by altering C1 (in both Figs. 1 and 2) as too high or too low a voltage will produce distortion or low output respectively. If the circuit of Fig. 1 is used the small series capacitor C2 should be varied so the detector does not overload. Generally speaking, product detectors overload very easily so if some other type is tried (there are several to choose from) use of a small series capacitor may be helpful. This method of avoiding overload can not be used if the circuitry of Fig. 2 is involved, so until AGC is fitted overload is avoided by reducing RF gain manually.

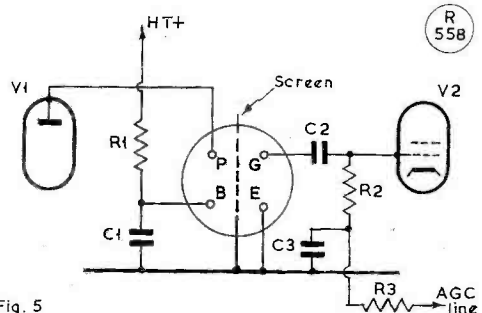


Fig. 5

Fig. 5. Circuitry to incorporate a mechanical filter. Values can be: C1, C3, .01 μ F; C2, .001 μ F; R1, 1K; R2, 500K; R3, 10K; V1, frequency changer valve; V2, first IF valve. All values are typical, except for C2, which may require variation.

Audio-Derived AGC

As product detectors overload easily audio-derived AGC is certainly worth fitting and that shown in Fig. 3 is simple but effective. Input is usually taken from the anode of the output stage and by adjusting VR1 a suitable AGC voltage may be developed for any particular receiver. Taking the input for the AGC system from the anode of the output valve is open to one serious objection for as the audio gain control is varied so will AGC voltage alter. A way round this is to use the idea shown in Fig. 6, where a low value potentiometer controls the actual loudspeaker volume and the receiver audio gain may be left permanently advanced, so avoiding any undesirable changes in AGC voltage.

However, it may be possible to get enough AGC voltage from the anode of the valve preceding the output stage. If this is so, and providing the audio gain control is wired in the grid circuit of the output stage, the objection referred to earlier does not apply. The setting of VR1 must be found by experiment, and a good method is to tune in an S9 signal and set VR1 so that the S-meter indicates this. By tuning other signals it will soon be found if VR1 needs a little adjustment. This system must not, however, be expected to handle very strong local signals so RF gain must be reduced manually in such cases.

Once the AGC is working RF and IF stages will have

their gain reduced on strong signals so there will no longer be any need to reduce RF gain manually to avoid overloading the product detector. The diode circuit of Fig. 2 will now work well and the capacitor C2 in Fig. 1 can, perhaps, be removed.

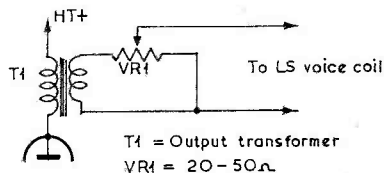
Audio AGC is also effective with CW but tends to cause distortion with AM signals. Reducing RF gain and perhaps switching off the AGC will alleviate this but if provision can be made to use ordinary AGC this is the best answer.

The Filter Unit

As yet the type of *Kokusai* filter has not been discussed. Type MF-455-15CK with a bandwidth of about 3 kHz is almost certainly best, though type MF-455-10CK, bandwidth about 2 kHz, could be considered.

Filters of any kind (*Kokusai* quote a figure of 20 dB) will cause a loss of gain. In practice the loss is less noticeable than might be expected and is a small price to pay for the benefits gained.

There are, of course, receivers which will convert well but have an IF other than 455 kHz. A suitable filter may be available but is almost sure to be costly and may not necessarily match easily into valve circuits. One answer is to fit a crystal filter (the minimum requirement being a half-lattice one using two crystals) and a task not to be undertaken lightly, but an alternative is a Q-multiplier. Results will not be as good as with a filter, but some improvement should be found. A Q-multiplier is also a useful fitment for CW working, so



T1 = Output transformer
VR1 = 20-50Ω

R 559

Fig. 6

Fig. 6. Circuit to control speaker output — see text.

the addition of one to a receiver fitted with a “wide” mechanical filter should not be overlooked if CW is used.

The question of converting the BFO to crystal control will not be touched on except to say that, provided the BFO is reasonably stable, there seems little point in incurring further expense and work doing modifications to the type of receiver likely to need such attention.

It is impossible to forecast how well these modifications will turn out with any particular receiver, but the set used to try these ideas is a very ordinary, very average one and the improvement is undeniable and well worth while. Tuning SSB is now a pleasure instead of an irksome exercise of skill, and the narrow IF bandwidth more help than hinderance with AM when band occupancy is high.

TWO-TERMINAL OSCILLATOR

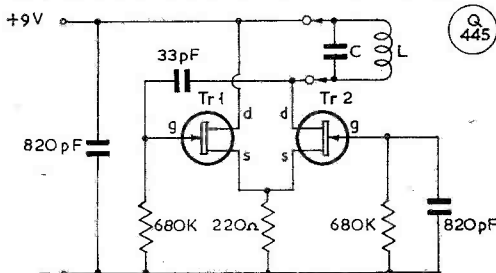
USEFUL TEST ITEM

F. JOHNSON (ZL2AMJ)

A TWO-TERMINAL oscillator is a laboratory or experimenter’s device with many applications. A tuned circuit, resonant at the required frequency, is connected to its two terminals and oscillates readily. The device can be used for checking components or as an “ever-ready” oscillator. The circuit shown here is a solid-state version of the twin-triode cathode-coupled oscillator.

The unit can be built on a scrap of print-board or Veroboard. When an oscillator is required for some new development project, a tuned circuit is added to the “two terminals,” and the unit becomes an oscillator at that frequency. There are no taps on coils, or other feedback adjustments to be made.

The circuit uses two field-effect transistors in a



Q 445

source-coupled configuration. The left-hand FET in the diagram acts as a “source-follower” and the right-hand FET as a “grounded-gate” amplifier. The resistor in the gate of the grounded-gate stage is to limit (to a safe level), the gate-current that would otherwise flow and destroy that transistor if the battery were accidentally connected with incorrect polarity.

A wide range of FET type numbers will operate satisfactorily in the circuit, so no particular type numbers are quoted here. Component values may need to be changed in some cases. Of the two units constructed each will operate between 3 and 30 MHz with the values shown.

Acknowledgements “Break-In,” July 1970

AUSTRALIAN RADIO HISTORY

The August 1970 issue of the *Australian Amateur Radio* is of particular interest because it devotes some 16 pages to the 60th Anniversary of the Wireless Institute of Australia, now the VK national society. But the W.I.A. started more or less as a semi-professional organisation, attracting many distinguished pioneers as members, amateur as well as professional, during the first two decades of its existence. It is not possible to summarise even briefly so much historical data in this small space—but we congratulate the W.I.A. both on its 60th anniversary and on the production of such an interesting issue dealing with the early days of radio in the Antipodes. And it was essentially pioneering by radio amateurs, just as it was in this country during the same period.

DESIGN OF *PI*-TANK CIRCUITS

THEORETICAL CONSIDERATIONS FOR OPTIMUM RESULTS

J. E. HODGKINS (G3EJF)

HAVING recently completed a transceiver for 3.5 MHz the writer was disappointed with the power output. On measuring the power in the dummy load it was found that more power was transferred when the PA was lightly loaded than when it was fully loaded—in loading more heavily we were merely increasing the power dissipated in the valve. This is neither conducive to good reports nor to heating the shack in the most economic manner.

Repeating the experiment with dummy loads of 25, 50, 75 and 100 ohms showed similar results so it was assumed that the output end of the circuit was functioning satisfactorily. The realisation that the fault must lie at the input end sent the writer reaching for his trusty four-figure logs. It was soon discovered that the coil was the wrong size and that the size depended on the valve anode current and voltage. It is no good using the first coil in the junk box that “looks about right for 80 metres.”

Theoretical Considerations

The *pi*-tank may be looked upon as both a low-pass filter and an impedance-matching device to match the anode impedance of the valve to whatever load impedance is required. In practice the impedance ratio should not exceed 100 : 1. It will only transfer maximum power to the load when the input and output resistances are correct for the component values used.

The anode resistance of the valve, assuming 70% efficiency, is given by

$$R1 = \frac{460 V_a}{I_a}$$

where V_a is the anode voltage and I_a the anode current in milliamperes. Table 1 shows the values of $R1$ corresponding to various ratios of anode voltage to anode current (mA).

Table 1

$\frac{V_a}{I_a(\text{mA})}$	$R1$ (ohms)
2	920
3	1380
4	1840
5	2300
6	2760
7	3220
8	3680

Thus, if the PA is drawing 100 mA at 500 volts, $R1 = 2300$ ohms. Both the valve and the load will have some capacitance but we can ignore this since we shall use variable capacitors for $C1$ and $C2$ —see diagram.

If the load resistance is $R2$ the reactances of the

components in the *pi*-tank are given by:—

$$X_{c1} = \frac{R1}{Q} \left\{ 1 + \sqrt{\frac{R2}{R1}} \right\} \quad X_{c2} = X_{c1} \sqrt{\frac{R2}{R1}}$$

and
and $X1 = X_{c1} + X_{c2}$

The writer has never had much success with coil winding tables so it was decided to limit the calculations to the capacitors in the circuit. The coil is resonated by $C1$ and $C2$ in series and it was thought easier to calculate this effective capacitance. Fixed capacitors of close tolerance were used to make up this value and a suitable coil constructed using the grid dip oscillator to indicate resonance at the required frequency. (A Q of 12 is a reasonable value to aim for and was used throughout.)

Suppose our transmitter PA is intended to draw 50 mA at 300 volts and we intend to use a 75-ohm load. From Table 1 the anode resistance is 2760 ohms.

Calculations for a Q of 12 show the reactances of the components in the *pi*-tank to be:—

$$\begin{aligned} X_{c1} &= 268 \text{ ohms} \\ X_{c2} &= 44 \text{ ohms} \\ X1 &= 312 \text{ ohms} \end{aligned}$$

If we then decide to use a 50-ohm load the reactances become:—

$$\begin{aligned} X_{c1} &= 261 \text{ ohms} \\ X_{c2} &= 35 \text{ ohms} \\ X1 &= 296 \text{ ohms} \end{aligned}$$

Since we are using variable capacitors the value of $X1$ is the important one and it can be seen that in changing the load we have only changed this reactance by about 5%. So it would appear that changing the load has little effect on the size of coil we require in our *pi*-tank.

However supposing we had got the drive, grid bias or screen voltage wrong and the PA would only draw 37.5 mA at 300 volts. The anode resistance is now 3680 ohms and for a 75-ohm load the reactances required are:—

$$\begin{aligned} X_{c1} &= 350 \text{ ohms} \\ X_{c2} &= 50 \text{ ohms} \\ X1 &= 400 \text{ ohms} \end{aligned}$$

Comparison with the figures for an anode current of 50 mA shows that the reactance of the coil has increased by 35%!

Thinking It Out

If reactance does not mean much to you consider this example applied to a frequency of 3.5 MHz. With an anode current of 50 mA the coil will have to resonate to 3.5 MHz with a capacitance of 150 pF whilst for an anode current of 37.5 mA the required capacitance is 115 pF. Thus the coil has an inductance of 14 microhenries in the first case and 19 microhenries in the second. In other words if the original coil had 30 turns you would have to add about another 6 turns and squeeze the turns together into the same winding length.

The example given above shows clearly that when constructing a *pi*-tank it is essential that the coil be correct for the anode current and anode voltage. If this is so the circuit will transfer power to loads of different values without appreciable loss. Obviously this was the cause of the unsatisfactory situation referred to in the

Table II

Va Ia(mA)	30 ohm load			50 ohm load			75 ohm load		
	Xc1	Xc2	X1 = Xc1 + Xc2	Xc1	Xc2	X1 = Xc1 + Xc2	Xc1	Xc2	X1 = Xc1 + Xc2
2	90	16	107	95	22	117	99	28	127
3	132	19	151	137	26	163	142	33	175
4	173	22	195	179	29	208	184	37	221
5	214	24	238	220	32	252	226	41	267
6	254	26	280	261	35	296	268	44	312
7	*	*	*	302	38	340	310	47	357
8	*	*	*	342	40	382	350	50	400

* Ratio $\frac{R1}{R2}$ exceeds 100 : 1 and should not be used.

first paragraph. A suitable change in the size of the coil and the power in the load increased as the power input to the valve increased.

Table II shows the component reactances required for various ratios of anode voltage to anode current (mA) using different loads.

Table III

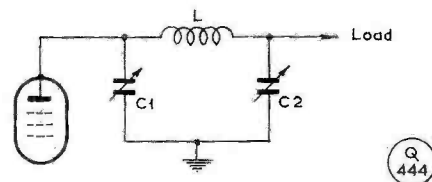
Frequency MHz	Inductance in microhenries	Capacitance in picofarads
1.8	X1	10 ⁶
	11.3	11.3Xc
3.5	X1	10 ⁶
	22	22Xc
7	X1	10 ⁶
	44	44Xc
14	X1	10 ⁶
	88	88Xc
21	X1	10 ⁶
	132	132Xc
28	X1	10 ⁶
	176	176Xc

All the values in Table II are reactances. In order to obtain values of capacitance and inductance for a particular frequency reference should be made to the charts in various publications or use made of the formulae:—

$$X1 = 2\pi fL \quad \text{and} \quad Xc = \frac{1}{2\pi fC}$$

However, since we are only concerned with the amateur frequencies the formulae can be simplified to give inductance in microhenries and capacitance in picofarads, as shown in Table III above.

The linear amplifiers used in SSB transmitters have a lower efficiency than the Class-C amplifiers considered



here. An approximate value of the anode resistance of such an amplifier is given by:—

$$R1 \approx \frac{500 Va}{Ia(mA)}$$

This will obviously modify the values of capacitance and inductance required. Calculate R1, find the nearest value in Table I and use the corresponding ratio from that table to determine the component reactances required. Some interpolation may be necessary. The value of Ia to use in calculating R1 should be the peak anode current. Note that this is *not* the maximum the meter needle swings to when you talk—it is the anode current you load to when tuning up the transmitter.

The procedure to follow when designing a pi-tank circuit should now be clear. First, decide the anode voltage and anode current you wish to use. If when the transmitter is built you find you were wrong you will either have to rewind the coil or alter the supplies to the valve to give the desired value of R1. It is also worthwhile considering the load you will use. Mobile equipment will be working into low values of load resistance so the 30-ohm figures are for you. For home use into the usual antenna tuning unit the load is more likely to be 75 ohms. However, of prime importance if those watts are to go into the antenna is the ratio of anode voltage to anode current.

“BIDEFORD RADIO SOCIETY”—1936

Remembered as original members of this Club group, active in North Devon during 1936-38, were G2ID, G3BO, G6FO, G6GM and G8US. If any other members of the time see this and could remind us of details we would be glad to hear from them.

THE DUAL-GATE TRANSISTOR FOR UHF APPLICATIONS

RECENT MOSFET DEVELOPMENTS

This article, discussing the metal-oxide semiconductor field-effect transistor at UHF, is taken from a paper by Dawson and Preisig of RCA, New Jersey. It shows how effective these devices can be at centimetre wavelengths.

—Editor.

THE Dual-Gate MOS Transistor is an integrated, tandem combination of two MOS triodes that can be operated in a variety of modes including cascode amplifier, mixer, and demodulator. As a cascode amplifier where gate Number 1 is the signal gate and gate Number 2 is RF grounded, the MOS transistor exhibits high gain, low noise, RF stability, and good gain control with excellent cross-modulation performance.

Dual-gate MOS transistors were developed for VHF applications in 1965; a year later, HF performance of improved transistors was examined. The improvement in these latter devices was the result of a decrease in channel length from 5 to 2.5 micrometers. An increase in maximum available power gain of about 4 dB was observed, but this value fell short of the expected increase because the critical fields which result in field-dependent mobility were experienced over a major portion of the channel. The maximum available gain of these 2.5-micrometer-channel devices at 1 GHz was about 6 to 8 dB; minimum noise figures were 5 to 6 dB. Although the experimental results were consistent with reduced effective mobility, parasitic loading elements were suspected of causing additional limiting of HF performance.

A UHF transistor structure was designed to minimise the parasitic loading that results from the charging of the output capacitance of the drain diode and the centre-point capacitance (composed of central-diode and gate-overlap capacitances) through substrate spreading resistances. The structure was fabricated by a doped-oxide diffusion technique that permitted fine definition of 2.5-micrometer-long channels. These channels were automatically aligned to shallow source-drain diffusions and to oxide steps located at the edges of the channel; the oxide steps reduced gate-overlap capacitance. Because this same technique had been used to fabricate all previous structures, any performance improvement could be attributed only to major design improvements, such as smaller diode areas and reduced substrate spreading resistance. Pertinent device characteristics were as follows: Channel width 20 mils, channel oxide thickness 600 to 800 ångströms, and stepped oxide thickness 6,000 ångströms. The transistors were mounted in standard cans to which the source contacts were multiply bonded.

Experiment

A 1,000 megacycle amplifier was constructed in which a combination of high-Q transmission lines and variable capacitors was used for input and output tuning. A

variable stub was provided to reflect an RF short to the gate-Number 2 terminal. The circuit was well shielded and provided with direct contact between transistor case and ground plane to minimise common-source lead inductance that could override the inherently low device-feedback capacitance. No provision was made for neutralisation.

Small-signal power gain and noise figures were measured at 1 GHz as a function of gate-Number 2 stub tuning, as shown in Fig. 1. The maximum available gain of the best devices was 18 to 20 dB with corresponding 4.5-to-4 dB noise figures when measured with the gate-Number 2 stub at the 15-centimetre, RF-short position. Under conditions of input mismatch for minimum noise figure, the power gain decreased by 1.5 dB and minimum noise figures ranged from 3.0 to 3.5 dB. These performance figures were nearly constant over a current range from 3 to 15 mA at a drain voltage of 15v. Reverse attenuation was greater than 30 dB, which indicates excellent RF stability without neutralisation. The 3 dB power-gain bandwidth of about 30 MHz resulted from the high circuit Q required to conjugately match the device output resistance of about 5K and the combination of device plus stray package capacitance. Measured total device-plus-stray-package capacity was about 1.2 pF while the calculated device output capacitance was only 0.15 pF, a value that indicates that a considerably wider bandwidth could be achieved if stray package capacitance could be minimised.

Measurements of power-gain linearity at 1 GHz were made for several input and output tuning conditions with the transistor drain biased at 10 mA and 15 volts; these measurements are shown in Fig. 2. With the amplifier tuned for minimum noise figure, 1 dB gain compression occurred at an output power of 8 milliwatts; when the amplifier was tuned for maximum gain at a high-level output, the 1 dB gain compression occurred at 40 milliwatts with a 5 dB noise figure. In comparison, small-signal bipolar transistors typically provide 1 milli-

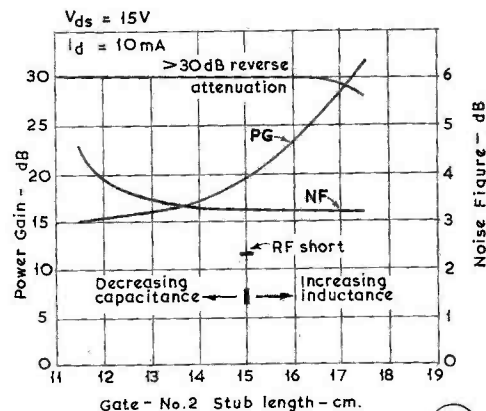


Fig. 1

Fig. 1. Small-signal power gain and noise figures at 1,000 megacycles/sec. as a function of Gate No. 2 stub tuning.

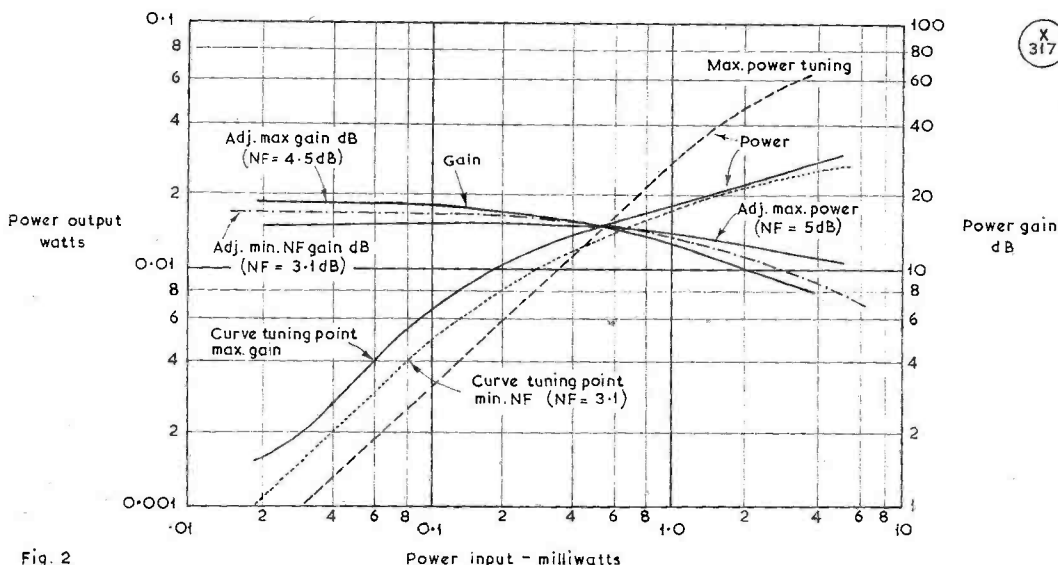


Fig. 2

Fig. 2. Power-gain linearity at 1 GHz for several input and output tuning conditions, with transistor drain biased at 20 mA, 15 volts. See text for discussion.

watt of output power at the 1 dB gain-compression point when biased at low currents and tuned for minimum noise figure. Bipolar amplifier linearity can be improved to 10 milliwatts by increasing collector current; however, the noise figure usually increases to 5 or 6 dB.

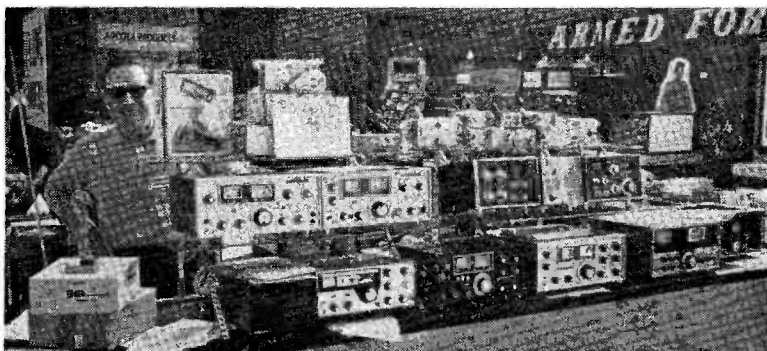
Results

The dual-gate MOS transistor has exhibited excellent cross-modulation performance over a 40-to-60 dB gain-control range in VHF applications; similar performance was obtained with the UHF devices. The MOS transistor is ideally suited for reverse AGC because gate Number 2 can be used as an isolated, gradual, gain-control element. In comparison with data reported for forward-biased bipolar transistors, the undesired signal level that could be tolerated in the MOS transistor for 1% cross-modulation was 80 millivolts, or about 15 dB greater for the MOS transistor at the high-power-gain point. At

20 dB attenuation, the MOS transistor still held a 10 dB advantage. In this comparison, the undesired signal level was measured at the 50-ohm source point. This point was matched to the impedance level of the transistors at which minimum noise conditions existed.

Conclusions

A dual-gate MOS transistor has been developed that exhibits an 18 dB power gain under a 3.1 dB minimum-noise-figure condition. Measurements were made at 1,000 meg./sec. in an unneutralised circuit with a 30 MHz bandwidth and with greater than 30 dB reverse attenuation. Narrow-band performance comparable with that obtainable with the best available high-frequency bipolar transistors has been achieved with the MOS transistors. In addition, the MOS transistors have several advantages over bipolar types, viz., ease of fabrication, improved gain linearity and better gain-control capability. }



"Tiger" Bill Lowe, alias Lowe Electronics of Matlock, Derbyshire, had an interesting and well-stocked stand at the recent Amateur Radio Exhibition in London. In addition to showing a wide range of his advertised ready-to-go equipment, he had many bins of desirable small parts at most attractive prices—and we are informed that business was good.

• • • SWL • • •

SHORT WAVE LISTENER FEATURE

THE NEW HPX LADDERS, AND SOME QUERIES ANSWERED

— TECHNICAL POINTS DISCUSSED — NOTES, NEWS, VIEWS, IDEAS AND GOSSIP

By Justin Cooper

ONE of the minor mysteries of life to your old J.C. is the lack of CW activity among SWL's. Quite apart from the mere like-or-dislike aspect of the matter, there is also the other side; there is no doubt whatever that sitting down for ten minutes a day on, say, Forty, with the receiver in the CW mode, listening for the DX buried under the QRM and funny noises, will very rapidly improve one's receiver-handling abilities. Make no mistake about it, this is the very thing which makes the difference between the "rabbit" at the bottom of the Ladder, and the chaps in the upper echelons, who could, if need arose, knock up the starting 200 prefixes in any one weekend of the year without really trying. Listening to CW is by far the best way of learning—and it helps a lot towards the ticket, too!

Talking of skills, this issue shows our first list of the new-style HPX Ladder. It is to be hoped that, in the clerical work that went into generating the new lists, nobody has been left out. If we have, we hang our heads in shame and ask you to write and let us know where we have gone wrong.

HPX Questions

Naturally, quite a number this time. First, let us get one thing quite straight, and that is that any prefix which was claimed and accepted, or was at the time it was heard claimable, will be taken in without any question. What we do say is that any new prefix which comes up, whose nationality and origin cannot be determined from the 1970 Prefix List (either in the main tables or the extra list on the outer back page—which so many seem to miss!) must wait till it is mentioned either by your conductor or G3KFE in CDXN. In effect this makes it a bit of a game, because if you can prove it to be in the Prefix List, you claim it, and if you can show that G3KFE accepts it, you again claim it. All of which goes to prove you need a Prefix List!

B. Hughes (*Worcester*) mentions a KFØNEB/O, operating from the Nebraska State Fair some time ago, while C. J. Deacon (*East Ham*) has both LI2B and LI3A. These two are in a "grey area" for HPX purposes, insofar as your scribe believes that little or no amateur operation in the true sense occurred, due to the lack of a truly amateur operator on the raft. This being so, one is inclined to say that LI2B or LI3A could only be claimed if heard in actual QSO with another amateur.

A. Cobb (*Hull*) is really and truly worried—he has it in mind that all such prefixes such as AX, ZM, 4N, YT, and such would have to be deleted, at least for a

time. No, they are claimed and accepted before the new rules came into force.

C. J. A. Morgan (*Wallsend*) is another one to look askance at the new Rules. Charles has worries, as with Tony Cobb, but this time whether to include such as PJ1, PX1, SXØ, TCØ, WS2, XQ3; the assortment of ZV, ZW, ZX, ZY, and ZZ used by Brazil; 3Z, 4A1, 4L, 4N2, 4M, 5J, 5K, and 9E3. As if this were not enough, Charles has chucked in as makeweights 7Z3AB, and G4VL/VO for a VO4. However, TZ3AB would be highly annoyed to have his call deleted (he has been around for years) while the other one is completely covered by the application of the Rules, so SWL Morgan's entire crop are taken in.

One very new one is mentioned by, among others, J. Fitzgerald (*Gt. Missenden*). This is IU, given by a station which signed IT1SEZ/P/IU, which was operational from the island of Ustica. Another new one since last time out is the station which signed HG100UA/K.

Does anyone have any information about a station signing U5DL, offered by J. R. Cowan (*Rochford*)? At a guess, J.C. would think it to be genuine, but it would be nice to hear from someone who has some more solid information and a QSL address.

Technical Points

Somewhat naturally, in view of the summer weather of late, there are not so many technical queries in the mail this time. R. Iball (*Workshop*) turns up again, and brings up a point from the discussion last time on Preselectors and Q-Multipliers. Bob questions the use of the term "preselector" as his JR-500SE has just such a "twiddle" on its front panel, which the handbook says is a variable capacitor to match the RF stage to the aerial. Just about all the transceivers use similar arrangements, along with such receivers as the KW-77. The use of the name "preselector" for this is a bit of a borderline case—usually there is a multiband tuned circuit at the other end of the spindle, which is used to avoid the necessity for bandswitching in this area. Nonetheless, it does have the effect of peaking signals, and to that extent it can be said to be truly a preselector.

One of the quickest ways of making the HPX score stand still, in the view of K. C. Webb (*Slough*), is to stick rigidly to the same listening hours. Very true, even though it has to be admitted that for many of us there is a lot which could be done in the way of combing out those bands we use at fixed times. J.C. spends a lot of time at the LF, CW, end of Forty, in among the

noises, and on three separate occasions heard stations in faraway places which would have never been spotted had he not heard someone calling them. If VK, ZL and JA are to be heard more or less any time one looks, in a normal evening on Forty, what is the point of getting up in the morning to raise them? However, it has to be admitted that it is a lot easier in the mornings.

D. J. Lee (Hemel Hempstead) has a problem with his B.40 receiver; it seems that cutting out the AGC results in complete loss of signal reception. It rather sounds as if the operation of the AGC switch simply results in leaving the AGC line o/c instead of earthing it. If this is the case, the odd electrons in the RF/IF valves which hit the grid have no way of getting back to the cathode, so the grids rapidly take on a negative charge which stops the receiver working.

S. Proud (Letterston) wants to know various things about VHF. First, are any other countries than W, VE, and ZS licensed for six metres, to which the answer is yes—EI. Stephen's second question is whether the W/K stations on 220 MHz could possibly be heard in this country by any mode such as E-M-E or Meteor Scatter. Yes, *possible*; indeed, quite long hauls have been made by moonbounce, but *not*, on the 220 MHz band, to U.K. as yet. It would have to be a cross-band contact anyway, with the G station on a band for which we are licensed; and, frankly, the prospect of trying to work E-M-E, cross-band, daunts your old J.C. no end—but no doubt soon it will happen.

Here and There

Which includes most of the rest of the crop for this time; and for a start we can congratulate *G. Braund (Taplow)* who is putting his last appearance in the Tables as he has been licensed as G3ZPI—congratulations.

A. Judge (Bishops Stortford) comments on the increasing numbers of /MM stations to be heard on the bands of late, as well as more usual mobiles and the /AM chaps. Yes, this is very true, and probably a reflection of the increased easing of licensing conditions throughout the world of late years, emphasised by the number of oddball but legitimate prefixes which have been allowed for special occasions of one sort and another. One wishes the authorities could maintain this attitude but at the same time tighten-up considerably in other directions, such as piracy, and the use of foul language over the air. One particularly unpleasant variety of the latter sort of operation exists in the Harlow area, and has been bad enough to cause several erstwhile Top Band operators in the district to move to cleaner air.

Work was ever the curse of the listening classes, bewails *D. M. Waters (Ruislip)*, who for this reason has to offer a "nil" report. A different reason is offered for inactivity by *R. Pepper (Bradford)* who has been more than enough occupied with civil engineering—the erection of a garden shed and fitting it out as a shack.

P. Corrigan (Tallaght, Co. Dublin) has a thirty-year old four-valver in use as main receiver, and to get it to resolve SSB uses a signal-generator loosely coupled to give front-end injection, the aerials used being either a longwire fed through an ATU or a loft-mounted 21 MHz dipole. There is also a transistor receiver available for Top Band and Eighty.

L. Cunningham (Wath-on-Deerne) is justifiably

pleased at passing RAE—the first exam passed since he failed an 11-plus at least 39 years ago. Which should interest some of those who say at forty they are too old to pass R.A.E.! Dad was accompanied by his son at R.A.E., and the latter chalked up a pass as well, so competition on the air should be strong in the Cunningham household! One sad note is the recent passing of a local blind SWL, a friend of many years' standing, who "needled" our correspondent into taking the R.A.E., and was overjoyed to hear of the pass slip—but, alas, he died before SWL Cunningham could get a call and come on the air for the first QSO. Bob Parkin will be sorely missed locally.

While the indoor aspects of Amateur Radio operating are quite fascinating, they were not enough to keep a hold on *E. Parker (Hove)* when the sun shone and summer was here—J.C. likewise! However, now that autumn leaves are here, we will be back in the groove. Ernie, in his letter, has subjected J.C. to the process sometimes known as "being taken to the cleaners" over his notes last time on modern receiver design trends. What he wants is for those general remarks to be transformed into a cut-and-dried design—crikey, what will we have to do next! Such an exercise would entail a couple of years' work in the production of the prototype, if it were to be a guaranteed design and reproducible by most people—and even then there would be plenty of queries and failures. What we were doing in that discussion was kicking around a few of the more basic design principles which often get overlooked.

Even though ZA has been activated, both by OH2BH and also again in the last few days by the DL7FT crew, there are still a few phoney "ZA's" to be heard on the bands, and, sad to say, one of them has been claimed by

NEW HPX LADDER

(Starting January 1, 1970)

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
R. Bence (Cardiff)	474	A. Watson (Dartford)	334
D. Foster (Llandaff)	452	R. Thompson (Birmingham)	331
R. Pepper (Bradford)	448	Miss L. Hyder	
D. J. Browning		(Southampton)	326
(Bishops Stortford)	444	D. Whittaker (Harrogate)	323
A. Judge (Bishops Stortford)	432	I. Simpson	
K. F. Bone (Chard)	428	(Newcastle-on-Tyne)	318
W. E. Swain (Bodmin)	427	J. Marchant (Sharnbrook)	288
P. Goff (Towcester)	416	A. Wood (Darwen)	285
N. Crampton (Romford)	414	D. J. Lee	
K. C. Webb (Slough)	409	(Hemel Hempstead)	282
J. R. Cowan (Rochford)	400	P. Corrigan (Tallaght)	271
C. J. Deacon (East Ham)	382	C. Deacon (East Ham)	256
A. P. Whittaker		N. Hydes (Darwen)	255
(London, S.E.2)	384	J. Law (Stonehaven)	253
S. Proud (Letterston)	384	D. Waters (Ruislip)	245
G. Stuart (Edinburgh)	375	A. Vest (Durham)	232
M. Rivers (Whyteleafe)	362	R. Bannister (Chorley)	227
J. Brackenridge (Maybole)	359	R. Friend (London, S.W.19)	224
P. Fry (Eastleigh)	359	K. Murphy (Manchester)	218
P. Oliver (Mansfield)	356	S. Head (Birmingham)	214
T. Rootsey (Ilford)	350	J. Spearing (Orpington)	212
P. Smith (Basingstoke)	350	M. Cuckoo (Herne Bay)	208

Listings include only recent claims. Starting score 200. Rules for HPX claims as p.156, May 1970 issue. DX Zone Map and latest Prefix List, 16s.9d. post free from Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

F. Swain (Bodmin) which means his claimed score this time goes down by one on account of his "ZA6ATK."

The main bit of news from *J. Brackenridge (Maybole)* is that his father has taken up an interest in SWL, with the result that they have pooled their resources and now have a Trio 9R-59DE receiver sitting in the shack.

All listening will have stopped by the time this reaches print for *A. Watson (Dartford)*, who has a scholarship examination to take for entry to Cambridge University. R.A.E. is already behind, says Anthony, so in the short month after the exam. he has to pass his Morse Test, the driving test and also have some front teeth repaired!

A. M. Lee (Nuneaton) wonders what happens to, say, G3YTW, should an exhibition-type call GB3YTW be issued for some event or other. The position taken by the authorities on this one is that the full call of the two stations are different, so that G3YTW would be able to carry on normally while GB3YTW was on the air. On a different theme, SWL Lee says that he has joined the Nuneaton club, and has also passed R.A.E., so that it will not be too long before he can come on with his own callsign.

At long last the KW-77 which is run by *A. W. Nielson (Glasgow)* has given up the ghost, after having an "intermittent" since before your scribe started writing this piece. What between this, and such outside commitments as looking for a new house, and work, Arthur has been very quiet of late, but the interest is still there and will be resumed actively in due course.

Reverting to LI2B and his amateur contacts, *P. Cox (Plymouth)* followed the expedition with great interest, and logged pretty well all the transmissions from the reed boat. Peter says that LI2B certainly worked several amateurs on July 7, when, after his usual sked with LI3A at 0900, there were a few minutes to spare before his sked with W4ETO. In this ten-minute period, Norman Baker, the operator on the raft, was persuaded to dish out a few amateur contacts, one of them being with GW5AHU.

Bert Glass, who also hails from Plymouth, has been altering things round somewhat; a Trio 9R-59DS, which Bert thinks to be much better than the earlier DE model, has replaced the old JR-500SE, so as to enable him to cover Top Band, and listen to the winter's DX-chasing.

One chap who is aware of the value of publicity is *M. Williams (Sleaford)* who has managed to get a piece about Amateur Radio into the local paper, and so has hopes of getting a few more SWL's to appear from Sleaford. Who knows—it might well result in the formation of a club.

A first entry for the Ladder comes in from *J. Spearing (Orpington)* who has a Codar CR-70A receiver, to which he has an aerial consisting of 120 feet in a U-shape, at twenty feet. School-work means that listening is mainly a matter of weekends and holidays.

Extending the A-T P-W table backwards from 1960 has resulted in happy memories for many of us as the old logs were being thumbed through. *H. Alford (Burnham-on-Sea)* brought some back for J.C. when he mentioned the MD5 and similar prefixes used by Service personnel just after the war, from many places which today are quite rare.

Double Entry

Terry Rootsey (Ilford) brings up a point, as regards running an entry in both Tables. It must be admitted that your scribe must have nodded off while writing this one—because first we said no-one could have an entry in both Tables, and next time round we said it would be allowable? No, your conductor is not in real-life a politician—it was a genuine slip-up, and it will be rectified by going back to the original July situation. Anyone reaching the 500 mark will automatically go into the All-Time, and nobody will have an entry in both Tables at once.

Life is hard at the top of the table, as *S. Foster (Lincoln)* finds; Stew had three weeks off the bands and promptly found himself knocked off the Top Spot! Among the prefix oddities, he adds 4J1CR, which was a call used by UA3CR; reciprocal licences in FO8-land come out as FOØ; FMØ is allocated similarly in FM7; OB was used to commemorate an anniversary in OA; and 3B7 and 3B8 which are audible nowadays are respectively the new standard prefixes for St. Brandon and Mauritius.

Sending in a "nil" report is an unusual event for *R. Carter (Blackburn)*, but it is caused by two things this time; in the first place the absence of the receiver, which has been completely realigned, and in the second by the taking on of temporary work at the local school on the admin. side—which turned out to be a lot more onerous than was expected.

A first entry for the ladder comes in from *M. Cuckoo (Herne Bay)* who runs a Trio 9R59DE, into either a

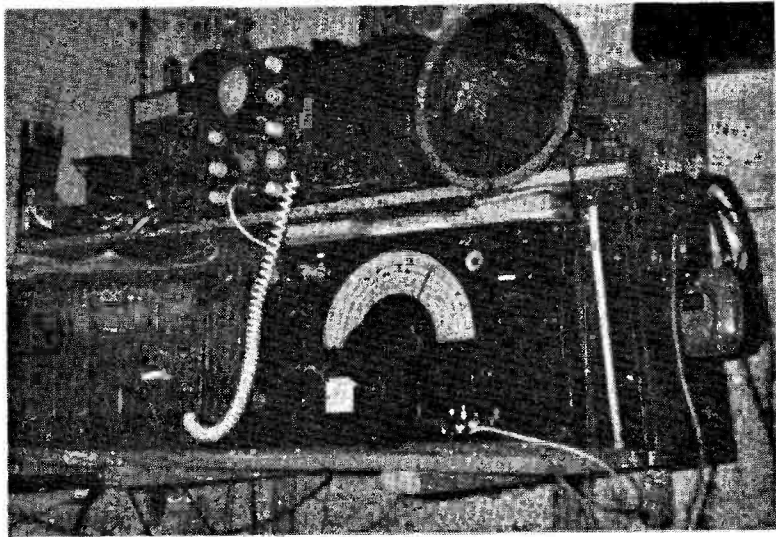
HPX LADDER

(All-Time post war)

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
B. J. Gilbert (Tonbridge)	1226	F/Lt. A. Cheesley	
S. Foster (Lincoln)	1160	(Kuala Lumpur)	622
J. Singleton (Hull)	1043	D. Robinson (Birmingham)	616
A. W. Nielson (Glasgow)	1039	R. Carter (Blackburn)	615
D. Reynolds (Dudley)	908	C. Price (Bolton)	615
R. Woods (Slough)	900	A. Cobb (Hull)	611
R. Nicholls (Narborough)	883	J. Williams (Wrexham)	610
W. H. Butcher (Towcester)	858	D. Rodgers (Bolton)	608
M. G. Toms (Ilford)	831	M. J. Quinton	
G. Dover (Nottingham)	821	(Wotton-u-Edge)	591
J. Fitzgerald (Gt. Missenden)	804	H. Alford (Burnham-on-Sea)	579
G. Braund (Taplow)	789	P. Batt (Littleborough)	574
M. T. Hyder (Hythe)	760	B. Thomas (Ferry Fryston)	568
A. D. Parker (Chesham)	758	G. Foster (Leyland)	568
C. J. A. Morgan (Wallsend)	757	I. Brown (Newtonabbey)	565
W. Moncrieff (Hampton)	744	P. L. King (Ryde, I.o.W.)	552
N. Hembrey (Northiam)	733	E. Parker (Hove)	548
G. Aytton (Sunderland)	728	G. W. Raven	
M. Fisher (Bradford)	705	(London, S.E.13)	546
R. A. Treacher (Eltham)	695	P. N. Butterfield	
J. P. Scragg (Stockport)	686	(Sharlston Common)	542
R. Bagwell (Frimley)	665	P. Sharman (Hayes)	529
H. M. Graham (Harefield)	651	M. Williams (Sleaford)	520
R. Shilcock (Lye)	649	J. Lee (Nuneaton)	517
T. W. Hyder (Southampton)	647	N. Askew (Coventry)	513
D. Hembrey (Northiam)	639	Mrs. S. Singleton (Hull)	512
B. Hughes (Worcester)	634	A. Hackett (Manchester)	500
K. Plumridge (Southampton)	627		

Starting score 500. Listings include only recent claims. Rules for HPX listing and claims as p.156, May 1970 issue. DX Zone Map and latest Prefix List, 16s.9d. post free from Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

Typical of many an SWL station is that run by T. McKay, 58 Killymerron Park, Dungannon, Co. Tyrone, N.I. It includes an R.1475, a modified R.1155N, a home-built 'scope, and PSU's. His antennae are a 30ft. vertical wire and a 20m. dipole. He has logged much DX on this rig.



Joystick, 120-foot wire, or a two-element beam; the total Michael claimed goes down by one, as he included two SM6 claims.

It is a funny thing about prefix-hunting, the way the score moves along by fits and starts, says *D. Rodgers (Bolton)*. Dennis uses an Eddystone 770R for VHF listening, with a five-element Yagi, at home, while for mobile working there is a converter feeding into an HA-600 operating from the 12-volt car system, which has been suitably treated; a halo aerial for two metres completes this set-up. As to the HF allocations, these are covered by a Hammarlund SP-600JX. It is interesting how on occasion the rig can be switched on to a rare DX station, quite by accident. For example, on two days recently, the Rx came up with ZK2AF, Niue Island, and CR9AK, Macao, before any tuning had been done.

A. Vest (Durham) raises doubts about his SU in the CW listing—don't know why, as there *are* SU's about on the bands.

On now to *I. Brown (Newtownabbey, Co. Antrim)* who has been making changes here and there. A Trio JR-310E now graces the operating-table, and seems to have taken its owner's heart. An ATU for it is contemplated and before winter comes on the long-wire will be re-rigged to withstand the gales, while the 14 MHz dipole is due to go up another ten feet.

The event of the period as far as *R. Treacher (Eltham)* was concerned was the receipt of the OH2BH/ZA QSL card—there cannot be many SWL's around with a QSL that rare!

At this time of year many operators seem to become inactive, the reason often being the amount of extra study time they are putting in in connection with an R.A.E. course. One such is *K. Plumridge (Southampton)*, who is cutting down no end on listening time so as to make absolutely sure of a pass.

A couple of SWL newcomers next: *K. Murphy (Manchester)* started listening about five weeks before he wrote, in which time he tracked down 218 prefixes

for the list, using as receiver an HRO. On the other hand, *J. Samson (Sheffield)* is not in the table but writing to gripe—and how justified he is—about the gargling noises which with some operators goes in place of a proper exchange of callsigns.

Not so long ago, J.C. was beginning to think we had seen the last of *M. G. Toms (Ilford)* in the HPX context, as Mike had gone very VHF in his interests. However, he is back with a bang, the score rising to 831, with new gear all round. The main receiver is now an Inoue IC700R, with nuvistor converter for 4m. and transistor types for 144 and 432 MHz.

The DX has been given a bit of a rest by *H. M. Graham (Harefield)* who has been rather pre-occupied with his new-found interest in HAB and the various nets. The return on QSL's over the years has been quite good at 63% with only one definitely anti-SWL reply, and one operator who sent him a letter back saying he did not QSL, and used the s.a.e. to post it! G6AG at Chalfont St. Peter came up on Eighty one evening to try out his new rig which has been three years in the building—the time spent has been very successful, says H.M.G., who from four miles away was nearly blown through the window by the power of the signal!

C. Deacon (East Ham) is doubtful about a station he heard who was signing VEØNEF/GM, and is therefore claimed under the Rules as a GMØ. After all, the station was aboard H.M.C.S. *Saskatchewan* in Rosyth dockyard, the VEØ is used for /MM operation, and VE's, like W's, use the prefix of the area they are working in as a suffix when they are out portable—so what could be more logical than the call he used?

R. Nicholls (Narborough) finds himself in a tangle over the new HPX rules and their interpretation, but it rather seems as though all his queries have already been answered in letters already dealt with; so in he goes at a total of 883 in the AT-PW listing. Not so worried is *M. Fisher (Bradford)* who has as his only problem the question of that HG100UA/K mentioned earlier; as this one is OK, up he goes to 705.

over

DEADLINES FOR "SWL"

Readers interested in this feature should note that final dates for the receipt of correspondence for the next few issues of "SWL" are as follows: November 16 (January '71 issue), January 18 (for March) and March 15 (for May). These issues will actually be published on January 1, February 26 and April 30 respectively. Sole address for all SWL material and reports is simply: "SWL," Short Wave Magazine, Buckingham.

A long report comes in from *A. T. Cheesley (Kuala Lumpur)* covering several interesting points. However, in general terms, it is his list for HPX which draws attention—naturally, from that part of the world different countries entirely become "the locals." The point here is that the list from a G/SWL station at 600-plus would contain little or no European stuff in the last entry, but mainly the harder-to-find DX, who are locals to Malaysia. However, it does not seem to work out

that way, as the bulk of the Cheesley offering is very much the same as would appear in a U.K. list.

As seems to happen so often to us of late months, space—and time!—are running out, and so we take this opportunity to mention letters received and that Table entries have been received and dealt with from: *J. P. Scragg (Stockport)*; *G. C. Stuart (Edinburgh)*; *G. Ayton (Sunderland)*; *R. Shilvoek (Lye)*; *A. Wood (Darwen)*; *G. Dover (Nottingham)*; *P. G. Fry (Eastleigh)*; *G. W. Raven (London, S.E.13)*; *M. T. Hyder and T. W. Hyder (Southampton)*; *P. Oliver (Mansfield)*; *I. Simpson (Newcastle-on-Tyne)*; *D. Foster (Llandaff)*; *G. Dodwell (Yeovil)*; *D. Robinson (Sheldon)*; and *B. Gilbert (Tonbridge)*.

Sign-Off

There we are again, at the end of another round in the series; we will be back again in the January issue, for which the deadline will be **November 16**, addressed as always to "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM. Meanwhile, have yourselves a happy Christmas, and take all care.



Station GB3MUL of the Mullard Radio Society, established at Mullard House, London, W.C.1, for the period October 5-24, the duration of the exhibition to signalise the golden jubilee of Mullard, Ltd., one of the most senior firms in the business, and now a world-leader in the radio/electronics field. It was 50 years ago that Capt. Mullard, who had served as a Signals officer in the 1914-18 War, started as a manufacturer of wireless valves—who remembers the Mullard hooded-anode types of those days, bright-emitter receiving audions. The exhibition itself was, of course, of enormous interest, covering progress and development right down to colour TV and all the demands of the present day in the electronics field. Here we see an amateur station nicely blending the new and the old—the modern K.W. HF band gear with, in the cabinet on the right, a 50-year old Mullard SW2 transmitting valve (one of those fat glass bottles remembered only by old timers) driven as a linear amplifier on the DX bands. Beside it, at lower left in the cabinet, is a much more sophisticated PA—a transistorised 100-watt wide-band RF amplifier, good for 2-30 MHz, and typifying the kind of PA which will soon be in demand for tomorrow's amateur stations. For the duration of the Mullard Exhibition, GB3MUL was operated by staff members holding AT-station licences, of whom there are quite a number, on the HF bands and two metres. The VHF operating position is at far left. On the wall, beneath the callsign, is a copy of the latest version of our "DX Zone Map."

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

THIS time we have a pile of quite daunting size to look at, what with the improvement in conditions which is to be expected at this time of year, the MDT to report on more fully, and heaven only knows what else—so let us dive straight in and see what goes on.

Support seems to have been pretty evenly spread over all six bands, with VK's audible at workable strength most evenings on *Forty*, as a change from chasing GM3SVK/P on *Top Band*, or raising a *genuine* ZA on one of the HF allocations. Something for all tastes and conditions, either Phone or CW—plus the usual crop of Lids, Spivs, and Unmentionables, of course.

The MDT

One of the most heartening things about this little Top Band entertainment in daylight is the number of good folk who not only participated but managed to get their reports off in time to be summarised last month (see p.481-482)—which means they must have sat down there and then to make out, in many cases, quite a lengthy report, before rushing out to catch the Sunday post, or getting it in, first-class, for first collection Monday morning. A very stout effort by all concerned, for which, thanks.

In addition to those mentioned last time, reports also came in from G8RZ (Workington), GM3OXX (Edinburgh), GW3SRG (Swansea), G3YPM (Swanage), G3XIV (Portchester), G3WSH (Eastbourne).

GC3XZC (Jersey) seems to have brought joy to many hearts, and in the process had himself a ball, as the W's put it; he appears in several logs, notably that of G3WSH, who was of course 6Y5FH, and so knows a little more than most of us about how to wrinkle them out. G3XIV seems to have been working them, in between his strokes of the decorator's brush, for about three hours; in spite of QRM from the locals, he brought off the double by working both GC3HFE (Guernsey)

and GC3XZC in Jersey. G3VZY (Haverhill) also figured in his log. All his contacts were raised with a quarter-wave top at 26 feet, fed against a counterpoise of similar length.

GW3SRG was plagued all day by an S4 sizzling noise, but made it with G3GMK in Southampton and G3TNO, Horsham, for his two longest distances. Here the aerial is 3/8th wave, running North/South, tuned against what is described as "a good earth."

Another of the paint-brush brigade was tickling the bug in between strokes of the brush at G3YPM. Here, operations are virtually at an end with the onset of University. G3SVK, G3MMQ, GC3XZC, G3VFA, and G3TNO were all raised at respectable distances, and G3VRW in Lancashire was heard at good strength working G3SVK, which indicates that, contrary to some opinions, things *were* being heard from up North.

A Heath DX-100U and AR88D operating in conjunction with an end-fed half-wave were used at G8RZ. Harry felt conditions were quite good, and would have dearly loved to be able to spend a bit more time on it; but as it was he worked GM3OXX, GM3HJB, EI9J, GI3WSS, GW3GWX, GW3GCZ, and a goodly assortment of G's, with even more interesting ones figuring amid the gotaways.

"Wish we had worked all we heard" was the comment at the foot of the GM3OXX log. George appeared to be getting down as far south as Grimsby, and it is of interest to note that his aerial was the "W3DZZ" design, strapped, tuned against earth, with 10 watts of RF and a homebrew receiver.

Rest of The T/B Reports

A pretty rapid tour of the scene of battle must suffice for this time. Top of the bill is W1BB's invaluable *Top Band Bulletin*, and the line-up for the 160-metre DX Tests once again. The dates are November 29, December 27, January 10 and 24,

and February 14. (This leaves December 13 clear for the ARRL effort, and January 31 for the CQ WW 160 Contest.) Times, as ever, 0500-0730z with W/VE East Coast stations between 1800-1820, West Coast chaps 1975-2000, and the Europeans (which includes us) in 1823-1830, all kHz. The form is to call "CQ DX Test" and listen on alternate five-minute periods, W and VE leading off from 0500 to 0505, EU from 0505 to 0510, and so on; the shack clock needs *accurate* setting if this is not to be a shambles.

The Trans-Pacific JA/EU Tests will be running on the same dates as for the JA/W ones, namely November 7 and 21, December 5 and 19, January 2 and 16, and February 6 and 20. ZL's are using 1876 kHz approximately, VK's 1802-1805 kHz, and JA 1907.5 to 1912.5 kHz. Unfortunately, the JA/W tests fall in our daylight times, but those to Europe are scheduled for 2030-2200 GMT, and it is understood that JA3AA for one is going all-out to make the QSO this year, over what in theory is an almost impossible path. However, it is one thing to say "impossible" but quite another for impossibility to be a fact. As witness to this, and encouragement to participants in the Trans-Pacifcs, consider GM3IAA (Inverness) who was a little surprised to receive an SWL report from Vladivostock. Jim was about to write it off as a sure phoney when he felt impelled to look in the log and see just what he was in fact doing at the specified time and date. To his surprise and joy, the report was a true one on his QSO with GM3LHV at 0210z one morning. So Gennady Mashonkin, the SWL concerned, made a very good entry into the record books—GM3IAA was the very first signal he had heard on Top Band. A look at the map reveals that Vladivostock is within the proverbial stone's throw of Japan, so that by far the biggest and most difficult bit of the path was proved to be workable by this one hearing. Congratulations are due to all concerned.

[over

9Y4NN (Trinidad) is now on 160 metres and looking for contacts with a vertical and a new Tx. In PY, the following stations are said to be operational and active on Top Band—PY1MGF, PY1BTX, PY2BJH, PY2SU, PY2BKO, PY2CSO, and PY2BGL, all well equipped and looking for DX contacts.

On a slightly different tack, in addition to the popular CQ WW 160 efforts on January 31, there is a new contest laid on by ARRL. The idea is to work as many ARRL sections as possible, for which the W's get two points a QSO, and as many DX stations as can be at five points a throw. Multiplier is based on ARRL sections, plus one for each country outside W/VE, and one for VE8, making a possible of 76. Submit a score sheet and an alphabetical list of stations worked (no log unless requested) to ARRL Contest Committee, 225 Main Street, Newington, Conn. 06111, to arrive before January 11. The contest is scheduled for the weekend of December 12, starting at 0001z, going on to 1600z on the 13th. While the W's will swap ARRL Section numbers in addition to the report, DX (that's us!) will be content with sending just the RST. Outside W/VE, where the sections are competing one against the other, the DX is working for a high score.

Now, but very briefly indeed, to the domestic news about Top Band. G3XIV seems to have been pretty well on the ball, and in particular mentioned September 12 as being a very good night, DL9KRA, EI9J, HB9CM, OE9ZQJ and PY2BJH all being in evidence.

G3VLX (Sidcup) has not been very active, but at the same time has not been idle, either. Apart from the GB3STF exercise, which soaked up a lot of time, and domestic chores, Deryck and G3XMD hied them off to TL28 in Huntingdon, and proceeded to make 101 contacts in 11 hours of operating.

Dave of G3PQF (Farnborough) writes in to up-date his Table entries, and has dark words to say about a DX-pedition to Moray, who appear to have swallowed no less than three s.a.e.'s, and still have not regurgitated the desired piece of paste-board.

At G3XTJ (Palmer's Green) activity has been a little down on

160m. lately, due to the preparations for the GM trip with 'SVK and of course the inevitable slackening of interest that has to come when the 98th county has finally been raised—in Ed's case it was G13SCM in Armagh who rang the bell for him. G3XTJ has a Vespa Mark II, a Drake R4A receiver, 140 feet of wire at 40 feet for Top Band, sloping dipoles averaging 20 feet above ground at the feedpoint for 7 and 14 MHz, and an inverted-Vee dipole in the roof space used for Ten.

G2HKU (Sheppey) finds the band is producing more evening DX, with OH1SJ and ZC4RB both putting good signals into U.K. at around midnight clock. At noon the regular contacts with the PA's have continued to feature in the log, and in the evenings EI5BW, GM3HJB (Ayr), OH1SJ, OK1JMP, OK2BMR

and OK3TCA were all hooked.

A new call to these pages—or at least a new one for your present conductor—is that of G3OJV (Hockley, Essex) who has recently moved from Hornchurch to his present spot, and finds himself a little more active on the bands. As to Top Band, Peter has been mainly occupied in picking up the threads. He finds it as noisy as ever, but the high incidence of SSB stations now on the band makes phone working a much more rewarding occupation. So much so, indeed that G3OJV threatens to spend a bit of time seeing just how well his aerial system *can* be made to raise the DX.

G13WSS (Holywood, Co. Down) seems to be sticking fast at 97 in counties, his missing one being the Scillies. In the way of cards, his

SIX-BAND DX TABLE

(All-Time Post War)

Station	Countries	28 MHz	21 MHz	14 MHz	7 MHz	3.5 MHz	1.8 MHz
G3DO	339	212	249	332	90	83	9
G3KMA	260	203	197	192	138	56	11
G3NOF	320	200	228	309	38	60	4
G2DC	338	179	310	329	169	116	20
W6AM	349	148	159	349	143	118	7
G3LZQ	265	140	156	215	72	38	8
G3IGW	211	128	153	168	131	105	47
G3WTV	196	125	124	157	70	74	—
9H1BL	189	115	125	140	66	54	8
G3XBY	167	110	124	107	74	57	8
G3PQF	165	106	52	105	84	56	13
G4RS	187	84	118	128	59	42	13
G3RJB	176	76	59	163	60	37	8
G3IDG	130	76	96	55	27	18	12
G3YDX	131	69	77	47	54	39	9
G3VPS	144	49	48	122	60	38	14
G3XAP	104	44	46	47	65	30	13
G3WPO	105	36	24	66	49	31	24
G3DCS	106	7	77	48	11	13	6
G3VLX	55	7	13	25	8	28	19

Note: Placings this month are based on the "28 MHz" Column. Claims must be made at least every three months to retain a place.

particular shortage is the Alderney one, no less than three cards having been sent in the hopes of stirring it up.

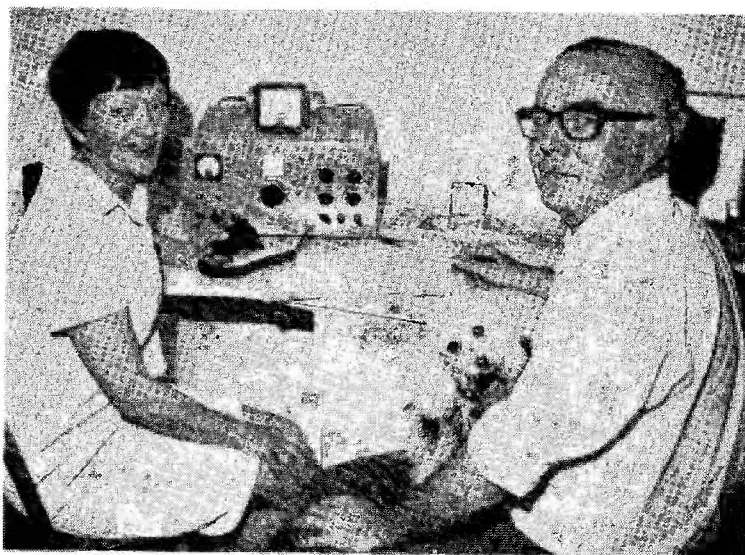
In a long and interesting letter, G3XDV (Canterbury) brings up the idea of a Top Band DX Net. The object would be to have a regular net operating at certain known times, so that Top Band operators in the rarer European countries would know that on certain evenings they could be fairly sure of getting a QSO. The net would also be listening on certain known frequencies at other times by arrangement, again with the idea of making things a bit easier for the DX. Net meetings are on Friday nights, 2200-2255z, and breakers are welcome if they keep to the rules of the game, which are simply these: The net operates at 10 w.p.m. so that DX can copy some of the news which is sent. The routine is: 2200-2228, call-in and exchange of DX news; 2228 call "CQ DX," QSX 1929 kHz at 2230; 2243 call "CQ DX," QSX LF end of the band 2245. Net closes at 2255. Frequency for the net, 1829 kHz. All breakers acknowledged, report and QTH exchanged *only*, and then QRX. If any DX comes up the stations will be called in, in turn. The main thing is that it is an ambitious scheme, and to run at such a slow speed of Morse—which is done to help the DX—means there must be *no* social chat on the net, leaving the platitudes to another time and frequency. One hopes this idea will blossom.

Eighty

Although a certain slight amount of interest seems to have been aroused over the DX potential of *Forty*, there seems never to be a word about *Eighty* of late months. Surely, someone, somewhere has something good to say for the band?

G2DHV (Sidcup) has recently appeared on 80m. with an SB-10 unit to generate the SSB, and a 5RV aerial to radiate it. So far the contacts have been with the two University stations at Manchester and Nottingham respectively, plus a hearing of GB3LI on Lundy Island. George is also active /M with both CW and AM phone to a 6-foot whip.

G13WSS mentions the activity of a body of citizens who call themselves



A husband-and-wife station. G3NOB (left) and G3HPJ are at 22 Danes Croft, Bridlington, Yorkshire. They have known each other since childhood and their interests are shared—climbing and walking, glider flying, driving a GT-Mini, bird-watching and the making of wine—and as regards Amateur Radio, the rig shown here is a home-built transceiver, actually a Chinese-copy of the Swan-350. Savings are going towards the provision of a super-rig. We can only wonder at what could happen next!

the Night Owls Net, operating on Eighty; it seems to be predominantly EI/GI chaps, with a sprinkling of G's. If you can't sleep, says Cyril, come and join them.

From his new pad, G3OJV launched himself into the turmoil on Eighty, investigated thoroughly, and came up with the verdict that it is full of familiar calls, and funny noises. No DX was worked, but GB3LI on Lundy and DL4WE/M on the Austrian border with RS57 SSB at least gave some interest.

G2HKU never does have much to say about Eighty, but it is also true to say that he usually has some item to report—this time in QSO's with F0ZF/FC and GC3UQM.

One of the real exponents of the art of getting to grips with the DX on any band is W6AM, and Don has this month a list which includes CW with VR10, EL2CB, and 6Y5GB, all of course at the bottom end of the band—DX Alley.

G2NJ (Peterborough) had a most nostalgic month on 80m. with his CW—no less than 21 two-letter G calls booked in, nine being G2/2 types; many dated back to the 1920's and one indeed was *XCP* in the days before call signs as we know them today were even thought of. (This was pre-Kaiser's War.—*Editor.*)

From St. Albans comes the letter

sent in by G3YYD, who has a KW-2000B to a 2/813 linear at 400 watts, fed to an inverted-Vee dipole with the apex up at 50 feet. This tackle raised DA2XA/P, EL0K/MM, F0ZF/FC, F6AGM/FC, JW1IC, K2RSR/VP9, OH1PS/4X4, OX3WQ, OY7JD, PY's, VE's, VO's, VP9GR, WA6EGL/TF, ZB2A, 4U1ITU, 4X4YM, 6W8DY and lots of Europeans.

Rather a poor month at G3DCS (Ipswich), says Enver, who found, on CW F5IE, SP7PBC, LA2SG, OK1KYs, SM0AHQ, OH1TN, all on the key, plus GB3LI and DJ0SR using SSB. Towards the end of the period Enver inverted the Joystick, and uses this fact to point a moral—it seemed quite OK on most bands, but as far as 3.5 MHz went, nothing he could do would make them come back to a CQ. It had got to the stage of looking to see if the RF was getting to the aerial, when suddenly the luck changed and back came a whole string of G's all dishing out S9+ reports. It just proves that an aerial *must* be given time to be evaluated, at least several months and preferably a year.

G2DC (Ringwood) has a turn now; Jack reports things much improved this month, the ZL's are coming through in the period 0600-0700z, with a peak around 0630,

the stations usually being found in the bottom 10 kHz of the band. Thus it looks as though ZLIAH, ZL2FT, ZL3FZ, ZL4IE, ZL4IF and all W call areas apart from W6 and W7 are decorating the G2DC log for the month.

Now Forty

Having declared for years that Forty is the only band on which it's darn near impossible to cause TVI, G3KFE promptly gets a complaint! Murphy strikes again! However, all's well that ends well; and before the complaint the regular G3KFE evening sniff over the band yielded a quite reasonable collection. VK3MR was to be heard and worked at reasonable strength around 2030z, when he was not being QRM'd out of sight by a pack calling a JA, not to mention a gaggle of W's calling CQ and finding no takers. On top of all, lies the great pulsating mass of Europeans calling "CQ DX" and getting replies from their own countries. What is really needed is for a little more agreement to

Reporting the HF Bands

keep off the bottom ten kHz of the band unless seriously out for DX, which means you would not be calling but listening for it; the point being that on this band the Europeans have probably the worst QRM problem in the world. Another thing that would help would be to carry as much local traffic as can possibly be, right under the lee of any intruders in the band till they get demoralised and go somewhere legal.

G3DCS stuck to CW, which gave him contacts with HB9, YU, UV, and similar Europeans at the times in which he could operate.

One big gotaway at G3XTJ was CM2FV, who, had he been raised would have been the month's star turn. As it was, Ed had to be content with such as C31CY, UL7GW, VP2VI, VP2VJ and PY1DDY.

Apart from *not* raising G3KFE, GM3JDR had a very successful month on CW, booking in UV9CO, UW9WN, OY7JD, JA0SX, JA6CY, JA6CLO, SK1KQ, UK8HAA, YV1AD, CM3LN, CO3BU, CO2DC, HI3PC, VK3MR, UF60AA, AX3XB, AX3FC, KV4CI, CX1AA, TF5TP, all W call areas, VE1-3 and VO1. SSB was not so popular—not surprising on Forty!—but nevertheless it came up with UD6BR, GB3LI, SK9WL and OY2X.

On to G3OJV who found the band very much as of yore, all noises and lousy signals, with the DX merrily peeping out from beneath the QRM. One CQ late in the evening yielded four W QSO's on the trot, while SSB turned up a nice contact with CN8HD, around 1900z.

Sideband alone was radiated on 7 MHz by G2HKU, his bag being HK3BQM, PY7ASM, UK9AAN, UW9AF, VP2AA, YV1BI and YV5CIL, all worked at around midnight GMT.

Seasonal factors are really improving Forty, says G2DC, who found it open to VK/ZL most mornings, 0600-0800z, not to mention W6 and W7. The VK's peak up in fine style and ride through the QRM from Europeans after about 0730, which makes them easily readable. CW

gave two-way exchanges with a string of AX/VK stations, all W call areas, PY's and LU. (Yes, we mean on 40m.!))

Bits and Pieces

A note from VP2DAI, who is now in Hemel Hempstead, mentions that the recent DX-pedition around the West Indies, by VE3EWY and VE3GCO, operated with VP2DAJ and VP2DAE calls "loaned" to them by the real owners owing to the way the licence conditions work there. However, the ironic part of it is that this restriction crops up because the licence is the old British one—and now that VP2DAI wants a U.K. ticket he cannot get it on the basis of his VP2 call; at the moment this means that instead of operating he is conducting a paper war with the appropriate official bodies. On a brighter note, though, VP2DAI hopes soon to be going back to Dominica.

To get all the news into the allocated space last time, the list of QTH's—one of the longest ever—had to go to the wall, but we still have a lot to go in this time, which will mean a "bumper bundle" in the appropriate corner of the piece. However, G3NOF, who is by far the most consistent correspondent on QSL addresses, mentions this time working a ZS4 who turned out to be our old friend G3LZQ in disguise. G3LZQ sits down at the bottom of *Forty* in his ZS4 suit and is looking for G contacts there.

At G2HKU the news this month is of mixed pleasure and sadness, with the latter note predominating. The death of his old friend PA0WEA on September 2 cast a cloud over things, as did his meeting with DL1PM at the F.O.C. Dinner, when he heard that Heinz had received his WAZ certificate *minus* the cards which CQ at this point cannot trace.

Talking of Germany we have a letter from DL5XW, in which Spike chides us for not having the facts right as far as the German licensing system is concerned. DA is allocated to NATO Forces; DC is a VHF-only prefix; DJ's are all Germans with

TOP BAND COUNTRIES LADDER

Station	Confirmed	Worked
	<i>Phone and CW</i>	
G2NJ	98	98
G2HKU	98	98
G13WSS	96	97
G3ADH	96	96
G3XTJ	96	98
G3WPO	95	98
G3VLX	95	98
G3XDY	88	96
G8HX	86	89
G3YMH	64	91
G3LXD	64	79
G3KFE	61	85
	<i>Phone only</i>	
G2NJ	98	98
G3PQF	97	98
G3WPO	91	98
G3VGB	91	97
G3XTJ	81	94
G3XDY	69	89
G13WSS	61	71

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

the exception of DJØ, which series is kept for visitors; DK is Germans *only*, with the exception of the few NATO Forces still left; the allocation scheme seems to be along the lines of DL5A-Q, American; DL5R-U, French; DL5V-W, Belgian and Dutch; and DL5X-Z, British Forces. This does not include the few still left who hold DL2 or DL4 calls. DM covers the East German set-up. Top Band operators should note that 160-metre working requires a special licence, which gives the areas to use as 1825-1835 plus 1985-1992 kHz. SSB is still further restricted to the area 1832-1835 kHz, which is virtually a spot frequency allowance.

GM3OQY (East Kilbride) is on terminal leave after 8 years in the Royal Navy, and has decided to equip himself for some intensive DX'ing to make up for the lost time. The rig is Sommerkamp FT-250 transceiver with an ETM-2 Keyer, plus a 14-AVQ as the radiator. The first six weeks with this has yielded loggings in all continents, all Zones other than 23 and 112 countries, in between the business of getting a job and settling down.

5N2KPT is the station of the Kaduna Polytechnic Communications and Radio Club, and is frequently to be found on the air, 21 MHz, in the afternoons, with G2FKS operating. The rig is KW-2000A and 7 MHz dipole. Cards to go *via* bureaux, or direct, but not—please *not*—to G2FKS, as his XYL will only have the chore of sending the things on. David, incidentally is on the lookout for a QSO with the Cambridge area; and his home address for mail is Staff Development Centre, P.M.B. 2113, Kaduna, N. Nigeria.

Talking of addresses, it would be as well to make a note that the IRTS Bureau address has altered. The new one is IRTS QSL Bureau, P.O. Box 462, Stella Avenue, Dublin 9, Ireland. Cards arriving at the old address in the next two years will, it is understood, be automatically forwarded to the new QTH, so there is no need to duplicate anything you may have in that direction.

G3WTV (Torquay) writes to say that his three-year stint on the DX Bands has come to an end, as Keith has now to go to college where there just is not time for both study and



Station of Michael Dividsohn, G3ZCC, 101 New Road, Chingford, London, E.4, licensed in January and now on the air with a particular interest in Top Band. He runs a K.W. Vespa with a Trio receiver, for CW/SSB. When he passes his driving test, imminent at the time of writing, G3ZCC will be going mobile. He has the gear, the enthusiasm and, like so many of our youngsters in Amateur Radio, the prospect of years of amateur-band operating before him.

Amateur Radio, the more so for someone as keen as Keith—a very wise move it seems. The next four years will see the interest kept up by chasing awards using cards already to hand, and by reading the *Magazine* each month.

The HF Bands

Here the bands have shown the same expected pattern of the Equinoctial lift in conditions, which has brought *Ten* to life, and given something of interest to just about anyone who cared to sit on the rig for an hour or two at some time of the day or night.

Let us take our initial grip on things then by consulting the oracles as to the 10-metre events.

G2DC feels that there is nothing wrong with *Ten* except the fact that so few DX stations activate it. Conditions during the mornings have been quite good, with plenty of Asiatic sort of U's calling and looking for contacts; by 1100z the band is wide open to VK with signals from that part of the world up to 'way over S9. QSO's were made with AX6RU, AX6HD, UK8AAA (Tashkent), UL7BG, UM8MAB, UD6BW, UA9's assorted, PY7OS, ZD5X, ZE1BT and ZS5UT/MM, whose ship was at Cape Town when the QSO took place.

G3XTJ broke the ice on the band

once or twice, for a dip, and came out with CR6GA, CR6KT, CR7LE, CX1BBR, CX2CN, CX3BR, DUIFH, KP4AST, KR6JX, VS6DO, ZE8JY, ZP5GS, 9J2's, AX4's and AX6's.

As for G3OJV, he has, as already indicated, been taking a good sniff around old well-remembered haunts, and *Ten* SSB was combed to the extent of SSB contacts with JA's, ZS, and CR7LE.

After 78 days of operating with his Joystick, G3DCS is up to 106 countries worked—although September was a pretty poor month, mainly due to interruptions such as work. There is hope of something a little better next time round as it is planned to take a week off and see what can be done in the shack. *Ten* in the period under review gave Enver contacts with UA1SP, K4PQL, UW4AN, 4X4MN, and CR7CN, all raised on CW.

Complaints are being received by G3VPS (Hailsham) about his aerials—the difficulty apparently is that the three dipoles and their feeders in the loft prevent anyone else storing odd unwanted items up there. Between dealing with these details, Peter spent a little time on *Ten* CW, and managed to raise JA, W1-4, WO, 9J2, UG6 and UAO.

It is quite an event for G3NOF (Yeovil) to consider the bands have

done well, but this time he reports *Ten* most definitely taking a little notice. There were a couple of gotaways in the shape of CR8AG and FH8CE. However, frustration over them was eased by hooking AX6HT, AX6NM, AX6CE, AX6HT, CR6GA, CR6IZ, CR7LE, EA8GZ, EA8HH, EP2TW, FB8XX, FG7XT, FH8CG, G3LZQ /ZS4, K7PXI and K7RDH (both in Arizona), KG6AAY, KP4AST, MP4BBA, MP4BIR, PJ9JR, PZ5RK, UA0TO, UD6BD, UH8BO, VP8CW, VP8KD, VP9DL, VS6DO, VE2BEO, VU2OLK, W7AAW (Arizona), WA7JZJ (Idaho), ZE8JY, ZP5GS, ZS's, 4Z4AI and 9J2RO.

Fifteen

Naturally, if *Ten* was giving, it is fair to say that 21 MHz is going to prove to have been doing the same; and so the mail shows it to have been. W6AM, from his aerial farm near Long Beach, combed through *Fifteen* a few times for interesting ones, which gave HH9DL, FP0NQ, VR1O, 4U1ITU, G2PL, VR2FO, GC5AOM.

GM3OQY came back to the battle with a vengeance, to the tune of 650 contacts, mostly CW, scattered all over the world, a list far too long to report in full but loaded to the gunwales with the sort of stuff one would like to hear, let alone work! Only two naughty ones get a passing mention in a "VK9A/C" and a "ZA1KAA" both worked but written off as pirates. Talking in terms of operating standards after his long lay-off, Stew notes all that extra activity and hence QRM has been accompanied by a marked deterioration in manners by some

"FIRST-YEAR-OF-OPERATION" LADDER

Top Band Only

Phone/CW Place of Honour: G3YMH, 89/16

Callsign	Date		Counties	Countries
	Licensed	Counties		
G3YXM	14/11/69	87		12
G3ZDY	21/2/70	81		11
G3ZCC	12/3/70	67		13
GM3ZDH	24/3/70	36		5

CW Only Place of Honour: GM3YOR, 80/10

Callsign	Date		Counties	Countries
	Licensed	Counties		
G3ZES	3/3/70	65		14
G3ZCC	12/3/70	45		13
GM3ZDH	24/3/70	28		5
G3YXM	14/11/69	15		8

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

Europeans, such as sliding about the band with key down, calling CQ on top of rare DX, testing and tuning *ditto*, and worse, calling other Europeans right in the middle of the pile-up. Add to that there is the battery of funny noises that seem to enclose the bands these days and on occasion trot up and down them before settling somewhere else. Most of Stew's DX was worked on CW, and here there is a brighter side, with a much higher standard of Morse than of yore.

Rather a frustrating period, complains G2DC, although once one gets away from the mid-afternoons and uses either mornings or evenings, things look very much brighter; in the evenings all the short-skip sometimes just disappears leaving a quiet band on which a CQ will raise a W6 or W7. An interesting one for Jack was with KH6GT who made his transmissions in Esperanto; as G2DC has a smattering of it he put it to use, to the surprise and delight of Bun. Another good one was with WA0TVD who was a good signal, well operated by a lad of fifteen. Among the CW contacts made here were FL8RC, KH6GT, KR6JU, MP4MBB, PJ2PS, PZ1RK, VU2CP (a YL), VU2OLK, ZD3SR, ZA2RPS (who was worked on both CW and SSB), ZM1ADN, ZL1AZN, 4S7EA, 4S7PB, 7X2FO, 9V1PA, all W call areas, VE1-8 and VK2-4.

For G3OJV it was more or less a case of proving things out, an exercise which yielded 9H1BX, OY7S, 6W8AL and some JA's.

Another long list comes up from G3DCS with his Joystick. Breaking it down we find CW with all W call areas, VE3, WP4DJZ, EA2IK, KF0NEB, KP4CLB, CT1UW, JW8MI, 9H1BY and 5N2AAF; lots of VE and W plus IPILCK and 9E3USA were booked in during the Sideband Contest.

Even though he has lost his beautiful antenna farm, G3VPS still goes on his merry way. This month saw 5N2ABG raised on SSB for a new country, plus shoals of W/VE, 9H1 and 9V1. Turning to the key, Peter used it for ZA2RPS, UK6QAD and JA, the first two going to add to the score.

G3ZAY (Petts Wood) uses a Sommerkamp FL-500 and Trio JR-500 receiver, with various aeriels, including a half-wave dipole on

3-5 MHz, a dipole for Twenty at 34 feet, a two-element Quad for 21 MHz at thirty feet, and a vertical dipole for Ten which has its bottom extremity four feet off the ground, and a yard away from an earthed drainpipe. 21 MHz is obviously the favourite band, and SSB the mode, with such a set-up; and so it proves to be, with SSB contacts shown for KC6WS, KR6TX, KR6HB, KR6JX, KH6GOI, KX6II, KJ6CF, KL7DHB, KA2FR, YB0AB, YB0AAO, HM4FA, AX1GD, ZM1's, DUIFH, VS6AD, CR5SP, 5N5KPT, IP1GAI, JW7UH, CO6RL, HB0XS, VE0NEF, and XE1UA.

An interesting log from MP4BIR, again remarking on the small number of G's to be heard, the majority of which date from pre-war or were licensed before TV got going in this country. One notices PY's, LU's, CT3AS, CR6GA, EA8BQ, EL2CJ and EL2CA, TJ1AZ, GM2FHH (for the only G among a hundred or more European contacts), on September 6, also FL8PJ, ZS6DZ and ZS6AQU, 9J2GE, VQ9L, FR7AG, FL8BH, 9X5SP, 9U5DL, WA5KPL /HR1, and PZ5RK.

Snippets

Nice to hear again from G3NMH (Swindon). Hal's business activities are cutting back on operating times, but he does get on occasionally and when he does usually manages to make an impression. As a "for instance," there was the 1969 VK/ZL/Oceania Contest, which Hal won, and the Bermuda Contest (Phone) which latter has enabled G3NMH and his XYL to visit Bermuda—two air tickets to VP9 *plus* a week's holiday paid for is most definitely a bit better than the usual run of certificates!

By the time this reaches the book-stalls the first part of the 1970 CQ WW DX Contest will have been played off but there is still time for the CW leg, which runs November 28-29, starting at 0001 on the Saturday and finishing at 2359 on the Sunday. In this one you swap report *plus* your Zone, e.g., for G's it would be RST 57914. There are Lord knows how many prizes to be won, some of which are just crying out to be lifted by a U.K. station—so what about a few of us having a go? Logs must be postmarked not later than January 15, 1971; indicate

Phone or CW on the envelope, and mail it to: "CQ WW Contest Committee," 14 Vanderventer Avenue, Port Washington, L.I., N.Y., 11050, U.S.A.

Many followers of this piece will already also be readers of the admirable *DX News Sheet* of Geoff Watts; he writes to let us know that he is the U.K. agent for W6GSV's *QSL Managers' Directory*, which gives the latest known information on over three thousand DX stations, not to mention a comprehensive list of the world's QSL Bureaux, with full addresses of the QSL Managers listed. In addition there are regular supplements which come automatically. The price for this valuable 60-page listing is 30s. U.K. or 32s. 6d. abroad; 43 IRC's will also turn the trick, or even four dollars—Geoff won't mind, for sure. The address is: Geoff Watts, *DX News Sheet*, 62 Belmore Road, Norwich, NOR-72T.

Twenty

Like Piccadilly Circus—if you wait there long enough you will see the person you seek; but it has to be admitted that it is also rather tough trying to complete a QSO, with the heavy traffic loading which makes QRM and lost QSO's virtually inevitable.

Let G3ZAY open the scoring; as already commented elsewhere he obviously goes the bundle on *Fifteen*, but at the same time realises that there is much that goes on on no other band than Twenty. Thus, he kept a watch on it, and at odd times added DU3ZAE, IPIJT and KA9JA to the log.

Now G2HKU takes up the story; and for him it was in the main late-night stints, plus the odd early-morning effort and his regular skeds. As a result the late sessions gave KP4BBX, VU2BEO, CX9CO, EA8GZ (a YL), HC2GG/1, HPIJC, PY2EIR, and PZ5RK. In the mornings AX3OG (who is *ex-G6OH*) was worked, plus AX5ZD, ZL3JQ, ZL3SE, the latter on the skeds.

About normal for the time of year, says G2DC, who notes as its peculiarity this month the amount of DX that has popped up at "odd" times to give him a pleasant surprise. UVØIP on Wrangel was one of interest, others being VK1-8, ZL1-4, W1-Ø, VE1-5, VE7-8.

The AX stations put through a tremendous signal in the mornings at G3OJV but he himself bewails the difficulty he has of matching it in *their* receivers! Still, 7X2OM, AX's, PZ5RK and KZ5EE helped to soften the blow.

G3DCS, stuck to CW on Twenty, and worked UN1CD, UY5TF, 8R1J, HK3HY, LU8DSA, VU2DX, UA4SK, OK3TBM, UI8IM, HA8CY, PY5AVV, TF5WMB, LU7PN, PY6HL, plus W's and more of the run-of-the-mill European stuff.

Very little activity for G3VPS on Twenty, thanks to the commitments of the other bands and work, but the odd CW session turned up OHØ, UA9, 4Z4, TA1, CX9, W's and VE.

On now to G3NOF, who found the going quite good, but little or nothing in the way of Africans during the evening. A couple of gotaways were KC4USV and ZK2AF, but the baited hook was dangled successfully under the noses of the following assortment of fish; DU3ZAE, AX's, C31BY/M, FØIL/M, HV3SJ, KA9AG, KJ6CD, KJ6CF, JA's, KL7FCH, OY2R, UVØIP, VP2SAB/MM, VR5LT, VS6CO, WB6ZDF/KG6, ZA2RPS, 4S7AB and 5Z4KL. Don says his gear consists of a KW Viceroy Mk. III, a Green and Davis PGLA1 Linear, and a Drake R4B receiver; this lot can be worked into one of three aeriels—A TA-33Jr. at 43 feet, a Top Band half-wave fed through an L-match ATU, and a trap dipole of G8KW design at 15 feet. As for Mobile there is a KW-2000, which doubles up for Top Band fixed-station-working operations.

GM3IAA has not for various reasons been much on the air of late, but Jim believes in at least keeping his hand in. This means raising VP2 and VP8, LU8 and ZS5XA in Durban, worked at 2320z.

To wind up for the players we hand over to MP4BIR, who offers, among others, such goodies as YK9AAN, YV1YC, VU2CK, YV3CS, KP4AST, AP2MR, ZC4RS, ZM2ASJ, HT1MG, TI2EGU, 7X2MD, FØYX/M (G3TJY mobiling in S. France), a four-way with 9H1BZ, MP4BBA, and WB8ADP, KZ5SD; C31BY,

and the only JA of the month in JA7GBS, who only broke through at RS44.

QSL Matters

This is quite a long list, including as it does, last month's crop as well. W6AM offers: *KG6SAC* to Box 6125 Guam; *CEØAE* to WA3HUP; *4N2KO* to YU2NEG; and *CT1AW* to DJ2IB. Then comes G3ZAY, who mentions *ZD8RR* via *W7VZX*; *AXØLD* to *ZL2AFZ*; *9N1MM* via *W3KVQ*; *YAIGNT* to Box 279, Kabul; *ZD3D* to *VE2DCY*; *KC4AAD* to *K7YMG*; *KC6JC* to *W2RDD*; *KC6CP* Koror, Palau, West Caroline Islands 96940; *KW6GM* to Box 205, Wake Island 9630; *3B8CZ* to *G3HSE*; *C31CY* to *DL2LK*; and *VP2MM* via *W1URM*. MP4BIR offers, for *TA3HC*, via *XE1EEI* and *TA1HY* via *W5QPX*. G3NOF has *AX9ES* to P.O. Box 1124, Lae; *CO2FA* to P.O. Box 6996, Havana; *VS5RG* to *VE7BWG*; *HA5KFZ/7* to *HA5KZ*; *EL2AW*, Box 1025, Monrovia; *MP4TCJ* to *G3E1Y*; *AX9DM* to P.O., Kerema, Papua; *ZE1CK* to *W4N1F*; *GC5AOM* to *DJ3YL*; *KA9RC* to *WA8NHZ*; *KX6DQ* to A.P.O., San Francisco 96333; *AX9KS* to *W1YRC*; *VP8KD* to *W2FBA*; *PZ5RK* to P.O. Box 566, Paramaibo.

For this month's lot, we have to thank G3NOF for: *KX6II* to A.P.O., San Francisco 96555; *VR1L* to *W6N1U*; *VR4BC* to Box 332, Honiara, B.S.I.; *FG7XT* to *K5AWR*; *FB8XX* to *F2MO*; *ZP5GS* to U.S. Embassy, A.P.O., New York, 09881; *FØIL* and *C31BY* to *G3OKQ*; *4S7AB* to *W2CTN*; *ZS3CJ* to *W3HNK*; *FL8PJ* to P.O. Box 468, Djibouti; *5R8AP* to *NASA*, P.O. Box 3242, Tananarive. *FK8BK* cards go to P.O. Box 96, Noumea; *FH8CG* to Box 135, Moroni; *HS1ABU* to *W5ZG*; *KA9AG* to *K1VYF*; *KJ6CD* to *W5TJT*; *KC4USN* to *K2BPP*; *GB3LI* to *G3TPY*; *PJ9JR* to *W3ZKH*; *9H1CB* to *G3LQP*, and *CN8BG* to *W3HNK*. (Phew!)

Sign-Off

Which is the point at which your conductor steps off the bus for another month, after dealing with about the largest crop of mail ever. Keep up the good work; the deadline for next month will be **November 9**, addressed as ever to: CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. Till then, *73 es DX*.

VHF BANDS

A. H. DORMER, G3DAH

THE wide-spread opening on VHF which appeared around the middle of September was probably the best we have seen this year. For one thing, it lasted longer than the June and August sessions and was certainly more extensive, both in respect of the EU/DX which was available and in respect of the extent to which operators in almost all parts of this country were able to take advantage of it. Almost inevitably, the South did a bit better than the North although, as witness the fine 70 cm. contact between G8AWS and Spain for example, it was not just the Home Counties who scooped the pool.

A fairly representative experience would be that of G6CW in Nottingham. He reports that on two metres, Thursday, September 17 saw little DX available on AM, but quite a bit on SSB. Stations in the south of France were being heard at good strength; later, LX and DL were coming in well, many Germans being located in the Berlin area, although no DM was actually worked at that time. PAØ was good, but not as strong as usual, and to the North-East, OZ9MO on quite low power, and SM7DTT, 15 km. west of Malmo, were good signals.

This pattern held over the weekend, but by the Sunday night/Monday morning, 21st, the best DX axis and moved round from

North-East to East/West with the EI and GI stations giving some very good strength signals in the Midlands, and also obviously in Holland, as several QSO's with PAØ were logged. ON and DL were good on Tuesday, 22nd, and on Wednesday morning OE2OML was reading S9+60 dB on the G6CW S-meter. Wednesday produced DX right down into the South of France, stations in Dijon and Lyons being particularly prominent, with HB9LN also a cracking good signal. DLØPR was being heard at this time also, but reception was patchy throughout the opening.

Further South, the DX was to be had almost for the asking. During the five best days of the opening, contacts were being made right round from LA through SM, OZ, DL, OK, PA, ON, F, LX, HB and OE to EA. EA1AB was worked by many operators in the South on both phone and CW. G2AOK reports hearing a YU on phone on the morning of Tuesday, 22nd; he raised an OK around that time. To the North-West, QSO's with EI, GI and GD were harder to come by, although signals were coming through on SSB from both EI and GI on the night of the 20th.

A typical log might be that of G8ATK on the Surrey/Hampshire border. He worked 73 DJ/DL, 10 PA, three ON, 17 F and one each LX, SM and OE, all on two metres; in addition he worked three DJ/DL and OE2OML on 70 cm. Then on Tuesday, 22nd, G8ATK had 37 consecutive contacts from one CQ call! G3LTF and G3LQR were also among those who got the OE on 70 cm., as was G8BGQ, who also worked an HB9/M in Zurich during the same period.

Tom Douglas, G3BA, who was so largely responsible for the installation of the Sutton Coldfield 70 cm. beacon, must have felt a glow of justifiable satisfaction when OE2OML, with whom he was in contact on two metres, played back a recording he had made of GB3SC, and which showed RST 599 reception.

A feature which was most apparent during this opening, and it has been on most occasions when extended tropo. was about, was the ducting effect. This was particularly noticeable on the DJ/DL stations which

were almost unreadable at times in the South-East, but who were giving, and getting, 5 & 9 reports during QSO's with stations to the West and North-West. Stations in the Midlands also reported this phenomenon.

Another interesting report comes from G3COJ (High Wycombe) who is usually pretty quick off the mark if there is an opening of any sort on VHF, whether it be auroral or just good extended tropo. On September 17, he found propagation very good, and was able to QSO both LX1DB and LX1DT on SSB and EA1AB on CW, the latter at RST599 both ways. OE2OML was heard calling F9FT on 70 cm. CW on the SSB channel, and F2TU in "DI55d" was worked on both bands. The following night, 18th, he found to be good, but not quite up to the standard of the previous evening. However, OZ9OR in "FP59d" and DM3PA in "FN10b" were both worked on two-metre CW. September 22, Brian says, were probably the best night for several years and there were few operators who were QRV then who would disagree with him. Many PAØ and DL were raised on both two metres and 70 cm., and for many of the latter, this was a first contact with G on that band, so fairly expensive in QSL cards for G3COJ! A notable 70 cm. signal was that from F2TH in Chaumont, "CI76b," who was running three watts from a varactor tripler. Incidentally, both he and DC9BY operate between 433.5 MHz and 434 MHz, so it is worth while tuning up above the GB beacons. With many others, Brian worked OE2OML on the morning of September 23 at around 0600 GMT—this on both two metres and 70 cm. OE2OML was an enormous signal on both bands. The Austrian reported that he had worked G8BGQ at 0300z that day, so it looks as if he were up that Alp of his for the whole of the night. Propagation tailed off after this, although HB9AMH/P was worked on September 28.

Not only were propagation conditions good on two metres and 70 cm., but on 23 cm. also. G8AUE in Derbyshire and G3GDR in Hertfordshire both made it on that band with DL9LU. The former contact was not altogether unexpected, since it was known that

Ian had been looking for this since the June opening when he almost got there. This splendid 23 cm. contact G8AUE/DL9LU took place at 1850z on September 22, signals-in being 53/55 respectively. They had a second QSO at 2025z the same evening. The distance Pentrich-Düren plots out to around 370 miles on mercator-projection but should be about 10% more when calculated on the great-circle path. Gear at G8AUE features a 2C39A tripler into 2C39A PA, giving 8w. output to a 68in. paraboloid, Rx being a xtal mixer type with no RF stage, DL9LU runs, for 23 cm., 2/3CX100A5 giving 100w. p.e.p. SSB output into a 64- ϵ (!) stack, his Rx being BFY243 into 1N23 mixer.

G3LTF in Chelmsford also finally made it with ON4ZK on 23 cm., for a new country on that band. Peter's best 23 cm. DX to date remains his contact with OZ7SP.

* * *

What lessons are to be learned from this wonderful opening? One, certainly, is the advantage of being VFO controlled. It is patently obvious that far greater use is made of the VFO on the Continent than in this country—the experience of G8ATK already mentioned is ample evidence of that—and by the law of reciprocity we should be able to work many more EU stations if we had the ability to QSY on to their calling frequencies, since many of them are accustomed to listen on their own channel before tuning the band. Of course, we have a Band Plan in this country which they, in general, have not, and such operating techniques require that one moves out of one's own Zone—but this Column has said before (and says again at the risk of being dubbed repetitious)—that such out-of-Zone operation is not only permissible but even desirable when working Continental stations who are much more conditioned to this technique than most British operators. The time is probably not yet ripe for single-channel phone working to become the norm on VHF, but inevitably it will come, just as it came to the HF bands in spite of all the diehards who opposed it. And it is already with us on CW.

The second lesson might well be that it is a good thing to spend a

little time listening around the bands before putting out a CQ call in any old direction in which the beam happens to be headed at the time. As explained before, there was ample evidence of ducting during this opening. A good example of intelligent operating in this context was that of G2DQ of Chelmsford, who heard the stations in the south and west of the country working the EA, watched till the duct came round his way, and then nipped in smartly and raised EA1AB. He also worked the two LX stations, which is one more than most people did, and this by using the same watching technique. It will nearly always pay to turn the beam to the West when there is an opening to the East, and listen to what the other chaps

are doing before launching an all-out attack on the DX, particularly if you are running ten watts to an indoor beam.

The third lesson which was there to be learned was that the weather charts in the daily papers and on TV gave ample warning that an opening was in the offing. There was this great big anticyclone over North-East Europe, virtually stationary for days on end, high pressure over the British Isles, and just the right amount of humidity to produce the required inversions. It was a natural, and it followed the same pattern as the autumn openings last year, although these came a little later in the Indian Summer in the middle of October. That we may also get another set of perfect conditions

THREE BAND ANNUAL VHF TABLE
January to December, 1970

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Counties	Countries	Counties	Countries	Counties	Countries	
G3OHH	56	8	54	11	22	3	154
G3DAH	24	3	67	15	16	6	141
G3COJ	6	1	53	16	29	8	113
G8ATS	—	—	55	12	34	8	109
G2AXI	36	3	48	9	6	1	103
G2JF	—	—	53	10	29	8	100
EI6AS	13	8	51	10	—	—	82
G3EKP	23	6	35	8	6	4	82
G8APZ	—	—	43	8	24	4	79
G8BKR	—	—	55	10	11	2	78
G3IAR	35	4	30	7	—	—	76
GD2HDZ	—	—	49	8	14	3	74
G8CVD	—	—	48	11	2	1	62
G8BWW	—	—	45	7	—	—	52
G3FIJ	—	—	37	5	1	1	44
G3ZIG	—	—	35	7	—	—	42
G8AUN	—	—	30	8	1	1	40
G8BHD	—	—	35	5	—	—	40
G8CCH	—	—	29	5	—	—	34
G8DWV	—	—	24	5	—	—	29
G3OJY	—	—	21	5	—	—	26

The Three Band Annual Tables show total claims to date from the year commencing January, 1970. Readers are reminded that claims should be sent as heretofore to: SHORT WAVE MAGAZINE, BUCKINGHAM. Summaries by band are given from time to time.

later this month is well on the cards, and past records show that October is a good month for auroral openings also.

* * *

Conditions during the remainder of September and into the first week of October, have remained obstinately mediocre, not perhaps even as good as that, from some of the comments heard after the 70 cm. contest at the start of the month. Scores there appeared to be very much down compared with other similar events, both in the number of QSO's and the ranges achieved. This was a Region I IARU event, of course, with no concurrent British contest, so perhaps it was not given quite as much support as usual. There is a strong argument for always backing up an IARU event with a U.K. one, the increased activity on both sides of the Channel being an inducement to all to participate. It was noted that the French appeared to be running a two-metre contest over the period, but as no 70 cm. French stations could be heard by G3DAH, it is not known whether this was instead of, or in addition to, the IARU contest.

The Durham two-metre beacon on 145-975 MHz is proving to be a very good indicator of propagation conditions for stations in the South. It is audible just about every day in Herne Bay, and the signal strength is a reliable guide to the possibilities of North/South contacts. In this respect it is better than GB3CTC or F3THF, since these stations are not beaming in this direction, and reception is less reliable. GB3ANG is also audible for about half the time in any one month, and during the latter part of the September opening was stronger than GB3DM at times. All in all, a good month.

Operating Hints

Now that most new operators have got used to the idea that there is some merit in using phonetics for the callsign when putting out a CQ, there is another aspect of the call which might bear emphasis. The "three-plus-three" routine is fine, as is the indication of location and tuning intentions, but these last two pieces of information should not come right at the end of the transmission or the essential informa-

tion, the callsign, may be missed by the distant operator who has only just tuned to your frequency. A good idea is to *finish up* with "G---- tuning." This not only conveys the fact that you have probably been calling CQ, and that it is worth giving you a call, but also catches the latecomer.

When putting new gear into commission, be it Tx or Rx, it is often worth while making out a "birdie chart." Plot out the sum and difference frequencies of the various oscillators and other signal sources, and multiples thereof, and you may be surprised to find how many of these are *in band*! Where transmission is concerned, these may be radiated at considerable strength, and give rise to TVI as well as interfering with other legitimate transmissions. On the "receive" side, the chart may help to explain those unmodulated carriers which at some time or other engender time-consuming and time-wasting investigation while combing the bands for the weak DX.

VHFCC Awards

Certificate No. 78 goes to Ernest Hoare, G8BDJ, for operations on two metres from Southwick, Sussex. His equipment is all home-built with the exception of the antenna and the main receiver. The Tx runs 55 watts of NBFM from a QV06-40A, and the converter is an FET job built to the design which appeared in *SHORT WAVE MAGAZINE* some three years ago. The beam is a four-over-four slot at 35ft. a.s.l., the QTH being as at sea level. The main receiver is an SX-28. Ernest is also licensed for A/TV under the call G6RZD/T.

Expeditions

Members of the R.A.F. at Brize Norton, Oxon., mounted a very successful expedition to Lundy Island during September 21-29. Helicopters were used to transport personnel and gear, some 1,200 pounds of it, for operation on both HF and VHF. The two-metre station, GB3LI, was set up near the old lighthouse, and it appears that the accommodation was a trifle primitive, since the VHF operators had to use an "Elsan" as a seat while they were on duty! The equipment consisted of a Heathkit HW-17 with an eight-over-eight

Yagi on a 30ft. pole, the site being at 450ft. a.s.l. A total of 364 contacts was made on two metres, in 39 counties and 9 countries; all these will be confirmed by QSL—a rather special card having been designed by the curator designate of the proposed Lundy Island Museum—on receipt of a QSL by G3TPY, *QTHR*, who is acting as QSL manager. Good conditions prevailed at the time they were there and contacts were made into Southern Germany, with better than 5 & 9 reports exchanged in both directions. The Wx was also kind, only one night on this exposed site being really uncomfortable. Although the operators, G8DPV, G3YWX and G3YUN (not forgetting their helper "Chalkie" White) ask that their thanks be passed to all those who gave them contacts, reciprocal thanks must go to *them* for laying the whole thing on, and for so many operators making possible a QSO with an outpost of the *Devonshire* empire. It is hoped to publish a full report of the trip, including details of the HF operations, in due course.

From G6CW in Nottingham, who has his finger on the pulse of two metres, and can be relied upon for all sorts of useful gen, comes details of some of the results achieved by the recent expedition to the rarer counties of Scotland by GM8AGU/P. The following are reception reports only as the Tx was very low powered and few contacts other than purely local ones were easily made. Operating from the Mull of Kintyre on Friday, September 18, G6AB was 5/6, G8BBB 5/5 and G6CW 5/6. On Saturday, when at the Campsie Fells near Glasgow, G3AOS was 5/8, G3NEO 5/7, G8BBB 5/5 and G3AAV 5/3. On the Sunday morning G3BA was 5/7, G6CW 5/7, G3WQW 5/3, G3YQA 5/4 and G8CB 5/6. It appears that several good sites were located, and further expeditions with a better Tx are envisaged.

G8BNO of Uckfield, Sussex, seems to have had a pretty lonely time on the air from Eire, where he recently spent a holiday. He got his reciprocal licence through, became EI2VCZ and started up on two metres with the HW-30 and a dipole from just outside Dublin. No joy after repeated calls. So he resorted to the

landline and established contact with EI6N and EI2BB; they in turn alerted EI2CB, who came on with his 100 watts and a QSO immediately resulted on 144.636 MHz. Nice co-operation from the EI boys, even if the distance was only one mile!

Going further back, a particularly intrepid effort in the way of DX-peditions calls to be recorded. The VHF-minded members of the Barry Coll. Radio Society have been in the habit of touring the hills of their native Wales, working the stuff under the Club call GW3VKL/P. But on August 23 last they were signing GM3VKL/P—from the summit of Ben Nevis. It was the first time that a full-sized /P amateur station had been humped up to this 4,406ft. high-spot in the southern part of Inverness, and the humping included a Honda generator, carried on his back by GW3PHH! His companions with the rest of the gear, tents and that, were GW3BQN and GW3WBU, and it took the party eight hours to get to the top. They spent 20 hours on site, and worked 59 stations, the GM's being specially delighted. And then the down-journey took another five hours—well done, boys, all in the tradition of VHF.

Newcomers

A callsign which appears for the first time in the Three-Band Annual Tables is that of G8DGR, Rodney Smallwood of Reading, Berks. Although he has not been long on two metres, he has knocked up a very reasonable score in his first few months. The equipment is an HW-17A with an 8/8 beam at 30ft. The QTH is badly screened in all directions by high (70ft.) trees, and to the North this obstacle is reinforced by ground rising sharply to 370ft. However, during the recent opening, G8DGR managed to work seven German stations, including DL9LA located at Flensburg, nine Frenchmen, one PA0 and GB3LI on Lundy Island.

A father-and-son combination new to the VHF bands is that of G8EER and G8EES, Francis and David Rigg, both operating from the same address in Shipley, Yorks.

A newcomer in Derby who would be glad of a few calls to swell his collection of counties for the Tables,

s Mike Pipes, G8DWV. He runs 18 watts to a QQV03-10, EL84 modulators and an 8-ele Yagi at 35ft. Score to date is 24 counties and five countries, and with rising ground in all directions around him, this is not bad going. He has had over 100 contacts with different stations on two metres since starting up in August, but to date, only four QSL cards have been received. *Nil desperandum* . . . as they say. He has already had a stab at some /P work in GW with the help of G8DKV and G8DYC.

Although not strictly a newcomer, it is pleasant to be able to welcome G3OJY (Coves, I.o.W.) back to the two-metre band after an absence of some five years or so. He has been completely QRT on all bands during that time, and is no fugitive from the chaos on the HF bands. The gear, which is located in the living-room and therefore only to be operated successfully late at night when the family have retired, consists of a Heathkit Pawnee running 18w. on two metres to a 6360 in the final. The beam is a four-element Yagi at 14ft. above ground, and is at present in the roof space. The QTH is 200ft. a.s.l., and has a good view in all directions. Alan is active most evenings from about 9.30 p.m. onwards, and is usually to be found on 144.3 MHz on phone and 144.108 MHz on CW. He is VFO controlled, and from his letter he is a firm supporter of the idea of calling the DX on its channel. To date, he has worked five countries and 21 counties, and this figure appears for him in the Annual Tables. (He remarked in his letter "well, somebody has to be bottom"—that's the spirit.)

Tabular Matter

The Three-Band Annual shown here was up-to-date at the time of writing—but there will no doubt be many more movements reported after the big *October* opening we have been enjoying. G3OHH is handsomely in the lead (G3DAH being temporarily dormant due to being incarcerated in hospital at the critical time) but the position of G8ATS is worth noting; without benefit of 4m. operation, he is up there with the leaders—well done. Two newcomers are G8DWV and G3OJY.

Incidentally, there are now only a couple of months to run before the Three-Band Annual closes for this year—so please get claims through in good time.

News from Home

Although he failed to knock off a great string of two-metre DX during the opening, G3UAN (Stannore Common) had a good 5 & 7 chat at 250 miles with F1AUX/P in St. Malo. This might not seem remarkable, but it was done with a small QRP rig running 250 *milliwatts* to a hand-held dipole! The Tx measures 1½ x 2¼in. and uses BSX20 transistors for oscillator, doubler and PA stages. The modulator is an IC-10 from Sinclair. The receiver is a Mosfet converter into a tunable IF strip using the Mullard LP 1153/6 IF and AF modules; power supply is derived from a PP9. Robert is at Sussex University and has taken the gear down there with him, so look out for a /P signal from the Ditchling beacon on 144.667 MHz from time to time.

Peter Le Fevre, G8AWZ, comments on the proportion of British to Continental SSB operators on Two. In his experience, he works about three times as many EU stations as he does British, and can't help wondering if this is general. One would not think so, and it seems more likely that it is due to Peter's location at Norwich and the comparative proximity of the PA and ON stations. Under average propagation conditions, few SSB operators will be beaming on Norfolk, since SSB activity in that area is low. It is these facts, rather than inactivity, which may account for the unusual ratio he experiences.

GW3LJP has now moved to a new QTH in Radnor at 950ft. a.s.l., and is active on Two and Seventy, the latter with TV as GW6AFG/T. He runs a QQV07-50 tripler to 432 MHz with 25 watts peak white. This is followed by a QQV06-40A buffer and a second QQV07-50 as a linear, giving a final output of 60-80 watts. The antennae are two home-constructed 11-ele long Yagis. The camera is a Vidicon, 405-line and positive modulation. On the receiving side, Bert has a trough-line converter with AF186's for RF and mixer stages. He would like to make TV skeds, and may be

contacted at Rock House, Fron, Cross Gates, Llandrindod Wells, Radnorshire, and *not* at the address given in the 1970 *Call Book*.

G3PBV (Newton Abbot, Devon) reports a very successful result during the big September opening, including choice pieces like DL, F, PAØ, LX1S1, ON and about 18 GD_X stations with reports of 9+20; the exotic OE2OML was heard. Dave remarks that one of the biggest problems associated with this opening was the terrific DX QRM—it is ever thus on these occasions!—and he found it almost impossible to work stations effectively when restricted to xtal channels, making the need for VFO control imperative.

G3OHH (Mow Cop, Staffs.) was very successful with the ED_X and says that for him the hazard was the lack of sleep occasioned by the length of the opening! Not at all an unfamiliar side-effect, as A.J.D. (who is actually writing this bit) well remembers when we had similar sustained openings in years past. (Oh, yes, it's all happened before, many times!) For G3OHH, his best QSO was probably that on 70 cm. with PAØHLA—and "Roger the Mow Cop beacon" also had the distinction of being heard on Seventycems by another PAØ, on the latter's TV receiver!

Also among the September opening, GD2HDZ (Laxey, I.o.M.) heard some DL/PA signals but worked only F9NJ, though he tried for ON4RE more than once. From up in Belthorn, Lancs., G3EKP did quite well with the ED_X and also added substantially to his scores on all three bands for the Three-Band Annual—his points total goes up from 48 to 82, in its way a good indicator both of the activity and what went on.

Out at Attleborough, Norfolk, G3ZIG mentions hearing HB9LN, with many DJ/DK/DL's and PAØ's also heard. The U.K. station that used to be G8CEF is now EI5CD, back home in Co. Tipperary, and getting ready for operation on the VHF bands. (See his small advertisement in this issue!)

The very poor propagation conditions on Sunday, October 4 played havoc with the *Magazine Daylight Test* organised for that day, to such an extent that there is little to be learned from the small

number of reports received, grateful though we are to those who took part. A further date will be announced later.

The South Bucks. VHF Club have a sale/demo. of equipment organised for their next meeting on November 3. On December 1, the programme merely records "Convivial Evening." Usual QTH.

G3OIZ of Littlestone, Kent, was startled to learn while in contact with an OE2 (on HF) that the Austrian station was also operating RTTY Mobile. It turned out that he was towing a caravan and had a second operator in it!

A report from G8BJR, says that G8CGI (Ashford, Kent) is just about ready to go on *three* cm. from there, and would welcome correspondence with others interested in operation on this frequency. Incidentally, G8BJR himself has a great deal of trouble getting round a local hill, and has found that the "bounce" technique, used so successfully by G3OUV *et al*, works well for him when he uses a local water tower as the target.

GB3MUL, the Mullard Exhibition in London, has been putting out a good signal on two metres. G8BMI (Keighley, Yorks.) has a QQV06-40A rig well on the way to completion, and reckons it will be on the air the day after the last of this year's openings! The QTH there is very poor, and best DX to date with the QRP rig has been G6CW in Nottingham. G2JF is now QRV again, on two metres only, using a small five-watt rig to a single 6/6 at 30ft.; he still gets 5 & 9+ from the French stations, though! The G2JF reconstruction is progressing satisfactorily, and it is possible that by the time these lines appear, the QRO rig will be once more putting out that famous beacon signal from Kent! G8AWO (Hatfield, Herts.) now has 12 watts of NBFM available on 70 cm., and rumour has it that he will shortly be QRO on that band. The Tx is all solid-state, and the PA is a BLY35. G6CW has an electronic keyer under construction, and reckons that this will be a help under less than average conditions when he is keeping his skeds with PAØPCD.

Interesting to note that during J-O-T-A, the Scout QSO Party over

the weekend October 17-18, there were a number of GB prefixes to be heard on two metres, operating in the Scout interest.

From all accounts the running 70 cm. contest proposed by G8APZ and G8AWS and announced in our last (*see* p.489) has got off to a good start, and has already resulted in a significant increase in activity on Seventycems.

* * *

It is with great regret that we have to announce the sudden death of Bryan Pickers, G3YUA, of Marksfield, Leics. Readers may recall his recent articles on two-metre gear in *SHORT WAVE MAGAZINE*. Professionally, Bryan was engaged in electronic work for the Hospital Service, and was largely responsible for the technical development of a successful heart machine.

News from Abroad

Many two-metre operators will have heard the fine CW signal from PAØAA, the National Dutch Radio Amateur Station, on 145.14 MHz. It may be of interest to note that news in English is broadcast from this station at 9.15 p.m. and 11.15 p.m. each day. CW lessons for beginners and for advanced operators are conducted from 8.30 p.m. onwards, with an RTTY transmission, 45 bauds, at 9.30 p.m.

Still in Holland, those who collect certificates may care to note that in addition to the Amsterdam Award, which can be obtained by working ten of the nominated stations in that town, there is a Hague Award given for confirmed QSO's with five of the following: PAØABB, ANY, AWN, BDH, CSL, FB, FIP, HER, HET, HJZ, HLA, HWG, ION, JBK, JWU, KTV, LOK, MDL, RB, TLX, TVH, WAW, and WOF. QSL cards and IRC's for four shillings should be sent to PAØTLX, QTHR, with your claim.

G2JF in Kent, reports reception of two German beacons which do not figure in the usual lists. These are DLØSGA and DLØUH, both in the two-metre band. Enquiries are being made to establish their identity and operating characteristics.

G8GLY comes in with news of a new 70 cm. beacon in Germany. Details are as follows: QRG 433.485 MHz, QRA GM47g, QTH Berlin,

callsign DL7HGA, power 500 milliwatts, antenna a multi-cross omnidirectional at 75ft. above ground. Operation is continuous and, although in view of the low power it is not going to be easy to find in this country, reception reports may be sent to Dr. Peter Brumm, 1 Berlin 37, Claszeile 23. This is a private venture and is the result of the combined efforts of DL7HG, DL7AN, DL7PU and DC7AS. Another 70 cm. beacon in Germany is DJØLF on 432.02 MHz.

The Irish Radio Transmitters Society request that the new address of their QSL Bureau should be published, and so here it is: IRTS QSL Bureau, PO Box 462, Stella Avenue, Dublin, 9. Cards going to the old address will be redirected to the new one for the next two years.

Contests

Contests to the end of the year are the 144/432 MHz CW event

(please note that the higher frequency band has recently been added) scheduled for November 7/8, times 2000 to 0800 GMT, and the 144 MHz Fixed Station contest dated December 6.

Deadline

Deadline for the next issue should be easy to remember, **November 5**. The address for news, views and comment is: VHF Bands, SHORT WAVE MAGAZINE, BUCKINGHAM. Cheers for now and *73 de G3DAH* (and A.J.D.!)

Late Flash

Just as this piece was being finalised, two things happened: Mike Dormer, G3DAH, had suddenly to go into hospital, and once again it fell to A.J.D. to rouse himself from his slumbers to take over.

But probably of more immediate interest and importance to readers

is the fact that *another* great opening developed from October 15, holding steady till at least the 17th—but affecting mainly Northern Europe and the southern half of the U.K. A ridge of high pressure stabilised along a line approximately East Germany to the Midlands, again bringing plenty of EDX, with the beacons good and strong (at least, in the South Midlands, where A.J.D. sits). All the classic signs of a big opening were there: The Wx map showing the formation of the high-pressure area; lovely warm afternoons with cold, clear nights; and the BBC talking about anomalous propagation on Band I TV and VHF/FM. There is neither time nor space now to go into details but we look forward to having a good selection of individual reports on which to build a detailed story for the next issue—deadline November 5.

A.J.D.

AMENDMENTS AND CORRECTIONS

Anent the article "VFO TTx for Twenty" in our October issue, G3NKH (North Harrow) suggests that performance could be improved by using RF choke values of around 20 μ H, instead of as specified, which are more typical of the impedance levels associated with valve circuits; as such, they are unnecessarily large for transistor transmitters at the frequency, and likely to encourage LF parasitics. G3NKH also considers that the meter M1 in the Tr3, Tr4 supply circuit could have a bit more decoupling, because "at 14 MHz it is full of L, C and R!"

As regards the article in the same issue by G2JF, on a VHF VFO, looking at the values for Fig. 5, p.465 R8 should read 68K and R10 (not listed but shown in the circuit of Fig. 5) should be 50K.

F.O.C.—23rd ANNUAL DINNER

This was held in London on October 3, with about 180 members and friends present, including a large overseas contingent, no less than 14 countries being represented. For nearly 25 years the First-Class CW Operators' Club—founded in 1937 by the late G2ZQ/G5BW, and restarted post-war by G2ZC/G6FO under the *aegis* of SHORT WAVE MAGAZINE—has been active in the interest of high-standard operating on the amateur bands. Its conduct, aims and objectives have attracted distinguished CW operators in all parts of the world—so much so, that almost since the beginning membership has had to be restricted to a number that could conveniently be handled by one individual acting as secretary. In consequence, there is always a waiting list and new members are only accepted on recommendation by established members of the Club. The present secretary

—fifth in the line of hon. secretaries—is G8VG. The first president post-war was the late G2NM. This year's occupant of that chair is G3IEW, who succeeded G3FXB, immediate past-president.

FATHER-AND-SON STATIONS

It is very interesting to find that there are three more father-and-son combinations now on the air from the same QTH: The Alldricks, G3MZP/G3ZOY, Sutton Coldfield; the Hills, G3ZRB/G8EEA, Oldham, Lancs.; and the Riggs, G8EER/G8EES, Shipley, Yorks. It will be evident that, with the exception of G3MZP, all have been very recently licensed. We congratulate them, *père et fils*, and wish them success on the amateur bands.



"... QRX a minute, 'e's gorn to answer the fone ..."

THE OLD NEW BOY

OR, TACKLING SUBJECT No. 55

Joshua Oldfield

IT all started when I was posted. I tend to use the word "posted" even though the powers that be called it "transfer on promotion." A hangover from the war, I suppose. The prospect of deserting sunny Berkshire to travel to the border wastes of Northumberland caused a little apprehension but the transfer being imminent I took a week off and went up there to search for a house. The one we finally picked on was completed only up to the dampcourse but with the assurance of the builder that the place would be habitable in 6 months time we put our signature on the contract and settled down to wait—my wife went back to sunny Berkshire and I took digs. on the misty banks of Tyne.

The evenings without the family were fairly slack and being a great believer in the notion that a change is as good as a rest I determined to do something different. The first idea was French conversation and I duly turned up at night school for registration, ready to prepare myself for the time when I could demonstrate to the French how their language should be spoken. Each classroom was labelled with the name of a different subject including "Fencing" and "Mixed Crafts for Ladies." One of the labels merely said R.A.E. To me this was vaguely reminiscent of regimental initials, but being of an enquiring turn of mind I asked the wild-looking type sitting at the desk what they stood for. He told me "The Radio Amateur Examination." "There cannot be many people interested in that," I said, "I should think it would be difficult to make up a class." "We are short," he replied, sadly, "of the 14 we require to make a class." "How many have you got," I said, "13" he replied, and his face suddenly brightened as he caught my wrist in a vice-like grip caused by many years of CW operating, "and you" he said, "are the 14th." Against such persuasion I could not hold out and a few minutes later I was once more outside, slightly dazed, on the foggy street, and 30s. the poorer.

In truth I had always been interested in things electrical since the day in the 1930's when I tried to convince the G.P.O. to take me on as a trainee telephone engineer. At the entrance test they asked me to draw the circuit of a trembler bell and the resultant effort was like nothing they had ever seen before. They failed me. The fools—not being able to recognise a transistorised circuit before its time.

The class itself can only be described as a multi-age group male version of St. Trinians. It ranged from about 14 at the minimum to at the maximum a couple of old gentlemen whose right hands possessed a natural ability for sending a high speed sequence of dots—what they would do about the dashes I hated to think. A few were professionally concerned in radio and television but most had only enthusiasm. They ranged from overalled young men straight from the factory floor to one very expensively dressed gentleman with a facial resemblance to Lord Beeching. It might, in fact, have been Lord

Beeching, but if it were not, he must have been in the same salary group.

I decided straight away that the whole thing would inevitably be a dead loss. A basic requirement of good teaching dictates that there must be some uniformity of attainment in the class being taught but I very much doubt if there was any here. The task, in fact, would require a super human being.

He walked through the door.

I am very tempted to give you his name but if I did, other individuals may recognise their descriptions and sue me for libel. "Many people hold"—said this superman, "that you should not bother to study Morse until after your radio amateur examination. This is hogwash and tonight you will learn the Morse characters for 'a,' 'b' and 'c' which are"—and he proceeded to tell us. "When I call the register," he said, "I shall give you a letter each week with your name from the sum of those we have already done and you will tell me the Morse characters." He swiftly got down to the task. When my turn came he fixed me with his beady eye and said "a."

I have been on the stage and the rostrum many times. I even once played the hangman in Tom Jones, but the delivering of the poignant words "di-dah" took very much greater effort than any of these—in short, I felt a right twit. Leaving me sweating profusely he swiftly passed on to the others and left me in peace. The register completed he then went on to show in the first lesson how enthusiasm, a willingness to teach and a willingness to learn can be a substitute for any arbitrarily defined entrance qualifications. Part I of the syllabus he dismissed by saying "this is merely a question of learning up the regulations and I do not propose to do anything at all in relation to these." He then lunged into an outline of the nature of electricity which whilst it may have astounded the doyens of the Physical Society gave the necessary background for those without it. We followed up with resistances in series and in parallel. Spot on 9 o'clock he said, "and that is the end of the lesson—now you will take down your homework problems." Over the next few weeks he flew through capacitance and capacitors and inductance and inductors, elementary AC theory and valve characteristics. Everything went swimmingly, the class grew bigger and bigger, finishing up with the situation where late-comers happily picked up a chair and desk from an adjacent classroom before attempting to come in.

Then the blow fell.

The instructor went sick. We never did find out exactly what it was but it necessitated the medicos opening up the cabinet and exploring the components. He was obviously going to be off for some time. His substitute was a bright young electronics engineer who knew all about solid-state circuitry but obviously had to dredge his mind to remember anything about valves. I even corrected him one evening myself!

But then I got Asian 'flu. I spent a fortnight over Christmas afraid I was going to die. Then I spent another fortnight afraid that I wasn't. After a two-month lapse and sadly weakened, I tottered along to night school several weeks late in the winter term, happily to find our original instructor obviously in the pink of condition

and beaming, but over a very much reduced class.

It was in fact below the level at which the Local Education Authority normally allowed classes to continue but over the succeeding few weeks in the hands of our superman the class grew and grew again. It never did reach the house-full proportions of the early weeks, but right to the end we always had a very respectable number and most of us had the nerve to sit for the examination at the beginning of May. I managed to attempt the full complement of questions although in one case since I started off with the wrong formula I doubt if I finished up with the right answer. Still, perhaps the examiner will give me a few marks for arithmetic.

Half of the paper I knew—and I wrote reams and reams on it. The other half of the paper I knew nothing about. I also wrote reams on this on the basis that a kind hearted examiner may be able to sort a little wheat from the chaff if sufficient chaff is presented.

The situation now? I have a National HRO-5T receiver and a BC-221AN frequency meter. I also have a wife who puts up very bravely with a house filled with Morse heterodynes as I try to work myself up to a speed of 12 w.p.m., just in case I pass the R.A.E. If I do not? I really don't know. You see, now the family are here I haven't got the time to go to night school again. On the other hand this bug does bite you. You must excuse me, I must go now. There is a lot of DX on 20 metres. I reach for my pencil and pad.

Editorial Note: Since this amusing little article was written, our contributor has been notified of a satisfactory pass. As he implies, he is not so young and when he started was straight out of the egg, as the saying is. His class was fortunate in having a good and compelling instructor.

NOISE SUPPRESSION IN /M WORKING

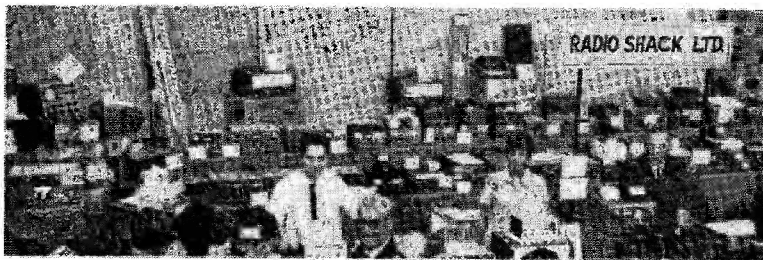
An interesting article by G3BID in the June issue of *Mobile News* explains that French law demands a high standard of electrical suppression in motor vehicles registered in that country. All cars intended for sale in France must conform to this standard. Hence, as G3BID suggests, it might be worth having one's own car fitted with the suppression system that its manufacturer has anyway to provide in order to sell his cars in France—and that, of course, applies to practically all British manufacturers. G3BID has certainly devilled out a very useful piece of information.

"MONMOUTHSHIRE RADIO SOCIETY"—1930

Going back to about 1929-30, this was one of the active Club groups of that time, and the first independent formation in South Wales. Remembered as members at that period (which was before the GW prefix came into use) were: G2BG, G2HH, G2JL, G5FI, G5WU, G6FO, G6GW, G6PF and G6YJ. But there were others, and the purpose of this note is to ask for their names and callsigns. We would also like to hear from anyone, whether listed here or not, who could supply some "historical notes."

QUESTION WE'RE OFTEN ASKED

How much does it cost to subscribe to your *SHORT WAVE MAGAZINE*? This is one answer that is easy to give—45s. for a year of 12 issues, starting any month. If you want "first-class posting" make it 48s. Despatch is guaranteed the day before publication, always the last Friday in the month. Orders, with remittance, to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1. We can also accept gift subscriptions to any address in the world at the same rate of 45s.



A stand attracting much attention at the London Amateur Radio Exhibition last August was that of Radio Shack, Ltd. The firm had a fine array of the latest equipment, no less than 20 manufacturers being represented British, American and Japanese—including the Signal-One CX-7 transceiver, probably the most advanced amateur-band gear of its kind ever offered; the one-off price in the U.K. is about £1,000. Interesting solid-state items were the Ten-Tec PM2/PM3 synchrodyne transceivers, low-powered and very reasonably priced. The Radio Shack stand was attractively laid out and made a most compelling display.

THE J-O-T-A EVENT

This note is to remind operators who took part in the recent Scout QSO Party that we would be glad to have reports (as outlined on p.479 of the October issue of *SHORT WAVE MAGAZINE*) on their participation. To catch the December issue, these reports and photographs should be with us by November 4, addressed J-O-T-A, *SHORT WAVE MAGAZINE*, BUCKINGHAM.

WEST HYDE DEVELOPMENTS—NEW QTH

This firm, making great progress in the design and production of transistor circuit modules, printed circuit systems and instruments cases in a wide range of sizes, has now moved into larger premises at Ryefields Crescent, Northwood Hills, Northwood, Middlesex, HA6-1NN. The trade descriptions associated with West Hyde Developments, Ltd. are *Contil*, *Mod-2*, *Pidam* and *Pidec*.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for December issue: November 6)

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

WITH this issue comes a Supplementary List of MCC identity codes allocated since the Rules and main Ident. List appeared in the October issue. For once we seem to have managed to collect up all the people who want to have a go, and missed very few—good! Even at this late stage, there is still time to start preparations for an entry, albeit the serious competitors will probably be worrying over the final details of the tea-brewing rota by now.

MCC has always been one of the events of the year for lots of Clubs, for it is an activity in which all the members can co-operate—whether licensed, as operators, loggers, or whatever, or unlicensed, when logging, second-op'ing, providing the site or the aeriels, tea-brewing, or standing by with the soldering iron, right down to the equally important job of giving moral support—and nobody can say that is not part of Amateur Radio.

So far as opinions have been expressed, the new scoring system seems to meet with general approval—there is no doubt that those multipliers will result in some pretty hefty scores being turned in! Anyway, we look forward to seeing what happens.

MCC—Points to Note

Party starts 1700z on Saturday, November 7. Rules on p.494, October. Please note Rule 6 for preparation of log sheets; all logs *must* conform to this layout, otherwise it will not be possible to read logs quickly and accurately. Remember to put Club name, callsign and ident. code on each sheet.

Identification Codes and Scoring System on p.497, October. Supplementary list p.561 herewith, representing Clubs who have asked for an ident. since the October list appeared.

And Rule 10 means exactly what it says—any logs received after *Friday, November 20*, will have to be rejected, as checking starts that week-end. To be on the safe side, get into the 1st-class post by Wednesday 18th latest.

Photographs of stations taking part will be appreciated and will be paid for on publication, if used. Where possible, they should be sent in with the log entry, so that they can be included in the MCC Report.

Scotland

Never a very large clip here, but always of interest. First, we have news of a Club recently formed called the **West of Scotland Amateur Radio Society**; they had the

inaugural meeting on September 11, to elect a committee and get them cracking. They meet every Friday evening and there is a full programme of events, refreshments are available half-way through the evening, there are courses in Radio Theory and Morse, and by and large it sounds as though someone is doing a very good job indeed.

Edinburgh is covered by the **Lothians** group, who have November 12 for a talk about components and their applications, by a representative of Texas Instruments. All the details can be obtained by contacting GM3YMX, at the address given in our Panel on p.563.

The **Falkirk** group has been re-activated, writes the hon. sec., and they are now getting together on the last Friday in every month at the Temperance Cafe, Lint Riggs, Falkirk, which gives them November 27 this time. For all the details, write or ring the hon. secretary—see Panel.

Northern England

Although it has, for various reasons, been some time since his last report, the p.r.o. of the **Bradford** crew advises that they are still around and active; the autumn session is fully booked, at the Hq. of 10 Southbrook Terrace, Great Horton Road, Bradford 7. November 3 is a visit, to Firth's Carpet Works, which should make an interesting change, while on November 17 comes a Mullard Film Show.

Stoke-on-Trent have Hq. at 2A, Race Course Road, Oakhill, Stoke—otherwise known as the rear of the Cottage Inn—every Thursday. November 5 is open for a talk on Constructional Techniques, and on the 12th comes a very useful one, titled "Miscellaneous Aids to Servicing." The Early Days of Radio is the title for the 19th, which is the last firm date we have.

South Manchester seem to be pretty busy in November. They start the programme on publication day—October 30—with the annual hot-pot supper, then on November 6 have a session of Technical Topics. November 13 sees the sound film evening, with "Apollo in Ascension" and "East-West Island" topping a double bill of sound and colour. A Mini Lecture Contest follows on the 20th, and the month is wound up on the 27th by Mr. T. W. Cannell who will be explaining the silk-screen process as a means of obtaining D-I-Y QSL's.

The **Hull** crowd meet at 592 Hesse Road Hull, each Friday evening. November 6 sees G3SSA and G3PQY joining forces to evaluate "Leads or Pins." Films are the order of the day on the 13th, while the 20th is set aside for an SWL night. G3RDM takes over on Novem-

ber 27, to give some hints and tips on soldering; which leaves December 4 for the Construction Evening.

Baird Television Ltd., of Bradford, are the guests of **Spen Valley** on November 12, when they will be giving a lecture on the Spectrum Analyser, and, one assumes, at the same time demonstrating one of these extremely handy boxes of tricks. On November 19 comes the logical follow-up when G3KEP talks about "What *not* to Twiddle." G8DSB takes over on November 26 to talk about the Ansafone. All are at Hq., the Grammar School, Heckmondwike.

November 24 is the date for **Sheffield**, when they are to bring along their home-built gear for the Home-construction Competition, to the Crossed Scythes Hotel, Totley.

Derby Nunsfield House have their AGM on November 6, followed by a Night on the Air on the 20th—the intervening normal meeting having been scrubbed as the Community Association have all the rooms in use for a big musical affair. November 27 is left, and on this occasion we understand someone will be talking about the principles involved in Alignment.

If you want to join the **North Leeds** band, then you must contact the hon. sec.—see Panel—for details of the venue. This is simply because they have a very nice two-room meeting place which is let on the one condition that they do *not* advertise it. The lads can operate on any band between 1.8 and 144 MHz, not to mention having RTTY and A/TV facilities, the meeting night being Tuesdays.

How to obtain stability of 1 Hz at 100 MHz is the theme of the October session of the **Wirral DX Association**. The venue for October is *chez* G3OKA, so please contact him—see Panel for his address—if you are contemplating joining.

G3MDW of **Northern Heights** seems to be full of beans after his visit to W1 and W5-land, and so also is the Club, with membership growing and more to do. On November 11, there is Mr. Craven's lecture to be looked forward to, while on November 18 the committee will be in a huddle in one corner. November 25 should be good—their Mr. Dougherty is down to talk about Radio Astronomy.

West of England, Ireland and Wales

Bangor, Co. Down group write to say that they are moving to new and, it is hoped, better, premises, in the near future, which they hope to have ready in time for them to take part in MCC. November's meeting, however is slated for the Silverstream Hall, Belfast Road, Bangor, on the 6th. This is a double bill, with G13WUO talking about the grinding and etching of crystals, followed by Hugh Irvine, G13TLT, describing his experiences with a G2DAF transmitter.

Our news from **Bristol** indicates that they have an AGM set for the day before this piece bursts on a startled world, which does not exactly give them time to lay down the programme for the coming months; albeit it is understood that there are strong hopes of being able to get it out on the night of the AGM. This being so, we are to advise any intending visitors or new members to get in touch with G3SXY, address as Panel p.563 for the very latest gen.

November 5 is the date for **Cornish**, who will be

converging on the SWEB Clubroom, Poole, Camborne, for a talk and demonstration of Colour Television by Mr. J. Ridge. There is also a Newquay group of the same Club, who are meeting at Treviglas School, Newquay, and an active VHF section as well.

For November the **Saltash** chaps are making a change in routine, by having G3WYJ giving the talk at Burraton Toc H on November 6, so that the AGM can be switched to November 20 for the greater convenience of the majority.

Just over the water is **Plymouth**, who have November 3 for a Members' Slide Show, when the chaps are to bring along their own prize 35 mm. slides to display. November 14 is the date for the annual dinner and dance at the Davie Hall, North Hill, Plymouth, for which tickets are obtainable from G3SPI, the hon. secretary.

North Devon next; this gang get together at the G4CG place, Crinnis, High Wall, Sticklepath, Barnstaple. November 11 is the date for the formal talk, and on the 25th there is to be a good old ragchew.

A change of hon. sec. appears in the box under **Exeter**; as G3HMY has resigned, G3TXG has been shunted into the "hot seat" for a few months till the next AGM. An important change to report is that the chaps have secured a room at the Community Centre, 17 St. Davids Hill, Exeter, which they hope will widen their scope somewhat. Looking at the programme, we note that on November 10, they will be seeing a Mullard film.

Midlands

Quite a while since last we heard from **Melton Mowbray**, but they still seem to be going strong at their Hq. in the St. John Ambulance Hall, Asfordby Hill, Melton Mowbray. For November 20 there is a recorded lecture by G3TJO, a blind amateur who calls his talk "Amateur Radio, my Window." In addition the lads run a Top Band net on 1900 kHz, at 1100 on Sunday mornings and 2000 Thursday evenings, clock time.

A new formation comes next in the pile, namely the **Bicester** group. It is understood they have gone through the formalities of formation, so it is just a matter

MCC CODES—SUPPLEMENTARY LIST

Zone A—Scotland		Fareham " C "	U44
Glenrothes	A6	Adur	U45
Glasgow Univ.	A7	RAF Abingdon	U46
		Purley " B "	U47
		Purley " C "	U48
Zone B—Northern England		Ariel (BBC)	U49
Tyneside	B37	Crawley (B, C, D, E stations)	U52, U53 U54, U55
Manchester Institute of Science and Technology	B38		
Zone C—Midlands		Zone F—Wales	
Four Counties	C52	Port Talbot " A "	F24
		Port Talbot " B "	F23
Zone D(U)—Southern		Zone G—All EI,GI,GD	
Fareham " B "	U43	I.R.T.S. Region 1	G6

of rolling up at 11 Stoneburge Crescent, Bicester, any Friday evening.

Wolverton Youth Club is the venue to be used by the **North Buckinghamshire** club, it was decided at the recent AGM—using the second and fourth Wednesdays as the basis of the booking. In addition there is an R.A.E. class to be operated at Wolverton College of Further Education, details of which can be obtained, as can all information on the Club, from G3ZNY at the address in the Panel.

Not much doubt as to which pile **Midland's** letter should go! November 10 is a big day for them, when they set to work to fill the junk-boxes, by way of a Surplus Equipment Sale. Incidentally, this month's issue of their *Newsletter* has a rather interesting piece about the AMSAT satellite and its theoretical background.

November looks like being the last month in their present Hq. for **Worcester**, who find it too heavy a drain on their finances. However, at least till November-end they will still be at Perdiswell Park on Tuesdays and Saturday evenings. The first meeting away from Perdiswell is on Saturday, December 12, at the Crown Hotel, Broad Street, Worcester.

A three-line whip is out on the **Coventry** chaps for attendance at MCC, says the hon. sec. of Coventry. He also mentions November 6, as a date when they will hear the postponed talk on Integrated Circuits by M. Kinsella, and the 20th as the evening set aside for a tape-and-slide lecture dealing with the St. Pierre DX-pedition. The other two club evenings, on November 13 and 27, are both set aside for the Night-on-the-Air ploy, when they endeavour to wear out the Club rig.

Winter Hq. have been opened up by **Peterborough**, after a summer spent lounging by the waterside; the first Friday in each month at the lecture hall of the Peterborough Technical College, Eastfield Road, Engineering Department. There are also plans for the future involving some trips to local places of interest.

A new hon. sec. at **Cannock Chase** is blessed with one of the most difficult scripts to read that has ever hit your old scribe. They get together at the Bridgtown Social Club, every Thursday, albeit the first one in each month is the formal meeting, the others being purely natter-sessions, while the Club call is also given an outing. November 5 is down for a Junk Sale, and we note that refreshments are available for those who become hoarse from too much bidding. The hon. sec's address is shown in the Panel—perhaps he would check it before next time, and tell us if we deciphered it correctly!

At **Solihull** the Manor House, High Street, Solihull, is the venue, when Post Office and other films will be shown and visitors welcomed.

Rugby have every Tuesday evening at 10 Drury Lane as the basis of their existence; the first meeting in the month is as far as possible set aside for some activity, November's one being a tape-and slide talk on Semiconductor Devices. The rest are informal evenings.

On to **North Staffs.** where a new secretary takes over—see the Panel for his "vital statistics." The Club get together at Harold Clowes Community Centre, Bentilee, Stoke-on-Trent, on Monday evenings.

South Birmingham have recently been through the AGM, and on November 4 is the first part of a three-way

Quiz which is being run between South Birmingham, the Bromsgrove lads and Worcester, the venue being, we believe, Hampstead House, Fairfax Road, Birmingham.

Southern England

It seems as though **Reading** are splitting up their programme and devoting several sessions to one major aspect, presumably so that an integrated educational syllabus can be brewed up; an ambitious idea, of which we hope to hear more. This winter is to be a VHF/UHF season, and on November 10 an engineer from Storno is coming along to demonstrate the commercial approach to VHF transmission and reception, while November 24 is entitled "Pedestrian Portable—Small Transistors, Small Aerials, Small Batteries—Small Wonder!" After that build-up G8CKN will have to bring something "out of the bag" in his talk on the approach to VHF and UHF!

At **Basingstoke**, the current chore seems to be the moving and setting up of a telegraph pole which they have acquired for their aerials at Hq. The first Saturday in November at Hq. is reserved for Construction, Morse and Chat—in that order! As for the third Saturday, what more appropriate than a talk on Aerials? To find them on these evenings, look for Chineham House, Popley Way, Basingstoke, or contact G3CBU, address as in Panel.

Oddly enough the address on the next letter is also Basingstoke, but it was written to advise us that the **Newbury** and District Club have been formed and got off to a good start. They hold their meetings on the first Monday evening each month at the South Berks College, Oxford Road, Newbury. December 7 should attract some visitors, as G2HIF will be talking about the design of tank circuits for solid state RF PA stages—a subject on which he is quite an authority in VHF circles.

Acton, Brentford and Chiswick will be at 66 High Road, Chiswick as usual on November 17, when they will entertain themselves with a general discussion of the members' problems.

Cray Valley have a *Newsletter* which often contains thought-provoking comments, when various members choose to do a little "stirring" and the one currently to hand is no exception. However, November 5 is the formal evening date, when G3OOU is to come along to talk about VHF Solid-State Transmitter Design and Construction. On the 19th is their regular Natter Nite, both meetings being at the usual venue, the Congregational Church Hall, Court Road, Eltham, London, S.E.9.

One of the Newsletters which are looked forward to is that from **Echelford**, which always has something of interest. However, the copy at hand jumps from October 29 straight on to January 11, so we have to refer you to the hon. sec. (whose address appears in the Panel), to give you details, although we can say that the Hq. is at The Hall, St. Martins Court, Kingston Crescent, Ashford, Middlesex.

It looks as though the November 17 session of the **Sutton and Cheam** lads will be a Junk Sale, with all sorts of goodies changing hands. They get together at the "Harrow" in Cheam.

At **Fareham** they are determined to make sure their publicity is not overlooked, as it comes in from two

different quarters each month, just to make sure. November 1, we note G3RCE down to discuss how to chase DX with a balloon aerial on Top Band, while the 17th is now—a late change—to be a tape-and-slide lecture called “A History of Amateur Radio.” There are also Slow Morse classes. All this goes on at Portchester Community Association where a room is booked for Sunday evenings, where also November 22 is down for G3LFM on home-brewed printed circuits, leaving a natter evening for November 29.

Another crowd who believe in publicity and yet more of it is Verulam; this month they have an interesting talk to listen to, when G3SIT discusses Radio and Life in the Antarctic—and he should know, having just spent three years in VP8. This one is down for November 18, at St. Albans Town Hall, St. Peters Street, St. Albans.

North Kent sadly say farewell to their old hon. secretary, who is going to Exeter for some years to pursue his studies; but no doubt we shall in due course hear who has been elected to replace G3WZJ in an arduous task.

MCC REMINDER

Starts 1700z Saturday November 7. Rules p.494 October. Identification Codes and Scoring System p.497 October. Supplementary ident. list herewith. Logs to be in by November 20, certain, to “Club Secretary,” Short Wave Magazine, Buckingham.

The club meetings are held at the Congregational Church Hall, Bexleyheath, adjacent to the Clock Tower. Percy Baber is the speaker on November 12, and it is something of a rarity to hear an SWL talking about CW operating. Another interesting one is on November 26, when G3GOG will be discussing Radio and Private Flying.

Now to Southgate, where the October issue of their Newsletter contains no reference to the November doings at the Civil Defence Hut, Bowes Road, opposite Arnos Grove Piccadilly Line station, being rather more interested in October's events. However, it can be

Names and Addresses of Club Secretaries reporting in this issue :

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.
 BAHRAIN: J. Dark, MP4BFO, Box 144, Bahrain.
 BANGOR: E. R. Sandys, G12FHN, 25 Moira Park, Bangor, Co. Down.
 BASINGSTOKE: P. Sterry, G3CBU, Ashley, Orchard Road, Salisbury Gardens, Basingstoke, Hants.
 BEDFORD: J. Bennett, G3FWA, 47 Ibbett Close, Kempston (2427), Bedford.
 BICESTER: P. Wright, 11 Stoneburge Crescent, Bicester, OX6-8DN.
 BRADFORD: H. F. F. Loble, Stoneways, 37 Cullingworth Road, Cullingworth, Bradford, Yorks.
 BRISTOL: E. J. Davies, G3SXY, 72 North View, Westbury Park, Bristol (33284), BS6-7PZ.
 BRITISH AMATEUR TELEPRINTER GROUP: D. J. Goacher, G3LLZ, 51 Norman Road, Gorse Hill, Swindon (21740).
 BRITISH RAIL: R. Woods, 15 Grant Avenue, Slough, Bucks
 BRUNEL UNIVERSITY: K. Baldock, G3UID, Room C2, Halls of Residence, Brunel University, Kingston Lane, Uxbridge, Middx.
 CANNOCK CHASE: P. Kemble, G3UYK, 71 Lichfield Road, Stafford.
 CORNISH: J. Farrar, G3UCQ, Elm Cottage, Ventonleague, Hayle, Cornwall.
 COVENTRY: C. Jaynes, 20 Belgrave Road, Wyken, Coventry, CV2-5AY.
 CRAY VALLEY: D. MacLennan, G3KGM, 52 Pinewood Avenue, Sidcup, Kent (01-300 0767).
 DARTFORD HEATH D/F CLUB: Mrs. M. Worbey, G3XVC, 13 Havelock Road, Dartford (22889), Kent.
 DERBY (Nunfield House): N. Gregory, G3LCV, 21 Back Lane, Chellaston (3516), Derby.
 ECHELFORD: R. Hewes, G3TRD, 24 Brightside Avenue, Laleham-on-Thames (3516).
 EXETER: V. Eggleton, G3TXG, 13 Beacon Heath, Exeter.
 FALKIRK: B. Mulleady, 9 Elizabeth Crescent, Camelon, Falkirk, Stirlingshire.
 FAREHAM: G. G. Bullement, G3XIV, 42 The Fairway, Portchester, Fareham, Hants.
 HULL: Mrs. M. Longson, 4 Chester Road, Wold Road, Hull.
 KINGSTON: R. S. Babbs, G3GVU, 28 Grove Lane, Kingston-on-Thames (2801).
 LOTHIANS: D. E. Ferguson, GM3YMX, 1 Braidburn Crescent, Edinburgh EH10-6EL (031-447 2858).
 MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead (20107), Berks.
 MELTON MOWBRAY: R. Winters, G3NVK, 32 Redwood Avenue, Melton Mowbray.
 MIDLAND: H. L. Bate, G8AMD, 88 Darnick Road, Sutton Coldfield.
 MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill (3552), Sussex.
 NEWBURY: H. E. Newland, 42 Woodlands Avenue, Baughurst, Basingstoke.

NIGERIA: The Hon. Sec., c/o P.O. Box 2837, Lagos, Nigeria.
 NORTH BUCKS: F. Frisby, G3ZNY, 11 Kingston Avenue, Stony Stratford (2382), Bucks.
 NORTH KENT: A. Watt, G3WZJ, 67 Glenhurst Avenue, Bexley (Crayford 22564).
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (44329).
 NORTH LEEDS: P. B. Fumfingier, G3MZF, 3 Ruthven View, Leeds, LS8-3RQ.
 NORTH STAFFS: J. Alcock, 1 Alma Street, Fenton, Stoke-on-Trent, ST4-4PH.
 PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye (357), Peterborough.
 PLYMOUTH: I. Dawe, G3SPI, 345 Crownhill Road, Plymouth (31055), PL5-2LL.
 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.
 READING: P. J. Bendall, G3NBU, 89 Hexham Road, Reading.
 RUGBY: J. Wood, G3YQC, 73 Hillmorton Road, Rugby, Warks.
 SALTASH: J. Ennis, G3XWA, 19 Coombe Road, Saltash, Cornwall.
 SHEFFIELD: G. Easton, G3JMV, 46 High Storrs Crescent, Sheffield (64730), S11-7JY.
 SHEFFORD: C. W. Stedman, G3XWS, 10 Wychwood Avenue, Luton, Beds.
 SOLIHULL: H. D. L. Clark, G3YOY, 18 Marsland Road, Olton, Solihull (021-706 0485).
 SOUTH BIRMINGHAM: E. A. Burke, 236 Beaumont Road, Bournville, Birmingham.
 SOUTHGATE: A. E. Hydes, 6 Glenbrook North, Enfield (01-363 7847).
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 WORCESTER: A. Ryan, G3VJN, Ahayweh, Bridge Street, Lower Moor, Pershore, Wores.

deduced that the November date will be the 12th—or, if you don't trust your scribe and his intuitions, contact the hon. sec., as Panel.

Although they get together each week, we have at the time of writing no information beyond November 5—which is an informal—simply because the AGM was held at the tail-end of October and it would be a little unfair to expect the programme to be finalised yet! To find them, take a stroll any Thursday evening to the Dolphin, The Broadway, **Bedford**.

The second and last Fridays in each month are used by **Wimbledon** as the basis for bookings at the St. John Ambulance Hall, 124 Kingston Road, South Wimbledon. This gives November 13, when the formal meeting will have the pleasure of the company of the Independent Television Authority, who will be talking about their transmitters. As for November 27, it is an informal session with G3WIM getting its usual airing.

"Aerials" is the topic chosen by G3GVU for the November **Kingston** meeting on the 11th, and then in December they will be going right to the fountain-head for their lecture, as the National Physical Laboratory are coming along to talk about "Current Developments in Frequency Standards."

On to **Purley**, where the main meeting is at the Large room of the Railwaymen's Hall, 58 Whytecliffe Road, Purley, on November 20, and will be the second half of one of the mammoth junk sales for which this crowd are well known. Earlier in the month, on November 6, the small room at the same place is booked for them to have the informal.

Dartford Heath D/F Club have no intention of slipping into hibernation during the "close season," and it is intended to run regular sessions. November 6 sees them at 49 School Lane, Horton Kirby, to listen to Eric Mollart and Mike Hawkins, who will be talking and showing films. A junk sale follows on December 3, and there will also be winter, and night, D/F Hunts for the hardier souls. As for the moment this crew are getting together at the homes of members it would be a courtesy to contact the G3XVC before attending although it is quite clear that there is a warm welcome here for new members.

Going southwards, we come to **Mid-Sussex**, who have their being at Marle Place, Leylands Road, Burgess Hill. Unfortunately we have no details of their November affairs, so it becomes necessary to refer you to the hon. secretary for the latest news.

The area around Broadstairs is catered for by the **Thanet Radio Society**, who assemble weekly at their Hq.; November 6 is down for Maurice Jordan's talk on Colour Television, while the 13th is set aside for a Film Show. As a lead-in on November 20, G8AJC discusses VHF/P operations, so that they are forewarned when they visit the South-East VHF group at Canterbury on the 27th. Finally, they have G3MDO who will talk about RSGB affairs on December 4.

How the **Shefford** lads manage to produce so spectacularly good a programme month-in month-out is a marvel to your conductor, who is at his wits' end to think up enough for a monthly session! Nonetheless, they do it, along these sort of lines: November 5, G8CTB on Atmospheric Phenomena; November 12, a Quiz and the judging for the Home-construction Trophy;

November 19, settling the final details of the annual dinner and also a junk Sale; November 26, G3XTQ on an Integrated Crystal Calibrator—and it is all just a run-up to their mammoth annual dinner, an event at which they manage to get an attendance of around 100.

A switch of routine is mentioned by **Maidenhead**; it seems they have so many chaps at the Advanced Radio Amateur class running at Slough that the dates are moved to break the clash. Thus, they are now on November 2 for the informal, and November 17 for the "big do," which for this month is a Junk Sale.

One is not surprised when the club belonging to a University or Technical College shows more variation in activity with the passing years—after all most of the membership changes in three or four years. **Brunel University** group have been in the doldrums for a couple of years, but now it is understood that things are to be revived, particularly since they now have a room allocated for a station shack in the Students Union building.

All sorts of things seem to be happening at **Sturley**, where they held an extraordinary general meeting in October, and have another on November 17. It seems they are changing the rules and constitution a little, and also are thinking very seriously about a change of venue, an opportunity having cropped up unexpectedly. As a result, it is suggested that, rather than just heading for the Swan and Sugarloaf on spec., contact be made with G3FWR, by letter or telephone, to obtain the very latest information.

Special-Interest Groups

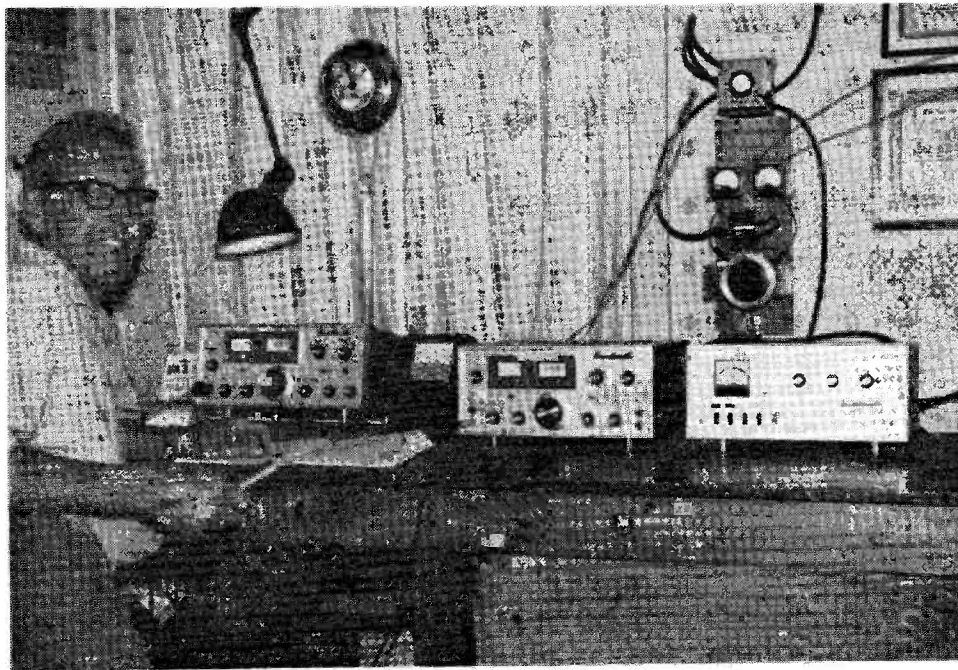
The **Amateur Radio Society of Bahrain** is a new formation whose president is Josh Wort, MP4BIR. Apart from looking after the interests of amateurs in Bahrain, it is also hoped, as far as may be, to care for the interests of all amateurs in the Arabian Gulf and Peninsula who have no national society of their own.

Nigeria's National Society is more interested in picking up the pieces, as gradually the members who had not been heard of since the troubles filter back into circulation and subscription-paying. Thoughts are being turned to the idea of forming branches to cover different parts of this large country.

R.A.I.B.C. cater for the interests of the blind and invalid followers of Amateur Radio, whether licensed or SWL, or even just plain beginner; and to that end they can always do with more supporters. There are so many things that want doing, so that often supporters can be of help in most unexpected ways.

Sign-Off

Which brings us once again to the end of our story for the month. Don't forget the transmitter for MCC, and do remember to join in! Till then, good hunting and please be early with the news, the deadline for which will be *November 6*, with the December details. At the same time, don't forget that January is the month when traditionally we report MCC in this space, so if there is anything particularly important occurring in January, include it with the December report. For February, the routine will of course be back to normal. All correspondence for this feature to "Club Secretary," **SHORT WAVE MAGAZINE**, BUCKINGHAM. Keep the fire in!



THE OTHER MAN'S STATION

ZLIAH

DEPICTED above is the station of John Wightman, ZLIAH, Welcome Bay, Tauranga, New Zealand, whose interest in radio started in 1928 at the age of nine, when he bought a defunct crystal set for 1s. 8½d. from a school friend in Manchester. Getting this going fired his enthusiasm and there was a steady progression—first logging medium-wave BC stations on an O-V-O, then SWL work on the amateur bands, Artificial Aerial licence 2AOV in 1936 and a full ticket as G3AH in 1937.

G3AH was one of the first to join the Civilian Wireless Reserve of the R.A.F., and in 1939 was a member of the group of amateurs known as "The Early Birds" who sailed to France the day after war was declared. Six and a half years of war service saw a variety of activities—a member of one of G6WY's "Emergency Fitting Parties," Radio Countermeasures and Radar.

After the war G3AH was reactivated in Manchester, but at the end of 1950 John left for N.Z., starting up in February, 1951 as ZLIAH, with a location which he describes as "An amateur's dream of Paradise"—four and a half acres on top of a hill overlooking Tauranga Harbour and the Pacific Ocean, where the weather (by British standards) consists of eight months summer and four months autumn each year.

For the first 25 years of his career as a radio amateur,

John "home-brewed" his gear, including his first two SSB rigs, but since 1965 he says he has become an "appliance operator" and his present equipment is the Yaesu F-line.

Antennae include Cubical Quads for 10, 15 and 20 metres, a ground plane for 40m., inverted-Vee at 60 feet for 80 metres, plus a general purpose centre-fed 520ft. wire.

ZLIAH has an impressive list of awards and achievements to his credit, including eleven consecutive wins in the CW section of the VK/ZL Contests between 1953 and 1963. Perhaps, however, he is the most proud of his "firsts" on Top Band—ZL/G, ZL/W and ZL/VS6 in 1952/54, and he also made the first ZL/G QSO on 21 MHz way back in 1952 when that band was first opened for amateur operation.

Present activity is mostly on 14 MHz with a particular interest in working G's on the short path between 1700 and 1900 GMT.

Mobile operation is also undertaken on 20m. SSB with a Hallicrafters SR-160 into a Hustler whip.

Since 1953, ZLIAH and G6CJ have had 1840 CW contacts, on all bands from 10 to 160 metres. The average length of each contact is over half an hour, and this adds up to an awful lot of ragchewing!

Always use our Small Advertisement section—see pp.567-574, this issue.

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.

- G3ZGN**, P. J. Swarbrick, 174 Monmouth Road, Dorchester, Dorset.
- G3ZHK**, T. G. Kellow, Glenvale, St. Dominick, Saltash, Cornwall.
- G3ZNB**, P. D. Hannam, 26 Church Lane, Rossett Green, Harrogate, Yorkshire.
- G3ZNQ**, S. Valentine, 90 Goodison Boulevard, Bessacarr, Doncaster, Yorkshire. (Tel. Doncaster 56904.)
- G3ZNS**, R. Mortimer, 214 South Avenue, Abingdon, Berks.
- G3ZOE**, R. P. M. Notton, 107 Highlands Road, Fareham, Hants.
- G3ZOL**, J. R. Powell, 44 Wellesley Road, Colchester, Essex.
- GM3ZOO**, W. M. Coupar (ex-GM8CZF), Forgue House, Perth Road, Blairgowrie, Perthshire.
- G3ZOQ**, G. Foster, 3 Egerton Road, Leyland, Preston, Lancs. PR5 1YB.
- G3ZOT**, J. R. Hewitt, 114 Canterbury Road, Kennington, Ashford, Kent.
- G3ZOV**, C. S. Cuthbert, 37 Laleham Road, Margate, Kent.
- G3ZOZ**, Dr. D. M. H. Cogman (ex-G8CHZ), 30 Downage, London, N.W.4. (Tel. 01-203 2118.)
- G3ZPC**, G. F. Gray, 5 Church Close, Peterlee, Co. Durham. SR8 5QT. (Tel. Peterlee 2843.)
- G3ZPG**, R. Shipman, 22 Albert Road, Leicester. LE2 2AA.
- G3ZPI**, G. S. Braund, Poynings, Ellington Road, Taplow, Maidenhead, Berks. SL6 OBA.
- G3ZPK**, H. A. Willis, 207 The Parkway, Iver Heath, Iver, Bucks. SL0 0RQ.
- G3ZPN**, J. V. Gibson, 70 Lawrence Road, Wittering, Peterborough. PE8 6EW.
- G3ZPO**, J. Johnson, 46 Coronation Drive, Penketh, Warrington, Lancs.
- G3ZPS**, S. J. Shorey, 51 Bassetts Way, Farnborough, Orpington, Kent. BR6 7AG.
- GW3ZQE**, D. E. Denny, C-17 Porthkerry Caravan Park, Barry, Glam.
- GW3ZQL**, S. Murray, 2 Clwt Cottages, Gyfelfa, Wrexham, Den-
- bighshire.
- G3ZQZ**, R. Hartley, 205 Kingsbury Road, Erdington, Birmingham 24.
- G3ZRA**, R. D. Elliot, 19 Lyndhurst Road, Ramsgate, Kent.
- GM3ZRC**, Greenock and District Amateur Radio Club, Watt Library Building, Union Street, Greenock.
- G3ZRF**, D. W. Slater, 110 Commonwealth Road, Caterham, Surrey.
- G3ZRG**, I. Steward, Keepers Cottage, East Runton, Cromer, Norfolk.
- G8CZH**, S. M. Clarke, 9 Erskine House, Springfield Grove, Charlton, London, S.E.7.
- GW8DOA**, G. R. Pollard, 3 Carey Walk, Cwrt Herbert, Neath, Glam.
- G8DWV**, M. A. L. Pipes, 28 Hampstead Drive, Mackworth, Derby. DE3 4GP.
- G8DXA**, A. D. Thomas, 6 Burlington Rise, East Barnet, Herts. (Tel. 01-368 6673.)
- G8DYS**, P. H. Truran, 125 Gospatrick Road, Tottenham, London, N.17.
- G8DYV**, C. Jones, 64 Monmouth Road, East Ham, London, E6 3QT.
- G8DYY**, J. G. Meddings, 106 Goldthorn Hill, Wolverhampton, Staffs. WV2 3HU.
- G8DZB**, G. W. Semple, 134 Canon Cockin Street, Hendon, Sunderland, Co. Durham. SR2 8PR.
- G8DZD**, R. V. Nuttall, 84 Station Road, Wylde Green, Sutton Coldfield. (Tel. 021-354 1899.)
- G8DZW**, R. L. Brookes, 20 Rockley Close, Almondbury, Huddersfield, Yorkshire. HD5 8ND.
- G8EAC**, L. Cunningham, 3 Tennyson Rise, Wath-on-Dearne, Rotherham, Yorkshire.
- G8EAF**, M. E. T. Lisle, 10 Lemington Avenue, King Cross Road, Halifax, Yorkshire. (Tel. Halifax 67194.)
- G8EAO**, D. J. Crawley, 40 Bosvean Gardens, Truro, Cornwall.
- G8EBE**, R. M. Wills, 148 Churchway, Weston Mill, Plymouth, Devon. (Tel. Plymouth 31707.)
- G8EBK**, R. Banister, 215 Chorley Old Road, Whittle-le-Woods, Chorley, Lancs. (Tel. Chorley 6202.)
- G8EBL**, J. C. Chisman, 7 St. Lukes Road, Ramsgate, Kent. (Tel. Thanet 55340.)
- G8EBN**, D. S. Radley (9J2GE), P.O. Box 1586, Lusaka, Zambia.
- G8EBY**, N. Ingman, 78 Weston Road, Aston-on-Trent, Derby.
- G8ECD**, S. L. Cunningham, 3 Tennyson Rise, Wath-on-Dearne, Rotherham, Yorkshire.
- G8ECL**, D. Brown, 106 Mount Road, Chatham, Kent.
- G8ECO**, R. C. Bagwell, 33 Frimley Green Road, Frimley, Camberley, Surrey.

CHANGE OF ADDRESS

- G2AQJ**, R. Collins, 33 Elm Close, Laverstock, Salisbury, Wilts.
- G2CTC**, S. R. Cooke, 20 Finsbury Avenue, Ansdell, Lytham, Lancs. FY8 1BP.
- G2FRX**, G. Wakeham, Fairview, Newton Road, Bishopsteignton, Teignmouth, Devon.
- GD2HDZ**, A. E. Breese, Ashfield House, Old Laxey Hill, Laxey. (Tel. 0624-86 465.)
- GM3ANO**, I. O. Shaw, Little Wardie, Golf Road, Brora, Sutherland.
- G3HZW**, D. C. Mainhood, 131 Westbury Lane, Westbury-on-Trym, Bristol. BS9 2PX. (Tel. Bristol 682117.)
- GM3KKG**, M. Darke, c/o Royal Overseas League, 100 Princes Street, Edinburgh. EH2 3AA.
- G3LNW**, J. McGuire, c/o Sgts' Mess, R.A.F. Gutersloh, B.F.P.O. 47.
- G3MBJ**, M. Acton, 32 Hillcrest Avenue, The Highlands, Burton-upon-Trent, Staffs.
- G3NDK**, R. K. Webb, 8 The Link, Wellingore, Lincoln.
- G3UJE**, B. D. R. Gale, 20 Camrose Avenue, Hanworth, Middlesex.
- GW8CMA**, P. A. Jones, 6 Gwelfor, Killay, Swansea, Glam. SA2 7NX.

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SALE: Trio 9R-59DE receiver, unmarked and unmodified, in original packing, price £34 10s., buyer to collect.—Barker, 4 Crescent Close, Cowley, Oxford (70101).

SELLING Up as changing interest to Aero-modelling, new 4CX250B/M's in unsealed cartons, £7. Some 88F air-bases only at 20s. Guaranteed new QV06-40A's at 40s. HE-30 receiver, very good condition, re-aligned, audio AGC, a good Rx at £16. BC-221 freq. meter in mint condition, with stabilised PSU, very accurate, £25. Also vast quantity of new components, selling very cheaply. Send s.a.e. for list, pse. (Midlands).—Box. No. 4968, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: FT-241A crystals for filters, BFO's, etc., frequencies available 464-815, 466-667, 468-519 and 470-370 kHz, all spaced 1-85 kHz, 5s. each.—Dobie, 1 Tudor Close, Chessington, Surrey. (Tel: 01-397 5552.)

REQUIRED: Sideband equipment, for cash, or could arrange 1972 holiday accommodation in local guest house.—Walsh, EI5CD, Ballylynch, Carrick-on-Suir, Tipperary, Eire.

WANTED: Manual for the ex-Govt. R.55 Rx, or can anyone please supply details of power supplies required, and their connections.—Lumb, 4 Rydall Street, Leeds, LS11-9LF, Yorkshire.

WANTED: Redifon Tx/Rx Type GR.410 (Service Type SR-C14) coverage 2-0 to 16 MHz, AM/SSB, preferably complete with mains PSU, AMU, etc. Please state age, condition, price required and enclose photograph if possible.—Box No. 4972, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

REQUIRED: By potential G8, two-metre transceiver in perfect order, alternatively transmitter and converter, etc. W-H-Y?—Neville, 27 Newbury Close, Great Wyrley, Walsall, Staffs., WS6-6DF.

FOR SALE: Eddystone S.740 Receiver, in very good condition, price £25, buyer to collect.—Phillis, 7 Lovelace Gardens, Walton-on-Thames, Surrey. (Ring 23201 after 6.0 p.m.)

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SALE: "Practical Electronics" from No. 1 to August 1970, in binders, price £7. Prefer buyer collects.—Lawrence, 20 Sharrow Close, Haywards Heath, Sussex, or ring 01-589 6371, extn. 508, Mon-Fri.

DISPOSING: Heathkit HO-13 Hamscan, factory built, little used, very good condition, with manual, £16. R.A.F. Tunable Artificial Aerial Type 1, very good condition, 60s. Avo R/C Bridge, very good condition, with circuit, £5. Avo Valve Tester, very good condition, circuit and data book, £5. Labgear speech compressor, perfect, with circuit, 60s. Admiralty Design-12 LP Filter, two. 30s.. 20s. Home-built 4-section tunable LP filter, 30s.—Boys, G3WVI, Crowthorne Farm, Crowthorne (2589), Berks.

WANTED: R.C.A. AR88D, preferably unmodified, or AR-8516L. Selling: National HRO, with PSU, eight GC coil packs and spare valves, price £20.—Box No. 4958, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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FOR SALE: Eddystone EC-10 Mk. I, price £56. Sentinel two-metre converter, £11 10s. Three-element 2m. beam, 30s., or near offer. All three months old and hardly used. Could deliver to reasonable distance.—Hawkins, 249 Herries Road, Sheffield. S5-7AX. (Tel: 386574.)

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FOR SALE: R.C.A. AR88LF receiver, £30; R.1475 Rx, £5; PSU for R.1475, 60s.; ART-13 Tx, coverage 2.0 to 18 MHz, £12 10s.; W.S. 12 Tx, 1-2 to 17 MHz, 230v. input, £8. All complete with valves.—Ring Jay, 021-454 8305 (Birmingham).

RADIO Amateur returning from overseas contract requires unfurnished family accommodation, London area.—Box No. 4931, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Hallicrafters S.120 general-purpose receiver, £10. Heathkit Equipment: Mohican GC-1U receiver, requires alignment, £10; C-3U R/C Bridge, £8; GD-1U grid dip meter, £8; laboratory oscilloscope, £10; electronic switch, requires attention, 60s. Test gear, Acton signal generator, £5. All items complete with manuals. Offers welcome, or £40 The Lot, or near. Buyers collect. (Midlands).—Box. No. 4960, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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DISPOSING: M. & G. three-band SSB Transceiver for 20-80-160m., 100 watts p.e.p., with mains PSU, in good condition, £60. Twelve-volt transistor inverter also available.—Buckley, G3VIX, 234 Halfway Street, Sidcup, Kent. (Tel: 01-850 6945, evenings and weekends.)

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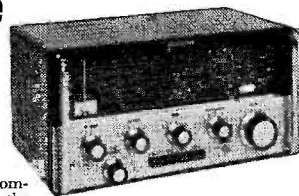
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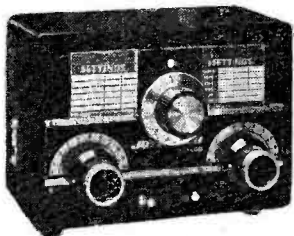
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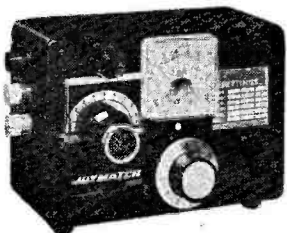
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