

APRIL
1975

THIRTY PENCE

Vol. XXXIII
No. 2

THE
**SHORT
WAVE**
MAGAZINE

**WORLD WIDE
COMMUNICATION**

FOR THE RADIO AMATEUR AND AMATEUR RADIO

STOP mistreating your rig

Match your antenna system to the PA stage with a KW 107—observe your TX "Waveform" with a KW 108.

KW 108 Monitorscope

- Monitor your transmitted "Waveform" 10-160 metres.
- Can be left permanently in antenna feed.
- Two-tone generator incorporated to ensure optimum linearity for SSB.
- Displays SSB, AM and CW "Waveform."
- A further safeguard for your PA tubes.



**KW 108
Monitorscope**



**KW 107
Antenna Tuning System**

KW 107 ANTENNA TUNING SYSTEM

The KW range of aerial matching units will ensure optimum power transfer from the PA stage to the antenna system.

- Longer life for your PA tubes.
- KW 107, suitable for most transceivers and transmitters (250 watt rating).
- The KW 109 is for use with linear amplifiers.
- Antenna selection.
- RF power and SWR measurement.
- Dummy load incorporated.
- Observation of SWR with and without antenna tuner.
- Attractive "G" line case.

The antenna tuner in the above unit can be purchased separately if you already have the KW 101/103, dummy load and antenna switch. This unit is known as the KW E-Z match.

Write or 'phone for catalogue to:



Communications Products

(Decca Communications Ltd)

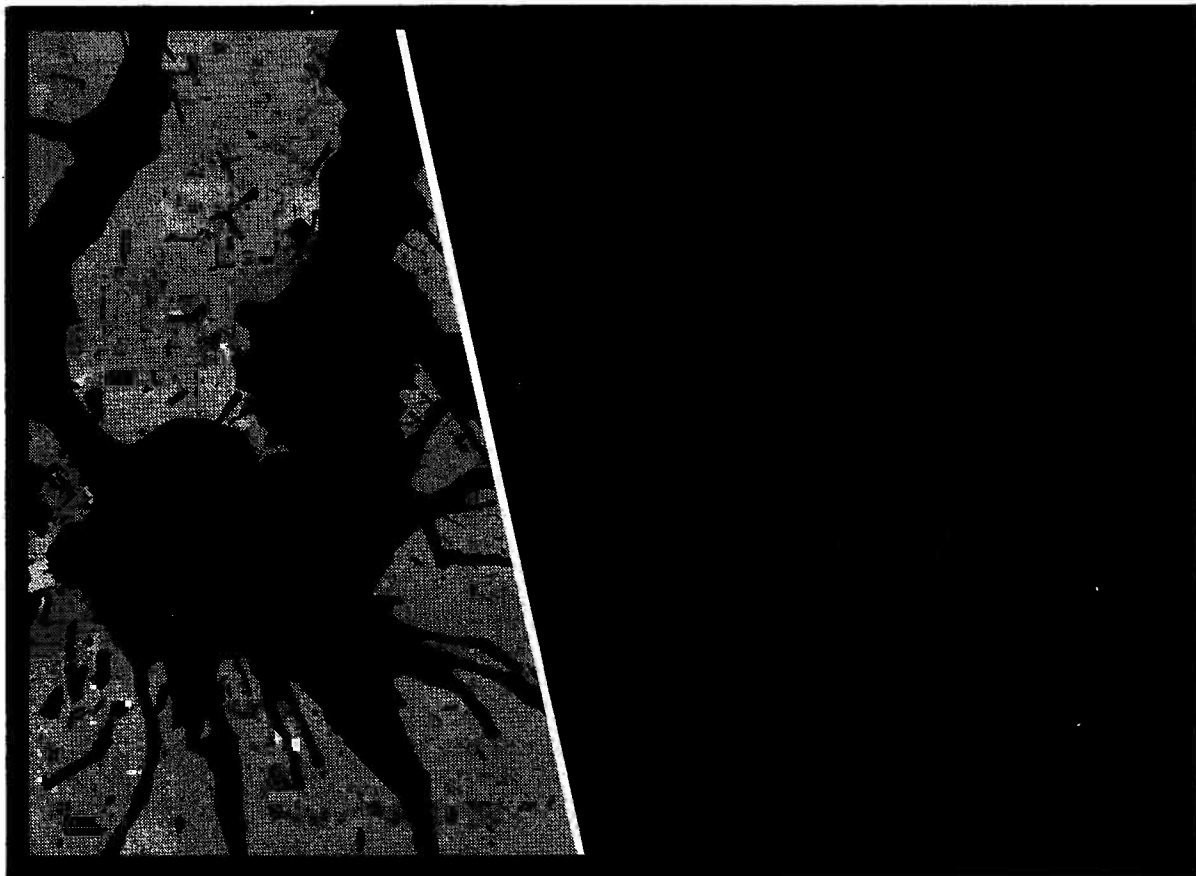
1 Heath Street, Dartford, Kent Tel: Dartford 25574/21919

Easy terms on Equipment available over 12, 18 or 24 months.

Other KW Favourites: KW 2000E Transceiver 10-160; KW 204 Transmitter; KW 1000 Linear Amplifier; KW 202 Receiver; KW 160 ATU; KW 103 SWR/RF Power meter; KW Dummy Load; KW Traps (the original and best); KW Trap Dipoles; KW Low Pass Filter; KW Balun; KW Antenna Switch

Stockists for Hy-Gain beams and verticals, CDR rotators. Shure microphones, etc.

KW spares are normally carried for a minimum of five years after date of manufacture of equipment.



SSB-ers:

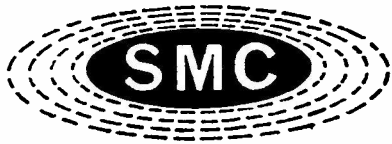
increase talk power. cut "splatter"



Our 444 base station microphone not only gives you increased talk power, but cuts "splatter" (and QRM complaints) to an absolute minimum! It has superbly tailored response, with sharp cutoffs below 300 and above 3,000 Hz and a rising response characteristic for maximum intelligibility. The 444's rugged, reliable Controlled Magnetic element has been proved in safety communications, and other tough professional communications applications. It delivers a clean signal to the transmitter at levels as high as crystal units! (And, unlike crystal and ceramic units, the element is totally immune to the effects of temperature and humidity.) The 444 also features an adjustable height stand that makes for comfortable "ragchewing" sessions, an optional-locking bar for push-to-talk or VOX operation, and a practically indestructible Armo-Dur® case. Write:

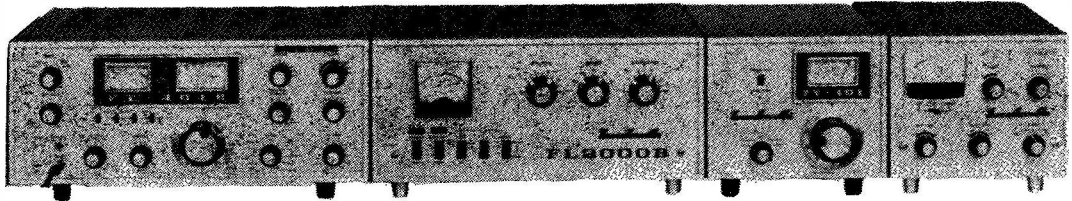
Shure Electronics Limited
Eccleston Road, Maidstone ME15 6AU
Telephone: Maidstone (0622) 59881





SOUTH MIDLANDS

24 HOUR SECURICOR SERVICE FROM SMC



FT401B £307

FL2000B £195

£48

£80

The FT401B and its accessories are shown above, and provide an uncompromising approach to the home station. The FT401B itself runs 500 watts P.I.P., but when throttled back to drive the FL2000B and coupled with the FV401 external V.F.O. provides the base station with ultimate DX appeal.

The unit nestling on the end is the FTV650, a 6m. transverter which we can provide electrically modified for 70 MHz, 100W. P.I.P., 50W CW, 40W FM/AM, £80.00.

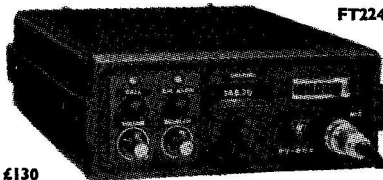
The FT620 features 1 kHz resolution VFO coverage across 50-54 MHz in 8 ranges, SSB (selectable) AM or CW (build your own FM modulator) 4 crystal controlled channels in each band segment, receiver offset clarifier, noise blanker, built in AC and 12v. DC power supplies, mic supplied, optional AM filter (£9) and crystal calibrator. The exceedingly low level of spurious emissions and the 50 MHz output makes this unit highly suitable for use as a drive source transverting to 4, 2 or 70 cms. and/or parametrically up converting to 70 or 23.

For use on 70 cms. we are pleased to announce the Microwave Modules transverter is now available for use with a 50 MHz I.F., £62.00.



FT62

50-52 MHz £175 50-54 MHz £180



FT224

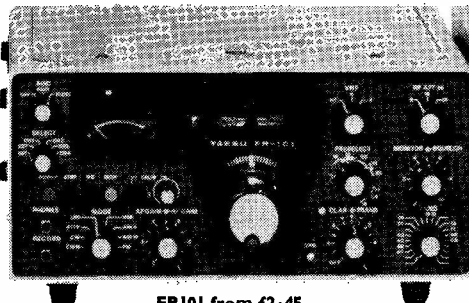
£130

The FT224 is an advanced Solid State transceiver featuring 10 watts output with a 24 channel flexibility (including priority channel) all in one complete package. The FT224 includes a built in tone burst for repeater actuation. Automatic high VSWR protection of the final transistor and reverse power line polarity protection are included. The wireless comes complete with built-in speaker, mobile mounting brackets and dynamic microphone.

S.M.C. models come fitted with 145.00, 145.50 and 145.55 MHz as standard.

FR10IS
£245FR10ID
£330FL10I
£265

Ex Stock



FR10I from £2.45



FL10I from £265

The FR-10I is an advanced receiver offering in the de luxe version, coverage from 1.5 MHz including all SW broadcast and HF amateur bands (23 in all) to 144 MHz. AM, FM, SSB CW are catered for, each with a separate crystal filter. Transceiver operation with the FL or FT10I.

The FL10I is the ideal companion to the FR10I thus forming a superb base station. Operation on 160 through 10m. using SSB, AM, CW or RSK is offered, with the added bonus of an option inbuilt RF speech processor being available at moderate cost.

STOCK / PRICE AND SECONDHAND LIST IN PRINT — SEND S.A.E.

**ACCESS
BARCLAY
HP FINANCE**

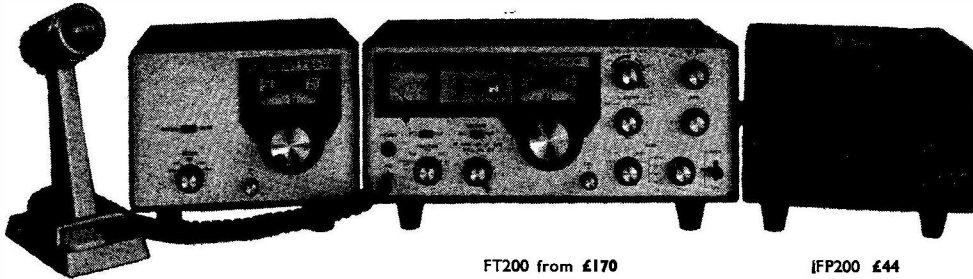
PLEASE NOTE THESE PRICES DO NOT INCLUDE VAT (8%)

Terms, cash with order, or card holders just phone in and we will despatch the same day. Immediate HP also available for credit card holders for amounts up to £150.

COMMUNICATIONS LTD.



YAESU MUSEN UK MAIN DISTRIBUTOR



YD844
FV200
FT200
FP200

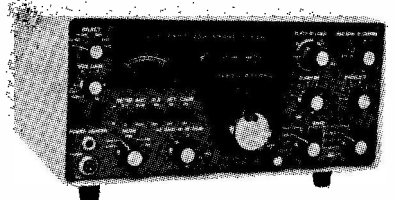
All
Ex Stock
in Totton

FT200 from £170

IFP200 £44

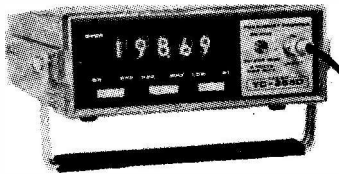
The FT200 is still without doubt one of the "best buys" available. Compare its features with similarly priced units. SPECIFICATION: 260w. p.e.p. 1/p SSB/CW; 75w. AM 1 kHz readout on all bands 3.5-4 28.5-29 MHz. (3 optional 10m. crystals available). Stability: 100 kHz 30 mins. after warm up. Sensitivity: 0.5uV 10dB S/S ±N. Selectivity: 2: kHz (6dB) 4 kHz (60dB). Solid state FET VFO with excellent linearity (like all Yaesu VFO's). 25/100 kHz Calibrator. VOX/PTT. Clarifier +5 kHz. Break in CW keying.

The newest of the Yaesu transceiver on offer the FT201. The FT201 features 80-10m. operation and the ability to run from the mains or a 12v. supply. It is constructed using plug-in modules as made famous in the FT-101. Of special interest to those contemplating using the 201 as a prime mover for VHF use, is the use of 9 MHz as the IF frequency and that full AM operation is possible (the optional AM filter being available). For the CW enthusiasts a 600 Hz filter is available with AGC characteristics to suit the mode. Write for full specifications.



FT201 from £290

YC355D

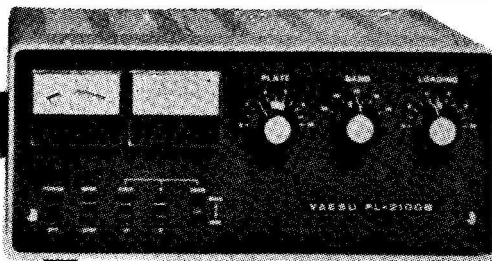


YC355 £104
YC355D £125

The YC355 series counters are available in two models. The basic counts to 35 MHz and the "D" to 2000 or over. The YC355D outlines the advanced IC technics and the dual range system provides an accurate 8 digit read out using only the 5 tubes and of course minimum of cost with maximum performance. Built in AC and DC power supplies enable complete portability and double sided epoxy circuit boards ensures accurate operation for years to come.



FT101B £330



FL2100B £195

FT101B
£330

FL2100B
£195

Ex Stock
in Totton

The FT-101B is except for driver and PA, fully solid state using reliable and serviceable "computer type" plug in modules. All that is needed for instant "on the air" operation from 160 through 10m. is either 12v. DC or 234v. AC and, of course, an antenna.

The FL2100B features operation 80 through to 10m. using two rugged 572B carbon plate tubes in class "B" grounded grid circuits with individually tuned input coils for each band, and Bifilar wound ferrite filament chokes.

SEE OVERLEAF FOR SELECTION OF MASTS, TOWERS, ANTENNAS, Etc.

SOUTH MIDLANDS COMMUNICATIONS LTD.

Formerly trading as South Midlands Construction Ltd. and Western Electronics (U.K.) Ltd.
OSBORNE ROAD, TOTTEN, SOUTHAMPTON, SO4 4DN

Telephone: (04216) 4930 or 2785
Cable: "Aerial Southampton"
Telex: Chamcom 47388 Aerial SMC

AGENTS (Evenings):
BRIAN KENNEDY, G3ZUL
Droitwich (09057 4510)
IAN McKECHNIE, G8MDX
Bridge of Allan 3201

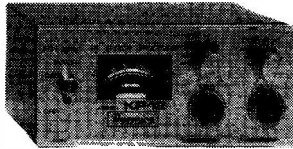
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Hours of Business: 9-5.30, 9-12.30 Sat.



South Midlands

CRYSTALS, FILTERS, PROCESSORS, LINEARS, READOUTS

RF SPEECH PROCESSOR KPI2



Audio to audio, via 107 MHz, mains powered illuminated meter, FT-101, FT2 plugs suitable all phone modes superb on FM.

EX STOCK IN TOTTON £44

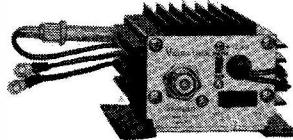
READOUT UNIT FOR FT-101, etc. DDI



Digital readout to ± 100 Hz for your FT-101 (B), FT401 (B), etc. 21 IC's 76 diodes provide a most worthwhile accessory.

AVAILABLE APRIL £110

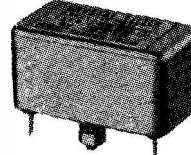
144 MHz LINEARS RFL



RF sensing, switchable drop out time SSB, AM, FM, CW, 12v. DC, 10W drive, 701-75W out, 801 100W out, 901 150W out.

701 £ , 801 £ , 901 £

9 MHz SSB FILTERS YF90/F/S



EX-STOCK at new low introductory price. 2.4 kHz, 6 pole, each individually supplied with ± 6 dB, 25 dB, 60dB bandwidths, ripple factor and insertion loss. With two crystals.

WITH U.S.B. and L.S.B. Crystals, £12.50 U.S.B. only, £11.50

MICROWAVE MODULES (all 28-30 MHz I.F., others to order) P and P 30p.

70 MHz Converter ...	£15.20	144 MHz Converter ...	£15.20	144 MHz Pre amp 2 output ...	£9.00	432 MHz Transverter	£62.00
70 MHz Converter + L.O. output ...	£16.30	144 MHz Converter + L.O. output ...	£16.30	432 MHz Converter	£18.10	1296 MHz Converter	£24.00

CRYSTALS NEW LOW PRICE (ALL POST PAID)

FT2FB (14 MHz Rx 18 MHz Tx)
 144 (-15, -20, -30, -36, -48, -50, -60, -80)
 145 (-05, -09, -20, -32, -40, -44, -51, -80, -84, -90)
 All £3.30 pair, £1.80 single
 Simplex 145 (-00, -500, -525, -550, -576, -600)
 Duplex 145 (-100/700, -125/725, -150/750, -175/775)
 All £3.50 pair, £2.00 single

FT2F (52 MHz Rx 6 MHz Tx)
 144 (-15, -25, -36, -40, -48, -60, -70, -80, -96)
 145 (-08, -09, -10, -20, -36, -40, -68, -80)
 All £3.30 pair, £1.80 single
 Simplex 145 (-00, -500, -525, -550, -575, -600)
 Duplex 145 (-100/700, -125/735, -150/750, -175/775)
 All £3.50 pair, £2.00 single

STANDARD 826 and 146
 145 (.500, -.525, -.550, -.575, -.600, -.15/75)
 All £3.30 pair no singles

SPECIALS
 100 kHz £2.50
 1 MHz £4.50

CRYSTALS TO ORDER—6/8 weeks delivery
 Phone 04216 4930 for best prices.

HY-GAIN THE BIGGEST RANGE FROM THE U.S.A. (Carriage paid)

Hy-Gain 18AVT/WB the great wide-band self supporting vertical (for 10-80 metres). Take the wide band, omni-directional performance of the famous 14AVQ, increase the bandwidth, add 80 metres use extra heavy duty construction and you have the 18AVT/WB. True $\frac{1}{2}$ wave resonance on all bands, 52 ohm feed, BAND EDGE SVR of 2 : 1 or less, handles 1kW (AM), ultra low angle radiation and may be roof or ground mounted.

Hy Tower, 10-80m. Self supporting tower ... £132.00
 18V, 10-80m. Vertical self supporting ... £15.50
 12AVQ, 10-20m. Vertical self supporting ... £20.00
 14AVQ, 10-40m. Vertical self supporting ... £29.50
 LC80Q Loading coil for AVQ, 80m. ... £9.30
 18AVT/WB 10-80m. Vertical ... £42.50
 TH6DX 10-20m, 6 element beam ... £117.00

TH3 MK3 10-20m, 3 element beam ... £90.50
 TH2 Mk. 3 10-20m, 3 element 600W ... £62.00
 Hy Quad 10-20m, 2 element 40m ... £90.00
 DB10-15A 10 and 15m, 3 element beam ... £69.00
 DB24B, 3 element 20m, 2 element 40m. ... £129.00
 402BA, 40m, 2 element ... £110.00
 2048A 20m, 4 element beam ... £96.00
 2038A 20m, 3 element beam ... £87.00

153BA 15m, 3 element beam ... £44.00
 103BA 10m, 3 element beam ... £35.00
 LA 1 Lighting arrester ... £17.50
 LA 2 Lighting arrester ... £3.00
 12RMQ Roof mounting kit ... £11.00
 14RMQ Roof mounting kit ... £13.00
 400 Rotor ... £139.00
 BN86 Balun ... £9.50
 TH3 Jnr. 10-20m, 3 element 600W ... £62.90

B.M.C. TRAP DIPOLES (Carriage paid)

Trap dipole 10-80m. ... £16.85

Type HP (1kW pep) ... £18.75
 Type P Portable ... £19.50

SECONDHAND PRICE LIST

Yaesu FT501 and FP501 ... £340.00
 FT401 and SP401 and YD844 ... £275.00
 FR400 and CWV Fil. and FM Unit ... £140.00
 FT75 ... £90.00
 DC75 ... £15.00
 FP 75 S/H ... £15.00
 FV50C ... £25.00
 FL2100 ... £155.00
 Trio TS520 ... £275.00

JR310 ... £75.00
 QR666... ... £100.00
 Heathkit SB102 ... £255.00
 OS2 ... £30.00
 HW32 and (H.B.P.S.U.) ... £55.00
 Eddystone 770R ... £105.00
 ER14 ... £75.00
 SR80A ... £30.00
 National NCX5 and (p.s.u.) ... £160.00

HRO(M) with p.s.u. and 7 coil packs ... £30.00
 HRC with p.s.u. and 9 coil packs ... £30.00
 Inoue 1C21 and VFO ... £135.00
 Telford TC5 ... £22.00
 Star SR200 ... £30.00
 K.W. Viceroy ... £60.00
 Bendix BC221 incorrect charts Ex W.D. ... £6.00
 R216 ... £85.00
 Racal RAC 417 ISB Adaptor RAC L.F. Adaptor RAC II Pre-Selector Units costing over £40.00, weight permitting delivery free of charge (usually by Securicor). Guaranteed 3 months (Labour). V.A.T. EXTRA at 8%

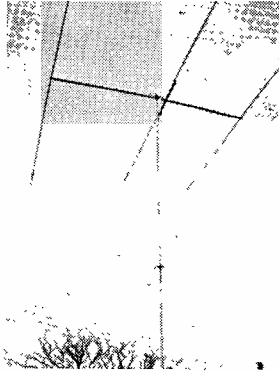
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 BARCLAY
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Terms, cash with order, or card holders just phone in and we will despatch the same day. Immediate HP also available for credit card holders for amounts up to £150.

COMMUNICATIONS LTD.

ANTENNAS, TOWERS, MASTS, ROTATORS, COAX, Etc.



VARSATOWERS (Carriage paid, England and Wales)
 Illustrated right. Tiltover Telescopic post mounted ex-stock. The tilting action allows ease of maintenance and changes of antennas. The relatively low weight eases installation problems.
 From £172.25

HAMTOWERS (Carriage extra)
 Galvanised lattice 10ft. sections 30ft. height with climbing steps on one face. From £90.00

ALIMASTS (Carriage paid, England and Wales)
 A/Alloy Telescopic 1.5, 2, 3 metre sections from £11.60 for 6m, to £38.00 for 21m.

THE COMPLETE RANGE OF JAYBEAM (AND MORE!) (Carriage extra)

OMNI-DIRECTIONAL	HO/2M Halo head only	—3dB 60 ohm	£1.85
	HM/2M Halo with mast	—3dB 60 ohm	£2.20
	UGP/2M Ground plane	0dB 60 ohm	£4.15
	XD/2M Crossed dipoles	—3dB 60 ohms	£5.15
	XD/2M Crossed dipoles	0dB 60 ohm	£5.75
	5X/2M 5 element crossed	7.8dB 50 or 75 ohm	£8.20
	8X/2M 8 element crossed	10dB 50 or 75 ohm	£14.20
	10XY/XM 10 element crossed	13dB 50 or 75 ohm	£14.10
	4Y/4M 4 element	7dB 50 ohm	£6.80
	RZ100 Alignment bearing		£7.60
	5Y/2M 5 element Yagi	7.8dB 60 ohm	£4.30
	8Y/2M 8 element Yagi	10dB 60 ohm	£5.60
	10Y/2M 10 element long Yagi	13dB 50 or 75 ohm	£11.00
	14Y/2M 14 element long Yagi	14.5dB 50 or 75 ohm	£14.00
	D5/2M 5 over 5	10.3dB 50 or 75 ohm	£7.92
	D8/2M 8 over 8	12.6dB 50 or 75 ohm	£10.50
	PBM14/2M 14 element parabeam	15.2dB 50 or 75 ohm	£16.90
	D8/70 8 over 8	12.6dB 50 ohm	£9.00
	PBM18/70 18 element parabeam	16.5dB 50 ohm	£10.50
	MBM46/70 46 element Multibeam	17.3dB 60 ohm	£12.10
	MBM68/70 68 element Multibeam		£16.10
	12XY/70 12 element crossed		£16.70

CIRCULAR

4 METRES BEARING YAGIS

SLOT FED

PARABEAM 70 CENTIMETRES

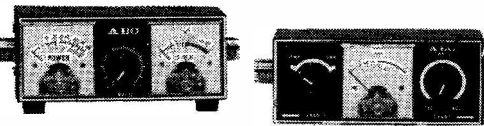
ALL PHASING AND MATCHING HARNESSES AVAILABLE

TELOMASTS (Illustrated above left). These galvanised steel telescopic guyed masts are most suitable for VHF up to medium sized beams. They are easy to install and do not require special erection equipment.

Supplied either with or without rigging kits at the following reasonable prices:

30' ... £14.00	With rigging kit including turnbuckles, wire, etc.	30' ... £29.00	Carriage extra £1.50 England, £2.00 Scotland
40' ... £19.00	" " " " " " " " " " " "	" " 40' ... £38.00	
50' ... £24.00	" " " " " " " " " " " "	" " 50' ...	

NEW LOOK!

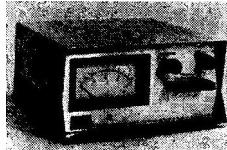


NEW LOW PRICE SWR/POWER METERS

SWR10 Reflectometer, single meter, accuracy quoted ±5% ... £6.30

SWR50 Calibrated for 50 and 75 ohm line, power meter (±15%) and SWR (±5%) ... £11.20

CDE ROTATORS EX STOCK (IN TOTTON) FOR FAST DELIVERY



Carriage (B.R.S.) free. Securicar delivery 60p extra. All rotators supplied complete with appropriate control box and instructions.

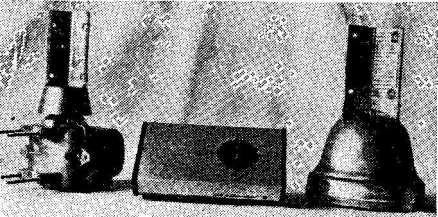
AR30 for Stereo and small VHF beams £25.00

AR40 for Medium VHF/Small HF beams £30.00

CD44 Arrays up to 2½ sq. ft. of wind area ... £60.00

Ham II arrays up to 7½ sq. ft. of wind area ... £90.00

Control Cable : 5 core for AR30/40 at 18p/m, 8 core for CD44/HII at 26p/m.



THE NEW SILENT CONTROL WITH AN AR30 and AR40

THE NEW CONTROL UNIT FOR THE CD44 AND HAM 2

- MOSLEY TRI BAND (10-15-20m.) BEAMS** (Carriage £1.75)
- | | | | |
|--|---------------------------------------|--------------------------------|-------------------------------|
| TA33 Jnr. E 3 ele. 200W RMS ... £45.00 | TA32 Jnr. E 2 ele. 300W AM ... £32.00 | Mustang 3 ele. 2 kW PEP £60.00 | Mustang 2 ele. 1 kW AM £48.00 |
|--|---------------------------------------|--------------------------------|-------------------------------|
- BANTEX FIBREGLASS, STAINLESS STEEL VHF/UHF MOBILE ANTENNAS** (Carriage 75p)
- | | | | |
|-----------------------------|------------------------------|---------------------------|--|
| B5 ½ wave 144 MHz ... £5.00 | BSU BSU ½ wave 432 MHz £5.00 | Magnetic Base Mount £7.50 | Note: Deduct 50p from price of aerial if standard base not required. |
| BGA ½ wave 144 MHz £6.00 | 70½ 70½ wave 70 MHz £3.00 | Trunk Lip Mount ... £5.10 | |
- G WHIPS. The British Mobile HF Antennas Range** (Carriage 75p)
- | | | | |
|---|-----------------------------------|--------------------------------|----------------------------------|
| Tribander, 10, 15, 20 £12.30 | LF40m., LF80m. or PL259 ... £4.10 | Flexiwhip 10m. with base £9.50 | F15, F20, F40 or F160m. £4.20 |
| Multimobile '71', 10, 15, 20 ... £14.30 | LF160m. ... £4.10 | Basemounts only ... £1.85 | Telescopic whips for coils £1.15 |
- RF CABLES** (Carriage up to 20m. 40p; over. 50p; less for lighter cables)
- | | | | |
|----------------------------|--------------------------|---------------------------|----------------------------|
| 50 ohm RGBU/UR67 ... 33p/m | 75 ohm UR39 ... 25p/m | 75 ohm Flat twin ... 6p/m | 75 ohm BICC 2378 ... 22p/m |
| 75 ohm UR57 ... 33p/m | 75 ohm Economy ... 10p/m | 300 ohm Ribbon ... 6p/m | 50 ohm UR43/UR76 ... 15p/m |
- COAX (P and P extra)**
- | | | | |
|------------------------|--------------------------|--------------------------------|-------------------|
| PL259 Reducers ... 42p | PL259A UHF Angle ... 54p | SO239 VHF back to back ... 33p | BNC plugs ... 42p |
| | | | N plugs ... 83p |

SOUTH MIDLANDS COMMUNICATIONS LTD.

Formerly trading as South Midlands Construction Ltd. and Western Electronics (U.K.) Ltd.
OSBORNE ROAD, TOTTON, SOUTHAMPTON, SO4 4DN
 Telephone: (04216) 4930 or 2785
 Cable: "Aerial Southampton"
 Telex: Chamcom 47388 Aerial SMC

AGENTS (Evenings):
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 Droitwich (09057 4510)

IAN McKECHNIE, G6BDOX
 Bridge of Allan 3201

SMC—A MEMBER OF THE ARRA
 Hours of Business: 9.5-30, 9.12-30 Sat.

AMATEUR ELECTRONICS UK

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for



**THE PERSONAL INSPECTION
MR. S. HASEGAWA, PRESIDENT
THE WARRANTY ON EVERY**

**The Incomparable Deluxe
FT-101B**



This fine selection of YAESU HF Band Transceivers must commence with the ubiquitous FT101B—the definitive unit in the mobile/fixed field.

**Economical Mobile/Base Station
FT-201**

Fresh on the scene is the FT201 which is setting new standards in its price range and has aroused much interest and some very flattering reports.



GIVE AS GOOD AS YOU GET —

FULL DEMONSTRATION FACILITIES

A COUPLE OF STAMPS (WE'LL PROVIDE THE ENVELOPE) WILL BRING YOU DETAILS OF ANY ITEM—PLEASE STATE SPECIFIC EQUIPMENT IN WHICH YOU ARE INTERESTED

● ALSO AVAILABLE
FROM OUR
ACCREDITED
STOCKISTS

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01-624 7174

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Anfield
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051-263 7829

**508-514 ALUM ROCK ROAD
BIRMINGHAM 8**

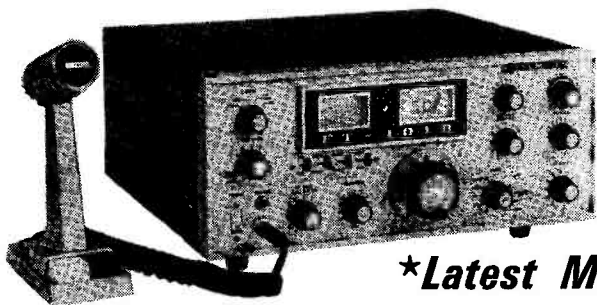
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**OF OUR SERVICE DEPARTMENT BY
OF YAESU MUSEN UNDERWRITES
YAESU ITEM SOLD BY US**

**High Power Base Station
FT-401B***

Study these and the total YAESU story in the FULL glossy catalogue—See below.

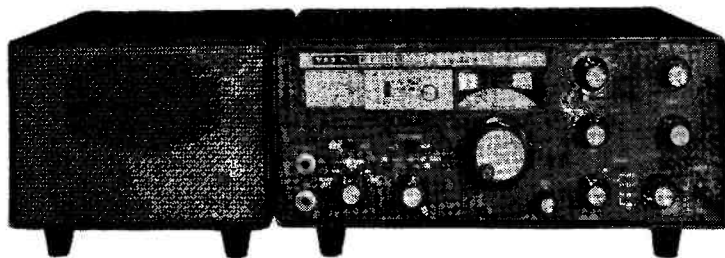


The very latest version of the famous FT401. Immensely popular with many operators for its exceptional specification and powerful signal.

****Latest Model!***

Low Cost Base Station FT-200

What can we say about the FT200? This has been a best-seller from the start—small wonder with such an exceptional specification at such a modest price.



TUNE UP A YAESU TRANSCEIVER!

PART EXCHANGES WELCOMED. EXCELLENT ON-THE-SPOT CREDIT TERMS.
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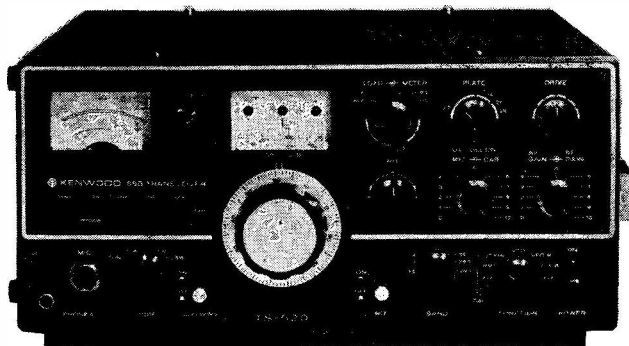
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LOWE ELECTRONICS



TRIO TS520



The TS520—latest in the new TRIO line of superior amateur radio equipment. Its styling and finish put all other rigs in the shade; and it is not just pretty—the front panel is a die casting giving unheard of strength and stability.

All semiconductor except for driver and PA, the TS520 is at home mobile, portable or fixed station thanks to built-in AC power supply and 12v. inverter. Blower cooled 6146's for long life and exceptional linearity.

*TRIO exclusive. Built-in speech compression for that extra DX punch—without distortion, due to amplified ALC system.

Drop up a line for details. You'll be hearing them on the air from now on.

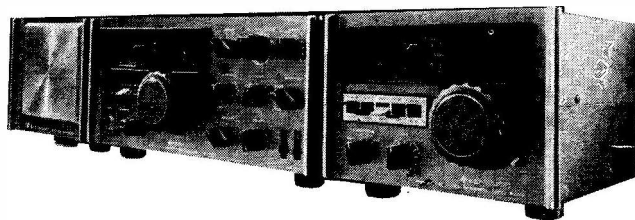
FEATURES

R.I.T. ★ NOISE BLANKER ★ AMPLIFIED 2 SPEED AGC ★ 25 kHz CALIBRATOR ★ BLOWER COOLED PA ★ FIXED CHANNEL OPERATION ★ 4 FUNCTION METERING ★ AMPLIFIED ALC ★ BUILT IN SPEECH COMPRESSION ★ LED INDICATORS FOR FIX, VFO, RIT ★ LOW POWER TUNE UP FOR LONG PA LIFE ★ TRANSVERTER OUTPUTS (MATCHING TRANSVERTER ON THE WAY) ★ 12v. DC/240v. AC OPERATION ★ MATCHING SPEAKER AND VFO AVAILABLE ★

OBTAINABLE ONLY FROM LOWE ELECTRONICS PRICE £290 (VAT EXCL.)



TRIO TS900



This is probably the finest amateur transceiver ever made. Professional design and construction make the TS900 a joy to own and use.

As QST (July 1973) said "This device has to be the pace-setter for the 1970's".

Full coverage 80-10; superb stability and selectivity; all mode operations including RTTY (crystal controlled RTTY shift built-in); all solid state except driver and PA; DC power supply and external VFO both available.

300W pep ★ All Modes ★ Separate USB/LSB Filters ★ 500Hz cw Filter Option ★ Four Function Metering ★ Two speed AGC ★ Noise Blanker ★ 0.1 Micro Volt Sensitivity (ARRL Measurements) ★ Blower cooled pa ★ Crystal controlled rtty generation ★ VOX ★ Break in cw ★ AC psu ★ DC psu ★

Write or phone for full specification and the reasons why the TS900 is the ultimate transceiver.

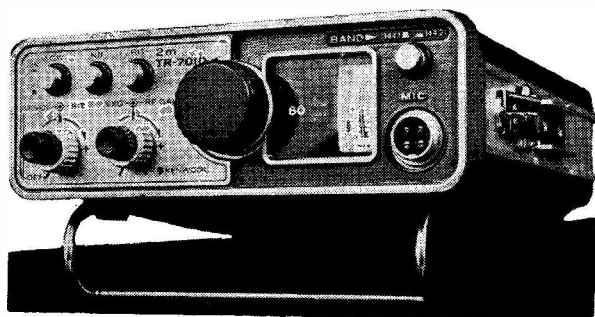
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LOWE ELECTRONICS



TRIO

TR7010



Following the worldwide success of the TS700, Trio have taken the TS700 basic design and packaged it for 2 metre SSB mobile use.

The TR7010 sets new standards in receiver sensitivity and low spurious emission on transmit. Operating CW and SSB from 144.1-144.3 MHz, the TR7010 covers CW, SSB and beacon activity. 40 5 kHz channels plus VXO and RIT provide continuous coverage. 8 extra channels can be used without retuning in the range 144-145 MHz by fitting auxiliary crystals.

Single conversion using an IF of 10.7 MHz with a superb crystal filter provides outstanding selectivity. Wide range amplified AGC and newly developed FET devices in RF amplifier and mixer stages allows maximum sensitivity to be used with freedom from overload due to adjacent signals.

Single conversion transmitter with new fully balanced mixer system generates a beautifully clean signal with crisp audio quality.

The first lucky owners are on two metres right now. Listen to the signal and make up your own mind. Why not send for full details of the all new TR7010 right now.

Price £165 (VAT exc.)



TR7200G 2m Mobile Transceiver

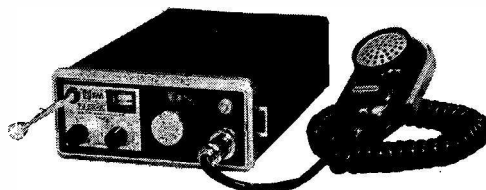
22 Switch selected transmitting and receiving frequencies in the 2m. FM band between 144 MHz and 146 MHz, five of which are factory-equipped with TX and RX crystals. Illuminated channel indication.

Channels Fitted 145-50 Simplex 145-15/75 Duplex

145-525 Simplex 145-175/775 Duplex

145-55 Simplex

Price £125 (VAT exc.)



TR2200G

The world's most popular 2 metre handy transceiver now comes complete with tuning fork controlled repeater access tone and facilities for 12 channels. With the advent of repeater operation in this country, it is now possible to work long distances with low power equipment and the sudden popularity of portable 2 metre equipment testifies to this fact. The TRIO TR2200G is a high performance transceiver with features not found in other rigs. Supplied with 3 channels fitted:

145-50 Simplex 145-55 Simplex 145-175/775 Duplex

Most other I.A.R.U. channels available.

Price £80 (VAT exc.)

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LOWE ELECTRONICS



TRIO

STATION ACCESSORIES

HAM CLOCK



Have you ever wondered why the amateurs in Hong Kong are not replying? Maybe it's because they're in bed and you forgot just how many hours time difference there is! The TRIO HC2 Ham Clock is a 24 hour battery powered (up to 1 year on a single HP2) clock which gives instant readout of the time anywhere in the world. Beautifully styled so that you won't know whether to keep it in the shack or out in the home, it is a real asset to the DX chaser. At only £11 (VAT exc.) it is incredibly good value.

LOW PASS FILTER LF30

You know how difficult it has been in recent years to obtain a good low pass filter. Now the TRIO LF30 fills this need. The specification tells its own story.

POWER HANDLING	1 kW
CUT OFF FREQUENCY	30 MHz
STOP BAND ATTENUATION	90 dB
INSERTION LOSS	1.5 dB at 30 MHz
IMPEDANCE	50-100 ohms
CONNECTORS	SO239/PL259
DIMENSIONS (mm)	224 x 50 x 40

PRICE: £9 (VAT exc.)

BAND PASS FILTER BPF2

This is a specially designed band pass filter centred on 145 MHz and is intended to be used between your 2 metre equipment and the antenna. Eliminate those out of band sprogies from your transverter in one easy move.

POWER HANDLING	50W continuous
PASS BAND	144-146 MHz
STOP BAND ATTENUATION	90 dB
INSERTION LOSS	1.5 dB
IMPEDANCE	50 ohms
CONNECTORS	SO239/PL259
DIMENSIONS (mm)	150 x 50 x 50

PRICE: £8 (VAT exc.)

MC50 MICROPHONE

Matching microphone for all TRIO equipment. Contemporary styling and dual function construction allows use as hand or stand microphone. Dual impedance 600Ω/50kΩ and two coiled cords give complete versatility. Built in locking PTT switch. The TRIO MC50 is an attractive addition to any station and its performance is superb.

POLAR PATTERN	Cardioid
FREQUENCY RESPONSE	300 Hz-9 kHz
SENSITIVITY	-76dB at 600Ω -56 dB at 50 kΩ

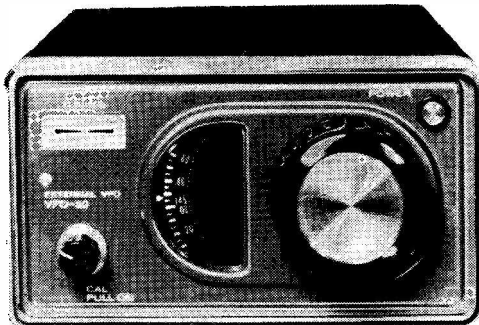
(which really means that it will drive any transmitter that we've tried it on)

PRICE: £18 (VAT exc.)

MC10 MICROPHONE

Superb hand microphone matching all Trio equipment. Press to talk or VOX operation. Supplied complete with coiled cord and 4-pin plug.

PRICE: £6.30 (VAT exc.)



VFO 30G

Matching VFO for TR7200G. Gives full band 144-146 MHz coverage on transmit and receive with built-in repeater shift. Centre zero tuning meter provided for accurate receiver tuning. Low frequency heterodyne type VFO for stable QSO's over long operating periods.

PRICE: £55 (VAT exc.)

LOWE ELECTRONICS

We always have a large stock of excellent fully tested and guaranteed second hand equipment. The following list is a small selection of the items available at the time of compiling the list.

RECEIVERS

Collins 51J3	... ..	Simply the best	£200
Yaesu FRsdx400	... ..	160 — 10 + 4m. 2m.	£135
Trio JR599 Custom Special	... ..		£132
Davco DR30	... ..	Almost pocket size but what performance	£100
Sommerkamp FR100B	... ..	Old Soldiers never die	£80
Eddystone EA12	... ..	Finest dial drive in the business	£120
Trio JR310	... ..	Why Oh why did they stop making this 1st class Rx.	£70
Yaesu FR50B	... ..	Same goes for this one	£65
Trio JR500	... ..		£45
Eddystone 888A	... ..	See above	£45
Trio 9R59DS	... ..	Long standing general coverage favourite	£40
Lafayette HA600...	... ..	Well, if you must	£40

TRANSCEIVERS

Yaesu FT501D	... ..	At this price it's worth buying as a digital readout receiver !...	£295
KW2000B	... ..	If you must have 160 metres	£185
KW2000A	... ..	Older but some prefer it 'cos of the power supply	£165
Sommerkamp FT500	... ..	No linear needed with this rig. No shack heating either	£175
Ten-Tec Argonaut	... ..	O.K. so I was wrong. This rig really performs despite the domestic styling	£130
Ten-Tec 100W Linear	... ..	(yes, transistor)	£35
Liner 2	... ..	The rig that started it all	£110
Yaesu FT2F	... ..	Another example of the early model being preferred to it's successor	£65
Multi 2000	... ..	Good practice for a safe breaker	£170
TW Communicator 160	... ..	Would you believe AM ?	£25
Trio TR2200	... ..	Small enough to hide in your handbag ducky	£55
Heath HW32	... ..	The incomparable single band doorstop	£55
National NCX-5	... ..	Most under-rated rig on the market. Still top quality	£160

SUNDRIES or if you prefer it **ODDS AND S...DS**

Europa	... ..	No, not the Lotus type	£55
Yaesu FP2	... ..	With Ni-cad. battery pack	£35
Spacemark SSM-I Monitor	... ..	As new	£120
Russian CI-16 Double Beam Scope	... ..	Pity about the red trace	£40

Above prices include VAT but not carriage. Securicor will bring your new toy to your door safely and quickly but it'll cost you £2.20.

QUOTE OF THE MONTH (When the man from the GPO inspects your log)

*"Where wert thou brother, those four days?
There lives no record of a reply."*

Tennyson, supplied by Dick Winters of Melton Mowbray.

EUROPA B

2 METRE, 4 METRE OR 6 METRE RECEIVE AND TRANSMIT CONVERTERS TO 28-30 MHz

Now in use in over 50 different countries! Exotic calls like A2, C31, 5W1, 9HI, 5BC, 2D8, KV7, KH6, TF, YB, VP8, VE8, etc.

Many of these people never use the receive converter—they have no local VHF activity and use their Europas exclusively for OSCAR work.



The Europa can be used with any normal H.F. equipment ★ Europa B features:

- ★ An aerial change over relay and SO239 antenna socket.
- ★ Adequate power for OSCAR work.
- ★ High transmit power. Up to 200W input, 50% efficiency.
- ★ Highest receiver sensitivity available—2dB N.F.
- ★ 28-30 MHz I.F. standard.
- ★ Cleanest output spectrum.
- ★ Extremely stable circuitry.
- ★ Well established and reliable design.
- ★ Additional crystals can be switched for extended frequency coverage.
- ★ Size: 9in. x 4½in. front panel, 4½in. deep.

All the prices include VAT (8%) and British Isles delivery. We export goods daily, so this is no problem. We can give same day C.O.D. service (£50 limit). All our products carry a 12-month guarantee. H.P. a pleasure. If you have any doubts, ring or write for assistance. See you at Leeds and Drayton Manor rallies. Please do not hesitate to contact us if you think we can help. Paul, G3MXG.

- ★ Low price, £88.00 complete to plug into Yaesu/Sommerkamp equipment.
 - ★ £74.00 less valves (2 off QQVO3/10 and 1 off QQVO6/40A required).
- } ex stock

For use with 6.3V Yaesu equipment (FL400, FT401 etc.) you feed in 12.6V AC at 2 amp. into the control socket. A suitable transformer is £3.24, or in a case to match the Europa £6.37. All from stock.

★ NEW! We now have in stock a complete AC PSU for the Europa, Type CSP 10.

This supplies all the voltages to power the Europa or Europa B. It also contains a 50 Ohm adjustable dummy load power attenuator and change over relay to reduce the 10 metre output power to a suitable level for driving the Europa.

This makes the Europa B compatible with HF equipment without transverter output sockets with NO modifications.

Size: Same as the Europa B.

Price: £38.50, ex stock.

EUROPA 70-70 CM TRANSMIT CONVERTER

Designed like our Europa B to provide sufficient power for Oscar working—70W input hybrid design valves for transmit—transistors for oscillator amplification. Size: 6in. x 6in. front panel, 12in. deep. Price £43.20.

Other items (please note prices include VAT). Atlas 180 transceivers in stock, £280.80. Part exchanges welcome. DC200, £37.50. Crystals: 15.5 MHz, HC6U, £2.00: 38.666 MHz, HC18U, £2.00.

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Manufacturers of V.H.F. and U.H.F. Receive and Transmit Converters and Pre-amplifiers
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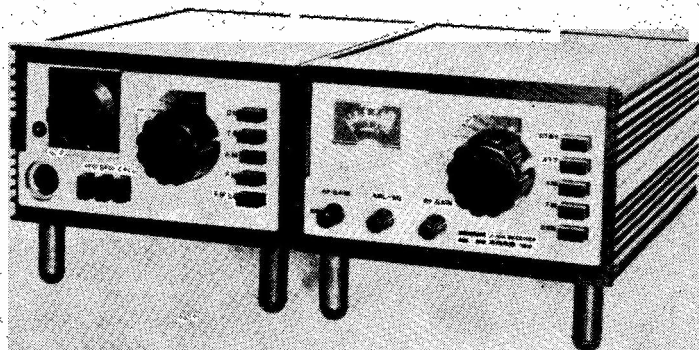
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ARAC 102 MOSFET RECEIVER

28 - 30 MHz
144 - 146 MHz
AM FM SSB

12v. DC operation. Built in speaker. 1uV for 10 dB S/N. Output 1.5 watt 8 ohm

PRICE £87-30

Delivery from stock
Ideal for Oscar 7 Tracking

ATAL 228

Solid State 8 watt AM/FM
Transmitter

PRICE £123

Delivery April

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FT101B Transceiver £356-40	AR22R (Post 65p) £29-70	12AVQ 10-15-20m. Vertical £21-60
FT201 Transceiver £313-20	AR30 (Post 65p) £27-00	14AVT/WB 10 to 40m. Vertical £31-91
FTDX401 Transceiver £334-08	AR40 (Post 65p) £32-40	18AVT/WB 10 to 80m. Vertical £45-86
FR101D Receiver £356-40	CD44 (Post 75p) £64-80	BN86 Balun £10-26
FT200 Transceiver £232-20	Ham H (Post £1) £97-20	TH3MK/3 Tribander Beam £97-74
FL2100 Linear £205-20	Stolle Automatic 2010 (Post 65p) £33-48	
YC355 Frequency Counter £137-00	Stolle Multimatic (Post 65p) £37-80	MICROWAVE MODULES (post free)
BELCON	BARLOW WADLEY	2 and 4m. Converters (state I.F.) £16-42
Linear 2 Transceiver £156-00	XCR-30MK2 Solid state Receiver £125-00	MMCI44/20 LO Converter £17-60
100 Watt 2m. Linear £172-00	TR801 FM Tuner £17-15	432 MHz Converter £19-55
CODAR	DRAKE	432 Varactor Tripler £18-90
PR4 Preselectors (Post 25p) £11-00	TR4C Transceiver and AC PSU £349-92	144 MHz Dual output Pre-Amp £9-72
MICROPHONES (post free)	SWAN	ATLAS
Yaesu 844 Desk Microphones £16-12	700CX Transceiver £426-00	180 watt PEP Solid State Broad Band
Yaesu 846 Hand Microphone £6-30	300B Transceiver £307-00	Transceiver, 20-40-80-160M, 12v.
Shure 201 Hand Microphone £7-50	I200 Linear Amplifier £189-00	DC operation £280-00
Shure 444 Desk Microphone £16-00	MB80A Transceiver £184-40	
Shure 444T Desk Microphone £16-50	SS-200A Transceiver £538-00	G-WHIP
Electro Voice 729SR Desk Microphone £13-50	TB-4HA 4 Element Beam £135-00	Full range of the popular range of mobile antennas
JAYBEAM	SOLID STATE MODULES	for 160 through to 10m. SAE for list and catalogue.
Send large SAE for latest catalogue and price list	PA3 Dual Mosfet Pre-amp £5-94	ELECTRONIC DEVELOPMENTS
of beams, clamps, masts, etc. 2 metres, 4 metres,	Europa SSB Transvertors complete with	2 and 4m. Transvertors £95-00
70 Cms.	valves £88-00 without valves £74-00	SECOND-HAND EQUIPMENT
KW ELECTRONICS	ACCESSORIES	Magnum Speech Compressor for Drake
KW 2000E Transceiver £373-68	Planet 808 Speech Compressor £32-39	TR or R4X £55-00
KW202 Receiver £214-38	Single Meter SWR Bridge (20p) £6-60	IC21XT Transceiver and VFO £165-00
KW204 Transmitter £273-78	3in. Ceramic Insulators 28p	Racall RA17 M. 2 Receiver £325-00
KW Linear Amplifier £198-18	Ceramic Dipole "T" Pieces 28p	Eddystone 940 Receiver £140-00
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KW 109 Matching Unit £95-04	Cable Reducers 8p	Yaesu FR50B Rx., FLSOB Tx £150-00
KW 108 Monitorscope £20-05	300 ohm and 75 ohm twin feeder yd. £16p	Eddystone EC10, £55-00
KW 160m. Antenna Match £24-41	UR67 40p UR233 £16p	Trio TS 510 Transceiver £195-00
KW E-Z 80-10 metres £24-41	Omega Noise Bridge TE701 £14-85	KW2000 Transceiver £110-00
KW103 SWR/Power Meter £3-46	Omega Noise Bridge TE702 £22-06	Eddystone EC10 Mk. II £95-00
KW Balun £3-46	New Model. Antenna Tuning unit for	Trio TSX99 Transmitter £140-00
KW Antenna Switch £6-70	SWL's will match any Antenna to any	
	Receiver £13-50	
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BY**

YAESU MUSEN



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PRICE INCREASES ARE ON THE WAY FROM YAESU : BUY NOW !

IT'S REALLY RELIABLE and THE BEST BUY IN BRITAIN . . . the FT200

YD844

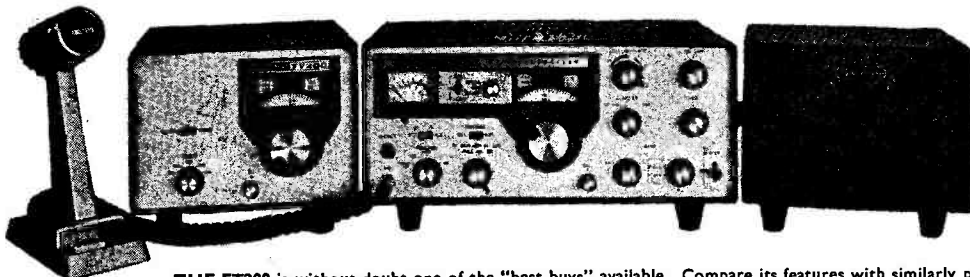
FV200

FT200 £183.60 ± FP200 (£48.6)

PRICES inc. VAT

FOR

260w. p.e.p.
10-80m.
SSB-CW-AM
1kHz READOUT
CLARIFIER
100 kHz
CALIBRATOR



THE FT200 is without doubt one of the "best buys" available. Compare its features with similarly priced units and kits. **SPECIFICATION :** 260w. p.e.p., i/p. SSB/CW; 75w. AM. 1 kHz readout on all bands 3.5-4, 7-7.5, 14-14.5, 21-21.5, 28.5-29 MHz. 3 optional crystals available for 28-28.5, 29-29.5-30 MHz. Stability: 100Hz 30 mins after warm-up. Sensitivity: 0.5µV 10dB/S + N. Selectivity: 2.3 kHz (6dB), 4 kHz (60dB). Solid state FET VFO with excellent linearity (like all YAESU VFO's), 25/100 Calibrator. VOX/PTT. Clarifier ± 5 kHz. Break-in CW keying. You will pay more for a kit with less power, only 5 kHz readout and no receiver incremental tuning (clarifier control). These prices only apply whilst current stocks last. 3 extra crystals fitted for full 10m. coverage, cost £8-10 inc. VAT.

REMEMBER: We have the experience and first introduced the "Yaesu" brand name to you in August 1970 by "Western Electronics," started by our managing director, Hal Perkins, G3NMH.

SERVICE: We do all labour FREE on warranty claims.

SERVICE DEPARTMENT: Our staff are trained! We have staff with experience in precision electrical measurements to Ministry EQD release and BS9000 requirements. Ours is no "amateur set-up!" We are prepared to undertake the test and calibration of test equipment itself.

WARRANTY POLICY: We maintain the manufacturer's full warranty and more besides.

SPARES: We carry an extensive range of Yaesu spares to ensure you get a good after-sales service.

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DELIVERY: We deliver within 24 hours of receipt of order of items which are in stock. This is the fastest delivery service in the country and costs £1 per parcel only! 48 hr. service to Scotland and remote places. This service is limited to parcels less than 6ft. long and 50 lbs. weight.

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This service will be available to callers, mail and telephone customers; just another part of the finest service available to the U.K. Amateurs. We hope you'll give it a try! We'll despatch your order the same day if humanly possible by whatever means you wish. You may order anything which we sell by this high speed service, including used equipment, up to the limit of your Access or Barclaycard.

Electronics (UK) Ltd

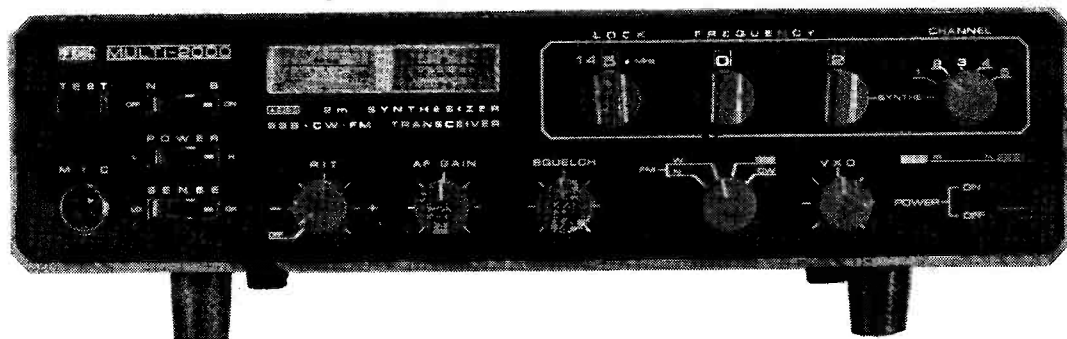
THE VHF/UHF PAGE

SSB/FM TRANSCEIVERS

NEW! YAESU FT-221. This is a new 2m. SSB/FM Transceiver to replace the FT-220 which is now sold out and no further supplies will be available. Please do not send to us for details yet as they are not off the "secret" list!

FDK MULTI-2000. We have new supplies of this fine unit pictured below. All units have 1750 Hz. tone burst built-in.

the FDK Multi 2000 2m. SSB/FM/CW TRANSCEIVER



2m. SSB/FM and CW Synthesised 200 Ch. AC/DC. 10w o/p. (SAE for details please).

The **WESTERN ELECTRONICS MULTI-2000** has the following features

1. **DUPLEX OPERATION ON ALL CHANNELS**
2. **NARROW FM FILTERS FITTED AS STANDARD** (£291.6 inc. VAT).

So no matter on what frequency a repeater comes up, the Multi 2000 will tune it because don't forget that it has VXO control; i.e., you are not limited to 10 kHz steps, the VXO allows you to tune any frequency. There is a 9-pin socket on the rear to permit switching an external linear relay. All our models are marked "DUPLEX" instead of "I" on the channel switch shown in the above picture. **FREE DELIVERY BY SECURICOR.**

BRAUN. SEE600 Digital (the "Rolls Royce" unit!) £970-90 inc. VAT/Carriage.
SSB TRANSCEIVER. Limer 2.144.1 - .34 MHz. £156.60 inc. VAT/Carriage.
FM TRANSCEIVERS. YAESU and STANDARD.

ANTENNAS. BANTEX
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NEWTRONICS

TOWERS VERSATOWER
HAMTOWER
TELETOWER

MASTS TELOMASTS
ALIMASTS

ROTORS CDE

THE OSKER SWR200 POWER METER

Features : Switchable for 52 or 75 ohm systems. Each instrument is individually calibrated. Four ranges : 0-2, 0-20, 0-200 and 0-2kW, 3-200 MHz. Excellent Styling.

Price : £22.68 inc. VAT.



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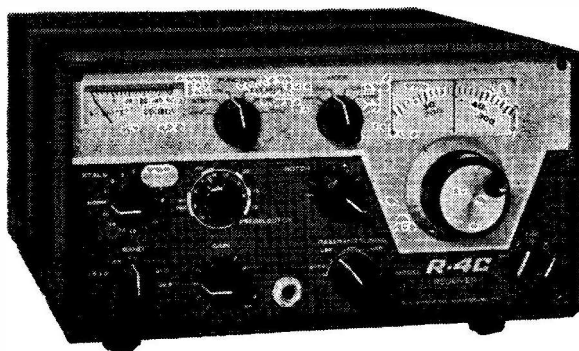


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SHORT WAVE MAGAZINE

(GB3SWM)

Vol. XXXIII

APRIL, 1975

No. 378

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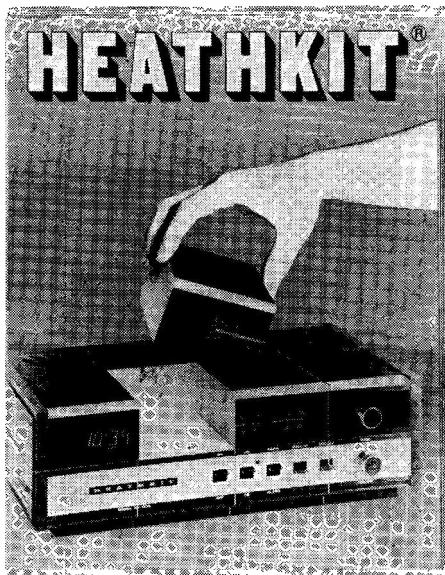
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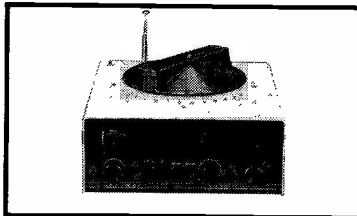
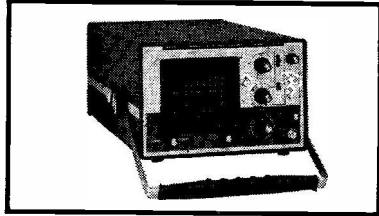
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The SHORT-WAVE Magazine

EDITORIAL

Imposition

Nobody glancing over this piece will need to be told that we now have to bear a considerable increase in postage charges. It is not just the 5½p/7p rates for letter-mail, which affect everyone.

What, then, is our particular problem? In the first place, mailing of the Magazine to each direct subscriber—several thousand of them—costs another 36p a year. Multiplying that out brings the increase for direct-subscriber postage alone to a substantial four-figure total—just like that. Then there are the parcel deliveries, to numerous retail and wholesale outlets in the newsagent category, through whom most of our circulation is achieved and for which, of course, there is no cover—and it is here that the percentage increases are much steeper.

Like many other publishers, we have in effect become unpaid tax collectors, because an increase in postage/parcel rates to bring the Post Office accounts into balance does amount to "taxation," since the postal service is a Govt. monopoly and there is no alternative method of distribution.

Naturally, we are always looking for economies in every direction but there are limits beyond which costs can be pared no further if any sort of standard is to be maintained.

One necessary measure is that, to hold some degree of balance, with immediate effect the direct-subscriber rate will have to go to £4.20 for a year of 12 issues, post paid. Of course, all existing subscriptions will continue to be honoured at the rate already paid—but new subscriptions and renewals will have to be charged at £4.20.

We much regret having to take up space to make an announcement of this sort—but we think it right that readers should understand the circumstances that compel it.

And we might as well admit, here and now, that there will shortly have to be an increase in cover price.

*Austin Forsyth
G6FO*

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

PERHAPS the first thing this month is to refer back to the note on ZC4EJ, on p. 658, February. Just too late to catch the last CDXN, ZC4EJ himself rang up—he is G3LEJ at home—to point out that he is a very genuine station and that his QSL manager is in fact G3ZGG, not G3ZCC (who has been getting the cards) and additionally that when operating, he *always* spells out the call phonetically, realising that many people who work ZC4EJ do not easily speak English. This being the case, the cards that G3ZCC was getting were either due to QRM at the receiving end, or just plain bad writing; not, by any stretch of the imagination, piracy. In addition, the ZC4 Society's secretary, 5B4WR, wrote to say he knew ZC4EJ to be OK, and to suggest how to deal with the problem. The upshot of it all was that we wrote to G3ZCC asking him to pass on the cards to the right quarter, and copied it to G3ZGG and G3LEJ. What it boils down to is this: If you worked ZC4EJ and haven't had your card back, if you sent it to G3ZCC (or if your writing makes a G look like a C) then be well advised to send a duplicate card, either direct or through the Bureau. Thanks to 5B4WR, also to ZC4EJ/G3LEJ, for letting us know the real problem as soon as they realised what was up.

Around The Bands

The sunspot count gets ever lower; but still the faithful press on, although the realms of super-DX offered by about every contributor a few years back are just not to be had. On the other hand a consolation is that your conductor understands the first sunspot of the new cycle has been recorded as appearing at solar latitude +37 degrees on November 15 last year—which is not saying we have yet hit bottom, merely that we are getting near it!

Top Band

There is a dearth of reports all through this month, but we have a little to show and to talk about. G3KFE has been threatening to come back on the band with a QRP CW rig, but at this moment is a bit hampered by having just one rock on 1800 kHz dead, and the certain knowledge that *somewhere* around the place there are two at suitably juicy frequencies, but gone into hiding at the bottom of the junk-box.

G2BJY (Walsall) sent in quite a report about 160m. For all practical purposes he has cleaned out the counties and regions saving for Gwent, Clwyd, and Cleveland on the key, and is now going the rounds on SSB, the rig being his old home-built ten-metre Tx suitably modified. Then there will be the set to work on AM, and to that end, Geoff wants a Top Band AM contest laid on—*crikey!*

A newcomer to the game who is quite clearly enjoying himself on Top Band is G4DDG (Derby) who has a KW-2000B and describes the result as "broke but happy!"—we know the feeling. David has been mainly padding about on Top Band CW; not a lot of DX, he says, but plenty of nice natters. This sounds as though we have a *real* CW man to deal with—let's hope G4DDG can see fit to put an entry on to the Ladder in due course, but meantime, welcome aboard.

G4AYS (Moir) thoroughly enjoyed the chase with his crystal-controlled gnat-power device, although there has been quite a lot of QRM from other activity around his rock frequency, which G4AYS seems to make into an additional pleasure of the chase! Anyhow, although the gotaways predominated this time, he did manage to work G3UMJ for Northumberland, and the writer's old pal G3TLF up on Humberside.

Questioning the OK30 prefix appearing on the band and putting up his ladders score is the main thing for G4BOH (Bury). These are in commemoration of thirty years since Czech liberation from Nazidom—how time flies!

G4CTR (Poole) has not been very active due to the onset of the dreaded A-levels, but since December Roger has been doing a bit whenever he can find the time, mainly on Twelthy with his FT-101B and a 132-footer; however, Top Band was not altogether neglected, and he managed to raise EI2BB, PAØRYS and GB3NEW. G4CTR is starting to build a slow-scan monitor at the moment and is looking for a 5FP7 tube for the beast, so far without much luck.

GD4BEG (Sulby, I.o.M.) has an enormously long letter of chat about Top Band. Mike's ladder score takes a sizeable lift, not so much by CW but rather by increased phone activity while maintaining his key-pounding at its normal level. However, one of the snags is the fact that there is an AM net just across the water which persists in operating on 1840 kHz ± their netting accuracy and splattering into the bargain—how we wish some of these anti-social types would take up tiddleywinks or something! Back in January we mentioned the

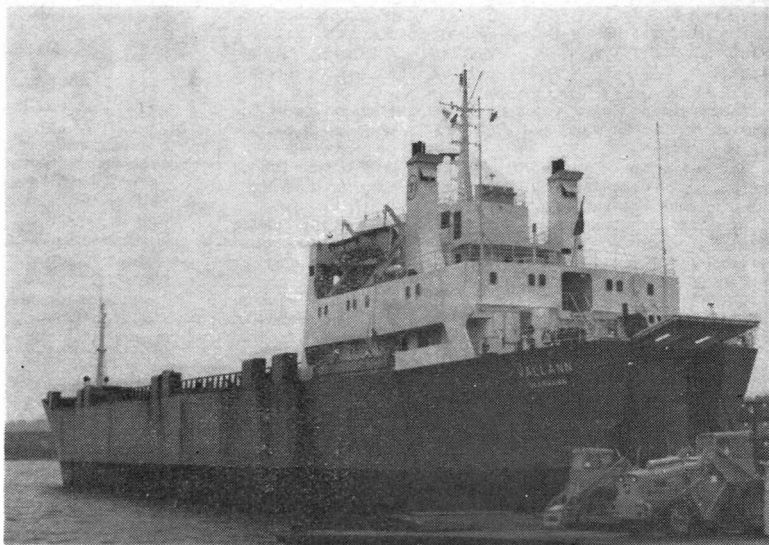
GD4BEG loop arrangement of aerial which can be persuaded to give either high-angle or low-angle radiation to choice; now there is another such an aerial spaced broadside to the first by seventy feet to give a beaming effect by suitable adjustment of the phasing of the feed. By careful tuning and adjustment it seems to give almost 360° worth of rotation electrically; in addition some sixty radials of quarter-wave length or more have been laid down, some a bit longer, some a bit shorter, some zig-zagging round such minor obstructions as neighbours' houses and gardens (I) seem to have made a further significant improvement. Recapping since the last report, Mike worked 43 U.S. stations in W1, 2, 3, 4, 5, 8 and Ø, plus KV4FZ, HC1XG, HC1CW (both QSL via G8VG) and KZ5AA. On December 11 there was a contact with 457UD, who wanted to chat on even though half Europe were after him; but Mike didn't seem to have copied the 457's QSL address correctly and would *love* to know what it *really* is! Next we come to December 22, when W4BGØ/T12 and 9L1JT were hooked, and then the Christmas period, when GD4BEG admits to having missed much (Christmas feasting?) but nonetheless tickled with lots of W's, PY1RO, KV4CI, KZ5AA and KP4AN all on December 31, plus hearing KH6CHC up on 1998 kHz. This last is interesting because although the KH6 has been heard three times up there, and people have QSP'd that GD4BEG was hearing him, the KH6 was not hearing GD4BEG on his bottom-of-the-band frequency; W's report a similar phenomenon, which suggests that possibly there is much more difference between the skip at opposite ends of 160 metres at any given time than is generally realised. Perhaps someone should do some serious tests on this oddity. The morning of January 1 was particularly good, with VE7UZ, W7DOL/6 and W6DAO audible but no QSO made, plus, about half-an-hour after sunrise, ZL3RB and ZL2HE on 1876 kHz albeit weakly and under the QRM. On January 3, VE7UZ was half-worked, the QSO disappearing under a G station busily calling the VE7 *co-channel*. January 4 saw W9PNE and PY1RO worked; and on January 10 there was a contact with a station signing 9A1C, probably another manifestation of Fred Phoney. A trip into hospital rather damped the ardour for a day or two, but GD4BEG was out again in time for the CQ WW 160 battle; on the morning before the contest started things were FB with W's in areas 1, 2, 3, 4, 5, 8, 9 and Ø all worked at good strength. Mike was not able to be on for much of the contest proper, particularly the late-night and early-morning period, but still managed to make 175 stations in 23 countries, including 4X4NJ, OH3XZ/Ø, VOIKE, KV4FZ, I2XKF, ST2AY and W's—there seem to be several I's on Top Band, as well as the 9HI's, but all are good operators (not like the HF Italians) with good clickless signals too, although usually buried under hordes of OK's. January 28 saw a QSO with PY2FUS, and then on February 2 there were lots of W's and VS6DO to put in the log. OJØMA who was 569 on Eighty, was persuaded to come up on Top Band and there he was at about 599, getting weaker as darkness fell. February 15 saw a call from a W4/M4 in Florida who claimed to be on the move, but Mike awaits a card before thinking of that one too seriously, plus a QSO with JA6GG/MM in the Persian Gulf and one with a JA, believed to have been JA1GWF but not claimed as the identification was not 100%. And that, *mes amis*, is what you get on Top Band if you have a bit of room, a good site, plenty of wire under the ground and operating know-how!

The usual nice letter from G2HKU (Sheppey) came in this month, Ted commenting that things in general had been a bit rough; on Top Band he was down to the sked contact with PAØPN.

It must be quite a while since Top Band echoed to the call of the rare G2NJ-bird; but a late note from Nick assures us this has been happening, and among the first stations to be hooked were PAØPN at noon and HB9CM at 1750—the latter reminded Nick that G2NJ gave him his first post-War QSO. At midnight on March 4, UR2TAB was heard working OL3ØCBH, and a few minutes later UR2FQ raised a station in the Midlands.

G5BHR (Dorchester) is also F6DDY, although he has never used his French call, living in England ever since he has been licensed. About a fortnight before his letter he plugged a key into the rig for the first time, and the result appears—for the moment—at the bottom of the Ladder, although we are promised it will soon go a lot higher—good! Incidentally, all the G5BHR gear is home-built, this being a prime interest; the aerial is a bit of a problem, having 132 feet squeezed into a forty-foot space by putting five bends into it, and the highest I can go is about fifteen feet—and, to make it worse no radials or earth rods can be buried in the earth either!

Station of SM7FDN/MM, often to be heard on the North Sea trade routes. The car ferry "Vallan", 8000 tons, is on a regular run Wallhamn-Felixstowe-Ghent, carrying up to 400 new Volvo and DAF cars and tractors back from England. Gunnar Wigur, SM7FDN, operates on the 80-metre band (3523 kHz) at various times during the day and is QTHR or via bureaux.



GM3YOR (Kirkcaldy) writes to let us know he recently acquired a new rig, by way of an FT-101B which has been deployed on the bands to see what it can do. However, Top Band was not completely left out, as Drew was able to help the Glenrothes Club, GM4DMN/A, during the CQ WW 160 contest; after several years of participation the Club is quite pleased this year with its best result so far, 24 countries having been worked, in Europe DJ, EI, G, GC, GD, GI, GM, GW, HB9, OE, OH, OK, PAO, 4UI, and DX EP2BQ, KV4FZ, KV5AA, OH0MA, PJ2VD, VE1CD, VE3BMV, VO1KE, W6BYB/VE1, VS6DO, YV1OB and 4X4NJ, plus 45 W's in 23 States, only the sixth and seventh call areas being missing from the log. Drew mentions early that during the summer he will be out "doing" some more counties on Top Band.

Right at the last moment three more letters landed on the mat; so they must perforce receive only brief mention. G4BOH (Bury) wrote mainly to update his score in the Ladder, but he does mention one daylight SSB QSO of interest, namely that with G3WQF of Haverhill, Suffolk, when both stations were just readable at 1030 in the morning. At about 130 miles, this is definitely a bit above the 50-mile daylight maximum which G4BOH normally reckons on.

A rather unusual reason for QRT was mentioned by G4AKY (Croydon). It appears he has a conventional end-fed plus a rather elegant vertical which last was fed from a longish distance by a piece of coaxial cable lying on the ground. After using the aerial to some success on the Top Band U.S. stations over Christmas, time did not allow operations to resume till January-end. Consternation—feeder is now in six separate pieces! No, not neighbours' dealing with TVI, teeth marks at the breaks indicate the damage was done by foxes. So, Dave is, for the moment back on the end-fed wire. As school studies are at an important stage he does not reckon to pick up more than the odd point until June; but he means to go hell-for-leather after that to lift himself to a good score by the end of the Table year.

G4CBQ is another of these two-location types, he being normally operational from Southampton University and occasionally from home in Derby. At Southampton the rig is a home-built AM/CW job and a modified BC receiver used with 170 feet of inverted-L up top and a brace of quarter-wave radials; at home there is a top-loaded vertical used with an unspecified rig, which latter managed to cross the Pond several times during the Christmas holiday period. Phil makes out a well-reasoned argument for letting cross-mode contacts have some sort of rating, at least where Phone is concerned, he having polished off 39 counties from Southampton on AM of which only fifteen can be counted as AM/AM, the rest being AM to SSB; a valid point when we say the reason for the present scoring system is to encourage the "tiddlers" into activity. Fair enough, and retrospectively we will allow both sides of an AM/SSB QSO to claim two points; for the AM station that county is included in his AM counties list but at two points instead of three, while the SSB chap includes it in his list of SSB counties but at two points instead of one. This ruling means that a given county can still only be claimed three times, in the AM, the CW, or the SSB list—we aren't going to add a fourth dimension!

Eighty

All sorts of funny things—both funny *ha-ha* and funny *curious*, come to think of it—happen in this area. There was a Fred Phone manifestation around, getting into Europe quite well and signing "BY9MAO," which caused a bit of a commotion. Whatever likelihood there may be of legitimate action from China, and it does seem as though the ice is slowly beginning to thaw, one can hardly imagine a legitimate Chinese licence bearing such a callsign—it'd be sacrilege.

Nonetheless, the old maxim that LF DX tends to improve as the sunspot count falls is still, in the general sense, true.

G4BKY (Dursley) has got an 18AVT up now, and has been giving it a run on all bands. On Eighty the SWR is rather high except around 3580 kHz and in that region Steve worked a few Europeans including LB3P and DJ3WG.

For G4DMN (Shrewsbury School) Eighty is, he says, the favourite band—except when the DX doesn't come back! And, as to that, he adds his country score is now 93 worked and at least twice 93 got away! From school, Richard succeeded with C31LO, EA8JP, EA8EX, HV3SJ, JX2HK, TA1MB, UB5BU, WIEBC and LU1BAR/W3; from home during half-term when the OM was pushed to one side of the home shack, G4DMN made it to AP2KS, ZL2BT, 4X4QG (all new countries on the band) plus FC2CD and YV5AMJ. The Morse key has also been plied for the first time since the ticket was obtained, but so far not much has been raised, and all of it in Europe.

The suggestion of a possible QRP net on 3550 kHz prompts G2NJ (Peterborough) to comment that he heard several well-known QRP types, including G3DNF and G3FMW, at workable strength on February 9. Nick's noontime operations have also turned up trumps, with a call after working a G2 old-timer coming from DJ1FE with five watts and a fine signal.

Now we come to G3CED/G3VFA (Broadstairs) with an extensive log of stuff worked, mainly on Eighty, using alternately his PM3A rig and the Heath HW-7, to a Joystick; one of the noticeable things is that when swapping reports with a station using, say 100 watts, there is so little difference in strength reports each way from G3CED's five watts—for example, working G4BPV in Redruth George passed out a report of RST 459 to the hundred-watter and got for his five watts a report of RST 549! The Joystick and five watts got round to a total of twelve countries on the band during the period.

G2HKU continues his QRP researches, and managed to work HZ1KE, and K3GJD on the big rig SSB plus F8MS on the tiddler CW, for which the batteries are now down to 10 volt—and that with a series/parallel arrangement! The scheme is to see how far down they can go before the PM2B refuses to receive any more! The general feeling Ted gets about the band is that by and large it is perking up a bit—let's hope he's right.

Forty

What a waste of a good band! Quite seriously, this old scribe feels that 7 MHz is probably the most reliable area in which to pursue the elusive DX trail, at least while the sunspot count is so low.

G4BKY found his FT-DX401 plus 18AVT worked out well, and on 7 MHz QSO's were registered with (CW) WA2BLV, K2DNU, W3BGN, W1CY, W2AXZ, W2ETM/4, WA2MPH, K4JM, WA2ITR/1, WB2IVK, W3ARK and WA1SCV, not to mention hearing PY7's and VK3MR, VK3HD.

Back at school, G4DMN reckons this is the Headache Band! His best offerings were CT2BP and a UK3LAC—never mind, practice makes perfect!

The only other correspondent is G3CED/G3VFA, who cut his Joystick feeder down to thirty inches, and pumped his three watts into it to work Europeans quite happily.

At which point, one cannot but wish that one of the 7 MHz dabsters of yore—say, GM3JDR, for example—would come back to the band and show us just what can be done by a skilled operator both on CW and SSB.

G4CXM (Bristol) is nothing if not a sticker, and he tried 40 meters once. The result was CW to KP4WL, UI8UR and a one-watt signal from YO3KDP/TS—wonder what the TS means?

G2HKU seems to have given the band a good whirl, and reports SSB contacts with HK4CKT, HK4DHR, VP1FF and VO1KE, while CW brought up VE2WW, VE3BMV, VE3BWW (perhaps recalled by many an OT better as G6WY) and UM8MBA, a couple of hundred miles from the Chinese border.

Twenty Metres

As usual, most of the activity has been around this area, although few people feel their results are worth reporting; indeed, many of those who would normally be sending in reports will have found that at times they could be on the band and pretty well dead to the wide.

G3CED and his Joystick plus QRP rigs had a go in the CW end, and found some interest in comparing results with five watts from the PM3A against the HA7 with just two watts, trading reports at R5 with OH2KP, UK1AAG, SM2FZA, UN1BR, UV3NA and a local in G3FTE (Margate).

Surprisingly enough, the school set-up gave G4DMN: JY9MS, G3ZGC/MM off Portugal, G3ZXH/MM near Malta, VP2MDG, UD6CC, U30G in Moscow, ZC4AK, 7X2AG and 4S7SW, while the home half-term break was used to work CG3GCO, EP2DB, HC1BU, VP2VBK and YV4ACY; and a single Sunday at home produced lots of W's in the contest, also FP0MM and 7Q7DW. On a side-track for a moment, Richard was amused to watch "Cannon" on the goggle-box, looking for "bugs" in a room with a sniffer which was exactly the same breed of SWR/FS meter as the one used by G4DMN! It would be nice to know how they detect bugging with an SWR meter!

On to G4BKY, who found CW the only answer as any attempt to go SSB resulted in TVI: the CW produced bookings with ZS6SS, ZS6ME, ZS5BS, WA7NDB, W7NW, W7DPW and W7VY (all in Washington state) many VE's, W1, W2, W3, W4, not to mention a few PY/LU stations. Steve reckons his TVI is getting through the mains, and so

Reporting the HF Bands

is going to build up a suitable mains filter—let's hope it does the trick, although old 'KFE, from painful experience, would suggest that the rig being clean on CW is simply saying that as soon as the PA gets a whiff of grid current as the ALC takes hold, the harmonic content goes up with a bump and is strong enough against most low-pass filters to upset the appletart—here we have two LFF's, plus a tuned stub, to ensure clear operation with the full whack and the ALC biting.

Back to our muttons. G4CTR manages to get pleasure out of Twenty, his FT-101 and 132-footer having been used to exchange reports with ZL1AH, HG104UA, W7KSA, VP8NP, K6PIZ, WA7PMI, VE7SV, 7X2BK, IC8TRA and JY9MS.

Now we come to the Big Guns, by way of G3NOF (Yeovil) who found Twenty the best of a job lot of bands. Mornings to VK/ZL have been pretty punk, few of these and no Pacific stations having been heard; evenings have been fair to Africa from 1700 to 2030-ish, sometimes as late as 2345, and of course the W's were around at about the same times. SSB contacts were made with A2CCY, A2CJP, C5AU, CN8DX, CY6AGV, CY6ATR, CY6GD, CY6GQ, CY6TB, EP2DB, HK3BGN, JA1JAN, F6AXV/MM, in Zone 39, JY9CR, JY9MS, K0KKU (Colorado), TR8BJ, TR8CM, TR8DG, TR8VE, TU2EG, TU2FA, TU2FO, VE6ANN, VE6OJ, VE6VG, VE7UBC, VP1PW, VP2EEC, VP9HS, VQ9GP, XT2AE, ZD7FT, ZE1DP, ZE2JK, ZS1DG, ZS4PB, ZS6AD, ZL4PJ, W7YL, WA7G9WU (Utah), W0ONL (S. Dakota), W0SYB (Colorado), 4W1ED, 4S7SW, 5R8AA, 5T5CI, 5T5GS, 5T5ZR, 5U7AW, 6W8AAD, 6W8DY, 7Q7LB, 7X2BK, 9J2B, 9J2DT and 9J2LL.

As we said earlier, GM3YOR has a new FT-101B and is trying it out on the HF bands; so far on Twenty he has hooked VE8ML, W1, W2, W3, ZB2A and 9J2WR on Sideband, plus a CW QSO with ZS6SM.

Nice to hear again from W4WFL/1 (Farmington, Conn.). Morgan tried the key during the REF contest and netted a couple of new ones in FR7A1/T and 5R8AA; for the Phone weekend things were nothing like so good although he did bump into 4S7SW and hooked him for another new one although not counting for contest credit.

Like most others, G4CXM doesn't think a lot to the spring lift this year; Twenty seemed to be in the doldrums whenever he could get on, although he keyed with PY7AHO, YV5TT, UK9WAP and "phoned" to TG9PW, YV7BI, 6W8DY, 5T5CI, VK3XK/P, CG3CGO and HV3SJ.

Lousy! That's the report from G2HKU; his ZL1 skeds which were 57 on SSB this time last year are now down to RST339 on CW! However, on SSB there were ZL3SE and JH3DPB/P/1 while CW gave ZL1VN and 4Z4PI.

Top Band Counties

October — September

Callsign	AM	CW	SSB	Total
GD4BEG	15	138	40	193
G2BJY	12	130	31	173
GM3YOR	—	120	30	150
G4AKY	—	94	24	118
G4BWP	27	70	—	97
G4BOH	9	48	18	75
G4AYS (QRP)	—	66	—	66
G4CBQ (home)	—	—	—	53
G5BHR	3	32	—	35
G4CBQ (Univ.)	30	—	—	30

Each county may be worked once in each mode. AM contacts score three points, CW two points, SSB one point. AM contacts made by changing over to AM from SSB are not allowed, neither are cross-mode contacts saving that AM/SSB contacts will be counted two points claimed for the mode the station was using, e.g., the station on AM claims his two points under the AM heading, the SSB end claims his two in the SSB list. New U.K. County designations apply.

Starting date October 1 1974, closing September 1974.

Ten & Fifteen

Lumped together this time as there is hardly enough to justify a separate section to each.

G4CXM seems to have stuck to SSB on 21 MHz, where he made QSO's with CR6WT, ZE1EA, ZS5PU, OD5HC, G3ZGC/MM (of recent reports to this piece, who was off EA9) and gotaways were A2CCY and 3B8CV. Ray did not bother with Ten at all. Just one contact was made on 21 MHz by G4DMN, namely VP2EEE.

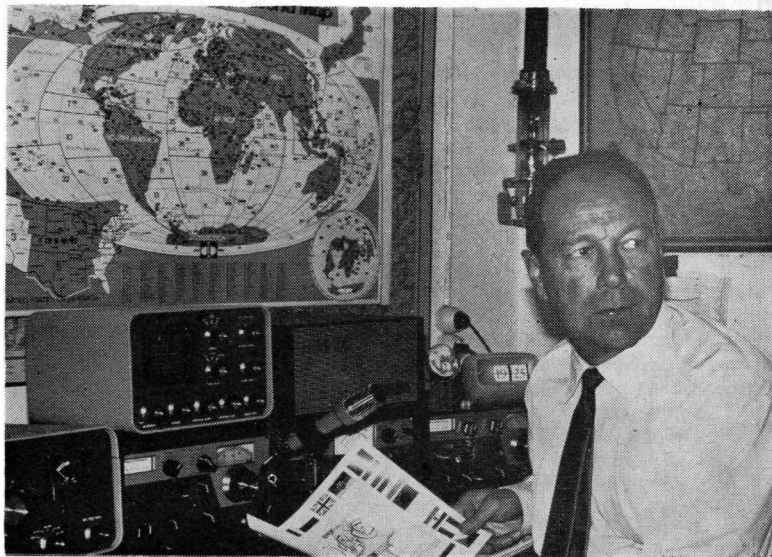
Fifteen CW gave GM3YOR contacts with A4XFP, EP2SN and KV4CI, and there was just one sideband QSO, with 9G18AA.

Even G3NOF found the going rough; Don heard Africans up to 1400 and some openings to VK6 and Asia, very few W's being heard at all. Sideband contacts were registered with CR6WT, HC2YL, VK9XR/MM (on a yacht between ZD7 and ZD8) VQ9NEW, VU2ABC, ZD7FT, ZE7JW, ZS2EM and 9G18AA, although 5T5GS and 7P8AT both got away. The only time Ten was noted to be open was on March 9 between 1000 and 1200 when VQ9HCS, ZE1EI, ZS6BKS and 9J2DT were logged.

Nothing has yet been worked by G4BKY on Ten, a sked with EA8GN being abortive; on Fifteen, CW accounted for EA8GN and 9H1CH.

A little more luck was had by G4CTR, with KV4AD, VK6HE, 9G1OY, PY0ZAE, ZD7FT, ZS2MN, ZS5MQ, YV5ESN, A2CCY and CR7JO all worked on Fifteen, many of the contacts on this band being with the aid of a one-element Quad at ten feet, which seemed to work quite well. Nothing was noted on Ten.

HB9KC is operated by Werner Bopp, P.O.B. 83, CH-3073, Guemligen, in the Canton of Bern. He has a nice range of modern gear, QSL's via bureaux and writes English.



This & That

Robbery is the proper name for it; as fast as the postal service deteriorates so do the postal rates rise. The current change will bring the cost of second-class postage up, first-class postage likewise, and the cost of an IRC for Overseas will now be no less than 13p! This old scribe suggests you all go down to the local Post Office and obtain the three brochures, one each for Inland, Overseas, and Forces Overseas. Once that is done, the next move is to send your QSL Bureau chappie a supply of envelopes at the new rate, or stamps to make up the value on the envelopes there. And, finally, we might comment that QSL'ing direct is going to be pretty prohibitive, so an increased proportion of traffic, like it or not, is going to be routed through the Bureaux.

Talking about Bureaux leads us on to QSL tactics. W4WFL/1 had a couple of stickers who failed to respond to QSL's plus s.a.e.'s, repeated several times. Eventually, Morgan sat down and "home-brewed" a QSL card to each one, which required the DX station to do no more than sign his name to authenticate. When sent off both came back signed within a couple of weeks and both are valid for DXCC use.

G3RJV wrote on various points and one interesting one is that his mail leads him to believe many QRP operators have expensive QRO gear just gathering dust in the shack, although there are of course some of the chaps for whom QRP is a matter of reduced costs.

On that score one has to admit that G3CED/G3VFA, whatever his likes and dislikes in the aerial line, is a real QRP enthusiast; in his latest letter which arrived too late for detailed comment, one thing he says is that two watts is far too much to put up the feeder; what he now proposes is to go QRPPP for a period of time and see what that yields as compared with the two-watt power!

G2HLU (Reading) returns to the lists, he having at the time of his letter just finished operating in BERU during which Harold was pleased to find that 7/14/21 MHz were up on last year's contest but Eighty most definitely "down." On a different tack, G2HLU has been at work redecorating the shack, and he took advantage of the clear-out to re-think the furnishing of that holy of holies. The old Handy-Angle rack at which he used to sit—shades of R107 receivers and hundred-weight transmitter PSU's!—has been discarded and the new G2HLU sits at a nice convenient desk-style operating position. Furthermore (this is really earth-shattering!) he has bought a *micro-phone!* Now his Vespa, which he has had for a couple of years or more, can be fired on SSB, and G2HLU found this strange experience of operating without a Morse key to be actually rather enjoyable. After about forty years of key-punching that really is a change; but it does imply that the mind is still open to be convinced by logical argument that something different or new is not necessarily also bad. One only wishes that those who make a "sacred cow" of any and everything new or modern would also display a similar flexibility of mind!

If you come across G3LSQ/MM, Peter is *en route* to the Leeward Isles in his 24-ton yacht *Lucina*; he keeps a daily sked with G3FWB of Northampton at 1045z on 14275 kHz.

ON4QX (Antwerp) says he doesn't know much about Amateur Radio, although he has 307 confirmed on Twenty and 327 on Fifteen! To brush up on theory, Bob is doing a B.I.E.T. course on R.A.E. and in this connection seeks back-copies of old papers for his collection. He also remarks that our R.A.E. is much more difficult than the qualifying exam. in Belgium! Incidentally, as many will know, Louis Th. Berge was a Radio Officer Lt. in the Royal Navy and Combined Forces during Hitler's War. He sends his 73 to all his old buddies from Dunkirk, Walcheren and D-Day. Give him a shout—on CW. of course.

Last time we heard from G8HX (Mansfield) he was in the wars with his DX-100 in which one of the inductors caught fire. Frank is now back in normal operation, his replacement being an output choke out of a junked T.1154 Tx! But what odds if it *works!* On a different line, G8HX has received the Nicolaus Copernicus award which to his pleasure was endorsed as the first G8 qualifier. Once more a change of tack, and referring this time to standard-frequency transmissions; as G8HX points out, in many parts of the U.K. the Russian 15 MHz signal is probably the most useful most of the time—but they also have a standard just five kHz away on 15005 so be careful you latch on to the right one before checking the wavemeter! Worth remembering, that.

Myrtle Cunningham, WA6ISY, YLRL vice-president, sends the result of the North American YL-DX YL contest in January, from which we notice that the honour of the G's was well upheld by G8LY both on Phone and CW—Congratulations.

Finally in this section we have to hand a note to remind us of the Bermuda Contest. *Phone* is April 19-20, *CW* May 3-4. Times 0001z Saturday to 0200z Sunday. Rules are pretty well the same as in past years saving that the VP9's will still be sending their parish in the exchange but the multiplier will not be related to parishes but to the number of VP9 stations worked on each band. We send RS(T) plus State, Province, or County. U.K. stations can work VP9, VE/VO, or W/K, while W/VE/VO operators go for G or VP9 stations only. Winners get round-trip plus one week's accommodation at the Bermudiana Hotel to attend the Bermudian Society's annual banquet and receive their award. For full details, in a coloured brochure *cum* rules-sheet, send an s.a.e. pronto to G. Beasley, G3LNS, *QTHR*.

Conclusion

Space has run out on us again; when we started this time there was next to nothing on the clip, 'cos everyone left it to right on the deadline. Please make it on time, or even if you can a wee bit early, deadline for our next, first post arrival April 8, addressed as always to: CDXN, *SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.* And 73 to all.

MOBILE RALLY SEASON—1975

With three more Rally dates notified, we now have a total of 14 for the Calendar, one of which (the White Rose at Leeds and the earliest in the Season) will be taking place just as this appears.

Organisers, and free-lance amateur picture-takers, are asked to let us have reports and photographs covering Rally events as they occur. Any photographs we can use will be paid for on appearance—but when sending in a print, please give full details on a separate sheet, *not* pencilled in on the back of the photograph itself except as may be necessary for identification purposes, e.g. "Photo A, Hogsnoton Rally, 23/4/75," or whatever, the details then being given separately and referred to "Hogsnoton, Photo A."

Also, we cannot accept negatives nor film-strip and we prefer black-white prints rather than coloured.

All such material should be addressed to: "Mobile Scene," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.

MOBILE RALLY CALENDAR

March 30: White Rose Rally at Lawnswood School, Leeds, junction A.660/A.6120, with many trade stands (some new to the Rally scene), a raffle, well-stocked canteen facilities, ample free parking and talk-in. Local travel by Leeds Metro No. 1 service, railway station to School.—Miss C. Wade, G4CUY, 74 Cow Close Road, Leeds, LS12 5PD.

April 20: North Midlands Rally at Drayton Manor Park, near Tamworth, Staffs., on the A.4091, and within 12 miles of Intersection 4, M.6, with local AA sign-posting.—A. R. Walton, G3ZKQ, *QTHR*.

May 4: Tulip-Time Rally at Gleed Boys School, Halmer Gardens, Spalding, Lincs. within walking-distance of the 20-acre Springfield Gardens, with flowers and fresh vegetables for sale. All regular attractions, talk-in by G4DSP/A on 1980 kHz and G3MMS/A on 145 MHz, ample free parking, refreshments, bring-and-buy stall (no junk), raffle, prize for longest distance travelled, location maps available on request.—R. Harrison, G3VPR, Spalding & District Amateur Radio Society, 38 Park Avenue, Spalding, Lincs., PE11 1QX.

May 18: Amateur Radio Mobile Society Rally is cancelled.

May 25: Hull & District A.R.S. Rally at East Riding College of Agriculture, Bishop Burton, Beverley, Yorkshire, as in previous years.—L. D. Colley, G3AGX, 13 Ferry Road, Wawne, Nr. Hull, Humberside, HU7 5XU.

May 25: Maidstone Trade Exhibition and Mobile Rally, Y-Sportscentre, Melrose Close (off Cripple Street, A.229), Loose, Maidstone, with talk-in on 160, 80, 4 and two metres, signing GB3YSC. Trade stand enquiries to A. S. Walters, G3WXL, 4 Oak Farm Gardens, Headcorn, Ashford, Kent.

June 1st: Royal Naval Amateur Radio Society Rally at H.M.S. *Mercury*, near Petersfield, Hants.—Fleet/CRS M. J. Matthews, G3JFF, R.N.A.R.S., H.M.S. *Mercury*, East Meon, Petersfield, Hants., GU32, 1HE.

June 8: Sixth Mobile Rally at Elvaston Castle Country Park, south of Derby, off the B.5010.—P. Neal, G3WUF, *QTHR*.

June 29: The 18th West of England Rally at Longleat House, Warminster, Wilts., probably one of the finest Rally sites in the country—further details later.—B. Croker, G3ULJ, 36 Portland Street, Staple Hill, Bristol, BS16 4PT.

July 6: Worcester & District A.R.C. Rally event at Upton-on-Severn, as in previous years.—B. Jones, G8ASO, *QTHR*.

July 20: Cornish Radio Amateur Club annual event, at the Technical College, Pool, Redruth, Cornwall. (*Details later.*)

August 17: Derby & District Radio Society annual event at Rykneld School, Bedford Street, Derby, as in previous years. Details later. Information from T. Darn, G3FGY, 1 Sandham Lane, Ripley (2972), Derby.

August 24: Torbay Amateur Radio Society Rally at Newton Abbot Rugby Club ground, as in previous years.—L. H. Webber, G3GDW, *QTHR*.

September 28: Harlow & District A.R.S. event at Netteswell School, Harlow, with bring-and-buy and Trade stands, refreshments, free admission and parking. Details: C. West-Bulford, G8JXU, hon. secretary, Harlow Amateur Radio Society, Mark Hall Barn, Harlow, Essex.

SPECIAL-EVENT STATIONS

The forthcoming dates notified for appearance under this heading are:

GB3RN, March 28-April 7: From H.M.S. *Belfast*, the historic cruiser now at permanent moorings in the Pool of London. Amateur Radio activity on all bands, HF and VHF.—D. F. J. Walmsley, G3HZL, 153 Worple Road, Isleworth, London. (*Tel.*: 01-892 3239, evenings and week-ends.

G3UOK, April 26: For the University of Keele Open Day, to celebrate their 21st anniversary, running 20-80m. and two metres. All contacts will be QSL'd. Visitors are invited to Room 117, Chancellor's Building. The University is two miles west of Newcastle, Staffs., on the A.525 and near the A.34 and M.6. Location maps available on request.—V. J. Reynolds, G3COY, Dept. of Communications, University of Keele, Keele, Staffs., ST5 5BG. (*Tel.*: 0782-71 371, *Extn.* 128).

GB3NRS, April 27: Northern Radio Societies' Association station, Bellevue, Manchester, for the annual convention of these groups. Stations G3WDH and GB3NRS will work all bands Top to two metres. Many attractions for visitors at this well-supported annual event in the North-West.—D. C. Mott, hon. secretary Otley Radio Society, 17 Newall Carr Road, Otley, West Yorkshire.

QRP ON EIGHTY

CO/PA Tx RUNNING THREE WATTS—ADAPTABLE FOR TOP BAND OR FORTY— ALL-TRANSISTOR DESIGN

G. J. BENNETT, B.Sc., Ph.D. (G3DNF)

Our contributor is a well-known exponent of the art of QRP/CW working. The Tx design he discusses here is easy to build and is capable of very satisfying results for those more interested in finesse than in "blasting through" at whatever cost.—Editor.

THE popularity of low-power CW on 80 metres becomes very evident by operating for only a few hours on this band. It is fairly certain that a contact with at least one QRP station will result.

Low-power operation has a fascination of its own, as every QRP enthusiast will agree. For the present purpose it is enough to say that QRP provides an interesting challenge, both in operating and in construction. The growing interest in QRP has been fostered by the availability for and acceptance of transistors in RF power applications. Energy conservation awareness is now providing an additional stimulus.

For anyone tempted to try QRP there is a bewildering choice of D-I-Y designs, some of which appear to be dauntingly complex, or may require components which are hard to obtain. The alternative is to purchase a ready-made QRP transceiver. Several models are available, though the price may seem high unless the purchaser is already convinced that QRP really works.

Building a CO/PA transmitter is probably the best way to make a start with QRP CW. Before the advent of transistors, in those far-off days when every newly-licensed "G3/3" had to put in a year of CW-only operation, a CO/PA transmitter could be found in most shacks. It is still possible to get on the air quickly in this way by using those same old valves or by going in for transistors.

The transistor transmitter described here is simple to construct and get going. It also gives enough output to make itself clearly heard.

Technical Description

A Pierce crystal oscillator (2N706) is capacity coupled to the PA (BFY52). The PA has zero standing bias and is driven into forward conduction by rectification of the drive signal at the base-emitter junction. The total lack of PA bias components looks odd at first sight but it is intentional.

Low-impedance output suitable for a link-coupled ATU is obtained by means of a toroidal transformer which delivers RF via a series-tuned LC circuit.

When receiving, the crystal oscillator can be switched on as required for channel checking or "netting." For this purpose the oscillator runs at reduced voltage, supplied by a dropper (R4, Fig. 1).

On "transmit," the crystal oscillator runs con-

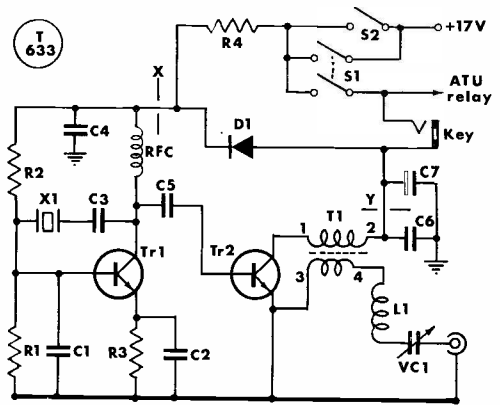


Fig. 1

Fig. 1. Circuit diagram of the QRP Transmitter

Table of Values

Fig. 1. Circuit Diagram of Transmitter

- C1 = .001 μ F poly-styrene
- C2, C4, C6 = 0.1 μ F ceramic
- C3, C5 = 120 μ F poly-styrene
- C7 = 1 μ F
- VC1 = 750 μ F mica, compression trimmer
- D1 = 1N914
- R1 = 2,200 ohms
- R2 = 22,000 ohms
- R3 = 100 ohms
- R4 = 3,300 ohms
- RFC = 1.5mH RF choke
- Tr1 = 2N706
- Tr2 = BFY52 with clip-on heat sink (see text)
- L1 = 30 turns of 28g. enamelled copper wire, close wound single layer on Aladdin former (7mm. diam., without tuning slug).
- T1 = See Fig. 4. Primary, 4 turns of 28g. enamelled evenly spaced on stack of 3 ferrite beads (FX-1115); Secondary, 1 turn of pvc-insulated wire threaded through stack after winding Primary.
- X and Y are metering points—see Fig. 2.

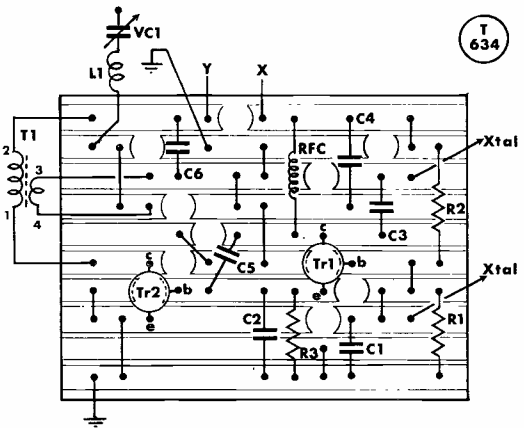


Fig. 2

Fig. 2. Suggested layout using 0.15-in. Veroboard, viewed from above

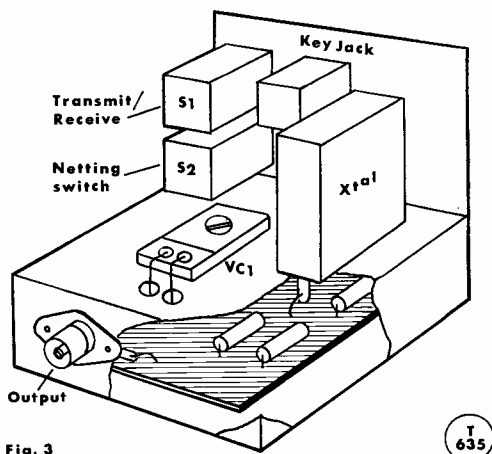


Fig. 3

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Fig. 3. Suitable method of construction, cutaway view

tinuously, but receives full voltage (via D1, Fig. 1) only when the DC supply to the PA is keyed. This method of keying is better than keying the PA alone, which does not give enough RF cut-off between characters.

Construction

In order to make use of the existing PSU, control circuitry and ATU, this Tx was originally constructed as a module rather than as a self-contained item of equipment. In this form it was built in an aluminium chassis box (3 x 2 x 1 inches) with key jack and power socket mounted on a small external bracket.

For the convenience of other constructors, the circuit as shown (Fig. 1) includes "netting" and changeover switches. If small enough these could also be mounted externally (Fig. 3). The addition of a suitable power supply and ATU will then complete the transmitter.

If receiver muting is also required, this can be arranged by means of a suitable relay, energised in the same way as the aerial change-over relay (Figs. 1, 5). Alternatively, the facility can be provided by having an additional pole on S1 (Fig. 1).

Most of the components can be mounted on a small piece of Veroboard (0.15 inch matrix), mounted inside the chassis box by using short lengths of 22g. tinned copper wire to complete the connections to the crystal socket and earthing points (Figs. 2, 3). Other components can be mounted as shown in Fig. 3 (L1, which is not shown, can be attached to the inside of the chassis box, in the space below VC1).

Components

The only component requiring comment is the toroidal output transformer, upon which depends the efficiency of the PA. Ferrite toroidal cores are often specified for coils and transformers in the design of transistor transmitters. In many instances the choice of core is critical and the selection of an equivalent will depend upon a number of factors, which include dimensions and grade

of ferrite. Some grades are unsuitable for RF power applications.

In developing this transmitter, many different toroids were tried, most of which performed fairly satisfactorily. By far the best core was found to be a tubular stack of three parasitic stopper beads, type FX 1115 (Fig. 4). This also makes a very cheap and easily available core. Similar results, but with slightly lower efficiency can be obtained by using a tubular ferrite tuning slug from an Aladdin coil former (N.B. Ferrite is a hard, stony material which cannot be scraped with a knife).

Setting-Up

Carefully check the circuit board and connections before connecting the power supply. Next, see that the crystal oscillates when the netting switch is closed.

Adjust VC1 (Figs. 1, 3) to maximum capacity and connect a flashlamp bulb (2.5v./0.3 amp) to the output socket of the transmitter. Switch to "transmit" and check the PA function by briefly connecting a milliammeter across the key socket. Normally, a reading of

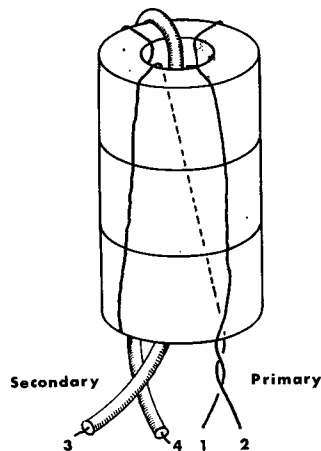


Fig. 4

Fig. 4. PA output transformer (T1, Fig. 1) general arrangement

T
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T1 is wound on a polypropylene tube $1\frac{3}{8}$ inch O.D. (e.g. as used in plumbing). Main winding is 60 turns 24g. enamelled, close wound, with several tapping points at intervals of 10 turns. Link winding 8 turns of pvc-insulated "connecting wire" overwound at the "earthy" end of the main winding.

For 160 metres, T1 can be 100 turns of 32g. wire with 10 link turns.

For 40 metres, 40 turns of 24g. and 6 link turns are required. These values are suitable for an end-fed aerial of $\frac{3}{8}$ to $\frac{1}{2}$ wavelength, e.g. 90 feet for the 80-metre band.

The choice of relay will be governed by availability. A suitable type is 354/12v. (Magnetic Devices Ltd.), which has low capacity contacts, a coil resistance of 325 ohms, and operates on 12 volts DC. There is plenty of scope for trying other types.

between 50 and 150 mA is obtained, and the lamp will probably light.

Tune VC1 for maximum output while keying a string of long dashes. Maximum output at 3.5 MHz will require a high setting of VC1 and will light the lamp to full brilliance. Avoid tuning the second harmonic, which will require a low setting of VC1 and will only dimly light the lamp.

When correctly adjusted on the dummy load, typical current readings at metering points "X" and "Y" (oscillator and PA respectively) would be about 10 and 100mA.

If the transmitter appears to be functioning correctly, connect the ATU and aerial (with the dummy load still in circuit). Key the transmitter intermittently while tuning the ATU for maximum absorption, so that the lamp is extinguished or at minimum brightness. Disconnect the lamp and continue tuning up with the aid of a sensitive absorption wavemeter or field strength indicator. Tune for maximum radiated signal, adjusting VC1 and ATU successively. With experience, this procedure can be shortened, once the optimum settings are known. As a general rule, if the aerial is tuned correctly for reception it will need little further adjustment for transmitting.

Before the final launching ceremony, it is wise to monitor the transmitted signal, to ensure freedom from chirp, parasitics, clicks, strong harmonics and TVI. This transmitter has been found to be remarkably free from such defects, but it is always worth checking the list when putting a new Tx on the air. With regard to harmonics, bear in mind that a strong harmonic detected on the station receiver is *not* a good guide to the amount of harmonic power radiated. The use of an absorption wavemeter or field strength indicator is better for this purpose.

Hints and Wrinkles

This little transmitter should be found easy to get going and free from snags. The following comments may be found helpful if any difficulties are encountered.

If the oscillator fails to perk, recheck the wiring. If all is in order, a change of transistor may do the trick. A crystal that is not active enough may fail to oscillate, or may oscillate weakly or start slowly. Reduced oscillator output will give low drive to the PA, which in turn will fail to light the lamp.

Should the output from the PA be less than expected, try another transistor here also. Other types which can be used include BFY50 and 51, 2N3053 and 40311, although some makes of the BFY50/51/52 series are less effective than others for RF power applications. Most transistors of these types will run at about 2 watts input in this circuit when properly loaded. Exceptionally, one can be selected which will run at 3 watts, but will also need greater care in avoiding a load mismatch during the tuning-up procedure.

The transmitter will run at about one-watt input on a 12-volt supply. For 40-metre operation, all that is needed is a crystal for that band and a suitable ATU

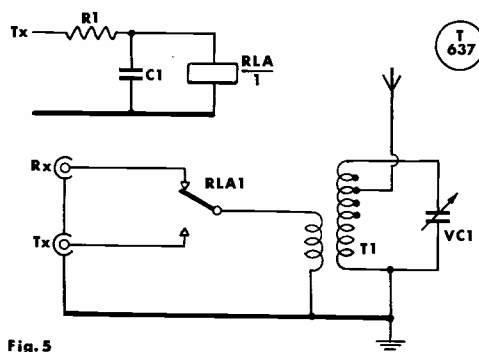


Fig. 5

Fig 5. ATU suitable for end-fed aerial—90 to 150 ft. on 80-metre band

Fig. 5. Aerial Tuning Unit. C1 = 0.1 μ F ceramic; VC1 = 100 μ F airspaced; R1 = 220 ohms.

(Fig. 5). The setting of VC1 will be lower for this band. Top Band operation can be achieved similarly, but in this case it is necessary to connect an additional capacitor (15 pF, polystyrene) in parallel with VC1).

Particular attention should be paid to the quality of all connections especially in the ATU, as a dry joint can absorb much of the RF generated by a QRP PA!

The power supply can be a bank of dry cells. If a mains power pack is used, it is preferable to stabilise the voltage. A zener diode or a more elaborate regulator can be used for this purpose.

Results

Much of the enjoyment of QRP comes from the recognition and exploitation of its possibilities. When conditions are good, opportunities occur for surprisingly good contacts to be made. However, QRM and QSB normally make it harder for the QRP signal to get through. Calling CQ tends to be a waste of time with QRP. It is usually better to search for likely contacts. When using crystal control, the best method is to lie in wait for calls occurring within 1 kHz of the frequency in use. If several crystals are used, each channel may be monitored in turn.

A glance through the CDXN columns of recent issues of SHORT WAVE MAGAZINE will give some idea of what can be done with QRP on Eighty. Results with this Tx should be similar to those reported by several stations using a couple of watts. Contacts within U.K. and Western Europe can be made quite easily.

The importance of the aerial in QRP operation must always be stressed. Experience of using low power for many years has shown that correct tuning of the aerial is the most important factor. Get it "on the nose" and you will be surprised how far a few milliwatts will go.

TRANSVERTER FOR SEVENTY CENTIMETRES

COIL DATA, SETTING-UP AND PSU CIRCUITRY

Part II

A. H. DORMER, C.Eng., F.I.E.R.E. (G3DAH)

The first part of this article appeared in the March issue, with circuitry and illustrations up to the PA stage.—Editor.

Continuing from p.31, March, further points on construction: The PA chassis bottom plate measures 12 x 4in. with sides 3in. deep. Holes are drilled in it under the valve envelope and, with a top plate made from expanded metal, give adequate ventilation, the chassis being stood off on rubber feet.

Capacitors C3 and C4 are connected directly to the grid pins on the valveholder and to the grid loop, which is supported at the far end on a p.t.f.e. stand-off. Once tuned, these capacitors are prevented from shifting by a small dab of *Denfix*. Note the shield right across the chassis on which the valve is mounted and also the screening ring around the valve base. The correct position for the anode feed chokes is determined in the same manner as described for the buffer amplifier. Note also that the moving vanes of the anode tuning capacitor are

not earthed—an insulated extension spindle is therefore required. The capacitor itself is mounted on insulated pillars bolted to the side of the chassis. These two chassis, with the converter and 404 MHz amplifier, are all accommodated in an RF-tight cabinet, the PSU being housed separately.

Operation

With 404 MHz input from the converter, the amplifier circuits are aligned on 404 MHz using a GDO. The circuit constants have been chosen so that they will not resonate at any other frequency. When correctly adjusted, the output should be of the order of 400-500 mW and the unit should draw 100 mA or so—150 mA with the

Table of Values

Fig. 5. Power Supply Unit

T1 = 125-0-125 volt, 250 mA	R2 = 7,000 ohms, 6w. wirewound
T2 = 6.3 volts, 4 amps	R3 = 47,000 ohms, 2w. wirewound
T3 = 34 volts, 1 amp	R4, R5 = 1,000 ohms, ½-watt
T4 = 28 volts, 1 amp	R6 = 35 ohms, 5-watt, wirewound
D1-D4 = BY1000	Tr1 = 2N3055 or 2N3233
D13-D16 = 1N4006	ZD1 = 6.2v., 400 mW Zener diode
D5-D8 = REC 63 or 1N4006	SW1 = DPDT mains switch
C1, C2 = 100 µF, 450v. wkg.	F1, F2 = 250 mA fuse
C3 = 500 µF, 50v. wkg.	PL1 = 6.3v. pilot lamp
C4 = 10 µF, 63v. wkg.	V1 = VR105
C5 = 500 µF, 64v. wkg.	V2 = VR150
C6 = 50 µF, 40v. wkg.	
C7 = 1,250 µF, 16v. wkg.	
R1 = 47,000 ohms, 6w. wirewound	

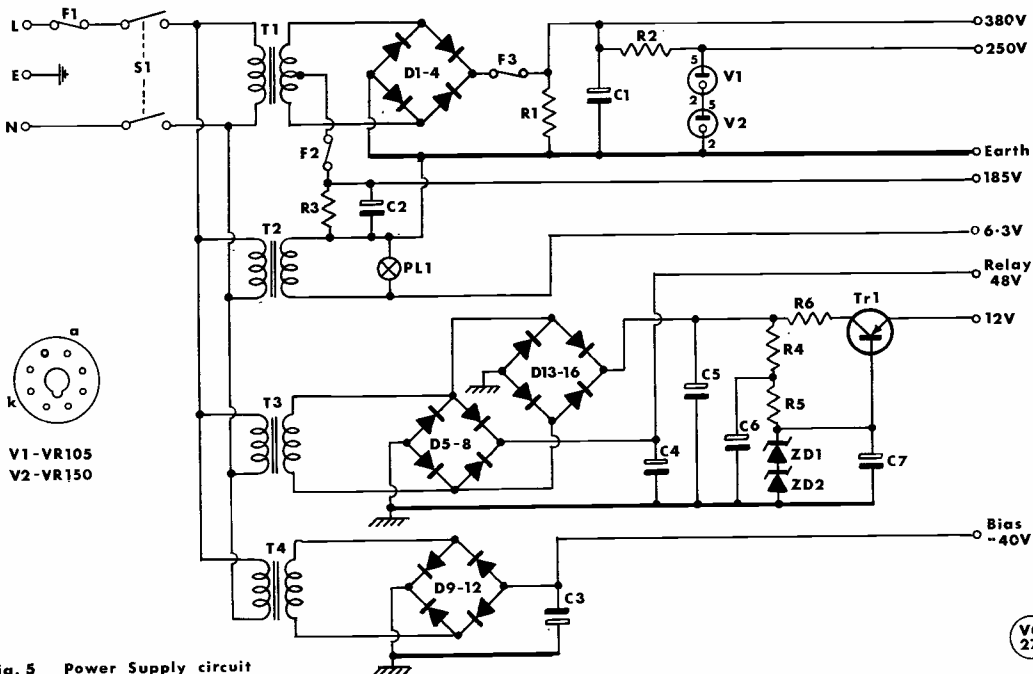


Fig. 5 Power Supply circuit

Fig. 5. PSU circuitry for the Transverter

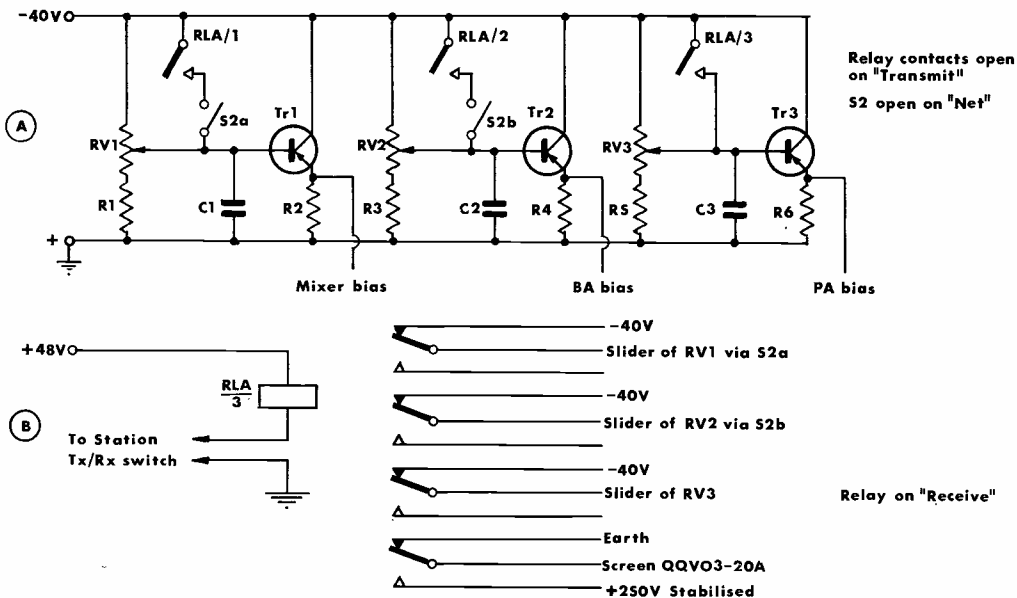


Fig. 6 (A) Bias circuit. (B) Relay Switching

Fig. 6. Relay and Bias control circuits

converter. Connect the output to the mixer chassis via an SWR bridge and adjust the output circuit and the input circuits of the mixer for maximum grid current in the mixer, having temporarily disabled the bias to the stage and inserted a 5 mA meter. Ensure that the bridge indicates minimum reflected and maximum forward power. Apply screen and anode voltages to the mixer and set the mixer bias at $-7v$. The anode current should then be about 16 mA. Apply a small amount of 28 MHz drive until the anode current just rises. Check with the GDO that the anode circuit resonates at 432 MHz. Do not run the valve above 30 mA for any length of time—the plate dissipation is only 6w.

Resonate the grid circuit of the buffer amplifier, checking again that you are on 432 MHz and not 404 MHz, apply anode and screen voltages and adjust the bias for 25 mA standing current. Modulation will kick this up to 45 mA with about 15 volts of bias. Bias voltage may be ± 1 volt or so—the important thing is the standing anode current value. The measured output under key down conditions was $2\frac{1}{2}$ watts.

Using the SWR bridge as before, adjust buffer amplifier tuning and loading and PA grid circuits for maximum transfer of power with minimum SWR. A meter in the QQV03-20A grid circuit will indicate this. With $-25v$ of bias on the PA, and a dummy load on the output, apply anode and screen voltages and set the standing anode current at 25 mA. This will rise to about 75 mA on speech peaks at resonance. Load up for maximum output and then increase the loading until the speech peaks drop by about 10%. Measured output from the prototype was just 10 watts.

Just to run through the main points again: With

Table of Values

Fig. 6. Bias Circuit

RV1, RV2, RV3 = 100,000 ohm linear wirewound pot.	R5 = 20,000 ohm, $\frac{1}{2}$ watt
R1, R3 = 10,000 ohms, $\frac{1}{2}$ watt	C1, C2, C3 = 0.1 μ F, 50v. wkg.
R2, R4, R6 = 20,000 ohm, 1 watt	Tr1, Tr2, Tr3 = BCY30

all circuits resonant at the correct frequencies and the right level of drive to each stage, the mixer should draw 16 mA standing current which should rise to about 18 mA, and no more, on speech peaks. The buffer amplifier standing current should be set at 25 mA and should go up to 45 mA on peaks of speech. The PA standing current should be 25 mA and should rise to about 75 mA on peaks. No grid current is drawn by any stage.

If you do not attain these figures, the most likely trouble is incorrect alignment of the mixer and buffer amplifier stages. Adjust SSB drive by varying the spacing between the input loop and grid line of the mixer. Do not do so by cutting down the audio gain control on the prime mover—you will only achieve an unbalance between carrier and sideband which will impair the quality and cause a carrier to be radiated. Do not operate the PA with screen volts applied and no anode volts and do not operate it except into a load, dummy or antenna.

It will be noted that HT is applied to all valves as soon as the PSU is switched on. On "transmit," normal operating bias is applied to all stages. On "receive,"

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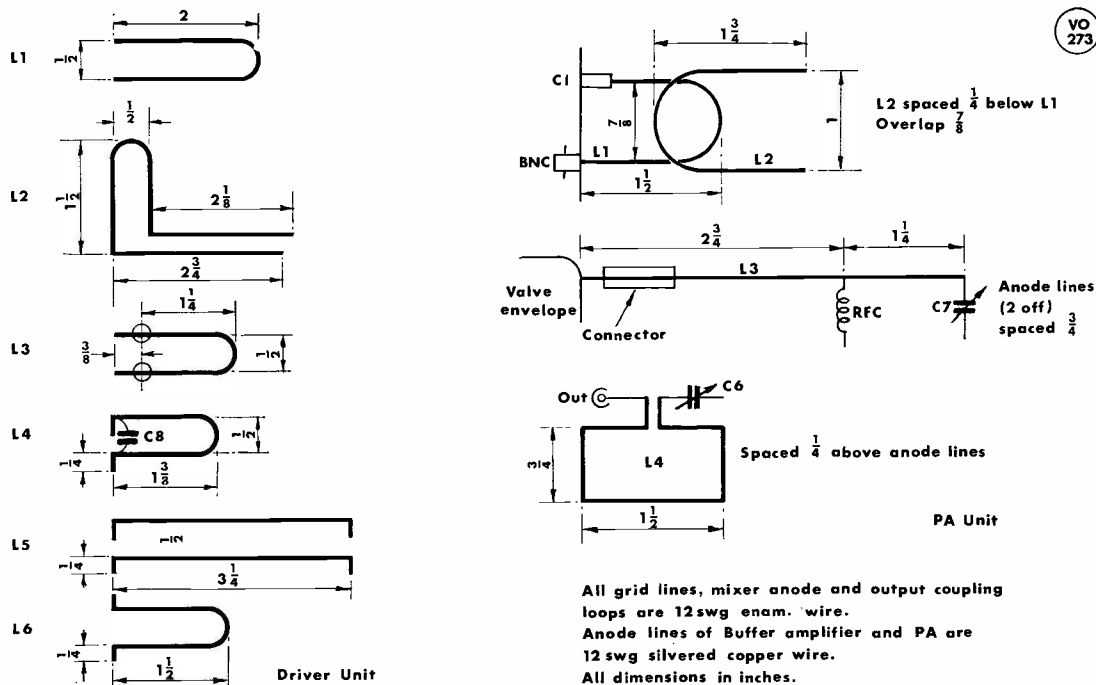


Fig. 7 Coil Data

Fig. 7. Coil data, showing configuration and dimensions

the relay contacts in the grid bias circuits are closed by the station Rx/Tx switch and the full negative rail voltage is applied to all grids thus cutting off the valves. To provide a netting signal if a separate receiver is used (and this is often desirable in contests) the double-pole switch in series with the relay contacts associated with the mixer and buffer stages is opened and operating bias applied to these valves only to produce a small signal in

the Rx. The relay connections are shown in Fig. 6.

Conclusion

Two models of this transverter have been constructed by different individuals and both worked first time. It would appear, therefore, that the design is repeatable provided that all the usual precautions associated with VHF circuitry and wiring are taken.

DISCUSSING THE MFJ CWF-2 FILTER

FOR CW OPERATION

THE MFJ Enterprises Model CWF-2BX CW Filter is one of these add-on devices intended to improve the owner's station for a particular purpose—in this case to provide an extra degree of selectivity for CW operation with a receiver designed mainly for SSB use, or with the popular SSB transceivers.

It was realised that the box is basically just an audio filter, and there were doubts as to whether it would prove worthwhile. It was arranged that we should have a production-line specimen, as supplied to customers.

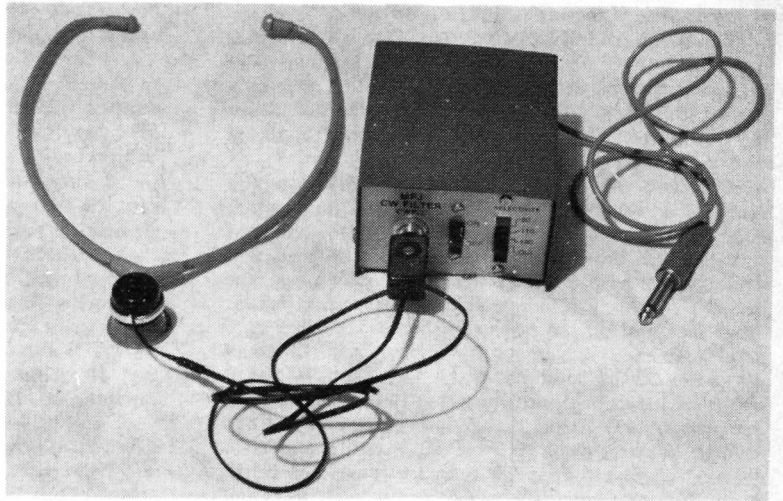
When it arrived it was realised at once that we had

indeed got one picked at random—there was a bow in the upper surface of the case, and the black screen-printing on the front and rear faces of the chassis were both smudged! A PP3 battery was sent along with the unit. The battery is fitted into a Terry-type clip, and the printed-circuit board is glued into the case, rather than being fixed in any more conventional way; this may raise a little problem when it comes down to servicing the filter electronics.

The Circuit

Circuit-wise, the arrangements are for a total of four active filters in cascade, components being selected to ensure that each stage peaks on the same frequency. One of the nicer things about this method is that the effective "Q" of the filter sections can be kept down to as low as 4, which means that this audio filter is one that does *not* ring every time it gets a good signal bang "on the nose." This alone differentiates the MFJ device

The MFJ CW Filter, with necessary attachments, and (below) the circuit diagram.



from the popular FL8 filter, or the one installed in the Eddystone 888, or indeed any of those using high-Q tuned circuits to generate the filtering.

Does it work? Sure, it works just like they say it does, with a centre frequency a little below 800 Hz. That does not say anything we couldn't have guessed! So, what about the way it works "on the job"—the hardest criterion any filter could be asked to meet.

To find out, it was tested with an Eddystone 888, a Codar CR-70A, and the station main receiver, a KW-2000B fitted with the VFO-4B adaptor and Codar Q-Multiplier. Each have headphone output sockets and so the move in each case was to just plug the output from the receiver into the MFJ filter at the terminals provided, using screened lead; the ground and signal terminals are very clearly marked so no difficulty should be raised there. Then the shack headphones were plugged into the jack at the front of the MFJ filter.

Results

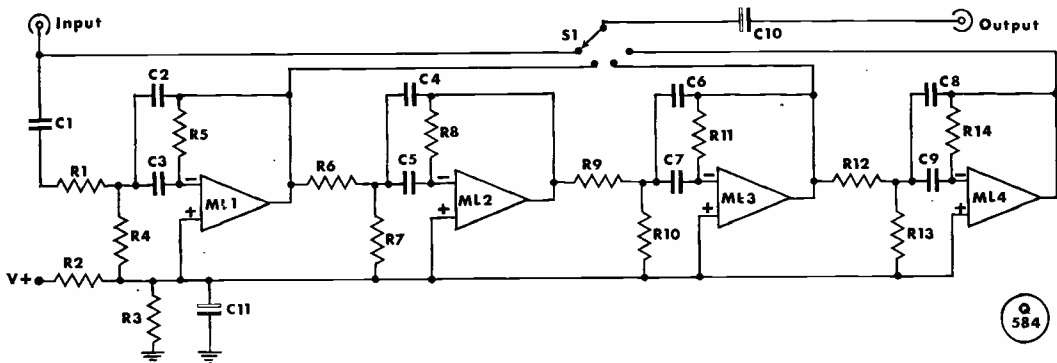
The only word that can be used about this filter once it is plugged in is *marvellous*. Of course, one needs to use selectivity so late in the receiver chain with care to avoid overload or blocking effects at the front-end of the receiver; but having said that the results are still

quite marvellous. For example, one can go right into the sidebands of one of these big fat interlopers on, say, Forty, and copy a DX CW signal right through it—a signal which is all but inaudible, appearing on the KW-2000B alone just as blips of tone when the BC station stopped for breath, but perfectly R5 through the MFJ filter. Adding the Q-Multiplier to the recipe made some further improvement, although of course, when the Q-Multiplier is in circuit one has to be careful always to use the correct sideband when on CW, a question that

Table of Values

C1 = .01 μ F	R4, R7,
C2, C3,	R10, R13 = 24,000 ohms
C4, C5,	R5, R8,
C6, C7,	R11, R14 = 1.8 megohm
C8, C9 = .001 μ F	ML1,
C10, C11 = 5 μ F, elect.	ML2,
R1, R6,	ML3,
R9, R12 = 680,000 ohms	ML4 = Micrologic μ A-747
R2, R3,	

Notes: Capacitors C2-C9 and resistors R1 and R4-R11 must be selected by test for same centre frequency. ML1-ML4 are Op. Amps. S1 is single-pole four-way.



does not arise if the MFJ filter is used alone.

The device comes in two forms: One, for use outboard as outlined here, and the other for building-in to the inside of the station receiver—but for this reviewer's money, keeping it in the "outboard" form has the advantage that it doesn't disappear when you come to sell the rest of the receiver!

The test was repeated with the Eddystone 888 receiver, and here the contrast between the built-in filter in the receiver and the outboard MFJ unit was very marked; the internal filter rang violently so that while it gave an apparently sharp selectivity curve, the output was all but unreadable, while under similar conditions and on the same signal, the MFJ box gave good clean easily-read copy. If anything, the Eddystone-plus MFJ combination was better than the KW-2000B on the LF bands, but once one got to 14 MHz and above, one immediately found the slight tendency of the 888 to drift between overs to be a mild embarrassment—although many old-time CW operators have coped with worse drift to recover their QSO's after each over and thought nothing of it. In fact, so long as one is operating within a system which lets the receiver monitor the outgoing signal, then one will cope with the problem quite automatically as one "tweaks" the receiver while sending, as long as you are working single-channel.

For split-frequency working the drift of the receiver would be embarrassing.

As for the Codar, one would never expect this Rx to be used as part of a transmitting station, and so the receiver was simply tried as an SWL device with the MFJ filter in the headphone lead. Here again the little box proved to be well worth its keep, although with this sort of simple receiver, one needs to use *any* control with care, lest the signal you are after just disappears out of the receiver pass-band, let alone the filter's.

The shack headphones are high-impedance, of the "stethoscope" variety, and so it was felt that a test with a low-impedance pair would be a good idea. A low-impedance stereo set plugged in—these have a DC resistance about 15 ohms—and they were found to work just as well as the high-impedance phones giving, if anything, a little more output.

Don't be fooled by the appearance or the size of the CWF-2. If you ever operate CW, this is one gadget you ought to have permanently around, either the plain board plugged permanently into and inside the receiver if you prefer to take your stuff on the speaker, or as an outboard unit if you prefer copy through the headphones.

The MFJ CW Filter, of American origin, is obtainable through Waters & Stanton, Hockley, Essex, as advertised in these pages.

BUILDING THE VENUS SS/TV MONITOR

SOME PRACTICAL NOTES ON A COMMERCIAL DESIGN

P. BURNETT (G4BLL)

SS/TV enthusiasts will have noted that the *Venus SS2 Monitor* is now available in kit form, for home construction. The writer, having been interested in SS/TV for some time, and having spent most of his free hours building and then trouble-shooting a Monitor described in the small booklet published by the B.A.T.C., decided that the time had come to invest in a Monitor with rather more sophisticated circuitry, to give improved noise immunity and weak-signal handling capability.

Accordingly the journey was made to Matlock to the premises of a well-known purveyor of the equipment and the writer became the proud owner of a box full of plastic bags containing "goodies" of all shapes and sizes. The first job on opening the box was to resist the temptation to unpack everything and get started. Instead both the operating and assembly instruction manuals were carefully studied and it was a great pleasure and relief to find that every stage of construction was described in great detail.

There are eight distinct stages of construction, in the following order:—

- (1) Assembly of the front panel controls to the small printed circuit board,
- (2) Assembly of the phono sockets to the rear panel,

- (3) Wiring of sub-assembly 2,
- (4) Cable harness wiring (a further stage of sub-assembly 2),
- (5) Assembly of the front panel and CRT,
- (6) Assembly of components to the main printed circuit board, and final assembly to form the finished unit.

For further clarification the instruction manual is supported by detailed drawings of each stage. The manufacturers obviously intend that the kit should be capable of being built by the most inexperienced of constructors.

Most of the components are packed individually, and each bag is fully identified with its contents—if some components *appear* to be missing, check the packaging for the next sub-stage (the writer found several resistors missing which were later found packed along with the IC's and transistors).

Both the main printed circuit board and the front panel control board are of high quality glass-fibre construction, and it is essential that components are soldered, using a low-wattage iron fitted with a "pencil" bit. This proved to be entirely adequate for all joints on the main p.c. board (with the exception of the soldering of the screw-heads where a 50 watt iron was used). As both boards are double sided, it is essential that solder is allowed to run through so that a good joint is made on both sides. Difficulty should not be experienced in soldering any components as there is plenty of room available even in the latter stages of assembly, and all or most of the component positions are actually marked on the board.

The writer did spend some time trying to locate C49 where this was not marked on the board; this could

have been avoided had the Addendum Sheet and drawings been studied a little more closely, as this "C49" is a later addition to the circuitry. There are ten modifications listed on the Addendum Sheet, most of which are of a minor nature—but be sure to study this sheet prior to commencing assembly. Because there are a number of modifications is no reflection on the quality of the instrument, since this is a quite normal and desirable state of affairs where a Company is continually progressing and updating its products.

This brings us to specific comment for each stage of construction:—

Figure 1: It is possible to locate the toggle and rotary switches in the wrong positions, therefore, pay particular attention to the instructions regarding orientation.

Figure 2: A little difficulty was experienced in tightening up the rather peculiar shaped 6-32 lock-nuts. Not having a 7/32in. spin-tight or socket wrench specified by the manual, a pair of long nosed pliers had to be used. Also, it is necessary to have a *Philips* screwdriver of the correct size and in good condition as the nuts are rather a tight fit on the screws and require a fair amount of torque to tighten them.

Figures 3 and 4: The wire lengths quoted were found to be a little excessive. However, start with the lengths given and trim back if necessary when the wire is in position.

Figures 6 and 7: See previous comments regarding C49. The manual states that each transistor, IC and resistor should be fitted and soldered at each step. However, it is better to fit all the IC's and resistors in position, then solder only one contact of each in turn until all are soldered. This method avoid excessive heat being generated internally which could damage these delicate components. Solder both sides of the board as mentioned previously.

Handle the board carefully after assembling the mains transformer and E.H.T. unit as these are both rather heavy components which can cause damage to the printed circuits through excessive flexing if the board is handled carelessly.

Alignment Procedure

A test tape is supplied with the kit to assist in the alignment of the unit. There are some reservations with regard to the use of this but it is good enough for the initial stages of setting up.

If the instructions are followed faithfully and these few notes observed, then on switching on the unit, after the initial warm-up period, some sort of raster should be visible on the screen. Fortunately, in the writer's case everything functioned correctly from the "off", it being only necessary to carry out the final adjustments in the sequence described.

Some of these adjustments require comment as it should be remembered that this unit was originally designed for use in areas having a 60-cycle mains supply, and it is this one single factor which can cause a few

slight problems since in the U.K. we are on 50 Hz. When peaking the Sync. Detector Band Pass Filter Tuning use a 1,200 Hz test tone from an accurate audio oscillator and *not* the 1,200 Hz tone recorded on the test tape as this will not be accurate, due to the reason given above. On peaking this circuit some 4.5 volts (instead of the 3.5v. stated) was found to be present at TP6. As this part of the circuit has been subjected to modification and the monitor functions perfectly, it can only be assumed that the measurement obtained is the correct one.

Adjustment of the Free Running Horizontal Sweep frequency (R47) will be incorrect if carried out as instructed, again due to the difference in mains frequency. However, this is easily adjusted by watching for an unbroken line and "clean" picture when using the "Spack-Mark" test tape, for example.

If the Monitor is finally set up using the circle pattern from the test tape supplied, it will be found that on receiving off the air pictures a blank border will be present on the right-hand side and bottom of the screen. Final picture positioning was accomplished, again by using the Space-Mark test tape.

There is only one feature with regard to this particular design of Monitor which, to the writer's mind, is unacceptable—and that is that the CRT heaters remain on when the units is switched off from the front panel. This is going along with the current trends in consumer T.V. manufacture to provide "instant" picture at switch-on. The writer intends to modify this at the first opportunity so that when the knob on the front panel points to "off", it means exactly what it says.

A desirable modification would also be to have the filter in front of the CRT screen removable to enable colour picture experiments to be carried out.

It is hoped that the would-be constructor will find these few notes of some little help, and if the same pleasure as experienced by the writer is obtained from the use of equipment well designed and built, then the effort is well rewarded.



" not the throttle, the IRT control on this rig "

FM Frequency Allocations

NEWCOMERS to the FM scene on 144 MHz may be unaware of the Channel Number system which is in wide-spread use in this country and on the Continent and is used to indicate certain simplex and repeater frequencies. Let us look at the latter first. Repeater *input* channels are distinguished by the prefix "R" followed by a number between 1 and 9 and are spaced at 25 kHz intervals between 145-025 MHz and 145-225 MHz. Thus, Channel R1 is 145-025 MHz, R2 is 145-050 MHz and so on. These represent the *input* frequencies of various repeaters. The *output* frequency is, in every case in this country, 0.6 MHz higher. As an example, GB3PI on R6 which means that the *input* frequency is 145-150 MHz and the *output* on 145-750 MHz. GB3LO is on R7, the *input* being on 145-175 MHz and the *output* on 145-775 MHz. GB3MH, the Malvern Hills repeater is on R7, GB3BC in the Bristol Channel area on R6 and GB3SN on R5.

Repeater *output* channels are given the prefix "S" followed by a number lying between 25 and 30 and are spaced at 25 kHz intervals up the band from 145-625 MHz to 145-825 MHz. They are related to the repeater *input* frequencies in that they are 0.6 MHz higher in each case. Thus, Channel R1 on 145-025 MHz is linked with Channel S25 on 145-625 MHz, Channel R2 on 145-050 MHz links with Channel S26 on 145-650 MHz, and so on. It may be noted here that 145-000 MHz bears the designation R0 but by common consent is used as an international mobile calling channel and will not be used for repeater operations.

The FM simplex channels lie between 145-500 MHz and 145-600 MHz, carry the prefix "S" followed by a number between 20 and 24, and are spaced at 25 kHz intervals within these limits. Thus, S20 is on 145-500 MHz, S21 on 145-525 MHz and so on. Since there is no supra-national decision on the use of these frequencies, their allocation for specific purposes varies throughout the country, but in the South a pattern seems to be emerging which puts S20 as the national mobile calling channel, and S21 to S24 as working channels, the implication being that, once a contact is established on the calling channel, it should be followed by a rapid QSY to S21 to S24.

There has also been a proposal in some quarters that S21 to S24 should be linked to the geographical Zones which were adopted as part of the last Band Plan. Thus, S20 replaces 144-48 MHz as a national mobile calling channel; S21 instead of 144-40 MHz as the Zone "A" working channel; S22 replaces 144-80 MHz and becomes the Zone "B" working channel; S23 instead of 145-20 MHz as the Zone "C" working channel and S24 replaces 145-60 MHz as the Zone "D" channel. However, these allocations have not by any means been universally adopted, and considerable use is made of 145-60 MHz in the North of England and in Scotland as a calling channel.

Finally, the following allocations have been made for repeaters "in the pipe-line"—GB3PO, Martlesham Heath; R3; GB3NA, Barnsley, R3; GB3CS, Forth/Clyde, R6; GB3HH, Buxton, R4; GB3ND, Bacton (Norfolk), R2. Other repeaters will be fitted into this pattern, the selection of channel depending mainly upon propinquity and radiation pattern overlap to avoid mutual interference.

VHF BANDS

A. H. DORMER (G3DAH)

Contests

Reports: Opinions appear to be sharply divided when reporting propagation conditions for the two-metre contest at the start of March. GD2HDZ, for example, assessed them as reverting to sub-normal and found it a struggle to get his 105 contacts in spite of the attractive call sign and the "two for the price of one" factor. Conditions in Northern G and GM were described as atrocious and several reports from the West Country suggest that, whoever else was having a ball, they were not. GI3JLA, none other than our old friend EI6AS, worked nine other GI stations on SSB, so activity was there, but little seems to have been heard of them beyond the NW coast of England. Unfortunately, your scribe could not get on for this event, but local reports indicate that things were not too bad—G8BQX/P in Sussex for example, made over 400 contacts including a fair bag of Continentals, and G3MOT (Oxon.) worked five GM on the trot. The Welsh portables seemed to be finding the activity—GW3UCB/P for instance made 509 contacts, 176 of them in the first three hours! It seems undisputed that propagation was better on the Saturday than the Sunday, particularly as far as Continental activity was concerned. There was quite a bit of contest activity on the mobile calling channel, 145.50 MHz, which ought *not* to have been there, and even the FM mobile working channels were pretty clogged at times. As they stand at present, contest rules do not proscribe this, but do bar contest working through repeaters. Results: 1296 MHz Cumulatives. G3JVL (Hayling Island) carried this off fairly easily with G6XM (Swindon) in second place. Several contestants made the point that these affairs should be timed to coincide with the evening lift period and this must surely be supported by regular users of the band. There is a significant enhancement of signal strengths after 2300z when the upper atmosphere has had time to cool down, which would add considerable interest to the event, and a couple of latish sessions a month for a short period are unlikely to deter those keen enough to come on the band in the first place. These remarks are equally applicable to 70 cm.

432 MHz Cumulatives. A disappointingly small entry for this event but, with the exception of the second session, conditions were pretty poor and many operators may have felt it useless to send in logs. Perhaps the answer is to have only one such Cumulative contest per year, and that in the summer when conditions are likely to be at peak. G3NHE and GD2HDZ were joint winners.

70 MHz Cumulatives. G3NHE carried off this event also and was followed by G3UKV/P, who topped G3XBY by two

points only. The 20 entries are a reflection of the increasing interest in this band, particularly SSB operation, but for many, seven sessions were too many.

Forthcoming Events: April 5/6 are the dates for the 70 MHz Open and SWL contest; April 27 for the 23 cm. Open and May 4 for the 432 MHz Open and SWL. The annual "G2CJN VHF Contest" organised by the Grafton Society takes place on May 3 between 2100z and 2400z and is open to all licensed amateurs. (*not* to Clubs). Further information from the contest secretary, G3ZKE, QTHR.

Repeaters and Beacons

The rate of licensing and commissioning of repeaters seems to have slowed down somewhat recently, but at last we have GB3LO on the air. After running in the beacon mode for some days the repeat facility was activated and considerable use is now being made of it. It has its teething troubles—the Low/High signal does not appear to be operating as it should (at March 10) and it would appear that the discriminator circuitry generating these indications is working too close a tolerance, since stations measured at only 1 kHz away are recipients of this reproof. Not that it appears to make the slightest difference to them in many cases! Intermittent impulse noise appears on the output channel from time to time which is not audible on the input channel and which only appears when modulation is present, and this is being investigated now.

Inevitably, newcomers to this mode of operation are finding it a bit difficult to get the hang of things—not waiting for the "K bleep" before transmitting is one catch, over-running time and over-deviation are two others. Inevitably also, there is a fair amount of indiscipline, due more to ignorance than intent, and not at all helped by the high level of activity. Perhaps "a G3VEH" in the London area could straighten things out to the same high level as he has in Cambridge! Just to remind you—input is on 145-175 MHz and output on 145-775 MHz and the access tone is 1750 Hz.

Several member countries of IARU Region 1 have sponsored a suggestion that 2m. beacons should be moved to around 144-90 MHz, 70 cm. beacons to the 432-90 MHz area and 23 cm. beacons to around 1296-90 MHz. Now this seems a very sensible idea since it would remove many of the present objections to having strong, static transmitters in a sub-band at present extensively used for CW and SSB DX working. Certain beacons, such as SK4MPI for example, are used for quite separate scientific studies and would benefit from QRM-free channels. Everyone seems to be in favour of beacons, except when they are sited on the doorstep, and a move to comparatively quiet parts of the bands would overcome this objection. This proposal, with which this Column concurs, is to be discussed at the Warsaw Region 1 IARU Conference on April 14 and, although the notice is rather short, readers' views would be most useful if they could be sent in before April 7.

VHFCC Awards

We are very pleased to welcome to the ranks of the Century Club this month GI3HXV for Belfast, doubly so in fact, because not only do we get but few claims from Northern Ireland, but also because his

Award No. 8 is for operation on Four Metres. Although licensed way back in November, 1952, 'HXV did not come on Four until mid-1961 using, at that time, an SCR522 (takes you back a bit doesn't it?) for CW/AM with a xtal-controlled converter and an Eddystone 640 receiver with a 4-ele. beam. This set-up was used for several years and later a Nuvistor pre-amp was added to an updated converter with an E88CC in the front end. At this time, all the HF gear was disposed of and activity geared exclusively to 4m., and this included mobile working with a B44. The latest rig consists of a solid-state Rx with CC converter with pre-amp. for 4m. and a mosfet converter for 2m. The antennae are a ground-plane for 4m. and a crossed dipole arrangement for 2m.—a beam replacement is on the way. The 4m. Tx is home-built, incorporates a transistorised modulator and runs 30 watts input on CW/AM. A "Cambridge" in the car boot supplies the RF for 4m. and a Vanguard is used for CW/AM on 2m. This claim includes some mouth-watering DX and such important "Firsts" on 4m. as GI/G, GI/GM, GI/EI, GI/GD and GI/GW. Congratulations, and let us hope that this Award will stimulate some more 4m. claims —from anywhere!

Now for two metres: First claim this month came in from Alan Pullen, G8BXJ (Bristol) who gets Award No. 234. He opened up on the band in October, 1968 and is now running a TS-700 to a pair of 10-ele. crossed Yagis. He is also active on 70 cm. with a FT-2FB into a varactor tripler and 46-ele. Multibeam (FM only) and on 23 cm. using the 70 cm. Tx and a *Micro-wave Modules* varactor tripler, his first contact being made in February of this year.

G8FOW operates from Sutton Coldfield and gains Award No. 235. He runs 25 watts of A3 from a Murphy "base station" and uses an EC-10 with *Sentinel* converter for reception. The site for the 8-ele. Yagi is at 600ft. a.s.l. but the take-off to the South is still poor.

Now to Roy Andreang, G4CMT of Hull. His Award is No. 236. He runs a Pye "Vanguard" with 32 watts of AM but has recently acquired a Liner and found the going much easier—as most people do when they change to SSB operation—and got his 100 QSL cards within four months. He also operates mobile and portable with this gear. Apart from the HF bands, for which he has full coverage, Roy is on 4m. with a converted "Cambridge" running 5 watts out to a 3-ele. Yagi and multiplies up from the Vanguard to get about 4 watts of RF into a 46-ele. beam on 70 cm. He has the distinction of being the only amateur to operate from the top of the Humber Bridge Tower, and this on his 50th birthday, too! He went up in the lift with the workmen and made 26 QSO's in 25 minutes (on Top Band). At 485ft. up, this should be a good site for VHF/UHF portable work, although getting a generator and all the gear up there might present a bit of a problem!

Finally, to GM4CXP of St. Boswells, Roxburghshire. Derrick Dawce gains Award No. 237 and must be congratulated on getting the 100 QSL's in under one year from commencement of operations on 2m. in March 1974. Most of the contacts were made with the Liner, with just a handful on 10 watts of AM. He has modified the Liner for CW, and uses a dual-output converter feeding an FR-50B to give him split-working facilities over the whole of the band. He is also

on 70 cm., running the Liner into a tripler to yield 5 watts of CW into the 46-ele. beam on 432.30 MHz, and on 4m. on Sunday mornings on fixed frequencies of 70.26 MHz and 70.32 MHz on CW.

So that's it for this time. We should particularly welcome claims for bands other than Two to stimulate activity where it is most needed.

The View from GM

Several reports are to hand commenting on the excellence of the early February openings. As here in the South, the best contacts seem to have been with the Scandinavian and N. German stations, with the DLØPR beacon on 144-140 MHz providing a splendid indication of propagation in that direction for days on end.

Scanning the latest reports, the impression is strengthened that these openings were much more useful in GM than in England. GM3VFB and GM3COX, operating portable from Tomtain (QRA XQ80d) on February 9, knocked up a massive tally of SM, OZ, PA and DL SSB contacts from their 1500ft. a.s.l. site between 1130z and 1730z. Signal strengths varied between RS57 and RS59+ both ways. The gear used was a Liner with an 11-ele. Yagi. An interesting feature of this operation was the localised ducting which they observed, the target area being an arc about 950 km from the site, 25° wide and bearing from 085°E to 110°W. Two good N/S contacts were those made by GM8FFX of Aberdeen with G3AWZ in Somerset and G8IWD/P in Dorset. 'FFX has already made 700+ QSO's with stations

THREE-BAND ANNUAL VHF TABLE
January to December, 1975

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	
G3DAH	24	2	41	6	26	7	106
GD2HDZ	15	2	44	9	21	5	96
G3ZMD	19	1	43	8	17	3	91
GM8FFX	—	—	69	14	—	—	83
G3FIJ	25	1	36	8	2	2	74
G3BHW	—	—	38	9	19	7	73
G3BW	—	—	48	10	10	3	71
G4BWG	13	1	47	9	—	—	70
G4BYP	18	3	40	8	—	—	69
G4CZP	—	—	53	13	—	—	66
G8FMK	—	—	26	2	25	4	57
G8EOP	—	—	34	11	8	3	56
G8ABH	—	—	29	4	17	5	55
GM4CXP	4	2	32	10	1	1	50
G8BKR	—	—	39	6	3	2	50
GW3KGD	—	—	41	8	—	—	49
G4DNJ	—	—	41	7	—	—	48
G8FWB	—	—	41	6	—	—	47
G8GHZ	—	—	33	6	1	1	41
G4AEZ	2	1	9	7	14	4	37
G5DF	16	1	Æ	—	16	2	35
G8HII/P	—	—	30	2	—	—	32
G4AIR	23	3	—	—	—	—	26
GW8HVP	—	—	19	4	—	—	23
G13JLA	—	—	16	5	—	—	21
G3EKP	3	1	6	3	—	—	13
G4BKY	—	—	8	2	—	—	10
G4AGE	—	—	—	—	3	1	4

Notes:

- Claims should be on the basis of the new County organisation given on page 97 of this issue.
- The Table shows claims to date from January 1, 1975 and will close on December 31, 1975.
- All claims should be sent to: "VHF Bands," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18 1RQ as soon as possible after the start of a new month.

TWENTY-THREE CENTIMETRES

ALL-TIME TABLE

Station	Countries	Countries	Total
G4BEL	28	7	35
G3DAH	22	7	25
G3JVL	20	4	24
G8ARM	20	2	22
G4BYV	16	6	22
G3COY	15	3	18
G3JXN	17	1	18
G4ALN	15	3	18
G3NHE	15	3	18
G8NOD	11	2	13
G3DF	11	1	12
G8FMK	11	1	12
G8FJG	7	1	8
G8ABH	7	1	8
G8AH	5	2	7
G8EOP	2	1	3

outside Scotland this year! GM3ZBE had a fine 70 cm. 4-way with G3LQR, G3ZEZ and PA0VZL at the end of February, although conditions in the South did not appear to be particularly good.

GM8FVC, GM8IZH and G4BTW have organised an unusual expedition for April 5, the aim of which is to operate on Two from the three highest peaks in Scotland, Wales and England. They start at midnight on April 4 from Ben Nevis, plan to be on Snaefell in I.o.M. between 1100z and 1300z on April 5 and on Snowdon at about 2100z. They will have SSB on 144-19 MHz and the special callsign GM3UKP has been applied for. "Mission Control" will be operated by GM8EUG, who will be able to keep callers advised on progress.

Outdoor 3 cm. operation, stimulated by GM3OXX *et al.*, has been severely hampered by the recent spell of bad weather, but the group are actively engaged in planning for the summer months. One certain target is the 151 km. path between Ben Ime and Cock Law. For the rest, the emphasis will be on super-refraction DX paths from sea level locations over non-optical distances. GM8OXX plans to take his gear to I.o.M. at the end of May.

GM8BZX and GM8BOW are two new converts to 2m. SSB, the former using the Limer and the latter a Multi-2000, so if you are looking for Angus . . . ?

Two-metre communication between Glasgow and Edinburgh has never been very easy, although GM5VG makes it appear to be, and GM6ZV was logged recently by GM6XI in Edinburgh at R556 when he was working into Dundee! The proposed change of frequency for the Angus beacon to around 144-95 MHz seems to have met with general approval in Scotland. At least it will release several kHz from the busy part of the band and also remove that powerful signal on 28 MHz for Oscar VII! GM3BQA has been doing very well via the satellite in Mode "A" and is reported to have developed a keen interest in 70 cm. with a view to having a go on Mode "B." (We were pleased to learn that, to the chagrin of the local undertakers and the delight of his friends, he has abandoned Hang Gliding!) Pleased also to learn that GM3BQO has recovered from a really nasty burn caused by getting his hands across the mains. He now has a hole in one finger about the size of an almond which he says matches the one in his head!

The Central Scotland FM Group Newsletter No. 10 contains a useful tip for getting on one of the 70 cm. FM channels. Obsolete 144-8 MHz xtals will come out, nominally, on 433-440 MHz, but can be pulled to 433-45 MHz which is a recognised channel. With a bit of fiddling with additional capacitors, they can also be put on 433-475 MHz and

433-50 MHz, both allotted channels.

Radio Teletype

It was good to see in the BARTG Newsletter for March, that David Evans, G3OUF, is conducting a regular feature on RTTY on 70 MHz and up and that he, and the Group, are pressing for a decision at Warsaw on the vexed question of speeds. Whilst 45 bauds is the standard for HF operation, a mix of 45 and 50 bauds appears on VHF, availability of 50 baud machines being perhaps an important factor here. To an outsider, it would certainly seem that standardisation of speeds and frequency shifts leading to greater compatibility would be a good thing. G3OUF, QTHR, invites comments on these and allied matters.

Dishonesty

Norman Fitch, G3FPK, feels very strongly, as does your scribe, about the growth of poor SSB signals on 2m, and the failure of some operators to give honest reports such as "You are S9+ and readability 2 due to your distorted signal which occupies 40 kHz of bandwidth" instead of "You are S9+ and really booming in." Now, this Column has often enough commented upon such signals and has suggested ways of ensuring that a clean transmission is radiated, but perhaps not enough emphasis has been placed on the necessity, if not the duty, of telling a chap that his transmission is lousy. He may not be aware of it if some fault has suddenly developed in the gear and would welcome his attention being drawn to it. He may not, or not be able to, monitor his own transmission, in which case he would be likely to welcome helpful criticism. He may even think that the garbage he is transmitting is quite acceptable. Whatever the reason, your scribe in many years of operating has never yet encountered the chap who resented honest criticism, and most operators welcome it. Shouldn't we all try to help clear up some at least of the mess?

Attenuation

Bill Hodgson, G3BW, of Whitehaven, Cumbria finds it very difficult to get out well on 2m, and 70 cm. from his QTH except to the West and Northwest where he has a sea path into GD, GI and GM. Many years ago it was reported that radio communication in that area was "difficult" and an investigation indicated as a probable cause the high iron-ore content of the Cumbrian hills. This finding was also applicable to other areas in the country. Although this explanation is more likely to apply to the lower frequencies, it would be interesting if any other evidence, *pro* or *con*, could be adduced by readers in a similar situation, which would show if the theory was equally applicable to VHF/UHF.

Variety

Referring to the comments last month about the AM/FM/SSB schism on Two, George Sassoon, G3JZK, points out that there is plenty of room on all our VHF bands for devotees of any of these modes as well as such *exotica* as EME, M/S, etc. so there should be little overlap of one mode to the detriment of another and no call for confining oneself to single-mode operations. Further, greater occupancy of any of the VHF bands will help to keep the commercials at bay and should be encouraged. Variety of operating modes is certainly one way of filling the spectrum and warding off interlopers.

He puts in a plea for less variety in the type of aerial used at fixed ground stations, and suggests that a standard polarisation should be agreed. There is much merit in this idea. Mobiles these days tend to use vertically polarised antennas, not just because they are aesthetically preferable to haloes but also because repeater antennae are vertically polarised. If we *all* used verticals any cross-polarisation loss would be minimised. However, most fixed stations these days are equipped with horizontally-polarised arrays which are all right for fixed station inter-operation but can cost 12 dB of loss when working many mobiles. One answer would appear to be to erect crossed Yasis and, although one must accept that one axis of polarisation can turn out to be something quite other at a remote receiving point, agree upon a standard left hand or right hand, circular polarisation. Tests have shown that there is little to choose between the results with LH or RH polarisation, provided that the same arrangement is used at both ends of the circuit, so let's stick our necks out and suggest we should follow the RH path if we are going to instal such arrays.

Oscars

As from March 1, permission to use descending orbits of Oscar VI has been withdrawn, except for Sunday mornings.

Oscar VII predictions for April:
April 5 Orbit 1762 Mode "A" 0753z 168-3°W.
April 6 Orbit 1774 Mode "B" 0652z 153-1°W.
Other orbits may be worked out as explained previously.

News Items

Although no reports are to hand of any outstanding British contacts during the recent series of EME tests, congratulations must go to PA0SSB and VK3AKC who completed a 23 cm. EME contact on February 23.

G3LQR raised DL and PA on 13 cm. during the early February lifts. He now has his 20ft. dish working for EME exchanges. G4BYV hopes to have 23 cm. SSB available shortly using the DJ9ZR 2m. driver mixing with 1152 MHz in a 2C39A. Higher up the scale, G4BKY in Dursley, Glos., is getting prepared for 3 cm. He has klystrons, an 18in. dish and polarplexers ready.

G8GLS (Preston) is reported to have worked I2SRR in Milan on SSB on February 24. G4CXP (Carnforth, Lancs) reports a 2m. lift into France on February 21/22 and another into DL and PA on February 28. GW8GLG should now be back on the 2m. air from Dyfed and looking for contacts on 144-225 MHz between 1800-1900 each night. He has 150 watts of SSB available. G4DOJ and others are taking 2m. gear to Andorra in June. We hope that they have better luck than previous expeditions have had. As a 4m. operator perhaps he can be persuaded to approach the authorities to let him use that band also, to take advantage of any Sporadic-E which may be around at that time! It is reported that PA0VV is trying to get his permission for the use of that band for SSB/CW.

Deadline

Deadline for the May issue is April 7, so please let us have your letters by then. Particularly, please send in your comments on the beacon proposals to reach us in good time. The address remains:—"VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM, M18 1RQ. Cheers for now and *vy 73 de G3DAH.*

COUNTIES OF THE BRITISH ISLES

ENGLAND		Berwickshire	<i>Brwk</i>
Avon	<i>Avn</i>	Buteshire	<i>Bute</i>
Bedfordshire	<i>Beds</i>	Caithness	<i>Cthns</i>
Berkshire	<i>Berks</i>	Clackmannanshire]	<i>Clack</i>
Buckinghamshire	<i>Bucks</i>	Dumfriesshire	<i>Dumf</i>
Cambridgeshire	<i>Cambs</i>	Dunbartonshire	<i>Dunb</i>
Cheshire	<i>Ches</i>	East Lothian	<i>E Loth</i>
Cleveland	<i>Clev</i>	Fifeshire	<i>Fife</i>
Cornwall	<i>Corn</i>	Inverness-shire	<i>Inv</i>
Cumbria	<i>Cumb</i>	Kincardineshire	<i>Kinc</i>
Derbyshire	<i>Derbs</i>	Kinross	<i>Kinrs</i>
Devon	<i>Devon</i>	Kirkcudbrightshire	<i>Kirk</i>
Dorset	<i>Dors</i>	Lanarkshire	<i>Lan</i>
Durham	<i>Dur</i>	Midlothian	<i>Mlthn</i>
Essex	<i>Esx</i>	Morayshire	<i>Mry</i>
Gloucestershire	<i>Glos</i>	Nairnshire	<i>Nrn</i>
Greater London	<i>GL</i>	Orkney Island	<i>Ork</i>
Greater Manchester	<i>GM</i>	Peeblesshire	<i>Pbls</i>
Hampshire	<i>Hants</i>	Perthshire	<i>Prth</i>
Hereford and Worcester	<i>H & W</i>	Reufrewshire	<i>Renf</i>
Hertfordshire	<i>Herts</i>	Ross and Cromarty	<i>Ross</i>
Humber-side	<i>Humb</i>	Roxburghshire	<i>Rox</i>
Isle of Wight	<i>IOW</i>	Selkirkshire	<i>Selk</i>
Kent	<i>Kent</i>	Shetland Islands	<i>Shetd</i>
Lancashire	<i>Lancs</i>	Stirlingshire	<i>Stir</i>
Leicestershire	<i>Leics</i>	Sutherland	<i>Suth</i>
Lincolnshire	<i>Lincs</i>	West Lothian	<i>W, Loth</i>
Merseyside	<i>Mers</i>	Wigtownshire	<i>Wig</i>
Norfolk	<i>Nflk</i>		
Northamptonshire	<i>Northants</i>	NORTHERN IRELAND	
Northumberland	<i>Northld</i>	Antrim	<i>Ant</i>
Nottinghamshire	<i>Notts</i>	Armagh	<i>Arm</i>
Oxfordshire	<i>Oxon</i>	Down	<i>Down</i>
Salop (Shropshire)	<i>Salop</i>	Fermanagh	<i>Ferm</i>
Somerset	<i>Som</i>	Londonderry	<i>Londy</i>
Staffordshire	<i>Staffs</i>	Tyrone	<i>Tyr</i>
Suffolk	<i>Sflk</i>		
Surrey	<i>Sry</i>	REPUBLIC OF IRELAND	
Sussex, East	<i>E Ssx</i>	Carlow	<i>Carl</i>
Sussex, West	<i>W Ssx</i>	Cavan	<i>Cav</i>
Tyne and Wear	<i>T & W</i>	Clare	<i>Clare</i>
Warwickshire	<i>Warks</i>	Cork	<i>Cork</i>
West Midlands	<i>W Mids</i>	Donegal	<i>Dnlg</i>
Wiltshire	<i>Wilts</i>	Dublin	<i>Dub</i>
Yorkshire, North	<i>N Yorks</i>	Galway	<i>Gal</i>
Yorkshire, South	<i>S Yorks</i>	Kerry	<i>Kerry</i>
Yorkshire, West	<i>W Yorks</i>	Kildare	<i>Kild</i>
		Kilkenny	<i>Kilk</i>
WALES		Laois	<i>Laois</i>
Clwyd	<i>Clwyd</i>	Leitrim	<i>Leit</i>
Dyfed	<i>Dyfed</i>	Limerick	<i>Lim</i>
Glamorgan, Mid	<i>M Glam</i>	Longford	<i>Long</i>
Glamorgan, South	<i>S Glam</i>	Louth	<i>Louth</i>
Glamorgan, West	<i>W Glam</i>	Mayo	<i>Mayo</i>
Gwent	<i>Gwent</i>	Meath	<i>Meath</i>
Gwynedd	<i>Gynd</i>	Monaghan	<i>Mongh</i>
Powys	<i>Pwys</i>	Offaly	<i>Oflly</i>
		Roscommon	<i>Rosc</i>
SCOTLAND		Sligo	<i>Sligo</i>
Aberdeenshire	<i>Abdn</i>	Tipperary	<i>Tip</i>
Angus	<i>Ang</i>	Waterford	<i>Wat</i>
Argyllshire	<i>Argl</i>	Westmeath	<i>Wmth</i>
Ayrshire	<i>Ayr</i>	Wexford	<i>Wex</i>
Banffshire	<i>Bnff</i>	Wicklow	<i>Wklw</i>

For Amateur Radio purposes, the following also score as separate counties and may be claimed as such:

Alderney	Jethou
Guernsey	Lundy Is.
Herm	Outer Hebrides
Inner Hebrides	Sark
Jersey	Scilly Is.

The two Channel Islands groups—Jersey (GC) and Alderney, Guernsey, Herm, Jethou and Sark together (all GC) also score as separate *countries*, since Jersey and the Bailiwick of Guernsey (which includes Alderney, Herm, Jethou and Sark) are in fact separate administrations, though all Channel Is. take the same prefix.

Similarly, the Isle of Man (GD) can be claimed as both county and country.

The Scottish counties (GM) will be workable as listed till December 31 this year, though the new county groupings in Scotland—"administrative areas"—came into force this April.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for May issue: April 3)

ONCE in a while, one comes across something of wider-than-usual point in a Club newsletter, justifying some comment in this space. This month we have two such items in the Chiltern offering. Perhaps of most general interest is their way of finding-out what people in the group want, and what sort of people they are in terms of other hobbies and activities, by way of a thirty-question handout sent with the newsletter. Even if only a few members are bothered enough to answer it, the committee will have an enormous bulk of information from which, hopefully, they can improve an already successful outfit.

The second point is that the Chiltern newsletter is quite prepared to accept and print controversial letters on subjects of national Amateur Radio interest. One such, in the current *Carrier*, concerns the old Phone/CW controversy, but from a new angle. The writer feels that the universal use of SSB at Special-Event stations does not present a balanced picture of the amateur interest. As he says, the reason usually given is that "that public do not understand CW." How true that is, and how wrong is this approach! If one has a display and a station, a change to CW, with the code coming out of a speaker, will *always* bring people to a stop, as this writer has on several occasions been able to demonstrate. The reason is quite simple—speech coming out of a speaker is "old hat" to people who recall Tony Hancock on TV, and listen to portable radios or a car set. Another speaker blethering away is unlikely to bring them to a stop—but if it starts to bleat out dits-and-dahs the noise is *different* and attracts attention. And it is odd how many people can read the stuff, anyway, as was demonstrated to the writer only a few days ago when a licensed amateur colleague was amusing himself at lunch-time by testing out a home-brew IC CQ caller which, when the button was pushed, churned out a beautiful call into an audio monitor running at very low level. It brought people round it like flies round a jam-pot—even the boss came out of his office and commented on the easy copy the thing made at high speeds but didn't like the monitor's clicky output!

* * *

On a more serious subject: For some time, we have been intending to comment on complaints reaching us from visiting lecturers about the off-hand way they are received at some Club meetings. In most cases, they have accepted an invitation involving a long journey, often in the dark—only to find on arrival that there is nobody to meet them, they are not properly introduced, are not offered refreshment and no particular preparation has been made for the lecture, such as some sort of dais to sit at or speak from.

At the end of the evening, they are left to grope their own way out to the car-park without even a "thank-you"—and there is never any suggestion that petrol-money might be reimbursed.

Of course, many Clubs do *not* merit a rebuke of this sort—they treat their visiting lecturers as guests and accord them all the consideration they would show a guest in their own home. (And a Club meeting is, temporarily, in the "home" of all members).

But the unfortunate fact is that certain very good lecturers will no longer accept speaking-invitations because of the cavalier way they have been treated on, not one, but several occasions at Club meetings to which they have been asked to give a talk.

And now to happier topics—the Club reports for this month.

The Specialists

The first one to appear in this group is the G-QRP Club, which, as its name implies, caters for the many amateurs who have an interest in operating with low power rigs. The current *Newsletter* carries modification data on the HW-7, aerial tuner details and a very good article on Aerials, also reprints of various items of interest.

B.A.R.T.G. handles the interests involved with the teleprinter or teletypewriter used on the amateur bands, by way of technical articles, details of the contests run in the RTTY mode, advertisements of special interest to them and so on. Details from G3OZF, as Panel. Their annual convention takes place on May 24, at Meopham Village Hall, Kent, the general arrangements being much the same as last year.

West Country

Quite a fat clip from this part of the world, with Yeovil in pole position. They can be found every Thursday evening at the Youth Centre, 31 The Park. On April 24 there will be a tape-lecture by G3IOR on DX Working, Aerials and Propagation.

Hereford assemble themselves into a coherent entity on the first and third Friday of each month, the venue for this process being the Civil Defence Hq., Goal Street. We are without details of the April goings-on, the *Newsletter* we have to hand not carrying the details that far forward. However, they seem, on the evidence of their past activities, to be a pretty good group.

Now Newquay, who allot alternate Wednesdays to be at Treviglas School; on April 2 they will be told how to set up a Colour Television, and on the 16th the talk will be on the useful art of Printed-Circuit Photo-Copying—they should put this one on Tape and offer it to other Clubs! April 30 rounds off the month with a talk on Model Control by Radio.

Still in Cornwall, just, we have Saltash making a welcome return to the lists after quite a long silence. G4UZ will be talking to them on April 4, and on April 17 they have a visit to the Planetarium at Plymouth Polytechnic, starting sharp at 7.45. The normal date would then be April 18, but this one is given the miss. The Hq. address is Burraton Toc-H Hall, Warraton Road, Saltash.

April 26 is the big date for Torbay if being the AGM to which all members are asked to attend. Looking on a bit to May 31, G2WS will be coming (all the way from Weston-super-Mare, incidentally) to talk about Plotting Oscar. For more details on the group, try G3UIQ, as Panel.

It seems quite a while since last we heard from the North Devon chaps, but they are still going strongly, and have just had their fifth AGM. A slight change in the arrangements is noted in that the second Wednesday in each month is at G4CG, "Crimnis," High Wall, Sticklepath, Barnstaple, while the fourth-Wednesday session is, at G2FKO, 38 Clovelly Road, Bideford; in both cases the start is timed for 7.30.

It is AGM time on April 3 for Cornish, at the SWEB Clubroom, Pool, Camborne, and they hope it will be followed for the rest of the evening by a talk on Integrated Circuits by G4CLF, of Plessey.

Midlands Area

Inter-club activity is featured at South Birmingham by way of the first leg of a Quiz contest between them and the Bromsgrove chaps—April 2, at Hampstead House, Fairfax Road, West Heath, starting at 8.0 p.m.

At Worcester even their usually-pessimistic newsletter compiler has to admit the group is doing well—and if the reports on activities covered in his other pages are taken into account there seems to be *lots* of interesting things going on. On April 7 they have provisionally allocated time for a talk on D/F, and on the 19th they have their Construction Contest. Normal meetings are held at the Old Pheasant Inn, New Street, Worcester.

At Derby, normal Club meetings are on Wednesdays at 119 Green Lane, in Room 4. April 2 features a Surplus Sale; the 9th a talk by G8AMD on Repeaters; a Film Show is booked for the 16th; and on the 23rd there is the first D/F Practice. Finally on April 30, they will be having a "Technical Topics" discussion. In addition, the Club room is open on Monday evenings for an "Activity Night" when there are various things being done to the Hq. itself for the benefit of all, and maybe shortly a Club project if enough interest is shown.

Incidentally, the Derby chaps seem also to be doing the lion's share of the work at Nottingham too, for April! April 10 is a Forum evening, and April 24 is the AGM and presentation of trophies. The Interference talk on April 3 is by Derby's G2CVV and the Films Show on the 17th is by their G3FGY—we can only hope Nottingham return the compliment! The Nottingham Hq. is at Sherwood Community Centre, Mansfield Road.

Every Wednesday evening sees the Mid-Cheshire lads converging on Verdin Comprehensive School, Grange Lane, Winsford, where there is a "Technical Activities Centre" at the rear of Verdin Buildings. Here they have R.A.E. and CW classes from 7.30 to 8.0 p.m., when the

PLEASE NOTE!

Closing dates for this feature for the next few months will be: April 3, May 8 and June 5. These are final dates after which material cannot be taken in but will be held over for the month following.

main activity comes on. On Easter Monday they are having an outing to Tatton Park near Knutsford, followed by a film show on April 9, and a Surplus Sale on the 16th. Converters for Seventycems is the topic for the 23rd, and at the other end of the spectrum Top Band transverters appear against April 30.

Spalding have a fine Newsletter thanks to the work of G400; and the Secretary writes in as well to tell us that they are booked in at the Ship Albion on April 4 for a Constructional Contest, while May 2 sees them at their other Hq. at the Teachers Centre, Knight Street, Finchbeck, eliminating, hopefully, Murphy's Law from their Tuliptime Rally two days later.

April 15 is Club Night for at Solihull Manor House, High Street, for a Junk Sale; and on the very next evening a coach leaves the Civic Car Park at 7.30, headed for the "Glover's Needle" at Warndon, Worcestershire, where they have a buffet meal laid on, with nine-pin skittles against the wives and girl friends

The Cheltenham (RSGB) Newsletter nearly always has some useful snippets in it, and this time they list tinner copper wire gauges against fuse ratings for various currents between 3 and 100 amperes—ideal for hanging up over the house fuses! The chaps will be at the Royal Crescent Hotel, Clarence Street, Cheltenham on the first Tuesday in each month

Sale Moor Community Centre, Norris Road, Sale is home to the South Manchester formation every Friday; in addition the VHF and D/F interest is served by getting together on Mondays at the Club shack in Shady Lane, Manchester, 23. Reverting to the Friday affairs, April 4 sees G3TNQ discussing a Top Band Transverter, and a Club quiz fills up April 11; then G3VSA puts them wise about OSCar on April 18, and on the 25th there is a Night-On-the-Air.

The Wirral Newsletter mentions the difficulty of finding outside speakers—a topic on which we have already commented in this piece! This problem is one that faces almost all groups, and in particular those in the remoter parts of the country—like Wirral, to a

large degree, they use the talent they have within themselves. On April 2, G3UJX will be talking about the NE555/556 IC Timers, and on the 11th all cares are forgotten at the annual dinner dance. This leaves April 16 for a discussion on NFD. Hq. is at the Sports Centre, Grange Road West, Birkenhead and normally they are there on the first and third Wednesdays of every month.

Up North

Strange that there should be so few regular reports from this part of the world, when we know there are so many groups—perhaps the local cannibals eat their scribbles! Whatever the reason, we could use more reports from both Northern England and all of Scotland and the Isles.

Our first one almost falls in the Midland group, Bury & Rossendale, where the lads assemble at the Mosses Community Centre, Cecil Street, Bury, on the second Tuesday in each month. At the time of the report nothing had been fixed up in the way of a lecture, but there was a strong hint that something of interest was, as it were, in the pipeline to fill the gap. No doubt G8ECM would be delighted to pass on the latest information—see Panel for his address.

There was a Wigan club just after Hitler's War, but it subsequently founded; now, however, it has been brought back to life, thanks in part at least to an Hq. at Poolstock Cricket Club, in Keates Avenue. Here they have bookings on the first and third Wednesdays for a mainly social evening, and the second and fourth Tuesdays for more practical activities, these last being made possible to the building of an extension to the premises.

One is saddened to hear that G3MDW, the long-serving secretary of Northern Heights, has been out of the circuit since last April, due to personal disabilities—but he is back again stirring the gang into life at the Peat Pitts Inn, Ogdon. April 2 is the AGM, with a committee meeting on the 9th. On April 16 there is a Junk Sale with G8CB doing the honours with the hammer, and on the 30th

Names and addresses of Club Secretaries reporting in this issue :

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3-8LB.

BARKING: J. R. Wiles, G8JEQ—address wanted.

B.A.R.T.G.: D. Beattie, G3OZF, Churchway, Stone, Aylesbury, Bucks. (0296-74 354).

BEDFORD: S. Felts, G8FMG, 6 White Lodge Close, Kempston, Beds. (Bedford 852414).

BISHOPS STORTFORD: C. Harlow, G8BTK, Thorn Cottage, Old Mead Lane, Henham, Elsenham, Bishops Stortford, Herts.

BURY & ROSSENDALE: M. Howarth, G8ECM, 11 Worthington Avenue, Heywood (65911), Lancs.

CHELTENHAM (RSGB): G. D. Lively, 131 Mandarin Way, Wymans Brook, Cheltenham (34785), Glos.

CHILTERN: F. S. G. Rose, G2DRT, 84 Cock Lane, High Wycombe, Bucks. (Penn 4240).

CORNISH: H. Webber, G3XTF, Crandale, Gillyfields, Redruth (6905), Cornwall.

CRAY VALLEY: P. F. Vella, G3WVP, 78 Hurst Road, Sidcup.

CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London SE23-3BN. (01-699 6940).

DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby (21931), DE3-7GE.

ECHELFORD: A. Wenham, G3ZXA, 28 Pinewood, Sunbury-on-Thames (86440), Middx. TW16-6SG.

HARROW: L. Light, G3KDL, 22 Chippinham Avenue, Wembley, Middx. HA9-6HQ. (01-902 2570).

HEREFORD: S. Jesson, G4CNY, 181 Kings Acre Road, Hereford (3237).

HULL: F. Moss, G8GDD, 334 Ings Road, Hull (76603), North Humberside.

MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead (20107), Berks.

MAIDSTONE YMCA: G. H. Taylor, G4BNI, 26 Valley Drive, Loose, Maidstone (43976), Kent.

MID-CHESHIRE: A. Greenwood, G3SIQ, 83 Ash Road, Cuddington, Nr. Northwich, Cheshire.

NEWQUAY: B. Pearce, G8GOR, 153 Henvor Road, Newquay, Cornwall.

NORTH DEVON: H. G. Hughes, G4CG, Crinnis, High Wall, Sticklepath, Barnstaple, Devon.

NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogdon, Halifax.

NORTH KENT: R. Wells, G4ARQ, 12 Bulbank Road, Belvedere, Kent.

NOTTINGHAM: S. F. Claringburn, G8HLD, 49 Fernleigh Avenue, Westdale Lane, Nottingham NG3-6FN.

G-QRP: Rev. G. C. Dobbs, G3RJV, 61 Park Street, Cleethorpes, South Humberside, DN35-7NG.

REIGATE: F. H. Mundy, 2 Conifer Close, Reigate (43130), Surrey.

SALTASH: I. Forse, G4DHA, Penlan, St. Stephens, Saltash (3219), Cornwall.

SILVERTHORN: C. J. Hoare, G4AJA, 41 Lynton Road, South Chingford, London E4-9EA. (01-529 2282).

SOLIHULL: L. G. Boswell, G4AEJ, 170 Kestrel Avenue, Yardley, Birmingham, B25-8QX.

SOUTH BIRMINGHAM: R. J. Thompson, G8GDZ, 23 Fox Hill, Selly Oak, B29-4AG. (021-472 0533).

SOUTHDOWN: A. Seabrook, G3ZQB, 6 Harebeating Gardens, Hailsham, Sussex, BN27-1JT.

SOUTHGATE: B. Oughton, G4AEZ, 48 Morley Hill, Enfield, Middx. (01-366 7166).

SPALDING: R. Harrison, G3VPR, 38 Park Avenue, Spalding, Lincs., PE11-1QX.

STAR: T. Leeman, G4BUU, 115 Asket Drive, Seacroft, Leeds LS14-1HX.

STEVENAGE: C. Barber, G4BGP, 473 Canterbury Way, Stevenage, Herts SG1-4EQ.

SURREY: S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon. (01-657 3258).

SUTTON & CHEAM: A. Keech, G4BOX, 26 St. Albans Road, Cheam, Sutton, Surrey.

THAMES VALLEY: R. J. Blassdell, G3ZNV, 341 Walton Road, West Molesey, Surrey KT8-000. (01-432 2343).

TORBAY: M. Yates, G3UIQ, Top Flat, 23 Waverley Road, Newton Abbot (3025), Devon.

VERULAM: H. Young, G3YHY, 93 Leaford Crescent, Watford, WD2-5JQ.

WAKEFIELD: S. Wright G4CPE, 8 Longfield Terrace, Batley Road, Wakefield, WF2-9PR.

WIGAN: A. Byers, G4CUF, 2 Beechwood Avenue, Ashton-in-Makerfield, Wigan (78443), Lancs. WN4-9L.

WIRRAL: H. I. Crofts, G3DLF, 3 Barmouth Way, Wallasey, Cheshire. (051-638 2515).

WORCESTER: B. A. Jones, G8ASO, 12 Woodside Road, Larkhill, Worcester (351565) WR5-2EG.

YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil.

YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

there is a social evening with wives and girl-friends. It should be mentioned that G3MDW conducts all his activities from a wheelchair.

Wakefield have a regular booking at the Youth Centre, Ings Road. For April, the dates are April 15 when they have an AGM, and April 29—this latter has the intriguing title of "See How they Run" and the exact details are a closely-guarded secret of G3WWF, the only clue being that it will be, at least loosely, connected in some way with radio! Be there to find out!

Hull also have a connection with Ings, in the address of their secretary, G8GDD—see Panel. One wonders to what it refers, as Hull and Wakefield are by no means near neighbours. However, to business. The Hull group Hq. is at 592 Hessele Road, and here they have, on April 4, a talk by G8IED on Easy Test Equipment. G3PQY takes over for the 11th, to talk about the "Elements of Condensers"—no doubt these are for turning steam into water! Back to G8IED on April 18 for a talk on Electro-plating, and on April 25 the activity known as VLF (Very Low Frequency communication) will be explained by G3WWD.

Up at York the lads have been doing quite a bit in the way of extra-mural activities, the latest being a trip to the theatre to see G2DQU, Brian Rix, perform. For the current detail we have to refer you to G3WVO, see Panel, albeit the letterhead tells up that the venue is at the British Legion Club, 61 Micklegate.

The main item for April at the Star Club in Leeds is on April 16, and is a Junk Sale, but they foregather every Wednesday evening at the New Inn Hotel, Bramley Town Street, Bramley, Leeds 13.

By the time this comes to be read the West of Scotland group will have ceased to be able to use their normal Hq. This being the case, before any attempt is made to go to any of their meetings, a contact should be made either with Graham Bleakley on *Cumberland* 26922, or GM3RHR, *QTHR*, the hon. secretary, on 772 3085.

Down South

A good start would be to pick up the Cray Valley note—from which we see they have the usual first and third Thursday routine at Eltham United Reformed Church Hall, 1 Court Road, Eltham, London S.E.9; this gives April 3 for the Annual General Meeting and the 17th for an Informal.

A crew who rarely if ever miss our 'bus as far as publicity goes are Yerulam, who entertain G4CLF of Plessey on April 16, at the Market Hall, St. Albans.

British Red Cross Hall, The Crescent, is where the Maidenhead group get together. On April 3 they have a panel on Operating Procedures and on the 15th G3DOJ will be talking about Simple Receivers and Converters.

At Acton, Brentford and Chiswick they have G3CCD discussing the first part of a Digital Frequency Meter he has designed. This is on April 15 at 66 High Road, Chiswick.

One is surprised by the *Crystal Palace Newsletter* this month—for the first time your conductor can remember Secretary G3FZL says that the detail for April 19 is "to be announced." Nonetheless, we know the date, and the venue is, as always, Emmanuel Church Hall, Barry Road, London S.E.22.

Bishops Stortford will be getting together as usual on April 21, at the British Legion in Windhill, but the detail is not yet available.

On to Southgate where our current issue of the *Newsletter* is pretty well behind with the news(!) giving as it does the January and February dates. Not to worry though, as it also says that there is a regular routine, namely to assemble at the Scout Hut in Wilson Street, Winchmore Hill Green. Any more details which may be wanted can be obtained by contacting G4AEZ, as Panel.

Bedford's secretary has been away from home for a while and so got a bit out of routine; but he didn't forget, which is the main thing, so we can say that it is a weekly get-together, each Thursday evening in the United Services Club, on The Broadway.

* * *

For Silverthorn, the current *Newsletter* is on a historical kick at the moment thanks to material from G2HR—how many of you readers could draw a Flewelling circuit or even say what it was used for? This old scribe could! They get together on a weekly basis at Friday Hill House, Simmons Lane, Chingford, the shack being inside the tower, with the two-metre aerial and rotator on top. Friday evenings are the ones to keep clear in your diary, and G4AJA (as Panel) should be contacted for the very latest gen.

There are plenty of things going on at Barking: on Mondays to Thursdays in each week the Hq. is open, at Westbury Recreation Centre, Westbury School, Ripple Road. Mondays for construction, Tuesdays for Morse tuition, Wednesdays for the Club station, and

the meeting proper on Thursdays. This suggests a nicely-balanced programme.

April 22 is the AGM date for Sutton & Cheam, the venue being the Library, Cheam; in addition we hear they are thinking of running an informal session during April, which is something that G4BOX, see Panel, can no doubt explain if you contact him.

North Kent folk please note: The group has changed Hq. and is now to be found at St. Mary's Institute, 2 North Cray Road, Bexley, right opposite St. Mary's Church on the bend of the road; it is a converted house with the front door right on to the pavement. Get into Bexley village, bear left in the village and almost immediately right again into the public car park. The Hq. is a couple of hundred yards away, past the garage and the Old Mill restaurant. The change of Hq. has not made any changes needful in the routine, which is still to get together on the second and fourth Thursdays of the month.

Reigate have their AGM on April 29 at St. Mark's Church Hall, Alma Road. This is preceded on April 1 by the informal at the "Marquis of Granby," Hooley Lane, Redhill, and the annual dinner and dance on the 11th. Further details on any of these can be obtained by getting in touch with the Secretary—see Panel.

Thames Valley is the ambitious title of the group based in the Hampton Court area, the venue being the small room at King George V Hall, Portsmouth Road, Esher, and the date the first Wednesday in every month; April's subject is Printed Circuits, by G3JJP.

For Chiltern we see the dates are to be April 1 for the Informal, and April 23, for which a programme was being arranged at the time they wrote. The venue is the canteen of the Ernest Turner works in Totteridge Road; visitors are asked to use the Works car park, which is specially opened up for the meetings and has its entrance in Gordon Road.

* * *

April 3 and 17 are the dates for Stevenage, at the Hawker Siddeley Dynamics Works, nothing being said about a programme which this old scribe knows is in the makings. But there is an intention to run a trip to the Drayton Manor Rally "for a lot of goodies," as their scribe has it.

You can't go much further south than Southdown without swimming. They having their Hq. at the Victoria Hotel, Latimer Road, Eastbourne, on the first Monday in each month—for April G8CVV and G8CFZ will tackle the question of Aerials and Propagation. A look forward to May shows them to be running the Annual Junk Sale.

Surrey look to have the third Tuesday as their regular date at the "Ship Inn," High Street, Croydon, and April turns out to be the most important of the year, namely the AGM. Don't miss it!

"Still booming" says Maidstone YMCA's secretary, G4BNI, his beginners' class now having been augmented by a couple of YL's; and the meeting turnouts are up, too. For the April 4 meeting, the subject is SS/TV, starting at 8.30 p.m. On the 11th there is the usual Beginners' Evening under G3XUN, and on the 18th a discussion on the Club Mobile Rally takes up all evening; and on the 25th, G3XUN and his beginners have the limelight again. Venue is Maidstone "Y" Sports Centre, Melrose Close.

* * *

Weekly is also the situation at Harrow, in the Sea Cadets Hq., Woodlands Road, Harrow. G3HB will be talking about Awards on April 4, and April 25 is down for G2UV to discuss "The Sounds of the Twenties," which should be of considerable interest; the other two evenings, April 11 and 25, are both Practicals.

After "dropping off" a bit recently, the latest *Echelford Newsletter* is right back in form, with a bit of technical stuff, a bit of controversy, and very easy-to-read print. Right at the top of page 1 is the place to look for the details—second Monday and last Thursday in each month, the Hq. being at St. Martins Court, Kingston Crescent, Ashford, Middx. April 14 is a Surplus Sale, and on April 24 a representative of Hewlett-Packard is coming along to talk about Opto-Electronics. It makes the mind boggle!

Late Ones—And Deadlines

Because of pressure on space and the tight production schedule to which we have to work, it is just not possible to write in Club reports received after the deadline we give each month, always set to the latest we can accept.

Yet month after month, we could list Club secretaries who send in reports, marked "Urgent," or "For immediate attention, please," or "Sorry, I was not able to post sooner"—in the hope and in the supposition by so saying their offering could escape the net and be written in at the last moment. It can't be. The Deadline is the Dead-

line. Even this is being written just as the machines begin to turn "tomorrow morning."

The deadline for the next issue of "Month With The Clubs" is Thursday, April 3. For the next it is May 8. Address to: "Club Secretary," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18 1RQ. See you next month and we hope on time.

For this month's Reader Small Advertisements, see pp. 112-118

NEW QTH'S

This space is for the publication of the addresses of holders of new call signs, or changes of address, in EI, G, GC, GD, GI, GM and GW of stations not already listed. All addresses published here will appear in the U.K. section of the American "CALL BOOK" in preparation. Please write clearly and address on a separate slip to QTH Section. Be sure to give correct County designation and post-code. Address items for this space to: "New QTH Page," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18 1RQ.

EI1CT, T. J. O'Gorman, Ivy Villa, Borris, Co. Carlow, Eire.
 G4DHE, A. Henry, 27 Longworth Avenue, Ceppull, Chorley, Lancs., PR7 4PJ.
 G4DHF, D. Johnson (ex-G8HAE), 3 Ethelstone Road, Grimsby (55354), South Humberside.
 G4DMU, Dr. T. G. Scott, Keeper's Cottage, Cot Road, Illogan, Redruth, Cornwall.
 G4DMV, Miss K. H. Scott, Keeper's Cottage, Cot Road, Illogan, Redruth, Cornwall.
 G4DNE, G. F. D. Swaysland (ex-G8HWR), 11 The Square, Boothfold, Waterfoot, Rossendale, Lancs., BB4 9BD.
 G4DOG, T. H. H. Illingworth, 7 St. Anns Crescent, Carlisle, Cumbria, CA3 8QA.
 GM4DOZ, T. Findlay, 8 Middlefield Drive, Muirkirk, Ayrshire, KA18 3RP.
 G4DPL, R. G. Gleave, 2A Cecil Avenue, Skegness, Lincs., PE25 2BX.
 G4DFP, P. J. Slade, 65 Hurley Road, Greenford, Greater London, UB6 9HA.
 G4DRT, D. A. Rhind-Tutt (ex-G8FBH), 203 Western Avenue, London, W3 6RL.
 G4DSD, R. Woodman, 1 Shirley Gardens, Sunderland, Tyne & Wear, SR3 1YD.
 G4DSQ, R. C. Coombe, 21 Glenmore Road, Stockport, Greater Manchester, SK1 4ED.
 G4DSR, B. Irwin, 95 Turncroft Lane, Stockport, Greater Manchester, SK1 4AR.
 G4DTB, M. Bryan (ex-G8IMG), 127 Leadbury Road, Hereford (4971), HR1 1RQ.
 GM4DTH, P. J. Dick (ex-GM8HHC), 89 Trinity Road, Edinburgh, EH5 3JX.
 G4DTS, R. W. Holland, 90 Brook View Drive, Keyworth (5458), Nottingham, NG12 5RA.
 G4DUD, F. Hutchinson (ex-G8CBW), 195 Washington Road, Lansdowne, Sheffield (734144), South Yorkshire, S11 8DQ.
 GM4DVG, J. N. Douglas (ex-GM8EUS), 49 Barcalaine Avenue, Chryston, Glasgow, G69 9PB...
 G4DVR, J. J. Life, 78 Elmstead Gardens, Worcester Park, Surrey, KT4 7BE.
 G4DVV, A. E. Lake, 7 Middleton Close, Nuthall, Nottingham. (Tel: 0607-43 2509.)
 GM8CMV, J. J. Creedy (ex-G8CMY), 4 Abbotsford Place, St. Andrews (3349), Fife.

G8ISU, N. Whittingham, 7 Ridgedale Mount, Pontefract (72784), West Yorkshire, WF8 1SB.
 G8IYL, N. W. Smith, 87 Lancaster Road, Ashby, Scunthorpe, South Humberside.
 G8JMO, D. J. Robinson, 3 Springfield Road, Attleborough. Nuneaton, Warwick., CV11 4PY.
 G8JNF, I. D. Berry, 8 Sherwood Grove, Leigh Lancs., WN7 3AZ.
 G8JOK, D. E. Barwood, 41 Wingfield Road, Knowle, Bristol 3, Avon, BR5 5EG.
 G8JPR, F. Corcoran, 49 Collingwood Crescent, Newtownabbey, Co. Antrim, Northern Ireland.
 GM8JPT, K. Turner, 31 Niddrie Road, Edinburgh. EH15 3NZ. (Tel: 031-609 3363.)
 G8JQD, S. D. Northam, Little Orchard, Broadclyst, Nr. Exeter, Devon.
 G8JRM, P. Hughes, 1 Entwistle Grove, Leigh, Lancashire, WN7 3DQ.
 G8JRX, A. Mills, 42 Mora Avenue, Chadderton, Oldham, Lancs., OL9 0EJ. (Tel: 061-620 3108.)
 G8JSA, C. F. Phillips, 18 Birdlip Grove, Quinton, Birmingham, West Midlands, B32 1ER. (Tel: 021-422 4217.)
 G8JSW, W. J. Wellington, 57 Hillcrest, Monkseaton, Whitley Bay, Tyne & Wear, NE25 9AF.
 GM8JUY, R. S. McMillan, Cairnbaan, 64 Eglinton Street, Coatbridge, Lanarks., ML5 3JF.
 G8JXB, G. E. Mayo, 117 Tamworth Road, Kingsbury, Tamworth, Staffs., B78 2HH.
 G8KCE, V. D. Cunningham, 28 Star Road, Peterborough, Cambs., PE1 5HP.

CHANGES OF ADDRESS

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 G2BUL, G. L. Butler, 130 Coulsdon Road, Old Coulsdon, Surrey, CR3 2LE.
 GW3COL, J. Worthington (ex-G3COT) Penrhyn Bach, Bwlch Tocyn, Pwllheli Caerns.

G3GSO, T. W. Bryan, 13 Scarsdale Avenue, Allestree, Derby, DE3 2LA.
 G13JLA, A. E. Latham, 9 Thornville Park Omagh, Co. Tyrone.
 G3TSG, M. J. Grierson, Officers' Mess, R.A.F. Station Henlow, Beds.
 G3TVS, Thames Valley Amateur Radio Transmitters Society, c/o V. Brand, G3JNB, 17 Southwood Gardens, Hinchley Wood, Esher, Surrey.
 G3VEB, A. R. Matthews, 30 Ashchurch Grove, London, W12 9BU.
 G3VLX, D. Buckley, 16 Wood Ride, Petts Wood, Orpington, Kent.
 G3VWL, R. E. Kemp, 9 Newtimber Avenue, Goring-by-Sea, Worthing, Sussex.
 G3WDL, T. F. Weatherley, 16 Beverley Court, Carlton Colville, Lowestoft, Suffolk.
 G3WNG, J. E. Grigsby (ex-V56DB), 8 Robertson Road, Catterick Garrison, North Yorkshire.
 G3XYZ, G. Bedwell, Wychwood, Forest Row, Wokingham, Berks., RG11 1HY.
 G3ZPN, J. V. Gibson, 56 Hull Road, Withernsea, North Humberside, HU19 2EQ.
 G4A1Q, G. J. Mitchell, Fosse Farm, Fen Road, Stickford, Boston, Lincs., PE22 8HA.
 GW4BLE, S. Cole, 25 Fernlea, Risca, Gwent, NP1 9FW.
 G4BYG, V. Lindgren, 27 Cedar Wood, Gilberdyke, Brough, North Humberside, HU15 2TZ.
 GM4CKP, W. M. MacDonald, Tigh-na-Bruach, 23 Elenfield, Carnock, Dunfermline, Fife.
 G4CXM, R. P. James, 264 Fishponds Road, Fishponds, Bristol, Avon.
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 G8BQO, W. G. Taylor, 28 Foster Street, Chorley, Lancs., PR6 0AY.
 G8EZH, M. A. Smith, 21 Lakelands Close, Hampden Park, Eastbourne, Sussex, BN22 9EH.
 G8FPN, J. F. Williams, 54 Granville Drive, Kingswinford, Brierley Hill, Staffs.
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 G8HED, I. S. Camm, 6 Maida Vale, Anchorsholme, Cleveleys, Lancs.
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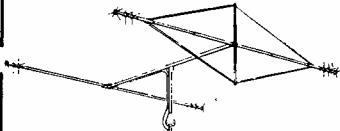
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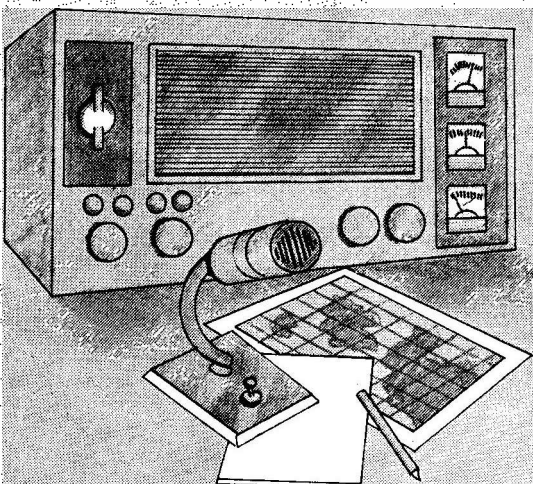
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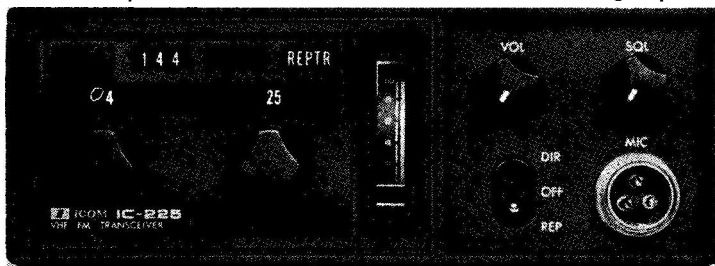
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IC-22. The IC-22 is the ideal low-priced mobile rig for the man who prefers to increase the number of channels he has available by buying extra crystals when he can afford them. It comes fitted with an automatic tone burst which operates only on selected channels, i.e. those fitted with repeater crystals, without having to turn any switches or press buttons at the right time while driving at 70 m.p.h. When operating on simplex channels the tone burst is automatically switched out. It has a total capacity of 22 channels and comes fitted with SO, S20 and S22 included in the purchase price of £109.26 + VAT. At the time of going to press we have crystals in stock for all the UK repeater channels at £4.00 per pair + VAT. The receiver sensitivity is excellent (0.4uV in 20 dB quieting) and the audio quality and clipping ideal for both repeater and simplex working. We check all our transceivers before dispatch and set up the deviation correctly. You won't be making a mistake by getting a 22 if you can't afford a 225—ask anyone who has one.

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May Issue: To appear April 25, single copies at 40p post free will be despatched first class mail on receipt from printers. Orders by April 23, with remittance to: Circulation Dept., Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H-0HF.

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SPERRY 7-SEGMENT P.G.D. DISPLAYS, digit height 0.3in. red, with decimal points, 150v. to 200v. (nominal 180v.) operation. These are the high-volt industrial type and therefore brighter than normal displays. All brand new. AT THE BARGAIN PRICE OF 50p PER DIGIT. TYPE 332 (two digits in one mount) £1.00 each. TYPE 333 (three digits in one mount) £1.50 (Sorry, no single digit available). Note: these are less than a quantity of manufacturers recommended price).

DRIVER ICs for above displays, SPERRY DD700, (16-dil) 50p each (only sold with orders for displays).

DATA covering L.E.D. displays and DD700 driver I.C. 30p.

HIGH QUALITY SPEAKERS. 8½in. x 6in. elliptical, 2in. deep, 4 ohms, inverse magnet, rated up to 10 Watts, £1.50 each, or 2 for £2.75. (Quantity discount available.)

MAGNETIC DEVICES PROGRAMMERS, contain 9 micro-switches with 9 adjustable drums for period switching (needs slow motion motor to drive drum) many switching applications, £1.00 each.

STUD RECTIFIERS, BYX42/300R, 300V at 10A, 30p each or 4 for £1.00.

TRANSISTOR HEATSINKS to take 2 x TO18 transistors, screw-in clamps. Block size 1in. x ½in. x ½in. with holes for mounting, 3 for 50p.

TWIN HEAVY DUTY CABLE, PVC covered, 50/0-25mm., 15p per metre, or £10.20 per 100 metre reel.

BARGAIN BOXES

ELECTRONIC IGNITION FOR YOUR MOBILE! Cut petrol costs by up to 15%. Instal Electronic Ignition in your car in minutes. Reduces petrol consumption, increases overall performance. Prolongs contact-breaker and spark-plug life. Makes starting so much easier. Each unit (British manufacture) tested and guaranteed for 2 years/50,000 miles. Important: state positive earth or Negative earth when ordering, £11.80 +VAT (94p). Post paid.

VARIABLE STABILISED PSU solid state, 240v. AC input, Output 0-24v. DC at 500mA + 32v. at 50mA (approx.). Size: 7½" x 4" x 2½" (voltage controlled by external 5k ohm pot). (Less 5k ohm pot), £5.00 each. 5k ohm pots, 3 turn, for above, 75p each.

EDGEWISE METERS, 50 microamp FSD, centre zero, but can be left hand zero'd, display area 1½in. x ½in., smart modern appearance, £1.50 each.

HIGH GRADE ELECTROLYTICS, 6800 mfd at 25v., with screw terminals, complete with capacitor clip for vertical mounting, 50p each, discount on quantity.

PL259 PLUGS (PTFE). Brand new, 50p each, or 5 for £2.25. Reducers for above, 15p each.
SO239 SOCKETS (PTFE). Brand new (4 hole fixing type), 50p each or 5 for £2.25.

PLESSEY ELECTROLYTICS, 10,000 mfd at 63V, Size 115 x 51 mm. 75p each. (Quality discount available).

TERMS OF BUSINESS: CASH WITH ORDER, MINIMUM ORDER OF £1.00. ALL PRICES NOW INCLUDE POST & PACKING (UK ONLY)

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TELEPHONE TYPE EARPIECE INSERT, 50p. REEDS (for reed relays). Single-pole make, 5 for 30p.

MULLARD TUBULAR CERAMIC TRIMMERS, 1-18pf, 6 for 50p (as featured in Rad. Comm. Jan. page 25).

ICs, some coded, 14DIL type mixed, untested, 20 for 25p.

IF CANS, ½in. square, suitable for rewind, 6 for 30p.

IF CANS, ½in. x ½in. x 1in., suitable for rewind, 10 for 30p.

SMALL NEONS, 6 for 25p.
 24v. MIN. REED RELAYS, encapsulated single-pole make, 2 for 50p.

24v. 2-8 LAMPS, MES type, 6 for 20p.

CHASSIS TAGS, 25p pack.

CABLE CLIPS for nailing cable, 15p pack.

MINIATURE SLIDER SWITCHES, 2 pole, 2 way, 5 for 50p.

BSY95A TRANSISTORS, 6 for 50p.

6.3v. 0-3A CAPLESS LAMPS, 10 for 25p.

PNP AUDIO TYPE TO5 TRANSISTORS, 12 for 25p.

BLACK PLASTIC KNOBS, ½in. dia., ½in. spindle, 4 for 50p.

RING MAGNETS, 7mm. outside dia., 20 for 50p.

25-WAY ISEP PLUGS AND SOCKETS, 40p set (1 plug + 1 skt). Plugs and sockets sold separately at 25p each.

CANNON right-angled plugs XLR LNR15, 75p.

DIN SKTS 5 pin 270 deg., 4 for 50p.

DIN SPEAKER SKTS, 2-pin, 4 for 30p.

STANDARD JACK PLUGS, ½in., 4 for 50p.

ANDREW 44AN FREE SKTS. (N-TYPE) for FH4/50B or FH14/50B cable, £1.00 each.

BULGIN ROUND FREE SKTS, 3-pin, for mains input on test equipment, etc., 25p each.

SO239 BACK TO BACK SOCKETS, £1.25 each.

BNC INSULATED SOCKETS (single hole type), 65p each.

VALVES
 QQVO3/10 (ex equipment), 75p each.
 2C39A (ex equipment), £1.00 each.
 QQVO2/6 (ex equipment), £1.00 each.
 4CX250B (ex equipment), £2.10 each.
 4X250B (ex equipment), £1.50 each.
 DET-22 (ex equipment), 2 for £1.00.
 EF80 (new), £25p EZB1 (new), 25p.
 ECC81 (new), 30p. ECC83 (new), 30p.

MAINS TRANSFORMERS

All 240v. input, voltages quoted approx. RMS (Please quote Type No. only when ordering)

TYPE 10/2 10.0-10V at 2A, £1.50.
TYPE 125BS approx. 125v. at 30mA, 65p.
TYPE 16/6, 16v. at 6A, 45v. at 100mA, £4.00.
TYPE 28/4, 28v. at 4A, 125v. at 500mA, £4.00.
TYPE 63/1, 6.3v. at 1A, 65v. each, 2 for £1.50.
TYPE 129, 400v. at 20mA, 200v. at 10mA, 6.3v. at 500mA, £1.25.
TYPE 12703, 400v. at 10mA, 200v. at 5mA, 6.3v. at 400mA, £1.25.
TYPE 70462, 250-0-250v., 50-0-50v., 6.3v., £1.75.

MAINS ISOLATING TRANSFORMER, 375VA, tapped primary, 240v. output, new, £6.00.

MAINS ISOLATING TRANSFORMER (ex equip.), in metal cases, totally enclosed, tapped mains input, 110-240v. etc., output 240v. at 3A + 12v. at 0.5A, £11.00.

AS ABOVE, output 240v. at 12A + 12v. at 3A + 22v. at 2.5A, £27.50.

RADIOSPARES 500-WATT AUTO TRANSFORMER, 100/110/130/200/220/240/250v. tapped input and output, step up or step down facility, ex new equip., £6.00.

NEW, TO5 SILICON PNP TRANSISTORS, unmarked, untested, approx. 100 for £1.50.

PRESSURE GAUGES, brand new, 2½in. flange mounting, 3 types available, state which, 0-60, 0-100, 0-200 lbs./sq. in., £1.20 each.

NEW MULLARD SCOPE TUBES, DN7-78, 3in. face, complete with CRT base and mu-metal screen, £8.50 each.