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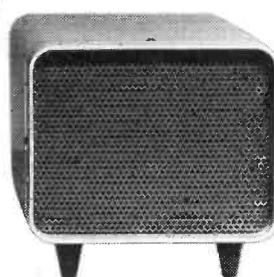
THE
**SHORT
WAVE**
MAGAZINE

**WORLD WIDE
COMMUNICATION**

FOR THE RADIO AMATEUR AND AMATEUR RADIO

PROFESSIONAL PERFORMANCE

with KW



KW 2000E and Power Supply

KW 2000E Transceiver covers all HF Bands 10-160 metres (10 metres in 4 Bands), 500 kHz VFO. SSB/CW. Outstanding TX audio quality. Excellent receiver signal-noise figures. Includes VOX, break-in CW, 100 kHz and WWV calibrator. Reliable 6146's in P.A.



KW108

KW 108 Monitor Scope. Monitor your transmissions 10-160m. two-tone test generator incorporated to ensure optimum linearity for SSB.



KW 1000

KW 1000 Linear Amplifier. 10-80 metres. 1200 watts PEP input max. Designed to be "driven" by KW 2000A/B/E or other Unit of similar power rating. In-built 2.5 Kv. PSU. PA tubes pair T160L. Very quiet in operation.



KW107

KW 107 Antenna Tuning System. Incorporates E-Z match, SWR/RF Power meter dummy load, Antenna switch. A high power version KW 109 is also available.



KW 204

KW 204 Transmitter. Well known for really good audio quality (SSB) and a favourite with CW enthusiasts. 10-160 metres. Reliable PA Tubes (2 x 6146).

Other KW Favourites. KW 1000 Linear Amplifier; KW E-Z match ATU; KW 160 ATU; KW 103 SWR/RF Power meter; KW Dummy Load; KW Traps (The original and best) KW Trap Dipoles; KW 109 Supermatch (High Power Version) 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.

KW

Communications Products

(DECCA COMMUNICATIONS LTD)

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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.



25% VAT and all that!

With the escalation of prices due to the imposition of the new high VAT rate on so-called luxury goods the FT-201 pictured above becomes an increasingly attractive proposition at **£290 basic**. With regard to second-hand equipment this will also be adversely affected by the new rate and for a limited period only we are offering a genuine 10% reduction on all used items which will alleviate the situation considerably as shown by the example below :

Typical Retail Price—£100 plus VAT at 8%. Total £108.00

Discounted Retail Price— £90 plus VAT at 25%. Total £112.50

A stamped addressed envelope will bring you our latest comprehensive list of first-class and guaranteed used gear.

A couple of stamps (we'll provide the envelope) will bring you the very latest ATLAS RADIO leaflet and if you would like the full YAESU MUSEN or SWAN glossy catalogues these are available against the receipt of stamps to cover i.e., 21 pence each.

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JOHN ROWLEY, G3KAE, Scarborough. Telephone : West Ayton 3039

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AMATEUR ELECTRONICS UK



Western

UNITED KINGDOM DISTRIBUTOR
OF THE WORLD'S FINEST RANGE OF AMATEUR
RADIO EQUIPMENT

BY

YAESU MUSEN

The superbly engineered FR-101 Receiver



- ★ Entirely Solid State
- ★ Transceivers with FL-101
- ★ 23 Bands
- ★ 160m.-2m.
- ★ Plus general coverage
- ★ SSB/FM/AM/CW
- ★ Digital readout option available

Full specification available upon receipt of S.A.E. for both models.

HF TRANSCEIVERS

FT-101B	160-10m.	AC/DC 260 watts p.e.p. input.
FT-201	80-10m.	AC/DC 260 watts p.e.p. input.
FT-501	80-10m.	Digital 560 watts p.e.p. input.
FT-401B	80-10m.	560 watts p.e.p. input.
FT-200	80-10m.	260 watts p.e.p. input.
FT-75B	80-10m.	120 watts p.e.p. input.
FP-75B	AC PSU.	
DC-75B	DC PSU.	

V H F FT-2AUTO

Auto Scanning 2m. Transceiver, fitted channels S20, S22, R5, 6 and 7.

F M FT-224

24 Channel FM 2m. Transceiver.

SIGMASIZER 200R 200 channel synthesized 2m. Transceiver.

HF RECEIVERS

FR-101S	160-10m.
FR-101D	160-10 + 2m. plus S.W. broadcast bands.

DIGITAL VERSIONS OF BOTH MODELS SHORTLY AVAILABLE

HF TRANSMITTERS

FL-101	160-10m.
--------	----------

ALSO AVAILABLE WITH R.F. SPEECH COMPRESSION

YO-100	Monitor scope.
YC-355D	200 MHz Frequency Counter.

HF LINEAR AMPLIFIERS

FL-2000B and FL-2100B	1200 watts p.e.p. input.
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WHY SHOULD YOU BUY YOUR YAESU EQUIPMENT FROM WESTERN ELECTRONICS?

- (1) The prices are roughly the same elsewhere.
- (2) The goods are available from stock.
- (3) As we first introduced Yaesu into U.K., it naturally indicates that we have the most experience in this fine equipment.
- (4) FREE delivery service by Securicor, and same collection and delivery service for warranty work.
- (5) As main distributors, we will naturally perform "after sales service."
- (6) If you intend purchasing, are you sure you will receive the "on the ball" service only available from Western Electronics?

Electronics (UK) Ltd

Note—Summer is almost here—Good time for Antennas

SOLE IMPORTERS OF HILLS TELOMASTS AND TELETOWERS

TELOMASTS

	Mast Only	With Rigging Kit
30'	£15	£29
40'	£20	£39
50'	£25	£49

42'	£101
57'	£145
79'	£187
101'	£253

TELETOWERS

Tower Only	With Rigging Kit
£101	£122
£145	£169
£187	£227
£253	£316 Carr. paid

CDE Rotors AR-30, £25.00 AR-40, £30.00 CD-44, £60.00 Ham-2, £90.00

Cable 5-way, 18p metre 8-way (CD-44 and Ham-2), 26p metre.

Coax prices per metre { 50 ohm R8BU, 33p UR76, 14p 75 ohm T3502, 20p RG11U, 33p.
75 ohm Twin, 8p, ditto rated 1kW, 28p.
300 ohm twin flat, 6p 300 ohm perforated, 12p
300 ohm twin open wire feeder, 18p.

FOR THE PERFECTIONIST — THE FINEST FROM U.S.A.

TH6DXX 6-ele., 10-20, 2kW. p.e.p.	£119.00
TH3MKII. 3-ele., 10-20, 2kW. p.e.p.	£99.90
TH3 JR. 3-ele., 10-20, 600W. p.e.p.	£74.00
TH2 MKIII. 2-ele., 10-20, 2kW. p.e.p.	£69.00

HY QUAD. 2-ele. quad, 10-20	£99.00
DB1015A. 10-15, 3-ele.	£76.00
402BA. 2-ele. Mono, 40m.	£121.00
204BA. 4-ele. Mono, 20m.	£96.00
153BA. 3-ele. Mono, 15m.	£44.00

BN86 Balun	£9.50
LA2 Lightning Arrestor	£3.00
VERTICALS	
18AVT, 80-10	£52.00
18V, 80-10	£18.00
14AVQ	£36.00
LC80Q	£11.50

All prices subject to VAT

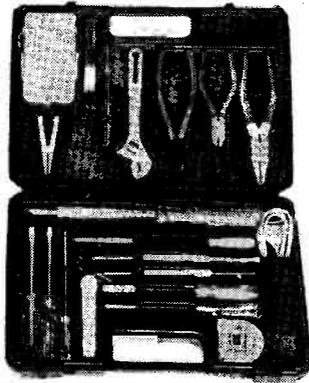
And presenting yet another first

SOLE DISTRIBUTORS: HOZAN TOOLS

S22 £18.34

S10 £15.57

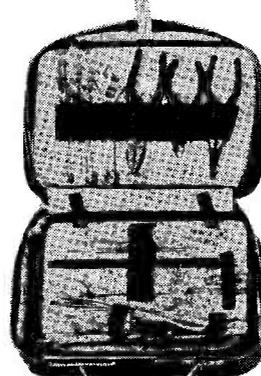
S7 £17.75



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Electro Tool Set



Shoulder Tool Set

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Hours of business: 9.15 - 5.15, 9 - 12.30 (Saturdays)

1-3 WEST PARK ROAD, SOUTHAMPTON

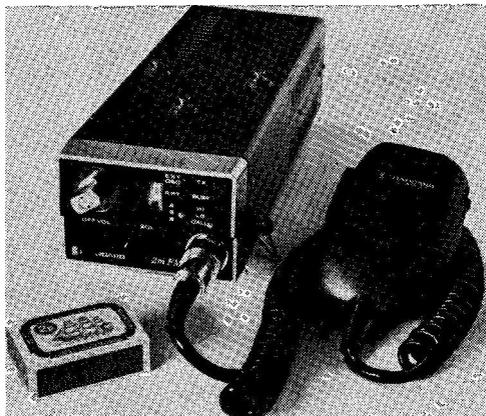
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Western Electronics (UK) Ltd SOUTHAMPTON



NEW! for the serious FM Repeater operator — the **STANDARD C828!** There's no other choice!

We're so fascinated by this little beauty that we think it makes everything else "obsolete" (or expensive!). The Price? **£125 + VAT**

- * 10 watts (Hi), 1w. (Lo) output.
- * 12 channels SIMPLEX or REPEATER.
- * Single crystal control of REPEATER means you only have to buy 1 CRYSTAL PER REPEATER.
- * Fitted S20, S22, R5, R6 and R7.
- * LED (BUSY) indicates whether you have accessed the repeater or not.
- * LED's to indicate EXTERNAL VFO, TRANSMITTER ON REPEATER OPERATION.
- * SPEAKER/MIC gives PRIVATE LISTENING and has switch to override the channel selector enabling a changeover to be made to an external VFO.
- * SIZE: mm 8½ wide x 24 deep x 6 high.
- * TONEBURST is built in.

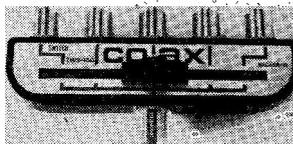
NEW!

HERE IS THE LATEST IN
SSTV
From **HAMVISION**

This advanced system is packed full of features and beautifully styled. The SS-727M (Monitor) and SS-727C (Camera with lens is **£485 + VAT**).

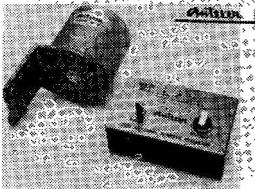


NEW! REX DG-100 10-160m. DIGITAL TRANSCEIVER £399 + VAT



NEW! CO-AX SWITCH DC-1500 MHZ, 1 kW

This is a superb commercial quality co-axial switch. It is NOT a rotary wafers switch but a gold plated micro-stripline constant impedance device. Specification: Power handling capability: 1 kW. AM. Insertion loss less than 0.2 dB. Isolation better than 80 dB. SWR: less than 1.2:1 at 1.500 MHz. Impedance 50 ohms. Connectors: UHF standard (gold flashed). BNC, N, C & F available to order.



NEW! AC-3 Remotely operated Antenna Switch

No extra cables required! The AC-3 enables one of 3 antennas to be remotely selected using a single co-axial feeder. No multicore cable is required. Handles 500w. pep up to 150 MHz. Connectors: UHF. Without doubt this is the best 3-way remotely operated switch we have ever seen.

CATALOGUE. We will be pleased to send you a copy of our COMMUNICATIONS EQUIPMENT catalogue (25p) or TOWERS, ANTENNAS and ROTORS catalogue (25p). No SAE required.

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Just around the corner from West Hampstead Underground Station

DRAKE RECEIVERS and ACCESSORIES

2-AC	Crystal Calibrator for 2-C	£12.50
2-CQ	Q-Multiplier/Speaker for 2-C	£33.75
R-4C	Receiver-SSB, AM, SW, RTTY	£325.00
FL250	Filter for R-4C (250 kHz)	£33.13
FL500	Filter for R-4C (500 kHz)	£33.13
FL1000	Filter for R-4C (1.5 kHz)	£33.13
FL4000	Filter for R-4C (4.0 kHz)	£33.13
FL6000	Filter for R-4C (6.0 kHz)	£33.13
4-NB	Noise Blanker for R-4C	£43.13
MS-4	Matching Speaker for R-4C	£15.00
SPR-4	Receiver-General Purpose	£337.50
AL-4	Loop Antenna for SPR-4	£18.75
5-NB	Noise Blanker for SPR-4	£43.13
SCC-4	100 kHz Calibrator for SPR-4	£13.13
TA-4	Transceiver Adaptor for SPR-4, T-4XC	£23.75
	DC Power Cord for SPR-4	£3.75
	Amateur Bands Crystal Kit for SPR-4	£16.88
	Time and Frequency Crystal Kit for SPR-4	£15.00
	MARS Crystal Kit for SPR-4	£15.00
	Teletype Commercial Crystal Kit SPR-4	£12.50
	Aeronautical Crystal Kit for SPR-4	£22.50
	Marine Crystal Kit for SPR-4	£33.75
	Tropical Bands Crystal Kit for SPR-4	£10.00
	RY-4 Teletype Adaptor	£8.75
DSR-2	Digital Receiver	£1,668.75

DRAKE TRANSCIVER and ACCESSORIES		
TR-4C	SSB Transceiver	£350.00
34-PNB	Plug-in Noise Blanker for TR-4C	£43.13
AC-4	115/240v. P.S.U. for TR-4C, T-4XC	£67.50
DC-4	12v. P.S.U. for TR-4C, T-4XC, R-4C	£78.75
MMK-3	Mobile Mounting Kit for TR-4C	£4.13
RV-4C	Remote V.F.O. for TR-4C	£67.50
FF-1	Crystal Control for TR-4C	£29.38

DRAKE TRANSMITTER and ACCESSORIES		
T-4XC	SSB Transmitter (see AC-4 above)	£337.50
L-4B	Linear Amplifier (including Power Supply)	£468.75
MN-4	Antenna Match Network	£63.75
MN-2000	Antenna Match Network—2000 watts	£116.25
W-4	RF Wattmeter 2-30 MHz	£40.00
WV-4	RF Wattmeter 20-200 watts	£47.50
C-4	Station Control Console	£31.25

DRAKE ADDITIONAL ACCESSORIES		
TV-42LP	Low Pass Filter 100w	£6.25
TV-1000LP	Low Pass Filter 1KW	£11.25
RP-500	Receiver Protector	£46.25
	Hand Microphone	£11.25
	Desk Microphone	£22.50
	Crystals for R-4C, T-4XC, SPR-4	£3.75
	Fixed Frequency Crystals	£5.00
	Spare Operating Manuals	£2.50
	Spare DSR-2 Operating Manual	£10.00

CDR ROTATORS		
AR-22L	Suitable 2 and 4m. beams, 3 banders	£34.38
AR-30	...	£31.25
AR-40	...	£37.50
CD-44	...	£75.00
HAM-2	...	£112.50

COPAL DIGITAL CLOCKS		
Model 601	24 hr. with day and date	£11.50
Model 225	24 hr.	£5.50

DECCA COMMUNICATIONS		
2000E	Transceiver with PSU	£427.50
204	Transmitter	£312.50
1000	Linear Amplifier	£225.00
107	Supermatch	£85.00
109	High power version of 107	£97.50
108	Monitorscope	£106.25
DC	Power supply for 2000A/B/E	£95.00
VOX	unit for Atlanta/204	£11.25
103	VSWR/Power meter	£20.00

E-Z Match	10-80m. A.T.U.	£27.50
Dummy Load	52 75 ohms	£15.00
Balun	1:1 dual impedance 52/75 ohms	£3.75
Antenna switch	3 way	£7.50
Pair of traps	and t-piece	£8.75
10-80m. trap dipole	standard model 20m. feeder	£32.50
10-80m. trap dipole	20m. feeder 75 ohms and balun	£36.25
10-80m. trap dipole	52 ohm feeder and balun	£40.00

SHURE MICROPHONES		
201	Ceramic	£6.88
202	Noise-cancelling ceramic	£7.50
401A	Controlled magnetic	£8.25
444	Desk Model	£16.88
2755K	Ceramic	£6.25
444T	Desk Model with pre-amp.	£20.00

HY-GAIN ANTENNAS—Carriage Free		
18HT	6-80m. Vertical Tower	£173.75
12AVQ	10-20m. trapped vertical	£31.88
14AVQ/WB	10-40m. trapped vertical	£45.00
18AVT/WB	10-80m. trapped vertical	£65.00
18V	10-80m. vertical	£22.50
12RMQ	Roof mounting kit 12AVQ	£13.75
14RMQ	Roof mounting kit 14AVQ	£16.25
1C80Q	80m. loading coil 14AVQ	£14.38
TH6DXX	6 element beam 10/15/20m.	£148.75
TH3MK3	3 element beam 10/15/20m.	£124.88
TH3JR	3 element beam 10/15/20m.	£92.50
TH2MK3	2 element beam 10/15/20m.	£86.25
H1QUAD	2 element 3 band quad	£123.75
DB10-15A	10 and 15m. beam	£95.00
204BA	4 element 20m. beam	£120.00
203BA	3 element 20m. beam	£100.00
153BA	3 element 15m. beam	£55.00
103BA	3 element 10m. beam	£43.75
499	Flush body mount	£6.25
417	De luxe spring	£6.25
492	Miniature spring	£2.50
415	Bumper Mount	£6.25
LA-1	Lightning Arrestor	£21.88
In-Line 2	In-line lightning arrestor	£15.00
BN86	Ferrite Balun	£11.88
TE-7 01	Antenna noise bridge	£18.75
TE-7 02	Antenna noise bridge	£26.25
PL259	Connectors	50p

JAYBEAM ANTENNAS		
4Y/4M	4 ele. 4m. dipole yagi	£8.50
5Y/2M	5 ele. 2m. dipole yagi	£7.50
10Y/2M	10 ele. 2m. dipole yagi	£13.75
10Y/2M	10 ele. crossed yagi	£17.63
PBM1/2M	14 ele. parabeam	£21.13
D5/2M	5 over 5	£9.90
D9/2M	8 over 8	£13.13
SVK/2M	mounting kit for 2 yagis	£7.19
XD/2M	pair crossed dipoles	£5.19
UGF/2M	unipole and ground plane	£2.75
HM/2M	mobile halo with mast	£7.00
SPM	portable mast	£15.13
MBM46/70	70cms. 46 ele. multibeam	£10.31

HUSTLER MOBILE ANTENNAS		
MO-1	Foldover mast	£10.31
MO-2	Foldover mast	£10.31
BN-1	Vumper, m. st. steel	£7.50
C-32	Ball mount	£3.75
C-29	St. steel spring	£4.13
RM-10	10m. Resonator	£6.19
RM-15	15m. Resonator	£7.38
RM-20	20m. Resonator	£7.49
RM-40	40m. Resonator	£9.63
RM-75	80m. Resonator	£9.99
UHT-1	1-wave 2m. whip 140-500 MHz	£6.44

G-WHIP PRODUCTS		
Tribrander helical	10/15/20m.	£16.91
additional coils	40/80/160m.	£5.64
telescopic whip	for above coils	£1.53
Multimobile 71	10/15/20m.	£19.66
additional coils	40/80/160m.	£5.64
telescopic whip	for above coils	£1.53
Base mount	sgl. hole fixing	£2.24
Base thread adaptor	Amer./G-whip	55p

Extendarod 40	Booster for MM 71	£7.90
Flexiwhip basic	10m. model with base mt.	£13.06
additional coils	for flexiwhip	£5.84

WATERS		
372	Clipreamp speech processor	£13.13

KOKUSAI MECHANICAL FILTERS		
MF 44-10CK	...	£16.25
MF 45-15CK	...	£16.25
...	...	£5.00

SOLID STATE MODULES		
EUROPA	10-2m. SSB Transverter	£101.85
Sentinel 2m.	converter, IF 2.4-4.6 ; 28-30	£18.75
Sentinel X	(de luxe version)	£24.38
Sentinel MF2m.	-med. wave converter	£23.44
Sentinel low noise	FET 2m. pre-amp	£8.51
PA-3	dual gate Mosfet pre-amp	£6.88
SM70	70 cm. converter	£18.75
TA-5	2m. mobile antenna 5/8 whip	£8.75

ROBOT SSTV EQUIPMENT		
80A	Camera	£287.50
70B	Monitor (built-in slow and fast scan)	£368.75
Kit to convert 70A monitor to 70B		£81.25
Model E Macro lens	...	£49.50

SUPEREX HEADPHONES		
Model CQ	600 ohms	£15.00
Model CQH	...	£18.73
Model APS-II	...	£19.38
...	...	£19.38
BARLOW-WADLEY XCR-30 Receiver		£145.00
TR-801	FM tuner kit for XCR-30	£25.00
ATLAS 180 SSB TRANSCIVER	...	£325.00
AR-220	Power supply console	£90.63
Mobile mounting bracket	de luxe plug-in	£28.75
Standard mobile mounting kit	non plug-in	£5.25
MT-1	Mobile antenna matching transformer. Broadband design, transforms base impedance to 50 ohms	£18.75
DC cable	...	£10.00

VENUS SSTV EQUIPMENT		
Monitor	...	£250.00
Camera	...	£312.50
F-1	Sgl. frame cassette	£2.50
T-G	Grey scale tape	£3.75
P-C	Checkerboard tape	£3.75
T-1	Polaroid adaptor	£21.25
V-1	Viewing hood	£8.75
Operating Manual	...	£2.20

YAESU MUSEN EQUIPMENT		
FT-101B	Transceiver	£412.50
RV-101B	Remote V.F.O.	£60.00
FT-200B	Transceiver and P.S.U.	£268.75
FT-201	Transceiver	£387.50
FR-101D	De luxe Receiver	£412.50
FR-101DD	De luxe Digital Receiver	£506.25
5P-101	Matching Speaker	£16.25
FL-101	Transmitter	£331.25
FL-2100B	Linear Amplifier	£243.75
YC-355D	Digital Frequency Meter	£156.25
YO-100	Digital Frequency Meter	£116.25
YD-844	Desk Microphone	£16.25
YD-846	Hand Microphone	£7.19

MICROWAVE MODULES PRODUCTS		
2m. Converters	with local oscillator	£19.00
2m. Converters	(70MHz.)	£19.00
4m. Converters	with local oscillator	£20.36
432 MHz Converters	...	£22.63
Varactor Triplers	432	£21.88
Varactor Triplers	1296	£31.25
2m. Dual output Preamplifier	...	£11.75
SWAN 700CX	5 band 700w. Tcvt. and P.S.U.	£493.75
VOX	...	£31.25
SWAN SS20A	5 band 300w. solid state tcvt.	£618.75

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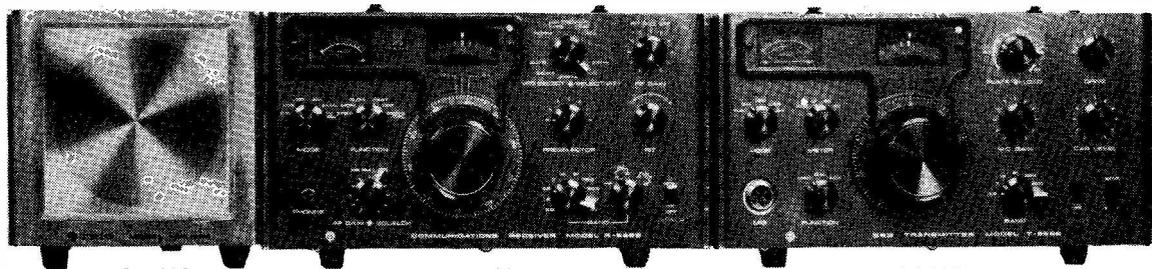
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OPEN 5 DAYS 9 until 5 p.m. Sat. 9 until 1 p.m. Telephone: 01-624 7174 Cables: Radio Shack, London, N.W.6. CLOSED FOR LUNCH 1 p.m. until 2 p.m. Giro Account No.: 588 7151

LOWE ELECTRONICS



SP599S

Speaker £12 (VAT Exc.)

R599S

Receiver £275 (VAT Exc.)

T599S

Transmitter £265 (VAT Exc.)

10-Band Amateur Receiver R-599S

Trio's new solid-state R-599S includes all the fine features made famous by the former 599 series along with several innovations, additions and improvements which make this receiver top value. It not only covers all amateur radio bands from 160m. (1.8 MHz) to 10m. (29.7 MHz), but also the 11m. (26.8-27.4 MHz), the WWV range (10 MHz) and the 2m-band between 144 MHz and 146 MHz due to built-in special converter circuits.

All-Mode Operation—Another "full house" feature of the R-599S: three separate demodulator circuits permit ssb reception in upper and lower sideband, AM reception with or without Auto Noise Limite (ANL) as well as FM reception.

Ultra-sensitive RF Stage—Due to extensive use of the latest FETs and RF semi-conductor devices the R-599S offers optimum sensitivity, spurious suppression, large-signal selectivity with virtually no cross modulation. Input sensitivity in ssb mode is better than 0.3µV on all bands between 160m. and 10m., better than 2µV in AM mode on 2m. for 10dB S+N/N.

Interference-free Reception—The Automatic Gain Control (AGC) can be switched to FAST or SLOW in accordance with respective receiving mode and guarantees clearly legible Rx signals. The Noise Blanking circuit effectively eliminates pulse-type noises such as car ignition system interference, etc. without affecting the input sensitivity. The additional Squelch circuit is continuously adjustable and suppresses background noise during FM reception.

Highly advanced VFO—equipped with latest dual-gate MOSFETs provides stable undistorted output signals. In conjunction with the FET mixer circuit and the diode switch-selected crystal filters the new VFO assures utmost frequency stability with less than ± 100Hz drift after 60min. warmup time.

Precision two-speed Dial Drive Mechanism—employing a multi-stage reduction gear permits velvet-smooth tuning. Only precision milled solid brass gears with miniature ball-bearings are used for this gear train which drives the main and sub tuning dials without mechanical backlash. The sub tuning dial covers a range of 600 kHz with 25 kHz calibration, whereas the main tuning dial covers a 100 kHz band section with 1 kHz calibration. A built-in 25kHz crystal marker oscillator assures fast and accurate dial calibration.

Versatile Operating Modes—In conjunction with the matching ssb/a.m./cw-Transmitter T-599S, the so-called "cross-over" switching of both units permits either independent Tx and Rx or combined transceive operation, using either the receiver's or transmitter's built-in VFO for master tuning plus RIT (Receiver Incremental Tuning) for transceive operation with offset Rx frequency, but without affecting

initial transmitter tuning. Moreover the R-599S/T-599S combination offers fixed channel operation on five crystal frequencies of own choice—ideal for frequent local and district QSOs.

Packed with Extras: automatic and manual bandwidth control, coupled with the MODE switch selects the appropriate bandwidth for each operating mode; built-in 8-element crystal filters for usb, lsb, cw and a.m.; large S-meter with illuminated dial and fluorescent-lighted dial pointer; VFO indicator lamp shows whether the receiver or transmitter VFO is in operation; connections for External Speaker S-599, Transmitter T-599S. The built-in 25kHz crystal marker oscillator is also used for transmitter dial calibration.

Dual Power Supply—The R-599S is equipped with two independent power supply units, one working from 120-240v., 50-60Hz AC power lines, the other from 12 to 15v. DC batteries. Due to its extremely low power consumption of 15 watts the R-599S is ideally suitable for field use.

GENERAL CHAT

Now that the Chancellor of the Exchequer has finished with us (I hope) it's interesting to point out that the Trio range of equipment still represents the finest value for money on the market today.

Take the TS520 as an example; even at 25% VAT, it costs about the same price as similar equipment did before the VAT increase. The same applies to the R599S receiver, which with its all mode capability, small size and low consumption to say nothing of its superior mechanical construction, is still the best receiver available and the cheapest!

The TR2200G and the T5700 have always been outstanding performers and we continue to sell every one that we can obtain from Trio.

Every single item in the Trio range has exclusive features which make it the best buy in its class, so why not ask us for the complete catalogue (please send 20p postage) and see if you agree with us that Trio is the best in performance and value.

SPEECH PROCESSING

This is the topic most talked about on the air these days and we have some thoughts about an ultimate processor developed by our technical staff at Matlock.

All speech processing is designed to make greater use of the available power of a transmitter by reducing the peak/average ratio of the speech envelope. This can be achieved by either increasing the average power or clipping the peaks. The system designed by Lowe Electronics is based on the concept of driving the transmitter to peak power all the time so that no power at all is wasted, and then superimposing the communication intelligence on this signal. An enormous amount of time and effort has gone into the design of a unit to carry out this function and by careful value engineering, we have managed to produce it at only £6.25 including VAT (postage 37p). It's called a mouse key.

HEAD OFFICE

119 Cavendish Road, Matlock, Derbyshire. Tel. 2817 or 2430 (9 a.m. - 9 p.m.)
Telex 377482 (any time)

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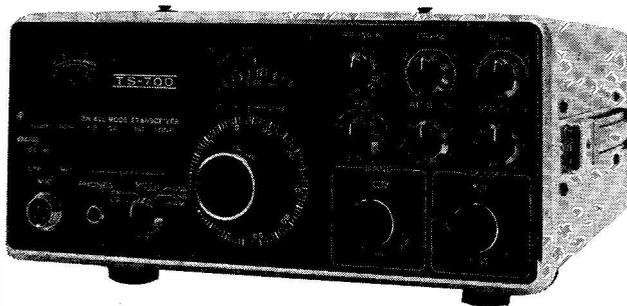
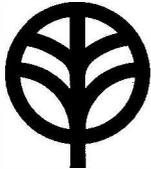
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John G3JYG, 16 Harvard Road, Ringmer, Lewes, Sussex. Tel. Ringmer 812071
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BRIEF SPECIFICATION

FULL VFO COVERAGE OF 2 METRES. 144-146 MHz

ALL MODE OPERATION AM, FM, USB, LSB, CW

POWER OUTPUT 10w. MINIMUM

DUAL POWER SUPPLY 240/120v. AC 50/60Hz AND 12-16v. DC

It is obvious from the basic specification that the TRIO TS700 is a totally new concept in 2 metre amateur gear. What is not obvious are the reasons why the TS700 is the finest 2 metre transceiver available today. For example :—

- (1) The AM transmission (and the TS700 is the only medium priced rig to offer AM) is true double sideband, and *not* SSB with re-inserted carrier.
- (2) The PA and driver transistors have been chosen for optimum linearity in all modes. Both driver and PA run from a 20v. supply to set a new standard in low intermodulation distortion for semiconductors. The 20v. is derived from a TRIO patented DC inverter which runs even when using the 12v. DC input.
- (3) No more drifting repeater access tones. The TS700 employs a miniature tuning fork oscillator which is incredibly stable. Another TRIO exclusive feature.
- (4) Automatic repeater shift (600 kHz) built in as standard—no accessory crystals to buy. Repeater shift is operational in either VFO or crystal control modes.
- (5) Dual ratio gearbox giving 25 kHz/TURN *and* 100 kHz/TURN means rapid tuning across the band together with superb bandspread for those weak SSB signals.
- (6) Front panel one knob tuning of all 2 metre tuned circuits for transmitter *and* receiver gives optimum gain and low spurious outputs. No broadband compromises in TRIO equipment.

There is so much more to say about the TS700—why not call us if you want more detail. We will be happy to send a complete specification on request.

Remember, you *must* see and try out the TS700 before considering any other 2 metre transceiver. There is really no comparison.

PRICE **£300** (VAT exc.)

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LOWE ELECTRONICS

PRICE LIST — JUNE 1975

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	Net price	Price to include VAT	Carr.
TRIO			
TS900 and AC power supply ...	£480.00	£600.00	£2.00
DS900 DC power supply ...	£64.00	£80.00	£2.20
VFO900 external VFO ...	£110.00	£137.50	£2.20
TS900 CW filter ...	£29.00	£36.25	20p
TS520 transceiver ...	£290.00	£362.50	£2.20
VFO520 external VFO ...	£55.00	£68.75	£2.20
SP520 optional external speaker ...	£12.00	£15.00	54p
TS520 CW filter ...	£21.00	£26.25	20p
TS700 2m. all mode transceiver ...	£300.00	£375.00	£2.20
Fixed channel crystals for TS700 ...	£2.32	£2.90	10p
VOX unit for TS700 ...	£15.00	£18.75	54p
TR7200G 2m. car transceiver ...	£125.00	£156.25	£2.20
TR2200G hand held 2m. transceiver ...	£80.00	£100.00	£2.20
Crystals for TR7200G or TR2200G, each ...	£2.32	£2.90	10p
Crystals as above per channel ...	£4.20	£5.25	10p
VFO30G external VFO for TR7200G ...	£55.00	£68.75	£2.20
VB2200 10 watt amplifier for TR2200G ...	£29.00	£36.25	54p
BP-10 NiCad battery pack for TR2200G ...	£11.00	£11.85	20p
TR7010 2m. SSB transceiver ...	£165.00	£206.25	£2.20
R599S Amateur band receiver ...	£275.00	£343.75	£2.20
T599S Companion transmitter ...	£265.00	£331.25	£2.20
QR666 General coverage receiver ...	£130.00	£162.50	£2.20
QR-6MK 500kHz marker for QR666 ...	£8.50	£10.63	34p
Extra for fitting QR-6MK, if required ...	£1.50	£1.87	
QR-6FM FM tuner for QR666 ...	£21.00	£26.25	34p
Extra for fitting QR-6FM, if required ...	£5.00	£6.25	
HC-2 Ham Clock ...	£11.00	£11.88	46p
MC-10 hand microphone with PTT ...	£6.30	£7.88	34p
MC-50 table microphone with PTT ...	£18.00	£22.50	46p
LF-30 low pass filter ...	£9.00	£11.25	46p
BFP-2 2m. band pass filter ...	£8.00	£10.00	46p
PS-5 regulated 13.5v. DC psu/digital clock ...	£43.00	£53.75	£2.20

GALAXY

RI530 General coverage receiver ... £750.00 £937.50 £2.20

HALLICRAFTERS

FPM-300 Mk. II Transceiver ... £290.00 £362.50 £2.20
 Mobile kit for FPM-300 ... £10.00 £12.50 46p
 Fan kit for FPM-300 ... £20.00 £25.00 34p

VENUS SLOW SCAN TV

SS2 slow scan station monitor ... £230.00 £287.50 £2.20
 SS2 slow scan station monitor kit ... £155.00 £195.00 £2.20
 C-1 camera ... £255.00 £318.75 £2.20

NIHON DENGYO

Liner 2 2m. SSB transceiver ... £145.00 £181.25 £2.20
 LA-106 Linear Amplifier ... £165.00 £206.50 £2.20
 FS-1007P 2m. FM Scanning Transceiver ... £220.00 £275.00 £2.20
 AMR-104 2m. Scanning Monitor Receiver ... £65.00 £81.25 62p
 Marine version of AMR-104 ... £86.00 £107.50 62p
 RI15E regulated psu for the Liner 2 ... £25.00 £31.25 £2.20
 Note: FS1007P transceiver and AMR-104 Monitor Receiver fitted 3 channels.

Marine monitor receiver fitted 8 channels.
 Extra crystals available—see under "CRYSTALS."

LOWE MONITOR RECEIVER REC RI420C

Receiver complete, less crystals ... £19.95 £24.94 46p
 " " fitted 1 channel ... £21.87 £27.34 46p
 " " " 2 " ... £23.37 £29.18 46p
 " " " 3 " ... £24.87 £31.09 46p
 " " " 4 " ... £26.37 £32.96 46p
 " " " 5 " ... £28.70 £35.88 46p
 Above receiver modified for the 156 MHz Marine Band :
 Receiver complete, less crystals ... £21.76 £27.20 46p
 " " fitted 1 channel ... £24.26 £30.33 46p
 " " " 2 " ... £26.76 £33.45 46p
 " " " 3 " ... £29.26 £36.56 46p
 " " " 4 " ... £31.76 £39.70 46p
 " " " 5 " ... £34.26 £42.83 46p
 " " " 6 " ... £36.76 £45.95 46p
 Extra crystals for the Amateur 2m. Band ... £1.85 £2.32 10p
 Extra crystals for the 156 MHz Marine Band ... £2.78 £3.50 10p

MICROWAVE MODULES

MC144/28 LO ... £16.30 £20.38 10p
 MMC70/28 ... £15.20 £19.00 10p
 MMC432/28 ... £18.10 £22.63 10p
 MMC432/144 ... £18.10 £22.63 10p
 MMC1296/28 ... £24.00 £30.00 10p
 MMC1296/144 ... £24.00 £30.00 10p
 MMV432 ... £17.50 £21.88 10p
 MMV1296 ... £25.00 £31.25 10p

WEIR V.H.F. EQUIPMENT

Weir 2m. Mosfet converter 28 MHz I.F. ... £14.00 £17.50 10p

CRYSTALS

We stock all the popular channels for all the equipment we sell as well as many crystals for other F.M. equipments.

Price per single crystal ... £2.32 £2.90 10p
 Where 2 crystals per channel are required
 Price per channel ... £4.20 £5.25 10p

LOWE ELECTRONICS

VALVES

For the very common valves, it pays to shop at one of the large London importers who buy in such enormous quantities that they can sell retail at a lower price than we can buy wholesale. We do, however, maintain stocks of the more unusual valves which are used in the equipment we sell, and which you may find some difficulty in obtaining.

	Net price	Price to include VAT	Carr.
6AH6, 6BZ6, 6CB6A, 6CL6, 6UBA, 6EW6, 6BM8, 12BY7A	66p	82p	10p
6GK6	£1.30	£1.62	10p
6JS6C, 6KD6, Matched Pairs	£4.20	£5.25	34p
6146B, S2001 direct replacement, Each	£3.20	£4.00	22p
6LQ6, Matched Pairs	£5.52	£6.90	34p

ANTENNAS

2m. "J" Beams, 50 ohm impedance only

	Net price	Price to include VAT	Carr. per metre
5Y/2M 5 element Yagi	£4.30	£5.37	£2.20
8Y/2M 8 element Yagi	£5.60	£7.00	£2.20
10/2M 10 element Yagi	£11.00	£13.75	£2.20
PBM14/2M 14 element parabeam	£16.90	£21.12	£2.20
5XY/2M 5 element crossed Yagi	£8.20	£10.25	£2.20
8XY/2M 8 element crossed Yagi	£10.20	£12.75	£2.20
10XY/2M 10 element crossed Yagi	£14.10	£17.62	£2.20
D5/2M 5 over 5 slot fed Yagi	£7.92	£9.90	£2.20
D8/2M 8 over 8 slot fed Yagi	£10.50	£13.12	£2.20
PMH/2C 2 way phasing harness circ. pol.	£2.85	£3.56	37p
SVMK/2M mounting kit	£2.20	£2.75	46p
XD/2M crossed dipoles	£5.75	£7.19	£2.20
UGP/2M Unipole and ground plane	£4.15	£5.19	£2.20
PMH2/2M 2 way phasing harness	£3.95	£4.94	37p
PMH4/2M 4 way phasing harness	£9.15	£11.44	37p

70 cms. "J" Beams

D8/70 8 over 8 slot fed Yagi with $\frac{3}{4}$ " boom	£9.00	£11.25	£2.20
MBM46/70 46 element multibeam	£12.10	£15.12	£2.20
PBM18/70 18 element parabeam	£10.90	£13.62	£2.20

2m. Mobile Whips

"J" BEAM $\frac{3}{8}$ vertical swivel mount	£6.00	£7.50	£2.20
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G-Whips

Tri-bander 20, 15 and 10m.	£12.30	£15.37	£2.20
Multimobile 20, 15 and 10m.	£14.30	£17.87	£2.20
160, 80 or 40m. coils for the above. Each	£4.10	£5.12	37p
Top whip section for the above	£1.10	£1.37	24p
Basemount for all G-Whips	£1.65	£2.06	24p

H.F. Beams

Hy-Gain TH3 jnr. 20, 15 and 10m. 3 element	£74.00	£92.50	£2.20
Hy-Gain Mk. 3 20, 15 and 10m. 3 element	£99.90	£124.87	£2.20

Verticals

	Net price	Price to include VAT	Carr.
Hy-Gain 12AVQ 20, 15 and 10m.	£25.50	£31.87	£2.20
Hy-Gain 14AVQ 40, 20, 15 and 10m.	£36.00	£45.00	£2.20
Hy-Gain 18AVT/WB 80, 40, 20, 15 and 10m.	£52.00	£65.00	£2.20

Rotators

CDR AR 22 Light Duty for VHF Beams	£28.50	£35.63	£2.20
AR 40 Solid State Control Box	£30.00	£37.50	£2.20
TR 44 Heavier Duty Rotator	£50.00	£62.50	£2.20
CD 44 Improved version of TR 44	£60.00	£75.00	£2.20
Ham-2 Improved version of rugged Ham-M	£90.00	£112.50	£2.20

ANTENNA ACCESSORIES

Please note that the carriage price assumes Parcel Post

Coaxial cable 50 ohms type UR43			
Per metre	14p	15p	2p
Coaxial cable 50 ohms type UR67			
Per metre	35p	38p	4p
Coaxial cable 50 ohms type RG-8/U			
Per metre	40p	43p	4p
Twin feeder either 300 ohms or 75 ohms			
Per metre	5p	5p	2p
Rotator cable 8 core for TR44 or Ham-M			
Per metre	31p	33p	2p
Rotator cable 5 core for AR40			
Per metre	18p	19p	2p
Rotator cable 4 core heavy duty			
Per metre	19p	20p	2p
Rotator cable 12 core heavy duty			
Per metre	44p	47p	2p
PL259 plugs each	36p	45p	10p
SO239 matching sockets Each	36p	45p	10p
Reducers to screw into P:259 plugs	12p	15p	7p
S.W.R. meter Asahi ME-11B twin meter	£10.00	£12.50	37p
S.W.R. meter Hansen SWR3 single meter	£7.00	£8.75	37p
Hy-Gain dipole centre insulator CI coax. feed	£3.00	£3.75	37p
Hy-Gain Balun BN86	£10.00	£12.50	37p
Diamond Balun BU-5	£4.40	£5.50	37p

STATION ACCESSORIES

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Morse Keys	£5.00	£6.25	37p
Katsumi Keyers EK108D (DC)	£28.00	£35.00	46p
Katsumi Keyers EK108A (AC)	£32.00	£40.00	46p
C.W. Practice Oscillators	£2.80	£3.50	24p
Low Impedance Padded headsets	£3.25	£4.06	24p
Teisco DM501 Hand Mike with P.T.T.	£5.56	£6.95	24p
Trio Dual Impedance Table Mike	£18.00	£22.00	46p

FILTERS

9.0 MHz Crystal filters complete with both carrier crystals.			
SEIWA YF90F S.S.B. filter	£15.28	£19.10	15p
Kokusai MF455 Mechanical Filter	£15.93	£19.91	15p
Carrier Crystals for Kokusai filters. Each	£2.60	£3.25	7p

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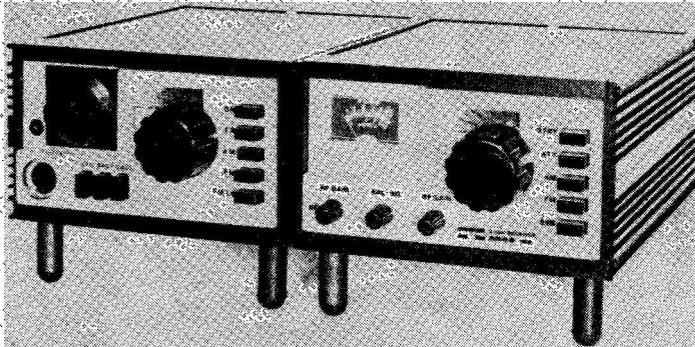
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Solid State 8 watt AM/FM
Transmitter

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FT101B Transceiver	AR22R	12AVO 10-15-20m. Vertical
FT201 Transceiver	AR30	14AVT/WB 10 to 40m. Vertical
FTDX401 Transceiver	AR40	18AVT/WB 10 to 80m. Vertical
FR101D Receiver	CD44	BN86 Balun
FT200 Transceiver	Harn H	TH3MK/3 Tribander Beam
FL2100 Linear	Stolle Automatic 2010	
YC355 Frequency Counter	Stolle Multitronic	MICROWAVE MODULES (post free)
FL101 Transmitter	BARLOW WADLEY	2 and 4m. Converters (state I.F.) £16.42
YO 100 Monitorscope	XCR-30MK2 Solid state Receiver	MMC 144/20 LO Converter £17.60
BELCOM	TR801 FM Tuner	432 MHz Converter £19.55
Linear 2 Transceiver	DRAKE	432 Varactor Tripler £18.90
100 Watt 2m. Linear	TR4C Transceiver and AC Psu	144 MHz Dual output Pre-Amp £9.72
MICROPHONES (post free)	SWAN	ATLAS
Yaesu 844 Desk Microphones	700CX Transceiver	180 watt PEP Solid State Broad Band
Yaesu 846 Hand Microphone	300B Transceiver	Transceiver. 20-40-80-160M. 12v.
Shure 201 Hand Microphone	I200 Linear Amplifier	DC operation
Shure 444 Desk Microphone	MB80A Transceiver	G-WHIP
Shure 444T Desk Microphone	SS-200A Transceiver	Full range of the popular range of mobile antennas
Electro-Voice 7295R Desk Microphone	TB-41A 4 Element Beam	for 160 through to 10m. SAE for list and catalogue.
JAYBEAM	SOLID STATE MODULES	ELECTRONIC DEVELOPMENTS
Send large SAE for latest catalogue and price list	PA3 Dual Mosfet Pre-amp	2 and 4m. Transvertors £110.00
of beams, clamps, masts, etc. 2 metres. 4 metres.	Europa SSB Transvertors complete with	2m 200 watt Linears £103.12
70 Cms. valves £88.00 without valves	70 cm Linear £45.62
KW ELECTRONICS	ACCESSORIES	
KW 2000E Transceiver	Planet 808 Speech Compressor £32.39	
KW204 Transmitter	Single Meter SVR Bridge (20p) £6.60	
KW Linear Amplifier	3in. Ceramic Insulators 32p	
KW 107 Matching Unit	Ceramic Diople "T" Pieces 32p	
KW 109 Matching Unit	PL259 Plugs 42p SO259 Sockets 40p	
KW 108 Monitorscope	Cable Reducers 14p	
KW 160m. Antenna Match	300 ohm and 75 ohm twin feeder yd. 8p	
KW E-Z 80-10 metres	UR43 16p UR67 40p UR233 £16p	
KW103 SWR/Power Meter	Omega Noise Bridge TE701 £14.85	
KW Balun	Omega Noise Bridge TE702 £22.06	
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£140 (+PSU) (+ 25%)

The FT75B is a higher power replacement (120W P.I.P.) of the FT75, the unit which along with the 101 has been responsible for the upsurge in HF mobile operation around the world. On bands 80 through to 10 there are 3 VXO controlled crystal channels as well as provision for external VFO operation. The FT75B is all solid state except the final and driver stages. Included is an excellent noise blanker and also a squelch circuit for quiet channel monitoring. Accessories include the FV50C VFO at £35.00, the VC75 microphone compressor and VOX at £18 and the FT75B AC power supply at £35, and the DC75B at £40 illustrated right.

The FT224 is an advanced Solid State transceiver featuring 10W output with a 23 channel flexibility (excluding priority channel) all on 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. All for six pounds and ten.

£130 (+ 25%)



**FT101B
£330**

**FL2100B
£195**

(+ 25%)



The FT101B 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 arid circuits with individually tuned input coils for each band, and Bifilar wound ferrite filament chokes.

**FL101
£265**

**FRI01S
£245**

**FRI01D
£330**

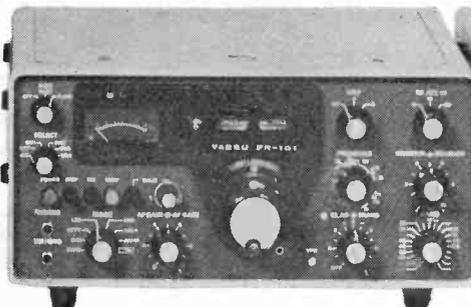
**FRI01SD
£330**

Ex-Stock

**FRI01DD
£430**

COMING

(+ 25%)



The FRI01 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 its own crystal filter. Transceiver operation with the FL or FT101.

The FL101 is the ideal companion to the FRI01 thus forming a superb base station. Operation on 160 through 10m. using SSB, AM, CW or FSK is offered, with the added bonus of an option inbuilt RF speech processor being available at moderate cost. (£22).

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SOUTHAMPTON, SO4 4DN.

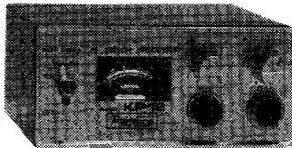
Hours of Business: 9-5.30, 9-12.30 Saturday
Telex: Chamcom 47388 Aerial SMC
Cable: "Aerial Southampton"
Telephone: (04216) 4930 or 2785

AGENTS (Evening)
BRIAN KENNEDY, G3ZUL
Droitwich (09057) 4510
IAN McKECHNIE, G8BDOX
Bridge of Allan (078683) 3223
HOWARTH JONES, GW3TMP
Pontybodkin (035 287) 846
PETER AVILL, G3TPX
Darton (022 678) 2517



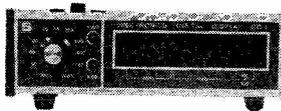
SOUTH MIDLANDS

RF SPEECH PROCESSOR KPI2



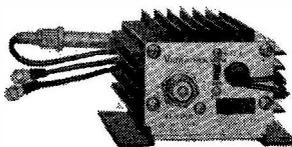
£44 Ex Stock
Audio to audio, via 10.7 MHz, mains powered, illuminated meter, FT-101, FT2 plugs suitable all phone modes (superb on FM). (+ 8%).

READOUT UNIT FOR FT-101, etc. DD1



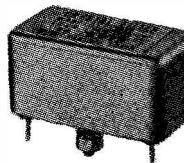
£110 (Ex stock). Digital readout to ±100Hz for your FT-101(B), FT401(B), etc. 21 IC's 76 diodes provide a most worthwhile accessory. (+ 25%).

144 MHz LINEARS RFL



144 MHz LINEARS RFL NEW MODELS
F sensing, switchable drop out time, SSB, AM, FM, CW, 12v. DC 10W drive.
Available mid June
RFA-10-100-HBX (801) **£75.00**
RFA-10-150-HBX (901) **£95.00**

9 MHz SSB FILTERS YF90/F/S



(P. and P. 37p) Ex Stock
2.4 kHz, 6 pole, each individually supplied with ± 6 dB, 25 dB, 60dB bandwidths, ripple factor and insertion loss. Carrier crystals in HC18/U.
Filter **£11.00**. Crystals **£1.50** ea. (+ 8%).

CRYSTALS—Low Prices from Stock (Insured post and packing 37p)

FT2FB (14 MHz Rx 18 MHz Tx) **£3.30** pair
144 (-15, -20, -30R, -36, -50, -60)
145 (-05, -09R, -32, -40, -44R, -51R, -80, -84, -90)
Simplex **£3.60** pair **£2.00** single
145 (-500, -525, -550, -575, -600)
Duplex **£3.50** pair **£2.00** single
145 (-075/675, -100/700, -125/725, 150/750, -175/775)
Inverse **£2.00** each
145 (-125R, 150R, 175R)
FT2F (52 MHz Rx 6 MHz Tx) **£3.30** pair
144 (-15, -25, -36R, -40R, -60R, -70R, -80, -96)

145 (-08, -09T, -20, -36, -40, -68, -80)
All **£3.30** pair, **£1.80** single crystal
Simplex **£3.50** pair **£2.00** single
145 (-000, -500, -500, -525, -550, -570, -600)
Duplex **£3.50** pair **£2.00** single
145 (-075/675, -100/700, -125/725, -150/750, -175/775)
Inverse **£2.00** each
145 (-100R, 150R, 125R, 175R, 750T)
STANDARD C826MB and C146A
145 (-500R, -525, -550R, -575, -600, -75R)
All **£3.50** pair marked singles only **£1.80**
Multi 7/8 TR2200 44 MHz Rx 12 MHz Tx **£3.50** pair

Pye Pocketphones 84.5 MHz 12 MHz Tx **£4.50** pair
433.2 **£2.00**
8 MHz HC25/U **£2.00**
145 144-480 145-00 145-150
145 (-525, -550, -500, -575, -600)
52 MHz HC6/U **£2.25**
145-750 145-775

CRYSTAL SUB STANDARDS
100 kHz HC13/U **£2.50**
100 kHz HC6/U
1 MHz HC6/U **£4.50**
Spare YAESU Crystals
COMPLETE range stocked **£2.20** each
CRYSTALS to order 6/8 weeks delivery
Phone : 04216 4930 for best price.

THE KP202 Super Low Cost Walkie-Talkie. NEW from SMC

Supplied with 6 channels, SO and S20 and your choice of S21, S22, R5, R6, R7

KP202 ... (+ 25%) **£75.00** Ni-Cade (set 10) (+ 8%) **£8.50** Case ... (+ 25%) **£3.75**
KCP2 base master ... **£8.80** Stubby Antenna ... (+ 25%) **£4.25** Burst unit ... (+ 25%) **£5.50**

NEW! For Two Meter SSB Only 8% VAT!

MAGNUM TWO TRANSVERTER (Electronic Developments)
Uses H.F. Transceivers P.S.U. and 1 watt on 28 MHz for up to 100w. output. Supplied complete with relays and 11-pin plug for instant operation. Microwave Modules receiver converter **£88.00**

BELCOM LINER TWO. 12v. DC for 10W P.E.P. on Two. Coverage of 240 kHz in 24, 10 kHz. VXO channels. Preamp for Liner II, **£3.75** ... (+ 25%) **£145.00**

NEW SOMMER GENERATORS—EX STOCK IN TOTTON (8%)

from
GAI23M5 1000w, 230v. AC ... **£135.00** GA303M5 2400w, 230v. AC ... **£215.00**
GAI203M5 1600w, 230v. AC ... **£155.00** GA403M5 3200w, 230v. AC ... **£320.00**



SWR 50



SWR 10

NEW LOW PRICE SWR/POWER METERS

Freq. 3.5-144 MHz (SWR only to 432) UP to 2kW.
SWR10 Reflectometer, single meter, accuracy quoted ±5% ... **£6.30**
SWR50 Calibrated for 50 and 75 ohm line, power meter (±20%) and SWR (±5%) (+ 8%) **£11.20**

MICROWAVE MODULES (all 28-30 MHz I.F. others to order) (P. and P. 37p) + 8%

70 MHz Converter ... **£15.20** 144 MHz Converter ... **£15.20** 144 MHz Pre Amp 2 outs **£9.00** 432 MHz Converter **£61.00**
70 MHz Conv'r + LO **£16.30** 144 MHz Conv'r + LO **£16.30** 432 MHz Converter ... **£18.10** 1296 MHz Converter ... **£24.00**

SHURE microphones (post paid) + 25%

444—Desk Mic. ... **£15.30** 444T—444 with Amp. **£17.20** 401B—Hand-Low Z ... **£7.20** 201—Hand-Hi Z ... **£6.00**

SECOND HAND/SHOP SOILED LIST (Telephone : 04216 4930 for latest) + 25%

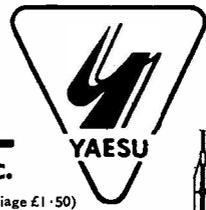
EDDYSTONE
EC10 Mk. II (AC & DC) **£80.00** **FYS01** and **FP501** ... **£335.00** **KW**
EP14 ... **£75.00** **FR50B** ... **£60.00** 2000B ... **£180.00** **CODAR**
HEATHKIT ... **£250.00** **FL50B** ... **£60.00** 2000E ... **£295.00** AT5 (AC and DC) ... **£25.00**
SB102 ... **£250.00** **FR50B s/s** ... **£75.00** Viceroy ... **£60.00** **INQUE**
... **£250.00** ... **£75.00** ... **£60.00** **VFO** for IC21 ... T.B.A.

PLEASE NOTE — THESE PRICES DO NOT INCLUDE VAT 25% or 8%

Terms:—Cash with order or credit card holders just 'phone in for, if possible, the same day despatch. Immediate H.P. available for card owners for amounts up to £150.00. Holders of current U.K. callings (where references have been provided) can be speedily cleared, or normal H.P. at competitive rates is available.



COMMUNICATIONS LTD.



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

VERSATOWERS (Carriage paid, England and Wales)

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 (+ 8%)**

ALIMASTS (Carriage paid, England and Wales)

A/Alloy Telescopic 1.5, 2, 3 metre sections, 6-21 metres from **£11.60** for 6m. to **£38.00** for 21m. (+ 8%)

HY-GAIN The Biggest range from the U.S.A. (Carriage paid) + 25%

Hy Tow 10-80m. Vertical Radiator	£132.00	TH2MK III 10-20m. 3 ele.	£69.00	DB1015A 10-15m. 3 ele.	£76.00
18V 10-80m. Loaded Vertical	£18.00	TH3 Jnr 10-20m. 3 ele.	£74.00	DB24B 20m. 3 ele. 40m. 2 ele.	£142.00
12AVQ 10-20m. Trapped Vertical	£23.50	TH3MK III 10-20m. 3 ele.	£99.90	402BA 40m. 2 ele.	£121.00
14AVQ 10-40m. Trapped Vertical	£36.00	TH6DXX 10-20m. 6 ele. total	£199.00	204BA 20m. 4 ele.	£96.00
18AVT 10-80m. Trapped Vertical	£52.00	Hy Quad 10-20m. 3 ele.	£99.00	203BA 20m. 3 ele.	£80.00
BN86 1:1 Balun	£9.50	LA1 Lightning arrester	£17.50	153BA 15m. 3 ele.	£44.00
562 Rotary bearing	£8.50	LA2 Lightning arrester (gas)	£3.00	103BA 10m. 3 ele.	£35.00

TELOMASTS (England and Wales, carriage £1.50) (+ 8%)

Galvanised steel Telescopic 10ft. section with or without rigging.
 30ft.—**£15.00** 40ft.—**£20.00** 50ft.—**£25.00**
 With rigging kits:
 30ft.—**£29.00** 40ft.—**£39.00** 50ft.—**£49.00**

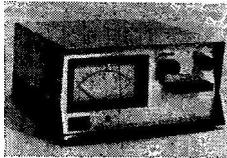
HAMTOWERS (Carriage extra) (+ 8%)

Galvanised lattice 10ft. sections 30ft. height with climbing steps on one face. From: **£90.50**

SMC Trapped Dipoles (Carriage paid) + 25%

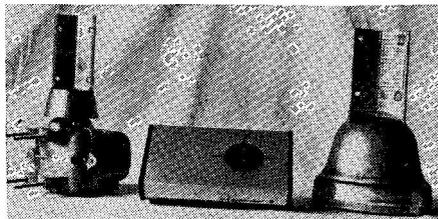
Trapped dipole standard 10-80m. (S) **£16.85** High Power version of S (HP) **£18.75** Portable ver sion of S (P) **£19.50**

CDE ROTATORS EX STOCK (IN TOTTON) FOR FAST DELIVERY



Carriage B.R.S.) free. Securicor 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 for large VHF, medium HF beams **£60.00**
 Ham II for larger arrays **£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

NEW from THE AR33 Ex Stock in Totton SPECIAL OFFER **£35**

Rotator unit mechanically similar to the AR40 but with a de luxe control box. Featuring five push buttons for preset beam headings (beacons, repeaters, etc.) in addition to full manual control. (Normal Price from July £36.75).

NEW from S.M.C.

JAYBEAM The Complete Range (And More) ! (Carriage extra) + 25%

FOUR METRES	TWO METRES	TWO METRES	70 CENTIMETRES
4Y/4M. 4 element ... £6.80	5XY/2m. 5 ele. crossed £8.20	5Y/2m. 5 ele. Yagi ... £4.30	DB/70 8 over 8 slot ... £9.00
PNH2/4 2 way harness £5.30	8XY/2m. 8 ele. crossed £10.20	8Y/2m. 8 ele. Yagi ... £5.60	PBM18/70 18 ele. Para-beam ... £10.50
BEARINGS (+ 8%)	10XY/2m. 10 ele. crossed £14.10	10Y/2m. 10 ele. long Yagi £11.00	MBM46/70 46 ele. Multi-beam ... £12.10
RZ100 Alignment bearing £7.60	D5/2m. 5 over 5 slot ... £7.92	14Y/2m. 14 ele. long Yagi £14.20	MBM68/70 68 ele. Multi-beam ... £16.10
COUPLERS (+ 8%)	DB/2m. 8 over 8 slot ... £10.50	PMM2/2m. 2-way harness £3.95	PMM2/70 2 way harness £3.30
JBL15/59 2" Jointing sleeve ... £1.85	PBM14/2m. 14 ele. Para-beam ... £16.90	PMH/2C Circular phasing £2.85	PMH4/70 4-way harness £3.85
K.W. EQUIPMENT (Carriage extra) 8 & 25%	HO2m. Halo head ... £1.85	HM/2m. Halo nd Mast £2.20	
KW103 SWR/Pwr. ... £16.00	K.W.108 Monitorscope £85.00	PMH4/2m. 4-way harness £9.15	Dummy Load 50 ohm £12.00
KW107 Super Match. ... £66.00	KW109 QRO A.T.U. £78.00		Antenna switch 3-way £6.00
MOSLEY TRIBANDERS (10-15-20m.) beams (Carriage £1.75) + 25%		KW160 Topband ATU £22.00	
TA33Jnr.E 3 ele. £53.00	TA32 Jnr.E 2 ele £37.00	KW EZ match 10/80m. £22.00	
		Mustang 3 ele. £70.00	Mustang 2 ele. £56.00

G WHIPS The British Mobile HF Antenna Range (Carriage 75p) + 25%
 Tribander 10, 15, 20 **£12.30** LF40m, LF80m or LF160m **£4.10** Flexiwhip, 10m with base **£9.50** F15, F20, F40 or F160m **£4.25**
 Multimobile "71" 10, 15, 20 **£15.73** MM40, MM30 or MM160 **£4.10** Basement mounts **£1.85** Telescopic whips for coils **£1.10**

BANTEX FIBREGLASS, STAINLESS STEEL VHF/UHF MOBILE ANTENNAS (Carriage 75p) + 25%
 B5 1/2 wave 144 MHz ... **£5.00** B5U 3/4 wave 432 MHz **£5.00** Magnetic Base Mount **£7.50** Note: Deduct 50p from price of aerial if standard base not required.
 BG 3/4 wave 144 MHz ... **£6.00** 70 1/2 wave 70 MHz **£3.00** Trunk Lip Mount ... **£5.10**

RF CABLES (Carriage up to 20m. 40p; over, 50p; less for lighter cables) + 8%
 50 ohm R8BU/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 PLUGS (p and p extra)
 PL259 **48p** PL259A **56p** SO239 4 hole **35p** BNC plugs **44p**
 Reducers **12p** UHF Angle **90p** VHF back to back **75p** N plugs **83p**

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YAESU EQUIPMENT (ex VAT)

FT101B 160-10m. tcvr. 240v./12v.	£330.00	(n/c)
FR101D 160-2m. rx. 240v./12v.	£330.00	(n/c)
SP101 matching speaker	£13.00	(£1.00)
SP101 remote vfo	£48.00	(£1.00)
FT401B	...	(n/c)
SP401 matching speaker	...	(£1.00)
FT200 80-10m. transceiver	£170.00	(n/c)
FP200 matching spkr./A/C supply	£45.00	(£1.00)
FT220 2m. SSB/FM tcvr. 240/12v.	£264.00	(n/c)
FT224 2m. FM tcvr. 24ch. tone-burst	...	(n/c)
FT224 2m. FM tcvr. 24ch. tone-burst	£130.00	(n/c)
FP2 matching A/C charger supply	£38.00	(£1.00)
YC355D 200 MHz counter	...	(n/c)
YQ100 12v.	£125.00	(n/c)
YQ100 monitor scope (superb)	£93.00	(£1.00)
FT2 Auto	...	tba
Sigmasizer (80 channel)	...	tba

JAY-BEAM VHF ANTENNAS (inc. VAT)

4m. 4 element yagi	£8.50	(£1.00)
5Y/2m. 5 element yagi	£5.38	(75p)
8Y/2m. 8 element yagi	£7.00	(75p)
10Y/2m. 10 element yagi	£13.75	(£1.00)
PBM14/2m. parabeam	£21.12	(£1.25)
D5Y/2m. slot fed yagi	£9.90	(£1.00)
D8/2m. slot fed yagi	£13.12	(£1.00)
D5Y/2m. 5 el. crossed yagi	£10.25	(£1.00)
8XY/2m. 8 element crossed yagi	£12.75	(£1.50)
10XY/2m. 10 el. crossed yagi	£17.63	(£1.50)
XD/2m. crossed dipoles	£7.19	(75p)
UGP/2m. ground plane	£5.19	(75p)
HM/2m. Halo with mast	£2.75	(50p)
DB/70cm. slot fed yagi	£11.25	(£1.00)
PBM18/70cm. parabeam	£13.12	(£1.00)
MBM46/70cm. 46 el. yagi	£15.12	(£1.25)
MBM68/70cm. 68 el. yagi	£20.12	(£1.50)
12X/70cm. 12 el. crossed yagi	£20.88	(£1.00)

Full range of phasing harnesses and brackets in stock. S.A.E. for catalogue.

MINI-PRODUCTS COMPACT BEAMS

HQ-1 hybrid quad 10-15-20m.	£
B24 2 element yagi 10-15-20	£
RK3 reflector element for B24	£
C4 vertical 10-15-20	£

HY-GAINS ANTENNAS (inc. VAT)

12AVQ 10-20m. vertical	£31.88	(£1.00)
14AVQ 10-40m. vertical	£45.00	(£1.00)
18AVT 10-80m. vertical	£65.00	(£1.25)
TH3 1hr. 600w. 3 element beam	£92.50	(£1.50)
TH3 Mk. 3 2kW 3 element beam	£124.85	(£2.00)

2 METRE SSB (inc. VAT)

Liner-2 2m. ssb transceiver	£181.25	(n/c)
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TRIO (inc. VAT)

QR666 receiver 160-10m. plus general coverage 230v./12v.	£162.50	(n/c)
Matching calibrator	£10.95	(25p)

LOWE 2m. MONITOR RECEIVER (inc. VAT)

2m. FM 6 channel receiver complete with all channels fitted	£36.19	(50p)
2m. FM receiver, less xtals	£24.95	(50p)
Channel xtals	£2.00	(10p)

2 METRE HAND PORTABLES (inc. VAT)

KEN KP202 handi-talki 2 metre fm transceiver. 6 channels with 145 and 145.5 fitted. Over 2 watts output. Highest powered model on the market with very good audio. Tone burst option available plus leather case, helical whip, ni-cads and base charger.

...	£93.75	(50p)
-----	--------	-------

STONE BURST MODULES

Dual 1700 and 1750 Hz o/p.	£4.60	(25p)
----------------------------	-------	-------

ROTATORS

AR30	£31.25	(£1.00)
AR40	£37.50	(£1.00)
CDE 44	£75.00	(£1.25)
Ham H	£112.50	(£1.50)
Stolle 2010	£40.62	(£1.00)
Stolle 2030	£45.95	(£1.00)
5 core control cable	yd. 18p	(1p)

AERIAL FEEDERS

50 ohm UR43	yd. 18p	(1p)
50 ohm UR67/RGBU	yd. 36p	(2p)
75 ohm standard	yd. 10p	(1p)
75 ohm UHF low loss	yd. 14p	(1p)
300 ohm feeder	yd. 8p	(1p)

MICROWAVE MODULES

NEW! 70 cm. transverter	£75.55	(50p)
2m. converters 2-4/4-6/28-30	£19.00	(25p)
4m. converters 28-28.7	£19.00	(25p)
70cm. converters 28-30/144-146	£22.63	(25p)
2m. dual o/p pre amp.	£11.25	(25p)
1296 MHz converters 28-20	£29.99	(25p)
2m. converter 28-30/116 osc. o/p	yd. £17.60	(25p)

Well lads, they've well and truly taxed our hobby this time—some would say clobbered it! The flood of orders we received after the budget was fantastic and really taxed (excuse the pun) our normally speedy mail order service. I am afraid that we have now got to get used to the new prices. Mind you I reckon that much of the gear at present available still represents remarkable value. A top Dolby cassette deck carries a similar price tag to the FT101B transceiver, but take a look inside both and see which represents better value!

Lets mention a couple of items that must be bargains at the present price. The LOWE MONITOR RECEIVER at only £24.95 is a complete 6 channel fm monitor receiver with built-in speaker—most popular channels available. Another item for the 2 metre enthusiast is the KEN HAND HELD FM TRANSCIEVER—6 channels, superb audio quality, very compact and over 2 watts output for a good punchy signal. Our latest addition to the TECHNICAL ASSOCIATES range is an audio filtering unit for ssb and cw signals that simply plugs into the receiver and looks like being another big seller. The companion speech processor has been a sell-out and is the only unit available with a noise gate and all this at half the price of its competitors. All these items are normally ex stock so just pick up the telephone and quote your credit card number for instant despatch.

73's Peter Waters
Jeff Stanton

SOLID STATE MODULES

2m. or 4m. Europa B	£101.85	(£1.00)
As above less valves	£85.65	(£1.00)
Matching power supply	£39.35	(£1.00)
2m. converter 2-4/4-6/28-30	£18.75	(25p)
70 cm. converter 144-146	£18.75	(25p)
2m. pre amp	£8.52	(25p)
PA3 compact pre amp	£6.88	(25p)
70 cm. pre amp	£11.25	(25p)

MICROPHONES

Shure 201	£6.95	(30p)
Shure 444	£16.25	(50p)
Yaesu YD844	£18.66	(50p)

MFJ PRODUCTS (U.S.A.) (inc. VAT)

CVF-2BX boxed cw audio filter	£16.15	(30p)
SBF-2BX boxed ssb audio filter	£18.23	(30p)
CVF-2 unboxed cw filter	£10.42	(30p)
CVF-3 unboxed cw filter	£6.25	(30p)
100BX 100/50/25 kHz boxed	£13.30	(30p)
xtal calibrator
MFJ 100 calibrator unboxed	£10.82	(30p)
MFJ 100 calibrator less xtal	£7.35	(30p)
CMOS Electronic keyer with monitor	£24.38	(50p)

SPECIAL SIGNAL PUNCHING PACKAGE

Technical Associates Advanced speech compressor with various attack, decay time and noise gate provides the most economical way of increasing talk power WITHOUT ANY DISTORTION. Still offered at £22.68 (30p) it's a bargain with the famous Shure 444 mic at £35 the two units, it's unbeatable! Order yours now and save money.

STATION ACCESSORIES, etc. as per last month's advertisement.
WANTED—Clean Second-hand Transceivers, Receivers, etc.

NEW!

**TECHNICAL ASSOCIATES
COMPLETE RECEIVER AUDIO
FILTERING UNIT**

—
SUITABLE FOR SSB and CW
1 watt o/p drives loudspeaker

8 positions of selectivity:
80 / 110 / 180 / 200 / 1-500 / 2000 / 2500 Hz
High Pass

ONLY £26.50 — VAT (50p)

G-WHIPS Mobile Antennas—Ex stock.

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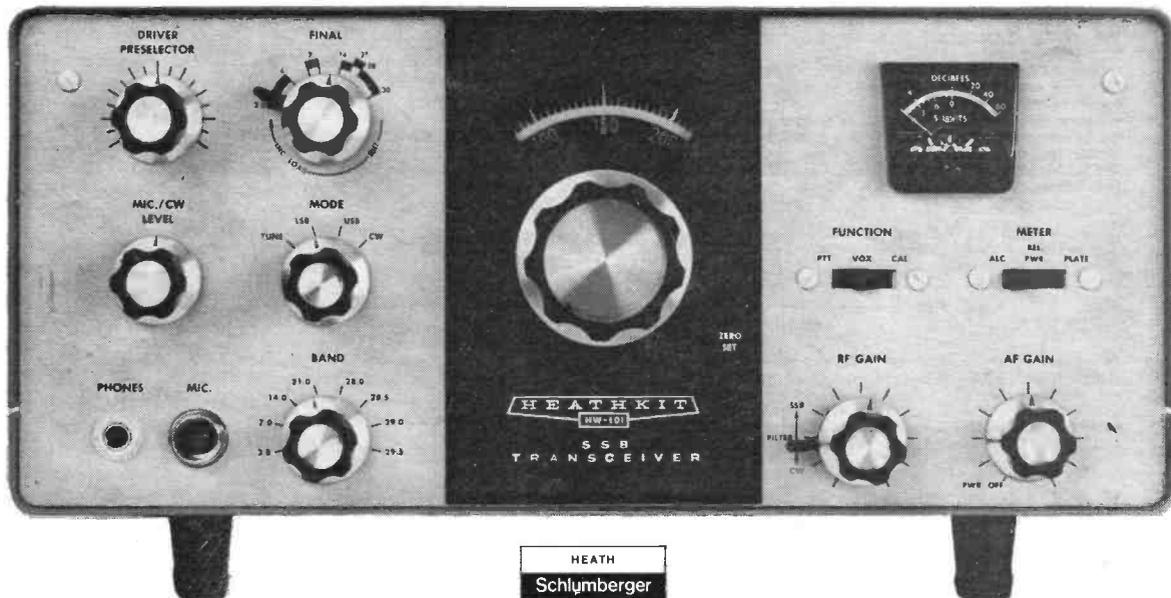
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SHORT WAVE MAGAZINE

(GB3SWM)

Vol. XXXIII

JUNE, 1975

No. 380

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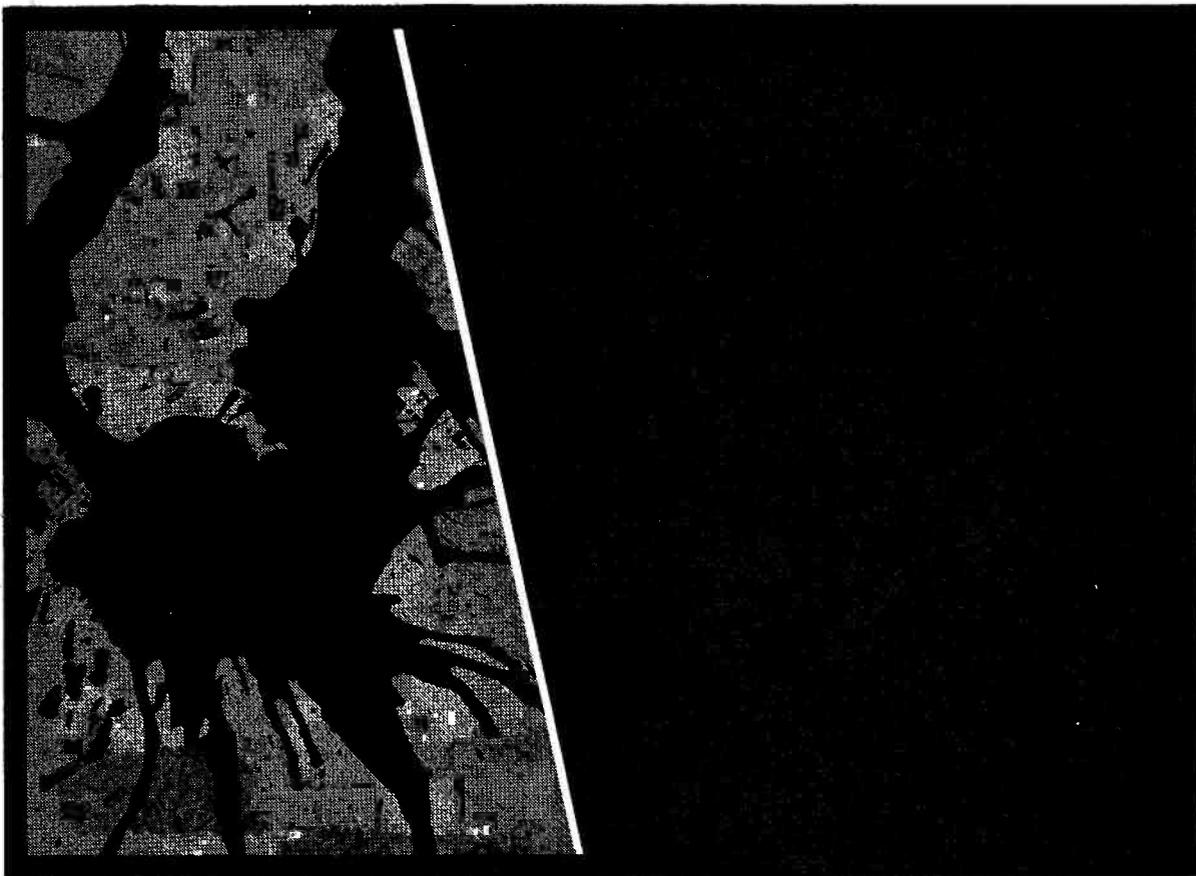
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Articles submitted for Editorial consideration must be typed double-spaced with wide margins on one side only of quarto or foolscap sheets. Photographs should be lightly identified in pencil on the back with details on a separate sheet. All drawings and diagrams should also be shown separately, and tables of values prepared in accordance with our normal setting convention—see any issue. Payment is made for all material used, and it is a condition of acceptance that full copyright passes to the Short Wave Magazine, Ltd., on publication.

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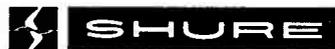
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The SHORT-WAVE Magazine

EDITORIAL

THEFT OF MAIL—APRIL 30

On the morning of Wednesday, April 30, our mail box at 55 Victoria Street was rifled before arrival of staff. It would have contained material posted to us over April 28-29—that is, immediately following delivery to readers of the May issue, when we would normally receive a fairly heavy post. It is, of course, impossible for us to know what we lost in the way of book orders, subscriptions and such. Obviously, there is nothing whatever we can do about it without the co-operation of readers affected, who should let us know about any orders sent in dated April 28-29 which appear to be outstanding.

* * *

POSSIBLE PUBLICATION DELAY

We should warn readers that there is again some unrest in the printing industry, involving one of the key unions. It may be that appearance of the July issue (due on June 27) could be affected. Many other periodicals and provincial newspapers are in the same difficulty. Therefore, if the July issue of SHORT WAVE MAGAZINE is not with you on time, we would ask that this situation be borne in mind before ringing in or writing to us to complain. It can be taken for granted that we always do our utmost—and have done for more than 30 years—to publish on the due date, the last Friday of the month.

* * *

R.A.E. COURSES—1975-'76

As in previous years, we shall be listing, starting with the August issue, courses of instruction to be held for the Radio Amateur's Examination, Subject No. 765, City & Guilds. Course organisers are asked to let us have details as soon as possible, addressed "R.A.E." SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ giving, as well as the address for application, the fee to be charged, the name/callsign of the course instructor and any other relevant information. Uniquely, Amateur Radio is the only hobby activity for which an official examination has to be taken and passed!

RAOTA DINNER MEETING—May 16

The 17th Reunion of the Radio Amateur Old Timers' Association took place in London on May 16, about 60 members and guests being present under the chairmanship of Kenneth Alford, G2DX, the president. Among two-letter calls of early pre-War days there were G2AK, G2IY, G2UV, G5DJ, G5OX, G5RS, G5UK, G5YH, G5YN, G6CJ, G6JP, G6LL, G6MN and G6YP—all wearing their years well and still retaining their early enthusiasms. It is intended that next year's Reunion should be centred on a Saturday lunch-time session, rather than on a Friday evening. Qualification for membership of the RAOTA (started some 20+ years ago by the writer of this piece as the British Old Timers' Club) is the holding of a full U.K. licence for at least 25 years. The hon. secretary, RAOTA, is Miss May Gadsden, 79 New River Crescent, Palmers Green, London, N13 5RQ. There is a regular RAOTA net every first Thursday in the month, with G2FUX, QTHR, as ringmaster.

* * *

CORRECTION—"QRP on Eighty"

In this article by G3DNF, in the April issue, the 16 lines below Fig. 4 (p. 86) should be read as the caption to Fig. 5, p. 87. And also on p. 87, in the fourth line of text below Fig. 5, the capacitor should be "0015 μ F polystyrene" and not as stated, the VC1 referred to being that of Fig. 1 on p. 85.

* * *

OBITUARY—David Corfield, G5CD

We much regret to have to record the passing of this well-known old timer, on April 16 at the age of 69. He was a professional of high standing in the field of radio engineering, and in the sphere of Amateur Radio pioneered the use of FM working and UHF transmission, as well as being an important contributor to the RSGB's *Radio Communication Handbook*.

*Austin Forsyth
G6FO*

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

ONE may conceivably have noted a certain hint of disillusion with life on reading the preamble to this piece last month, possibly some sense that Dark Forces were sitting on your old 'KFE's aged head. You might be right at that—at *precisely* the time that a farmer's wife was embedding the front-end of her vehicle into this person's horseless carriage, some five miles away his previous car was being shunted up the hind-quarters; and, as if that were not enough, the son-in-law, driving the shopping-wagon, managed to dent a hub-cap in a car park. Whoever the guy is with the wax and pins—*Lay Off!*

In a general sense, there can be no doubt that those who, like G2BJY, believe we should all brew-up everything ourselves, must be laughing at those of us who might have been considering a change of commercial rig—the Chancellor's latest Budget has brought us a 'way from the old situation whereby one could buy a rig without any form of blood-money being involved.

The Bands

Rather like the curate's egg; but what more can we expect at the bottom of the sunspot cycle? However, regular monitoring of the bands has revealed activity, to a greater or less degree, on all of them, for the pleasure of the DX chaser or the plain communicator. Let us start at the bottom, with Top Band, if you read us!

Activity on 160m. may seem to be down on this band, as viewed by someone who has not listened for, say, ten years; but most of this activity which had disappeared was in the nature of local natters and nets. If one is in there for an interesting GDX or EDX QSO, either on CW or Phone, there is plenty going on.

Up in Kirkcaldy, GM3YOR has been dipping his feet in the HF waters to the detriment of Top Band activity; and in his case, as he is well on with the easy ones, he is now scratching about a bit for some expeditions to fill up the difficult areas. In addition, changing over to shift work and the consequent opportunities to operate at "useful" times on the HF bands has had its effect.

G2BJY (Walsall) divided his time between Top Band and Forty, on the hunt for the "30" prefixes from OK, the end of which was a total of no less than 82 of them which may well make him the top scorer from G-land. And, we could remark, we go along with Geoff's feeling that the U.K. authorities could well have followed all the other countries who celebrated the end of Hitler's War—or, perhaps even better, the Battle of Britain 35 years ago—with a special prefix? On a different theme, G2BJY has been trying his hand at what might be called QRP reception! This by way of a 1-v-2 TRF receiver costing about 75p, using a 6AG5 RF stage, 6AG5 triode-strapped as the detector with reaction, and two more 6AG5's to bring signals up to speaker level. However, for serious use headphones are preferred, with an audio filter, and this Rx is being used on a short, about 20ft., aerial, even though OK's have been worked on the "big" wire. We could make the comment that if we add to the cost of 75p for the receiver, a power supply from the junk-box or Club junk sale, plus a couple of valves gleaned from the same source and turned into a transmitter (say, a pair of EF91's), plus a bit of wire aloft and a lot under the ground could, even at today's inflated prices it would get a keen chap on the air and able to enjoy contacts aplenty for well under a fiver!

Looking at the snippets at the bottom of Geoff Watts' *DXNS*, as regards Top Band, we notice that A2CBX is QRV on 1828-5 kHz weekends, between 0230 and 0415z—QSL to Dave Harris, P.O. Box 52, Gaborone, Botswana. K4V4Z worked TI9DX for his 100th country on the band since 1969, not to mention taking top place in the CQ one-sixty metre contest each year—W1BB had better look to his laurels by the sound of it! On a different tack, WB8APH has made a WAC using two-way SSB on One-Sixty.

Eighty Metres

We had hardly made that comment, last month, on the problems of unwanted noises generated in receiver front-ends and put the copy into the post, when the mail at the salt-mine produced a most interesting Siliconix Application Note, No. 48, referring to the advantages of using a *double-balanced* mixer comprising four U310 FET's, or, better still, the U350 device which is four U310's in an optimum-shape 14-pin DIL package, with the four chips taken from the same wafer to give a quite remarkable degree of matching of the FET's and hence of balance. The note refers to the performance over the range 50-250 MHz, at which the device has a noise figure of 8 dB—more than enough to be used without an RF stage in, for

example, a direct-conversion receiver for Eighty of performance probably superior to *anything* on the market today. An interesting thought!

Two letters came in from G4DMN (Shrewsbury School), the second being a large amendment to the first and realising he had reported some stations twice; as if that were not bad enough, Richard addressed both of them to Justin Cooper of "SWL" from whom they had to be recovered by main force! To be serious for a moment, G4DMN has added an 18AVT/WB to the school aerial farm, and oddly enough finds it relieves him of TV as compared with the dipoles. On Eighty, the diople entrapped signals from VP2ABC, 8P6AJ and ZB2CJ, but the run up to A-levels is this term and so activities have been more academic than DX-oriented.

Next we have a brief letter and log from G3CED (Broadstairs) who seems to have varied his gear quite a lot from band to band, and also to have tried out a new type of ATU with his Joystick. On Eighty, it was either five watts or 750 milliwatts to a BFY52 doubler PA; the latter made contact on CW with DK6VF, F2WW, ON5RL, G3DBZ, G4AYG, G5JL, PA0FVL, TK8TM—the "celebration" prefix used by the F's—and G3WSZ, finding that going up to five watts made little difference to reports.

G2NJ (Peterborough) maintains his noon-time activity on Eighty QRP and had quite a crop of interesting QSO's, including G3FMW in Harrogate with two watts; G3CEL, Hyde, on five occasions, of which three were when he was P from Pwllheli in Wales (with only 35 feet of wire and two watts); G2CAS using one watt from Harrogate; G8PG and G2DOJ, both running two watts; G3RJY, the QRP Club spark-plug, with four watts, plus many five and six watters in the Low Power contests.

Yet another QRP artist is G2HKU (Isle of Sheppey) who says his MFJ filter tacked on to the back of the Ten-Tec receiver is a great help with the winking-out job, always provided the *other* bloke doesn't drift! 90 watts of SSB hooked W1WQC/P4 and 6W8DY who came back with a fast QSL via VE4SK and air-mail, while the QRP CW at one watt (those batteries getting flatter still?) made it to DA2SL, DK3PY, OK30DNJ, ON5GK and PA0FIN.

Forty

There are people who claim that DX'ing is best done on 7 MHz at this phase of the sunspot cycle, but it is certainly not for the faint-hearts and refugees from the VHF telephone-links!

G2BJY found conditions for what he calls *real* DX were pretty poor, but noticed at the same time that often the Eastern Europeans were getting through when he couldn't, which told him the skip was not right—though some people would have ascribed it the easy way and said those same EU's were running over-power and umpteenth-element beams! Nice to hear someone put a problem down to skip and not to crimes against the licence committed by "they"—whoever "they" may be. However, his "Pobieda 30" activities found quite a crop of odd prefixes of which Geoff candidly comments "their significance eludes me!" and a very nice QSO with DL6XT, Lake Chiem, and a very rare one for DOK.

G4DMN did not brave the QRM on Forty, but he has now received his second call-sign, EI1CV, on which he is restricted to 25 watts and CW on Twenty and Forty until he has held his G-ticket for a full year—but it'll be good practice, he reckons. For this odd scribe to hear of a probationary period of a year attached to a U.K. licence brought back memories of twenty years ago!

G3CED/G3VFA did not risk his real QRP on the band, but went QRO to five watts(!) at which level he hooked HB9AAL, SM7WZ, SM7FYK, EA2JJ, YU3UMC and F6AGH, all on the key—George is a dyed-in-the-wool key-basher *ex-pro* operator.

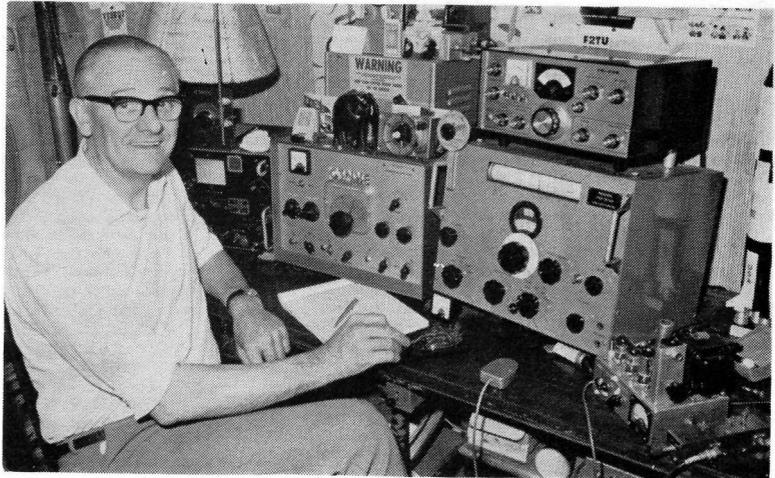
As for G2HKU, Ted stuck to the Big Rig for this band, and CW, accounting for K2BT, KP4BJM, PY7ASY, PY7BPA, UH8AU (for a new oae), VP9HP and YV4TI.

Comments

As always, lots of these, some grave, some gay, some quite unprintable! G2HKU kicks his off by wondering at the collection of funny noises infesting Top Band of late, and what they do—for instance does that "OSN41" thing serve any useful purpose beyond getting rid of surplus electricity?

G2BJY has been having some surprises at the way people keep their logs—stations operating Vox on Top Band and arguing as to the date they had their last QSO, as one end of the contact appeared

Ernest Phillipson operates G3NVE at 67 Newport Street, Goole, South Humberside, running all bands Top to 10m. and VHF, with an FR-50B as main station Rx and a CR-100 as tunable IF for VHF. Antennae are a TA-32Jr., with beams for 2m./70cm. on a simple home-designed and built rotator and direction indicator. G3NVE was licensed in 1959 and his interest goes back to 1936.



not to have made *any* entry, even a wrong one, in his log, or the GW who claimed it was their first QSO but who seemed familiar—it turned out their last contact was a fortnight earlier! As Geoff sees it, and your scribe agrees wholeheartedly, apart from the "licence conditions" aspect of the thing, well-kept old logs are a source of much pleasure to mull over when the band is flat, always bringing back memories of people, places or events.

From WIWY we have a Xerox copy of the results of the 1974 CQ WPX Contest, both CW and Phone, a full two months earlier than usual. Looking at the CW results which we have to hand, the U.K. representation was higher than for some years past. HC2YL was at seventh among the world-high scores all-band, EI0REI was top on Eighty, and GM4ASY on Top Band made third place. Of the U.K. entrants, G3FXB led the all-band with over the million points mark, ahead of sixteen other G's; GM3BCL led the Jocks home and GW3SLA did the same for the GW's; in the multi-op. single transmitter class the leaders were, by country, G3WYX, EI0GRC, G13FFF, GM3ZRC, and GW3UCB. Top single-operator in Ireland was EI2BB, and GB3MCG, competing in the multi-operator multi-transmitter class, racked up over the million points; the total U.K. and Eire entry was no less than forty-five stations—quite a livening-up of interest in the big contests!

Nice to hear again from W6AM (Long Beach) who has been on a Caribbean cruise, operated from five countries and visited 60 amateurs, including giving a lecture to the Radio Club of Venezuela.

G4AGM (London S.W.4) writes in to let us know he is back in the U.K. for a spell but will be in Brazil after December this year and, hopefully, licensed in that country; he already has VP8JR, DA2XW, DJ0HY and G4AGM callsigns to his credit.

The Rhodesian *Sunday Mail* on March 23 gave ZE1CW a good write-up with a couple of pictures, one of the shack and the other of a fine Quad and crank-up tower, details of the requirements for a licence, the address of the licencing authority and of the Radio Society of Rhodesia; the clipping was sent in by G3MYF of Otley, to whom our thanks.

A.R.M.S. secretary, Norman Fitch, G3FPK, writes to mention the mobile calling channels. The HF net frequency is of interest to be mentioned in this piece—the Saturday members' net has moved down to 14-320 MHz, at 1330z, with the Club callsign G4AMS as the net control.

We live and learn! Last time round it was remarked about PA9 prefix that it might possibly be a /MM variant; now G8BBP/PA9AHY puts us right by pointing out that PA9 is the prefix for Dutch reciprocal calls—and Keith reckons it is pretty fair for a G8/3 to receive a PA9 ticket allowing 80-10 metres, 144 MHz and 432 MHz operation! Thanks for the information—and it's nice to know we have at least one G8 reader!

Some time back we mentioned the problems of G4BUE, about planning-permissions for his aerial—his employers solved that one by transferring him to Burgess Hill and requiring him to live in the area where he works! On a different tack, Chris has a lot of fun with the Mid-Sussex amateurs calling themselves the "Channel Contest Group," and he sent us some colour prints of the members and their Club station during last year's CQ WW WPX, operated by them, as a DX-pedition, from Guernsey with much help from the locals there.

The idea in the future is to operate in the contest from somewhere like Morocco and really make a killing. The group members are G3FXB, G3MXJ, G3XBN, G3ZQW, G4BVH, SWL Measor and of course G4BUE himself—quite a fund of DX and contest experience there!

Next we have WB2OZW/G5AUP, writing from Park Ridge, N.J., to comment on the recent review of the MFJ CW filter. Paul offers some findings of his own which will be of interest to any CW op. thinking of using one. First, he compared the filter against his previous passive devices, and found it no-contest—the CW out of the MFJ filter is far superior. However, he does make a couple of points of interest as to the best place to connect the box—not, as most of us do, putting it in the headphone leads, but between the slider of the receiver volume control and the grid of the first audio stage, where the level is at its lowest. A good point, at that, which Paul takes further in his Drake 2B by running his unit off a *twenty-five volt* line, divided down from the 60-volt rail in his receiver, so as to improve further the rejection of overload crud. However, while it is quite safe to do this, one must be sure that the HT never under any circumstances rises above thirty volts, which rather indicates the use of a zener diode to be on the safe side. Keeping the MFJ filter outside the receiver physically, but taking screened leads inside the receiver to the volume control slider, as just mentioned, means that you can control the receiver as normally without fear of overloading the MFJ unit, and also that you can use the receiver headphone jack and speaker in the normal manner. G3KFE has tried this and the improvement is quite noticeable.

The HF Bands

Broadly, things have been about what one would expect for the time of year and the sunspot cycle. Ten has had a few odd openings Southwards around noon-time, plus the occasional "VHF-type" opening. However, the greater interest in Ten at the bottom of this cycle as compared with the last two minima has resulted in more DX contacts being reported, by far—which just goes to show that, as we have so often remarked, *activity* is needed to detect an opening!

GM3YOR has been getting his feet wet on HF, and finding out about the required arts for raising DX—not necessarily quite the same as Top Band, he ruefully remarks of the ones that failed to come back! The FT-101B is hooked to a K.W. trap dipole at thirty-five feet and aligned SE/NW, which only made one contact on Ten apart from Oscar, which was to YU2BST, and even that needed a combination of SSB and CW to complete.

Just for a while, G4CXM is back at his Paignton home, and naturally enough he is enjoying it, although he will in due course be going away again, possibly to work in Bristol. Ray didn't see much activity on Ten, but usually there were at least stirrings around 1200-1400, with 9J2DT always to be looked for as a beacon.

G3NOF (Yeovil) dismisses the ten-metre activity as far as he is concerned in very few words. He noted a few openings into Europe, but made no contacts.

* * * *

Now we must look at Fifteen, and here our first exercise is the letter from G6AH (Burnham, Essex) who was stirred to write in by

our comments on sunspots and the lack of them last month. Being retired, G6AH began keeping a daily watch in August '71, on 21 MHz for one hour, the chosen period being the first activity in the morning, moved in steps to coincide roughly with the seasons. The aerial used for these watches was a quarter-wave rod against ground or a ground-plane; results are expressed in terms of DX prefixes heard.

G6AH then totals up the DX prefixes logged in a given month, and divides the total to give a "per day" figure for each month. The highest per-day total was in February 1972 at 19.1, dropping more or less as one would expect to February 1975 with 3.6; April 1975 at 2.2 shows as the worst month since the watch started but November 1974 showed up as the best month since November 1972 and the fifth best since operations began in August 1971! In general, November seems to be the best month and April the worst, for DX, for some unknown reason. Further, the answer is not connected with the sunspot count, which was for October 74, 47; November, 25; and December, 20. Very odd, and very interesting! Research along these lines is always rewarding, and we would like to hear of more.

Fifteen for G4DMN meant contacts only with LU4MBI and 5B4BS, both taken on the 18AVT. On the other hand, GM3YOR used SSB for QSO's with CE3RC, CR7BU, OD5BV, VQ9HCS, and VQ9SS/C (Chagos), while the CW bait hooked EA8BK, LU1DNU, PA0WY/MA (over the Persian Gulf), PY1DG, PY2FCF, PY2ZBU, M1C, YV4NB/MM off Gabon, 4X4ST and 5B4RW.

On to G4CXM, who reckons that the band went well for him to the East and to South America, but not at great strength; CW was used to work YB0AB, but SSB came up with CV0Z, UF6FAD and XX6OZ; but although he was a good signal inwards, the bait was dangled at FH8CY to no avail. The first couple of weeks of May saw conditions fall off, with little heard in the away of DX; short-skip on some days, but on others almost dead—with an occasional burst of life for a few moments and then again silence. SSB contacts were made with CE3RC, CR6BY, CR6QU, TU2EI, VP8NK, VQ9J, ZS1EZ, 4Z4IX, 5R4CB, 6W8BR, 9J2DT and 9J2WR.

How About 14 MHz?

Were Shakespeare alive today, it is sure he could have waxed eloquently on the distressing topic. But for the moment we must make the best of it.

To kick off the reports we have G3UOL (Coventry) who seems to have reacted to poor conditions by way of a linear not mentioned in previous reports; the K.W. Viceroy still gives of his best, and the two are coupled to a KW trap-dipole. Usage was confined to 14 MHz and SSB, conditions considered to be fair over the month of April; and it meant two-way contact with 9K2DI, VK's around 1300z and OE2SCL/YK for a new country; around 1800 he found TU2CJ and TU2DD, TG9PW, and during the evening-time there were HZ1AB, KG4FO, TR8RS, TR8WR, TU2EH, 5N2AAE, 5U7AW, 9G1AR, 9G1HX, followed at 2100z by FY7AN, HR3JJR, VP2AYL and ZP5SG.

Top Band Counties

October — September

Callsign	AM	CW	SSB	Total
G2BJY	18	138	52	208
GM3YOR	33	126	47	206
GD4BEG	15	138	40	193
G4CBQ (Home)	56	46	55	157
G4AKY	—	94	24	118
G4CBQ (Univ.)	105	2	—	107
G4BWP	27	70	—	97
G4BOH	9	62	24	95
G4AYS (QRP)	—	76	—	76
G5BHP	3	32	—	35

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 from SSB to AM are not allowed, neither are cross-mode contacts, saving that AM/SSB contacts will be counted as two points for the mode the station was using, i.e. the SSB end will claim his two points under the SSB heading and the AM end his two points under the AM heading. New U.K. County designations apply, as listed on p.97, April.

Starting date October 1, 1974, closing September 1975.

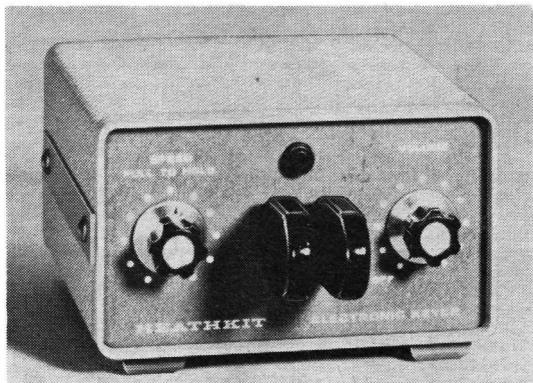
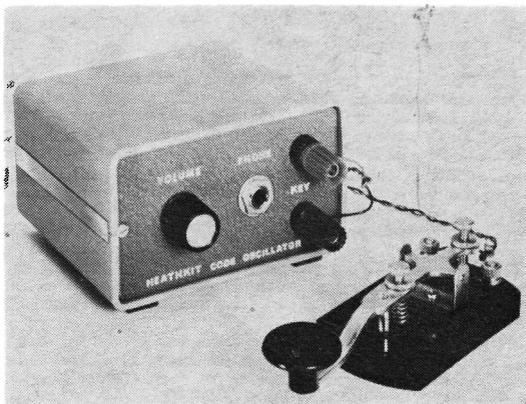
Reporting the HF Bands

There was a lot of 14 MHz operation, relatively, at the G3CED QTH, with inputs varying from the 750 milliwatt power doubler to two or even five watts input. The gnat-power device, coupled into an aerial, netted an R5-both-ways from W1TW—the aerial being of course, the Joystick, while UA1CZ in Leningrad could hardly be regarded as a bad return to a CQ with such a power level either, come to think of it. Twenty QSO's with the little 'un, and a change was made to two watts for another twelve QSO's all round Europe; the five-watt "big rig" was not needed on Twenty, being reserved for the tough stuff on Forty and Eighty!

At G2HKU, the only SSB was with UD6CC, but CW raised UK0AAB and 9H1CH, who is perhaps better-known as G2BW, now living out there.

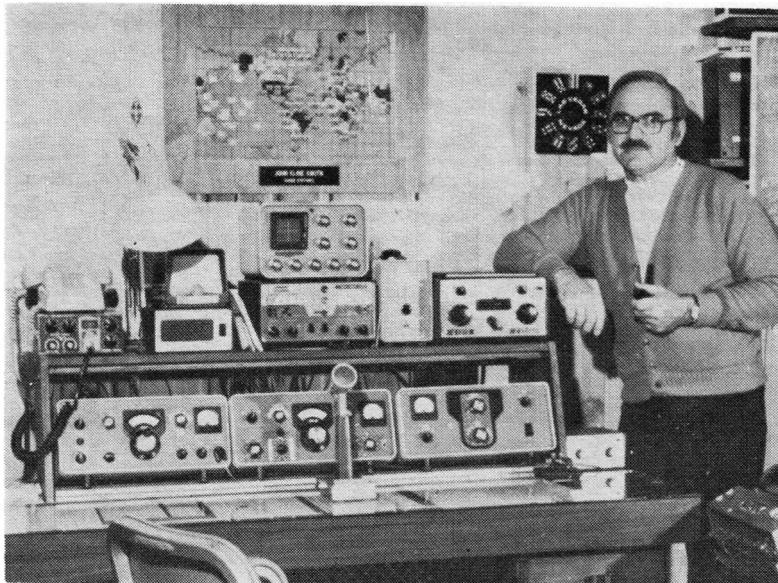
The letters from G4DMN indicate quite a lot of activity; on the dipole there were CR6XA, TA1HY, KZ5ED, C5AR, TU2EP, CN8AG, VP2LBR, FM0BQQ/FG; a switch to the vertical produced the desired exchanges with 9K2BR, W0NNY, 5Z4OG, PY6AM, VPIPKW, PY1RP, K2OAS/M, W1YZZ (who was S3 running one watt of SSB), PZ1BW, PY7VKN, UP2AYL, 9Y4VV, HK3LY, YSIGMV, W5NVU, JA4HM/5, HM1AQ, JY3ZH, JY9MS, HZ1TA, KZ5BC, LU1ATQ, 9L1JM, LU8AAE and CE8DC.

GM3YOR found he was gradually learning his way about the band, and his success ratio improved over last month, with eight new ones booked in, by way of CE, CR7, HC, HK, M1C, VQ9, VQ9/C and 9K2. CW saw off HC1XG (who is otherwise G3HVG)



(Upper) The Heathkit HD-1416 Code Practice oscillator, which operates from a 9v. supply, and comes complete with key and phone jack, in a home-constructor kit costing £7.00. (Below) The Heathkit HD-1410 electronic keyer, with adjustable dot-dash paddles for speeds from 10 to 35 w.p.m. It can be AC or DC powered and costs £29.70 in kit form.

K9UTN, John Kline of 3302 Nottingham Way, Madison, Wis., 53562, having started in 1959 now holds the coveted Extra-Class licence, involving among other things Morse at a steady 20 w.p.m. Regularly on the low end of Twenty, some 70 countries have been worked on CW this year alone. Though the gear shown in our picture is all of ten years old it is still regarded as "top line" in the U.S.



and SSB did the rest, with CE2PC, CT2AK, FY7AQ, HV3SJ, HP2KP/MM (in the Persian Gulf), JY9MS, HK3BGN, UK9CAE, UK9MAA, VE8RCS, WB2ZH, WA5OQZ/MM and 9K2DR.

An April Fool's Day special? wonders G4CXM of his contact with QQ0AA who was worked although no-one appeared to be able to extract a QTH out of his phonetics! However, more likely candidates for the log were, on CW, FM7WH, UL7AFA, VO1HP, UF6FAY, UI8AP; SSB, VP5GT, LU4DSZ, YV3AGG, YV2AMG/3, 9Y4PH/P, 9Y4VU, OD5IO, 4U1TU, HK3LYH, VK2PA, VK4NE, VK2LW, VS5DB, VS5MC, VS9MB, PY2HY, A4XFX, M1D, OE2SCL/YK, UA9VH/JT1, 5T5ZR, VU2RG, CT2AC and UK9's.

The best of a bad lot, opines G3NOF, who found conditions on 20m. poor for the week prior to his letter, and occasionally disturbed earlier in the month; but he still manages to get around, and so his log entries include A4XFE, A4XVF, CR6MX, DU1DCC, DK6PN/A6, EA5ES/9 (Rio de Oro), EP2DB, HI8HJD, HP2KP/MM, JH3PNR, JY9MS, K6MOO, KZ2PTE, OE2SCL/YK, SU1MA, UA9VH/JT1, VK2TG, VP2LBR, VP2MGB, VP2MW, VS5MC, VS5MAS, VU2CK, VU2MX, WAGMKI (Nevada), YB0ABV, 4S7AW, 5B4CA, 5N2NAS, 5ZAGK, 5Z4OG, 9G1HX, 9I2KP, 9L1JM, 9M2AP, 9M2CJ, 9M2CX, 9N1MM, 9V1SG and 9Y4VU—but the gotaways included DU1JMG, DU3BS, FG7AN, KG6JAR, VS6DO and 9M8VLC.

Snippets

It looks as though there will be no more AC3PT contacts in the foreseeable future, as Indian troops occupying the Royal Palace seized the AC3PT rig; Sikkim has for all practical purposes been annexed by India and will become an Indian state.

VS5MC's Spratly expedition was lucky to have, as it were, come unstuck—since then, between April 14 and 29, the Viet-Cong occupied

all its islands of Song Tu Tay, Son Ca, Nam Yet, Sinh Ton, Truong Sa and An Bang, so Maurice seems to have achieved a near squeak. Also in this troubled area, we hear that XU1DX has left Phnom Penh and sent his last logs on to W1YRC. And rumour has it that XU1AA, Vong Sarin, is under arrest—we must hope this is unfounded.

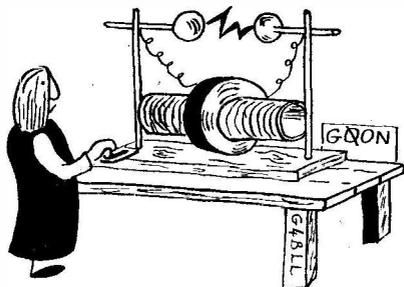
Cocos Is. seems to have raised a mighty hou-ha one way and another. First there were TI9DX pile-ups to be worked through, this being the group of TI2 operators led by TI2WD, and then the TI9FAG expedition by some HB9's came on the air. Since then we have a letter from TI2WD, published without comment by *West Coast DX Bulletin*. The gist of this is that when the TI2's heard the HB9's had got a licence to operate from Cocos, they went to their P. & T. people and had it cancelled. This bit of pettiness resulted, on TI2WD's own showing, in the HB9's reacting by asking TI2FAG to get a licence for TI9FAG operation, bringing him into the party and going on and operating, successfully as we all know. TI2WD once again went to his authorities, with the end result that TI9FAG licence was voided, as also was TI2FAG's own licence, and letters were being sent to IARU, ARRL and the HB9 authorities by, again, this same TI2WD, all this being unsupported by any word other than that of TI2WD! This is a pretty disgusting display of mean and childish behaviour on the part of the TI2WD group, which does them no credit at all! Had Aldo Diener not applied to activate Cocos, one seriously doubts whether this Costa Rican party would even have thought of going to Cocos. This is the sort of petty spitefulness that in children results in a slap; and it is to be hoped ARRL, IARU and the HB9 authorities administer the equivalent!

Something rather more savoury to look forward to: Ed de Young, ex-KH6GLU, VK3JW, and VK4WS are set to leave Mooloolaba at August-end, to activate three spots for which they hope to obtain DXCC cuntry status, then on to Mellish, another reef, and finally, Willis Island before returning. This one sounds to be pretty firm.

If you have been listening for those "ITU" calls, and ran across KY1ITU during May 10-17, you were hearing our old friend W4WFL, who was going to "work it over" quite firmly during the week's operation. After that, by the time this reaches readers, Morgan will have, as it were, changed his spots, and will, hopefully, be signing G5AYL once again, this time for several days, and drinking English ale as well.

Some changes are afoot, we hear, which will change the face of DXCC; negotiations are reported to be going on between Iraq and Saudi Arabia, which may lead to a settlement and the abolition of the 8Z4 Buffer Zone formerly considered to be necessary between these two "allies." Heading southwards, we hear that Transkei and Qwaqwa are likely to become independent soon, which will generate a couple of real new countries.

By mid-June, 3B8DL should be away from Mauritius and in to Rodrigues where he hopes to remain for about three weeks; it is understood INDXA are shipping him a rig which will enable him to operate SSB rather than use the crystal-controlled outfit with which he has



“ . . . Am on all bands here . . . ”

previously been content.

If you are a keen type and after the DX on Top Band—and it is a rather specialised sort of DX'ing, it must be admitted—then you might like to help W4BRB help you; the Top Band Association will accept five-dollar donations with a view to funding Top Band activities at DX, for example by freighting gear out to CE0AE, Fr. Reddy on Easter Island.

If you heard your old scribe out /M on Two since last you picked up the *Magazine*, please take note it does *not* mean he has gone off his rocker—far from it, but he was in fact going on a cruise of part of the narrow-canal system, and it seemed the only way to run a reasonable aerial system was to go VHF for a change, it being held that a TA33, a mast and a rotator, were not really *practical* aboard a 24-foot craft! So, a Liner-2 and four elements on Two it was, thanks to G3LWM of *RSL Components* who offered his own gear when it transpired our chosen piece was sold out right across the country until weeks after the holiday.

A final snippet provided by G4DMN, who must spend at least a few minutes occasionally watching TV—he spotted, in a Walt Disney cartoon, the bee escaping from Donald Duck while sending a CQ with its sting, *Crikey!*

QSL Addresses

G3NOF sent the following ones for the QSL-less; *FG7AN*, to WA3EDS; *DU3BS*, to Box 74, APO San Francisco 96298; *9L1JM*,

to W4BAA; *9M2CX* to SM0BYD, these to be direct only with s.a.e. and IRC; *PZ9AA* to P.O. Box 1810, Moengo; *SZ4OT* to VE2GS; *EP2FR* to W3YMB; *KZ5BC* to W4YWX; *DUIJMG*, to Box 1381, Manila; *VP2MGB*, c/o Bethel P.O.; *9Y4YV* to K9KXA; *VQ9J* to Box 4, Mahé; *HZ1AB* to DJ9ZB; *HZ1TA* to OD5FH; *9X5PT* to VE3BOZ; *DK6PN/A6* to DK3NK; *VS9MAS* to G3LQP; *YB0ABV* to W3KT; *VQ9GP* to Box 235, APO NY 09030; *KC4AAZ* to K7ODK; *VP8NK* to P.O. Box 55, Falkland Islands; *E45ES/9* to Antonio, Aridal 5, El Aiun, Spanish Sahara; *DL0OC* to DF4GX; *VS6DO* to K4CIA; *KG6JAR* to Box 133, NCS, APO San Francisco 96630; *OD5IO* to P.O. Box 4201, Beirut; *A6XB* to K1DRN, and *VP2LBR* to K2IGW.

And, as a very final-final, it will be recalled that Fred Laun was wounded and kidnapped when he was held by bandits last year when he was LU5HFI; he is now W9SZR/3 and ran into the second place in the 1974 *CQ WW Phone* contest to take the U.S.A. Trophy while operating single-op. all-band as W3AU. More recently he has been worked by G3NOF.

Sign-Off

That is about it for another month; for next time the deadline will be, as usual, 17 days before publication date, the last Friday in the month, which gives you June 10 for the July issue. Address as always is "CDXN," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18 1RQ.

* * * THE MOBILE SCENE * * *

REPORTS, PICTURES AND EVENTS TO COME

The first Rally event of the season—staged in Leeds on March 30 by the White Rose Radio Society, as last year—was again an unqualified success. They had no less than 24 trade stands, offering a wide variety of interesting items, from shiny boxes to trays of components. The one complaint registered was that it was "all too crowded," there being a larger attendance than for any previous White Rose occasion.

An interesting result on the /M side was that while more than 40 mobiles were worked on two metres, very few turned up on Top Band—this being a pointer to the fact that, there being no commercial gear generally available for 160m. mobile, few /M's build for this band nowadays. Indeed, it is probable that there is more /M activity on 80m. than on Top Band.

The White Rose report remarks that "though the cost of organising the Rally was astronomical, every single item being at least 25% up on last year, it is hoped to hoist Club funds up a notch or two." Good for them!

For the well-known (and well supported) Spalding Tulip Time Rally on May 4, some interesting statistics are available: Between

11.0 a.m. and 3.0 p.m. they had in 961 people in 374 cars, of which 121 were fitted mobile—104 on two metres, four on 4m., ten on Top Band and one each on 80m., 70 cm. and all-band. Hard figures of this sort are extremely useful in indicating trends, in this case showing quite positively the move to VHF so far as mobile operation is concerned—unless a very large turn-out of mobiles is expected, it seems that providing talk-in on the other bands is hardly worth while, and that it might even be necessary to have more than one two-metre talk-in, perhaps fairly remotely located from the Rally site to avoid too much mutual interference. Anyway, it is more than doubtful whether one two-metre talk-in station could cope with all the traffic offered during the peak arrival period.

The Spalding bring-and-buy stall record is also interesting—more than 100 items changed hands, to the mutual satisfaction of all concerned (you get your price for what you offer and pay fairly for what you want and the Club gets a percentage of the gross).

Once again, this was a very successful undertaking by the Spalding & District Amateur Radio Society, and they had fine and sunny Wx for it.

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THE RALLY CALENDAR

Forthcoming events on the Rally scene are given in detail herewith there being some additions to the earlier list.

June 1: Royal Naval Amateur Radio Society Rally at H.M.S. *Mercury*, near Petersfield, Hants.—Fleet/CRS M. J. Matthews, G3JFF,



For the White Rose Rally, members of the Sunderland Amateur Radio Society got together to hire a mini-bus for their trip to the first Rally of the Season. This was a well-organised outing, enjoyed by them all—but what a crowd when they got there!

R.N.A.R.S., H.M.S. *Mercury*, East Mèon, 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: For the 18th West of England Rally at Longleat House, Warminster, Wilts., the under-cover accommodation will be spacious marquees, with trade stands, a raffle, bring-and-buy stall (no rubbish, *please*), refreshments available on site and talk-in by G6YB/P (1920 kHz), G3JMY/P (3775 kHz) and G3TAD/P on 145.5 MHz/VFO. There is something for everyone here, including the House itself and the magnificent wild-life park, overnight camping (from 6.0 p.m. on the Saturday) and plenty of space for parking and to picnic. There is an admission charge, as this is one of the "stately home" sites. Further information from B. Croker, G3ULJ, *QTHR*.

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 12th Annual Rally at the Technical College, Redruth, Cornwall, with talk-in on Top Band, 80m. and two metres, from 10.0 a.m. There will be trade stands, a raffle with radio and non-radio prizes, and refreshments arranged at the College. Details: W. Locke, G3NKE, *QTHR*.

July 20: Anglian Mobile Rally at Stanway School, Colchester, Essex (exit A.604 off A.12), with ample car parking, trade stands (usual and unusual), family attractions, undercover accommodation, bring-and-buy stall, refreshments and talk-in on 2m./80m. by GB3AMR.—T. Mills, G3YAI, *QTHR*.

August 10: Mobile Picnic at Avoncroft Buildings Museum, Stoke Heath, Bromsgrove, Worcs., B.4091/A.4024, admission payable, free parking and picnic site (bring your own sustenance), bring-and-buy stand and talk-in on 2/80/160m. Information: J. K. Harvey, 22 Elm Grove, Bromsgrove, Worcs., B61 0EH.

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.



A commercial mobile installation as supplied by Rediffon Telecommunications to the Nigerian Police Force. A 100-watt SSB set for HF working, it has been tested under location conditions to give ranges up to 900 miles or so.

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.



For the White Rose Rally at Leeds the hall was "jam-packed solid" before lunch-time! This is a general view, with the crowd milling round the stands. The White Rose group could well feel that this year their Rally was almost too successful!

INTRODUCTION TO MOBILE WORKING

SOME OF THE PRACTICAL CONSIDERATIONS

C. PAGE (G4BUE/M)

WHENEVER mobile operation is discussed there is often doubt as to what is actually regarded as mobile operation or a "mobile QSO." Driving along the M1 at seventy whilst in QSO is clearly "mobile," whilst parked in a field using a Quad on a 40 feet mast is clearly portable. Doubt is raised when the vehicle is stationary and the equipment, including the aerial is self-contained in or on it. The generally accepted definition is that if, at any time during the QSO, the operator can drive the vehicle safely away, and maintain the contact, it is a "mobile QSO." The writer does not regard stationary CW operation as true mobile, in that the vehicle cannot be said to be driven safely if the driver is also keying. (It is a different matter, of course, if a passenger in the car is operating the key). The question of CW operation whilst mobile is very controversial amongst mobile amateurs and there are widely differing opinions.

Having established what a mobile QSO is, the next step (after obtaining the mobile licence) is to decide on what bands and modes it is intended to operate. The writer's experiences have been on the HF and LF bands, with the exception of 40 metres. For some reason mobile amateurs in England avoid Forty, whereas in France it is the most popular band. What follows is intended primarily for those proposing to try the 10-160m. bands, but much of what is said equally applies to VHF/M.

Whatever is decided, membership of The Amateur Radio Mobile Society is recommended. Members are very experienced in all aspects of mobile operation and are only too willing to assist others interested. An excellent information service is maintained through which particulars are available on all aspects of vehicle suppression and reciprocal licensing. Various achievement awards are offered and a monthly news bulletin is published. Full details about ARMS and membership are available from the hon. secretary, Norman Fitch, G3FPK. *QTHR* and reports appear regularly in "Month with The Clubs" in *SHORT WAVE MAGAZINE*.

Safety

The aspect of safety cannot be emphasised too greatly. It is to the credit of mobile amateurs that no record can be found of road accidents that have occurred through operation of their equipment. Although there is no law forbidding radio transmissions being made by the driver of a motor vehicle, it is an offence to "drive without due care and attention." The ideal arrangement is to be able to transmit with both hands on the wheel. This can be accomplished by using a headphone and/or mike boom arrangement. Although the danger of wearing headphones must be considered, most can be worn in such a way that external noises can also be heard. Alternatively a neck fitting can be worn to hold the microphone. The push-to-talk switch can be a push-button mounted

on the steering wheel or direction indicators depending on the make of car. This arrangement then only necessitates a hand being taken from the wheel to adjust the VFO, once initial tuning has been carried out. Better still, by using Vox control, greater safety can be ensured. It is very noticeable that even police officers in their vehicles still use old fashioned hand sets with manual changeover. All controls should be reached in comfort from the driver's seat. The SWR bridge, if used, needs to be mounted so it is clearly visible. The comfort of others using the car should be taken into consideration, as should the mounting arrangements for the gear that could affect the re-sale value of the car. If a domestic car radio is fitted, its speaker can also be used for the amateur-band receiver, by a two pole/two way switch to enable either Rx to be selected.

If "stationary-mobile" operation is envisaged to any large degree, the fitting of auxiliary batteries is recommended. With more than one extra battery, switching should be arranged to break the connection between them, when not in use. A battery charger is used by the writer to keep the three auxiliary batteries right up by charging them *in situ* in the boot of the car over night.

The Rig

The question of the rig to be used mobile is often determined by that available in the main station (FT-101 in the writer's case). If a new rig is to be purchased for mobile use, the advantages of transistors over valves (to conserve power) must be considered. Apart from home-built equipment, the FT-101, FT-75, KW-2000 and TR4 probably account for the majority of commercial mobile rigs in use today. It has to be borne in mind that those which require an external DC power supply take up more room than those which are self-contained.

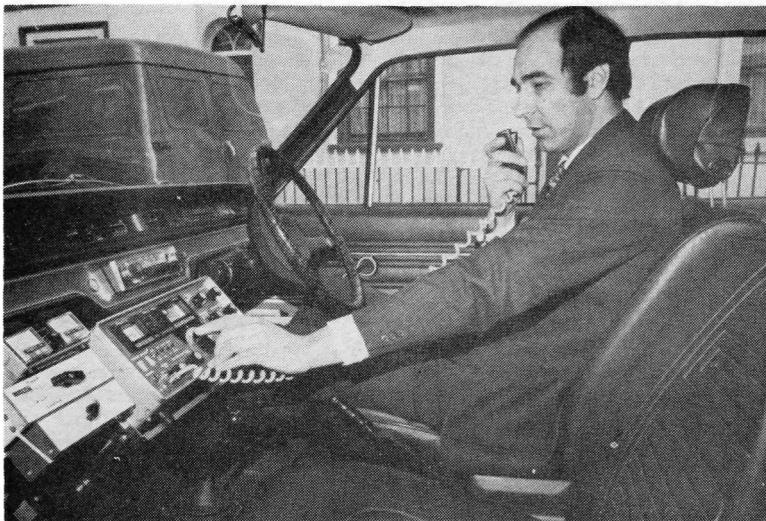
Mounting the gear in the car is mainly a matter of initiative and ingenuity of the amateur himself. (A mounting kit is available for the FT-101 which can be modified quite easily to fit most makes of car).

Suppression

Unless steps are taken to suppress ignition and other noises, the S-meter will register a permanent reading of about S8 or S9, making it impossible to copy all but the strongest signals. A summary of the steps taken on the writer's car (a 1971 model Hillman Avenger), is as follows:

- (1) 0.5 μ F coaxial (or feed through) capacitors are fitted from: (a) SW terminal of the coil to earth; (b) "D" terminal of the voltage regulator to earth; (c) "A" terminal of the voltage regulator to earth; (d) "D" terminal of the dynamo to earth.
- (2) A 5-ohm resistor (about 2 watt), in series with a .0047 μ F mica capacitor from the "F" terminal of the voltage regulator to earth,
- (3) A 15 K in-line resistor in the HT lead between the coil and distributor, as close to the coil as possible,
- (4) The HT leads were replaced with screened leads made up by using lengths of UR-57 (or UR-67) coax screening, with the original HT lead inside. The screening should be kept within three quarters of an inch from each end to avoid shorting between the screen and the wire

Chris Page, G4BUE/M, home QTH 25 Ashurst Avenue, Saltdean, Brighton, Sussex, runs a Hillman Avenger fitted with an FT-101 incorporating a "G3LLL" RF clipper for more talk power, and an SWR bridge for the 20-metre monoband whip.



itself. An earth lead is taken from each screen to the car body.

(5) A Dot Line C.B. 330 tunable filter was purchased (from *Radio Shack*), and tuned to 20 metres, found to be the worst band for interference. It was then fitted between the "D" terminal of the dynamo and the 0.5 μ F capacitor, the other side of the capacitor going to earth.

(6) A filter was fitted in the power supply to the rig itself, consisting of two coils in series with the supply cables, with disc ceramic capacitors to earth. (The one actually used was as fitted as standard in the Pye "Cambridge" VHF equipment).

(7) Lengths of earth strapping (old coaxial cable screening) were fitted between the car body and bonnet, boot, dynamo case and engine block. In some cases an earth strap from the exhaust system to earth also helps prevent interference.

A range of suppression equipment is manufactured by Lucas, but this is mainly for use on military equipment. It should be possible virtually to eliminate all noises, although the level of noise will vary with band conditions.

The Aerial

The aerial is what usually determines why one mobile station performs better than another. Whereas at home, full size directional aerials and linear amplifiers can be used to give a big signal, the /M operator is very restricted both in terms of the overall height of the aerial, and the practical problems of mounting (and keeping) it on the car. Although the law does not restrict the overall height of a motor vehicle including attachments, safety *does*, and thus the mobile aerial, with the exception of ten metres, normally has to be considerably shortened. This means a loading coil, usually mounted at the centre or base of the aerial. There are several excellent com-

mercial designs on the market, but as is the case with all multi-band aerials a compromise has to be made. A monoband aerial is the way to obtain the best efficiency, and many amateurs have achieved excellent results on simple home-made whips. The text books describe the methods of constructing mobile whips, and the 20m. aerial in use by the writer was constructed by taking the best ideas from a number of such books, the cost of the job being about 35 pence. On-the-air tests show it to perform better than commercial aerials. Full-size quarter-wave whips are being experimented with at present for 10 and 15 metres, but it is too early to assess results.

Positioning of the aerial on the car is also important, and after having tried the front and rear wings, the writer has settled in favour of the centre of the roof. Anywhere near the engine compartment is to be avoided as this encourages interference. Fixing the aerial to the roof has been by using a roof rack with a sturdy metal plate at the centre, making a flat platform. The roof rack is earthed to the body of the car by attaching two earth straps from the rack to the gutter of the roof. The whole thing can be easily removed, leaving only two small holes in the gutter, which can be filled and painted over any time. In the case of the 20-metre whip, four thin nylon guys are attached to the corners of the rack by using old fashioned picture hooks. Although this arrangement causes heads to turn, the aerial is very safe, and the car may be driven at normal speeds. If the aerial is mounted on a rear wing or bumper, a piece of cord should be run between the aerial and the rear side window to prevent the aerial being bent backwards when the car is driven at high speeds. Care should also be taken to see that it does not sway from side to side. It is debatable as to whether a mobile whip performs efficiently in anything but the vertical position.

Operating

If it is intended to work DX, similar tactics have to be adopted as used by the QRP operator. Calling CQ

can result in working Europeans on 20 metres, but the DX generally has to be called. However, the mobile suffix very often stands out in a pile-up, resulting in the DX station saying, "Go ahead the mobile." Once a DX contact has been established, the fact that one is mobile very often results in a much longer QSO than one would have had from the home QTH. The writer's experiences have been limited to the last two years, and the full offerings of 15 and 10 metres have not yet been experienced. Most of the countries worked have been on 20 metres, but when the upper bands are open, it appears a lot easier to work DX on them. Recently the writer

has been chasing DX on 80 metres, with surprising results.

Phone contests are a very good way of testing the mobile rig and building up the countries score. The newcomer will be very surprised at what can be accomplished. WAC/Mobile can be obtained by a good mobile station without too much difficulty, though DXCC/Mobile is a different matter.

For a mobile, the final compliment is when the station being worked refuses to believe you are mobile because of your good signal strength—and this can happen in a surprisingly high number of cases.

MORE QRP CIRCUITS

SIMPLE TRANSISTOR ARRANGEMENTS

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

THERE is a lot of interest in running low power—say under two watts—either to find what it can accomplish, or for easy portable operation. Low power is often used on 160m. but the circuits here have been tried exclusively on 80m., where a good 100-mile contact with under one watt is not exceptional—provided the aerial is effective, and conditions reasonable.

For simplicity, and because crystals were to hand from earlier valve equipment, crystal control is used. Crystals also give an assured logging frequency.

Oscillator

Fig. 1 is the circuit of this stage, which has always proved to operate satisfactorily, using various transistors, crystals, and supply voltages. The transistor recommended is a BFY51. It is cheap, has a total dissipation rating of 800 mW, operates readily at the required frequencies, but is less likely to function at very high frequencies, unlike some VHF types.

This stage alone, keyed and with L1 coupled to the aerial, would form a QRP transmitter. R4 (to decouple when later stages are present) is then unnecessary. The supply voltage is quite flexible, but a meter should be clipped in one lead, when first testing the circuit, or making adjustments. A 9v. to 15v. supply is recommended. Provided current is kept under 80 mA with the 9v. supply, or under 50 mA with 15 volts, dissipation will be inside the 800 mW limit, even with no RF output. The actual current, when used as an oscillator, will lie more in the 10-20 mA region.

There is no particular reason why any of the values R1, R2, R3, or C1 should not be modified, if this gives improved results. C2, with L1, naturally depends on the operating frequency.

When testing this part of the circuit, a 6v. .04A bulb, fed from a 4-turn loop around L1, is a useful RF indicator. L1 has to be adjusted for reliable starting, and near maximum RF output—at 9v. this is not sufficient to light the bulb brightly.

With this circuit, and indeed with all oscillators or finished transmitters, a check should be made with the receiver. With some crystals and settings of L1 core it

may be possible to produce RF at an unwanted or unexpected frequency. When the circuit is correctly set up, the receiver will locate the carrier at almost or exactly the crystal frequency, and small movements of L1 core will have no apparent effect on the frequency.

As Tr1 case is common to the collector, it should not be too near other components, or actually touch any parts. If Tr1 is hot to the touch after being on for some time, the power it is dissipating can be checked as described for the PA stage—see later.

For bands other than 80m., L1 would have to be changed; also possibly C2, as well as C1.

Single Transistor PA

Fig. 2 shows the circuit for this, L1 being the oscillator stage coil L1 as in Fig. 1. Tr2 draws no current in the absence of drive, so tune-up is now for maximum current in this stage, while obtaining full RF output by adjusting L3 as well.

A good way to test this stage is to load it with a 6v. 0.1A bulb, fed from L4, as this will take up to 600 mW, and is then a load of around 60 ohms. This is near-enough that of a dipole not to cause trouble when the aerial is substituted. (End-fed aerials will need some other form of adjustment, such as a mini-ATU to present about 60 ohms to L4, or variable coupling of L4, or other similar measures.)

For L2, eight turns should be satisfactory, overwound on the battery-positive end of L1, but the effect of varying coupling by moving L2 or changing the number of turns can be tried if the whole circuit is not giving what is expected of it. With a 9v. or 10v. supply, there should be enough RF to light the bulb fully, and it will probably prove wise to employ a larger bulb. A pair of 6.3v. 0.15A bulbs in series will take 1.8 watts or so and be about 80 ohms when lit.

PA Ratings

As with valves, if a lot of DC is put in, a substantial level of RF should be got out. Otherwise, the difference is wasted as heat in the PA. If this exceeds the safe level, the transistor is destroyed. The worst conditions for Tr2 is with high drive causing a heavy DC current, with L3 mistuned or not loaded.

As example, assume a 6v. 0.1A bulb coupled to L4 lights as brightly as from a 6v. battery. About 600 mW RF is thus being obtained. If Tr2 were drawing 100 mA at 12v. this would be $0.1 \times 12 = 1.2$ watts. As only 0.6w. output is obtained, power dissipated in Tr2 is *Input*

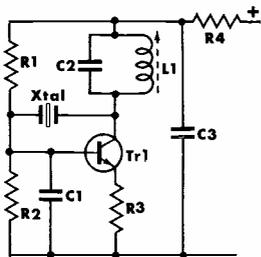


Fig. 1 Crystal oscillator

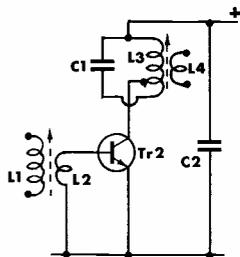


Fig. 2 Single Transistor PA

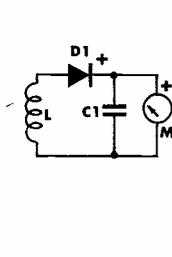


Fig. 3 RF Indicator

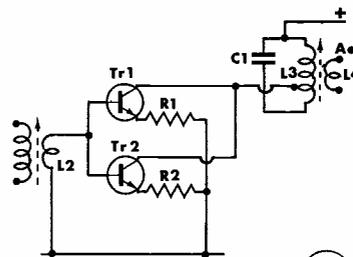


Fig. 4 Parallel Transistor PA stage

X 375

Table of Values

Fig. 1. Oscillator Stage

- C1 = 150 $\mu\mu\text{F}$
- C2 = 470 $\mu\mu\text{F}$
- C3 = 0.1 μF
- Tr1 = BFY51
- L1 = 32 turns 32g. enam. side-by-side on 5 mm. cored former.
- R1 = 33,000 ohms
- R2 = 10,000 ohms
- R3 = 18 ohms
- Xtal = 80m.

Fig. 2. Single Transistor PA

- C1 = 470 $\mu\mu\text{F}$
- Tr2 = BFY51
- L3 = 24 turns 26g. enam. side-by-side on 11 mm. cored former.
- L4 = 4 turns on L3. Tap L3 7 turns from positive end.
- C2 = 0.1 μF
- L2 = 8 turns on L1

Fig. 3. RF Indicator: L = 2 turns insulated wire $\frac{1}{16}$ in. diameter; D1 = OA81, etc.; C1 = 0.001 μF ; M1 = 100 μA , 1mA, or other sensitive meter.

Fig. 4. Parallel PA Stage: L2, L3, L4, C1, as Fig. 2; Tr1, Tr2, BFY51; R1, R2, 2.2 ohms.

Keying

As removing the crystal or stopping Tr1 will cause the PA collector current to fall to near zero, some circuits with this type of PA key the supply to the oscillator. This can be done at R4, Fig. 1.

If a key is put in one supply lead to the whole transmitter, it does leave the complete transmitter "off" with the key up, and this may be felt of advantage.

Keying Tr2 alone is of little use. Remember that L1 will need to be slightly off-set from maximum RF drive, for proper starting.

Modulation

The temptation to modulate these little circuits to get AM phone has resulted in several circuits being tried. As the modulation cannot properly be applied to the oscillator (because it is crystal controlled), and there is no driver to modulate along with the PA, leak-through in the PA gives an impression of not very adequate modulation. Trying to boost this by increasing the AF results in severe distortion. But if these points are kept in mind, reasonable speech quality can be obtained by a series Class-A modulator, transformer coupled Class-A modulator, or push-pull stage giving a watt or so.

Remember that with many systems the collector voltage of the PA will be swung from zero to twice the normal voltage, so that further reduction in supply voltage is necessary, if peaks are not to be higher than the base-collector rating.

Parallel

It was found that Fig. 1 provides adequate drive for a pair of transistors in the power amplifier. Fig. 4 is the PA circuit used. The emitter resistors are to equalise currents, so that one transistor does not have to sustain most of the input.

Changing Fig. 2 to this requires little else than the extra transistor and resistors, followed by re-tuning. It was rather more susceptible to the production of "whiskery RF"—it is essential that all RF output is cut off when drive is removed, and that a check is made up and down the band, with L4 feeding a bulb, before putting the signal into an aerial.

less Output, or 600 mW.

It is thus necessary to watch the input with a meter in the supply circuit. For initial tests DC input can be kept down by reducing the voltage, or including a resistor in the supply to this stage.

Fig. 3 will give a more accurate indication of any improvement in output than does the bulb. The loop can be one or two turns near L3, and the output indicator a multi-range test-meter on a 1 mA or other sensitive range, if no other instrument is to hand. This will in any case be useful when L4 is coupled to the aerial, and the bulb is discarded.

The dip in PA current, corresponding to correct tuning as obtained with a valve PA, must not be expected. It is more a matter of adjusting drive (tuning of L1) and tuning of L3, for best RF output, while keeping DC input to the limits necessary.

The maximum collector-emitter voltage for the BFY51 is given as 30v. If the RF waveform excursion is from zero to twice the collector potential, this limits DC input to 15v. However, some manufacturers list a 60v. rating here, which would permit 30v. DC input. More than 15v. has at no time been used in these circuits, and to date no transistor has been destroyed.

When the dissipation in the transistors is at all excessive, they will be hot to the touch, and though a heat sink is not essential for the oscillator, it should be provided for the PA. The finned, clip-on type was found satisfactory.

MAINS PSU FOR THE LINER—2

SUITABLE FOR BENCH
OPERATION

R. M. CROSSLEY (G4CZP)

THIS power supply was built to enable the "Liner-2" to be operated from the 240v. AC mains, and was prompted by the cost of the matching commercial supply unit, together with the fact that the author's shack is also his bedroom, hence lead-acid accumulators are not favoured. There is no reason why this PSU should not prove suitable for running any of the 10-watt output transceivers requiring 13.8v. DC at approximately two amps, or as a variable voltage, stabilised bench supply. Requirements were that the unit should be inexpensive to build compared with the commercial counterpart, that it should provide the nominal 13.8v. DC with good regulation and low ripple at load currents of up to approximately 2.5 amps, and that it should be possible to make it physically small.

The circuit, for which no originality is claimed, is shown in Fig. 1 and uses a readily available operational amplifier (Op. Amp.) as a voltage comparator driving a Darlington configuration series stabiliser, which is fed from the smoothed, unregulated DC supply.

Circuit Operation

The step-down mains transformer feeds a full-wave bridge rectifier which is followed by C1 as smoothing in the form of C1. This forms the unstabilised source which supplies the Darlington pair and from which the zener diode, D5, providing a reference voltage for the op. amp., is fed via R1. C2 ensures that this reference voltage is free from ripple. The unstabilised source also produces the supply for the op. amp. (the stabilising performance of which is not significantly affected by itself being fed from an unregulated supply) and in this circuit need not be balanced with respect to earth.

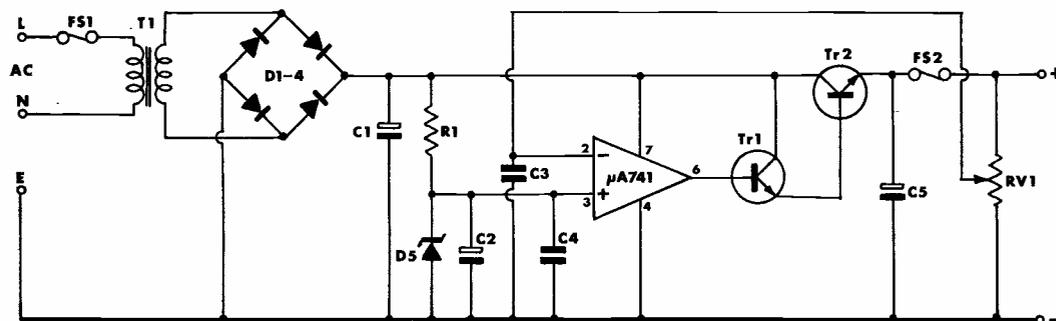
The op. amp. is basically a high gain DC-coupled amplifier having two inputs termed inverting and non-inverting, denoted by — and + respectively. If the non-inverting input is made positive with respect to the inverting, then the op. amp's. output goes positive, as it also does if the inverting input is made negative with respect to the non-inverting. The non-inverting input is fed from the zener reference voltage, whilst the inverting input comes from a potential divider across the output of the supply. The two inputs are decoupled to RF by C3 and C4.

In order to understand the stabilising performance, suppose that the output voltage of the supply is such that the voltage at the wiper of the potential divider is equal to the zener reference voltage. Under these conditions the op. amp's. output is zero. Now suppose that the output voltage starts to fall (e.g., by placing a load on the output). Then the voltage at the wiper of the potential divider and hence the voltage at the inverting input of the op. amp. will fall. So the potential at the inverting input becomes negative with respect to that at the non-inverting input, and the output of the op. amp. goes positive. This drives the Darlington pair harder so the output voltage of the supply rises and with it the voltage at the inverting input, thus reducing the op. amp. output—and so on. Thus stabilisation is achieved. The range of RV1 enables the output voltage to be set anywhere between a minimum of the zener reference voltage and a maximum of approximately that of the

Table of Values

Circuit of PSU for Liner-2

C1, C5 = 2200 μ F, 40v. elect.	D5 = 4.7v. 400 mW zener
C2 = 100 μ F, 10v. elect.	IC1 = 741 Op. Amp.
C3, C4 = .001 μ F, disc	Tr1 = BFY51
R1 = 1500 ohms, $\frac{1}{2}$ -w.	Tr2 = 2N3055
RV1 = 5K lin., w/wound	F1, F2 = 3 amp fuses
D1, D2, D3, D4 = 3 amp 100 p.i.v. silicon	T1 = Mains xformer, 20v. sec. (see text)



Circuit of the Power Supply Unit

unregulated source, though towards the maximum-voltage end regulation is impaired.

Construction

This may take any convenient form but several points are worth watching. The 741 op. amp. is most frequently encountered in 8 pin DIL configuration and it is suggested that an IC socket be used. Tr2 requires a heat sink of at least 120 sq. cm. and Tr1 one of the small, clip-on style TO-5 heat sinks. The transformer used in the prototype is rated 20v., 2 amp. Whatever type of transformer is used, its secondary voltage should not exceed 22v. r.m.s. (the op. amp. will not tolerate a supply of more than 30v.) and should not be less than 15v. r.m.s. If continuous currents of approximately 2.5 amps are envisaged, rather than the current *peaks* of 2.5 amps drawn by the Liner-2, then a 3-amp transformer would be required. The electrolytic smoothing capacitors used were *Mullard* types having a high capacitance to volume ratio and a ripple current rating of 2.9 amps.

If the supply is used to feed its equipment along a lengthy cable, resulting in significant voltage drop, this may be compensated for by placing RV1 at the load

end of the cable and running an additional wire back to the supply from the wiper of RV1. If this is done the regulation will take into account any voltage drop along the cable and the voltage at the load end will remain constant.

As it was not thought likely that, under normal conditions, the output would be short-circuited, no protection was built in other than the fuse F2. This will usually save Tr2 in the vent of such a mishap.

Performance

Regulation is such that, with a voltmeter connected across the output and the Liner-2 "talked up" to approximately 2.5 amps peak current *no* variation of output voltage could be detected on the meter. Using a digital voltmeter, regulation was measured as approximately 2% for a 2 amp load. The same basic circuit, but with the op. amp. driving four Darlington pairs *via* two pre-drivers, together with a more substantial transformer and rectifiers, has been used to build a 13.8v. 15 amp supply suitable for ex-commercial radio-telephone equipment. The regulation of this is also approximately 2% for a 15 amp load.

BOOK REVIEW

"RADIO AMATEUR'S HANDBOOK"—ARRL

52nd Edition, 1975

What is this *ARRL Handbook*, of which we hear so much? What does it cover? And being American in origin, what meaning has it in the U.K. context? As an active and progressive radio amateur, reading all I can get hold of about Amateur Radio, is there anything it can teach me? On the other hand, as a beginner, in what way can the *Handbook* help me with the theory and practice of the subject?

It would take a great deal of space to answer these questions fully—and we certainly could not, in what must necessarily be a brief review, digest fully about 700 pages of a manual that for the best part of 50 years has been dealing with every aspect of Amateur Radio in the context of its time—theory, design, construction, operation and the process of getting a station on the air.

The fact that the *ARRL Handbook* is American in origin in no way makes it "strange," because fortunately we all speak, in English, the same radio language, so that whatever is said in the *ARRL Handbook* has basically the same meaning for any U.K. amateur.

What the *ARRL Handbook* does is to teach the fundamentals and the practice and establish the principles on which the techniques of Amateur Radio are founded, in all their various aspects.

As a standard text covering "how and why it works, how to make it work, how to put out a signal, how to make that signal effective" it is an obvious "must." The latest *ARRL Handbook*—the 52nd of a long line in a successful series—is the bookshelf "bible" on the

subject of Amateur Radio. As such, in its 700 pages, it is a practical guide to everything to do with Amateur Radio, from basic theory to the latest techniques in HF, VHF, UHF, Antennae, Frequency Measurement, Power Supply, Workshop Practice for the amateur, and much else besides.

Of course, because the *ARRL Handbook* is an annual compilation for *all* amateurs, new or old, it cannot offer entirely fresh material in every edition—because there is a large volume of technicalia which is not alterable if it is to retain its status as a standard text. What the *Handbook* does attempt is to keep up-to-date, which involves constant revision—and this is what makes any issue different from that of, say, three or four years ago.

There are drawings or illustrations on practically every page, with a general index running to twelve pages, and the numerous data and tables include 26 pages on valve and semiconductor characteristics, with connection diagrams.

Since its inception—and the earliest copy we have is of the 3rd edn, dated 1928—more than 4½ million copies of the *ARRL Handbook* have been sold! They have gone not only to radio amateurs throughout the world but also to professional radio men at all levels, for the *Handbook* is essentially practical and written in straightforward language.

The *ARRL Radio Amateur's Handbook*, 52nd Edition, 1975, of 700 pages, illustrated in line and half-tone, price £3.27 (limp cover) or "library edition" in hard-back, £4.18, prices inclusive post and packing, of the Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H 0HF, immediate delivery from stock while it lasts.

The Warsaw Conference

THE IARU Region I Conference in Warsaw during April, 1975 covered a tremendous amount of ground in the time available to them, and it is not possible here to do more than to condense those decisions which are of more immediate application to our VHF bands.

- (1) Steps are being considered to seek an allocation of 220-225 MHz for amateur use in Region I, which may alleviate some of the congestion on 144 MHz.
- (2) Based upon a paper by G3RPE and G3HWR, it has been decided to go for new allocations in the 30-300 GHz band which will be in harmonic relationship with established lower frequency amateur bands.
- (3) After the recent changes in our VHF band plans it is hardly likely that further extensive modifications would be welcomed or universally complied with. However, such a state of affairs was recognised and has been avoided. Amendments have been limited to:
 - (a) CW calling frequency—144.05 MHz,
 - (b) SSB calling frequency—144.30 MHz,
 - (c) Random M/S SSB calling frequency—144.20 MHz,
 - (d) The upper limit for SSB is to be 144.50 MHz and, by implication, FM/AM transmissions should be kept above this frequency,
 - (e) Regional beacons of greater than 50 watts e.r.p. to be centred on 144.90 MHz. Low power beacons will not be subject to such planning,
 - (f) SS/TV calling frequency—144.50 MHz and FAX calling on 144.70 MHz.
 - (g) CW may be used anywhere in the band but 144.0-144.15 MHz is allocated exclusively for CW.
 - (h) Other allocations, such as for RTTY, repeater input and output channels and FM simplex remain as at present.

If 432 MHz and 1296 MHz are substituted for 144 MHz in the above, the pattern is much the same for those bands also, with the addition of 432.00-432.01 MHz and 1296.00-1296.01 MHz for E-M-E working,
- (4) Repeater channels have been allocated in the 70 cm. band as follows: Prefix RU, 0-RU9 for input channels with 25 kHz spacing from 433.0 MHz to 433.225 MHz. Output channels in every case are 1.6 MHz higher. Simplex channels bear the prefix SU, 16-SU23 for frequencies spaced 25 kHz intervals between 433.40 MHz and 433.575 MHz, while 433.50 MHz has been designated as the International Mobile calling channel and 433.575 MHz for International Mobile working.
- (5) Considerable emphasis was placed upon the study of anomalous propagation at VHF. The co-ordinator for Sporadic-E phenomena is Serge Canivenc, F8SH, 6 rue de Pont-Hélé, 22700 Perros-Guirec, France, while our own Charlie Newton, G2FKZ, QTHR, co-ordinates auroral observations. Widespread reports to these two centres are likely to improve our image *vis-à-vis* the outside world, and national administrations in particular, and may form a vital bulwark in the defence of amateur frequency allocations at forthcoming conferences,
- (6) Although we can hardly claim that the comments made in this Column recently about the desirability of agreement on a common speed for RTTY forced the issue, this has now been achieved. BARTG

VHF BANDS

A. H. DORMER (G3DAH)

recommended 50 bauds, but there was no support for this idea from other representatives and, by common consent, 45.45 bauds was adopted as the standard for HF/VHF/UHF operation. This will entail winding down the governor, re-cutting gears or going to electronic conversion in the case of the popular Creed 7B printer if it is synchronous on 50 bauds. Space frequency is 1275 Hz and Mark 1445 Hz for narrow band 170 Hz operation, and 2125 Hz for 850 Hz shift.

* * *

On balance, it is fair to say that we have gained more than we have lost at this Conference in that more of the British proposals were accepted than were rejected. Whether we like it or not (and there are some who would prefer that we go our own, isolated way) some measure of standardisation in Region I is a "must" if mutual interference between diverse modes of operation is to be avoided and if we wish to continue to work our Continental neighbours. The days when one could roam at will over Megahertz of VHF/UHF are over.

Twickenham Convention

Attention was slightly down on last year, but the event was, nevertheless, well supported by both the Trade and amateurs generally. The lecture session opened with a report on the Warsaw Region I Conference with its impact on band planning and was then divided into two streams, one with a UHF bias and the other covering subjects of more general interest. Perhaps the most controversial episode was the confrontation between the VHF Contests Committee and a fairly critical section of contest-minded amateurs. A determined attempt was made to get agreement to submitting the three best scores out of four on the bands used in VHF/NFD, but this was resisted on the grounds that such a sweeping change would require opinion from a larger cross-section of active contest groups than was present. The thought behind this suggestion was that the present arrangement was unfair to operators in the North of England and in Scotland who were penalised by the small amount of 23 cm. activity up there. They can't all live in holes in the ground, there are some reasonable hills around, and the remedy for lack of area activity surely lies in the hands of the locals and visiting groups. One would imagine that a "CQ" call on 23 cm. from a GM/P would attract a fair amount of interest as well as a goodly number of points! Other lectures included reviews of propagation *media* and practical

demonstrations of operation and measurement on the UHF/SHF bands.

The Sunday morning session was devoted to a presentation by Pat Owen, G3IOR of the AMSAT U.K. Group. on *Oscar* operations. Of particular note must be the plans for a satellite in a highly elliptical orbit, an apogee of some 22,000 miles and a perigee of about 200 miles, which will dwell in the Northern hemisphere for some 80% of the orbital time and which will make possible longer distance trans-equatorial contacts than can be made *via* Oscars VI and VII.

Following the dinner came the presentation of Awards. The 1962 VHF Committee Cup for home-constructed equipment went to G3WJG for his 10 GHz, medium power source using a Gunn diode and the John Rouse (G2AHL) Cup to G8FNF for his 2m., FM synthesiser, as joint winners. The Fraser Shepherd Prize for work on microwaves went jointly to GM3OXX and GW3BPM (the Barry Radio Club) for their outstanding achievements on 3 cm.

Hardly surprising was the comment made by several of the traders present that the volume of business was comparatively small in relation to that of 1974, but what with the 25% VAT, and the fact that many of them had sold just about everything they had before the Budget, such a result was perhaps inevitable.

Beacons & Repeaters

At the high end of the spectrum, the 3 cm. beacon in the Isle of Wight, GB3IOW, is now active. The service area should extend well North into Hampshire and, if you are within 30 miles or so, have a look for it during the 3 cm. contest over May 31/June 1.

Another new beacon is GB3GEC, radiating on 432.1 MHz from Boreham Wood, Herts. (The beacon is new even though the call sign is not). Output is five watts into two 18-ele. crossed Yagis giving circular polarisation. Initially, an 8/8 may be used. Beam headings are NNN and ESE. There are plans to include a pair of 8LX69's in the output stage to bring the power to 25 watts or so. G4CYR, QTHR, would be pleased to receive reception reports. Signals are RST 549 in Herne Bay.

On 2m., the first reception report of ZB2VHF on 144.145 MHz comes from G4CXL (Weybridge). Peak signal on April 23 was RST 429. This beacon, which was constructed by members of the Surrey Hills Contest Group (G4DGA), runs 15 watts to a 4-ele. Quad located on the North side of the Rock, and beams to the U.K. Report to Box 292, Gibraltar, please.

The change of antenna system associated with the Sussex beacon, GB3SX on 4m., has certainly improved reception in the Midlands and the North—G3OHH (Mow Cop) reports it at RST559 on the evening of April 23—although the fact it is now radiating somewhere near the published frequency of 70.685 MHz (it is on 70.687 MHz) has perhaps contributed to this result. GB3SU, the other 4m. beacon, has been a bit erratic of late but seems to have settled down again at the time of writing. G4BYP, Liverpool, recorded reception of ZB2VHF on 70.263 MHz at RST 559 at 8.30 p.m. on May 7, and this looks like the first report of the new season.

On the repeater front, GB3LO now radiates a "busy" signal if the input channel is jammed. There is still some nonsense going on on the input channel but, by and large, the repeater is working well and

certainly does not lack users. GB3SN is still in trouble and the latest buzz has it that this is associated with the common antenna system. (Suggestions that there has been a move afoot to make it difficult for "outsiders" to get into the device have been denied!). The 70 cm. repeater, constructed by the Pye Group at Cambridge, is now operational on 431.35 MHz In and 433.35 MHz Out. Callsign is GB3PY and access tone is 1750 Hz. It is reliably reported that GB3PY will also go to 1750 Hz access tone, which will be a boon to many.

A new repeater has been set up near Antwerp which should be workable under lift conditions. Callsign is ON6DH and it is a dual-channel job with input on 432.15 MHz and output on 144.558 MHz or input on the two-metre frequency and output on the 70 cm. channel, NBFM only.

A Western FM Repeater Group has been formed (hon. Sec. G3LEQ, *QTHR*) to sponsor a 2m. repeater in North Wales at Moel-y-Parc, initially on 2m. but later on 70 cm. also, and interested Clubs are asked to appoint representatives to the committee. Application has been made for the call GB3MP to be operated on Channel R6. With GB3RF, which it is hoped to site on Hameldon Hill, near Burnley, this should give the same coverage facilities in the NW as are available in the South.

It is reported that the difficulties, which need no elaboration here, associated with the proposed repeater at Martlesham Heath have now been resolved, and that it should not be too long before GB3PO is on the air.

DX-Peditions

The Cambridge University Wireless Society are mounting an expedition to Angus, Kinross and Perth/Fire, June 9 to June 14. They will be running high power SSB/CW on 2m. and 4m. and medium power on 70 cm. They will operate on 70-20 MHz during 0800-0900z each morning and on 144-17 MHz \pm 10 kHz SSB and 144-050 MHz CW each evening over 2000-2300z. The 70 cm. frequencies and operating times will be announced on 2m. Skeds for 70 cm. and 4m. may be arranged by s.a.e. to Ken Vickers, G3YKI, Trinity College, Cambridge. Callsigns are GM6UW/P on 2m., GM4CIK/P on 4m. and GM4CDF/P on 70 cm. If you don't work them in Scotland, they will have SSB mobile on the way there and back using the call G(M)8IBP/M.

Peter Wallis, G3YJI, will be on from Guernsey during July 5-17 with both 2m. and 4m. SSB.

Contests

Reports: Conditions were generally very poor for the 1296 MHz Open on April 27 although G3JVL managed to make 15 contacts for 1550 points which is the highest score heard to date. His best DX was with G3KMS at 332 km and G3DY and G4BEL, both at 200 km. The below-par conditions on 70 cm. didn't help with the establishment of contacts on the higher-frequency band.

Things were not much better for the 70 cm. Open on May 4. An outstanding signal in the South was that of GW3UCB/P in Wrexham and G8AGU/P from Lynton, Devon, was a welcome contact for many. One cannot help being surprised yet again at the lack of CW activity on this band when conditions are as poor as they were. Your scribe put out 46 CW calls altogether with one reply only, from G3FIJ, and 'DAH' is

not running a transistor in the PA either! Phone activity was nearly all SSB, as is becoming usual on this (and other) VHF bands.

Forthcoming Events: *May 31/June 1*, 144 MHz Portable. *June 21/22*, Microwave Field Day (23 cm. and up). *June 22*, RSGB Region 1 VHF Contest, and *July 5/6*, VHF Open and SWL.

Scottish Scene

More microwave exploits by the GM3OXX team. George climbed Ben Ime (3318ft.) with GM8GEC (who unfortunately damaged his Tx during the ascent) and made a 3 cm. contact with GM8BKE and GM3DXJ located near Dunbar. The QRB was 151 km. and the signals were S9 both ways. The equipment both ends consisted of a Gunn

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	31	3	47	8	32	7	128
G3ZMD	23	2	54	12	28	7	126
GD2HDZ	28	4	47	10	21	5	115
G4BWG	30	3	55	11	—	—	99
GM8FFX	—	—	74	14	2	1	91
G3FIJ	32	2	37	8	3	4	86
G4BYP	24	3	45	9	—	—	81
G8EOP	—	—	40	12	20	4	76
GM4CXP	12	4	42	11	3	2	74
G3BHW	—	—	38	9	19	7	73
G4CZP	—	—	58	14	—	—	72
G3BW	—	—	48	10	10	3	71
G8BKR	—	—	49	7	5	2	63
G4AJE	—	—	35	8	15	3	61
GW3KGD	—	—	50	9	—	—	59
G8FMK	—	—	26	2	25	4	57
G8ABH	—	—	29	4	17	5	55
G8FWB	—	—	47	8	—	—	55
G4DNJ	—	—	45	8	—	—	53
G8GHZ	—	—	42	6	3	1	52
G5DF	29	3	—	—	17	3	52
G8IAT	—	—	38	9	—	—	47
G3FPK	—	—	40	7	—	—	47
G8GII/P	—	—	42	5	—	—	47
G2AXI	26	2	—	—	13	3	44
GW8HVP	—	—	35	7	—	—	42
G4AEZ	2	1	9	7	14	4	37
G4AIR	29	4	2	1	—	—	36
GW8GLG	—	—	28	3	—	—	31
GI3JLA	—	—	16	5	—	—	21
G4AGE	—	—	10	4	5	1	20
G3EKP	3	1	6	3	—	—	13
G4BKY	—	—	8	2	—	—	10

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	Counties	Countries	Total
G4BEL	28	7	35
G3DAH	23	3	26
G3JVL	21	4	25
G3OBD	20	3	23
G8ARM	20	2	22
G4BYV	16	6	22
G3JXN	18	1	19
G4ALN	16	3	19
G3COJ	15	3	18
G3NHE	15	3	18
G8AOD	11	2	13
G5DF	11	1	12
G8FMK	11	1	12
G8FJG	7	1	8
G8ABH	7	1	8
G8AII	5	2	7
G8EOP	2	1	3

radio society, callsign GM4EAF, and so increasing 2m. radiation from the fair city. GM8BJF has now completed the solid-state linear for the mid-Scotland repeater and it is undergoing the usual 'BJF stringent soak tests.

On 4m., GM4CXP now has 50 watts available and GM3BQA in North Berwick has SSB on this band from a *Europa* transverter and an FT-101.

VHFCC Awards

A very well-known callsign on 2m. is that of Steve Marsh, G4BWG (Peckham, SE London), and we are pleased to send him Award No. 239 for two metres. The equipment used to achieve this has varied considerably, but most of the contacts were made using an FM-208 followed by a QQV06-40A in conjunction with an HRO Rx. Latest situation is that 130 watts of SSB are available from a pair of 4CX250B's to feed the 14-cle. Parabeam at around 50ft. and the HRO has been replaced by a *Trio* JR-599 with a *Burns* converter. Steve is also active on 4m. with a "Cambridge" on 70-26 MHz and a 4-cle. beam, and has plans for SSB on 70 cm.

Bob Matthews operates as G3ZNZ from Driffield, N. Humberside and gains Award No. 240 for his 2m. work. The interesting thing about his list of 100 contacts submitted was that every one was with a separate county or country—and you don't get many like that! He runs an FT-DX401 and

a *Europa* transverter, and this feeds that 5-cle. Cubical Quad of his. To confirm that he is not in the least parochial in his outlook, Bob has gained the PA25 Award and wants but four more for the PA100 Award. He was the first British station to gain the "DLD 1000" certificate for working 1000 different DOK numbers in Germany. He has made the appropriate contacts for the "VHF DLD," but is waiting for the QSL cards to come in.

News Items

Four Metres: G4BYP is still very active on this band in spite of the S6/9 noise level caused by thermostats in adjacent blocks of flats and the proximity of the Radio Merseyside and Radio City transmitting masts. He can frequently copy the Sussex beacon now, so the Rx should be OK, but he apologises to those who may call him and get no reply. In spite of this handicap, he made it with G13JLA (ex-EI6AS) of Co. Tyrone on 2m. and has skeds laid on for 4m. G2AXI (Basingstoke) is now fully equipped with 120 watts p.e.p. input on 4m.

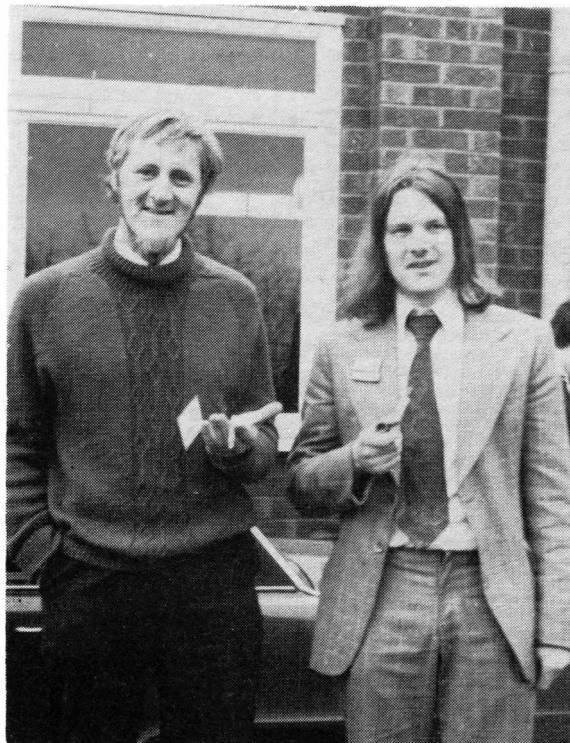
A call over the PA system at the Drayton Manor Rally recently for a "70 MHz Corner" produced 14 replies and a great deal of discussion—mostly about the lack of 4m. contests. Of the 14, seven were known to operate SSB on this band which is yet another sign of the times. G3IJE (ex-GW3IJE) is in Northwich and has some good SSB going

diode with 10 mW output to a 2ft. dish. At one stage, 'OXX removed the dish and continued the QSO using only the open waveguide! One waits with bated breath to hear what the team accomplish during their trip to the Isle of Man at the end of the month when they are attempting contacts with GI, EI, GM, GW and G to repeat, indeed to extend, their previous success. Congratulations and good hunting, chaps!

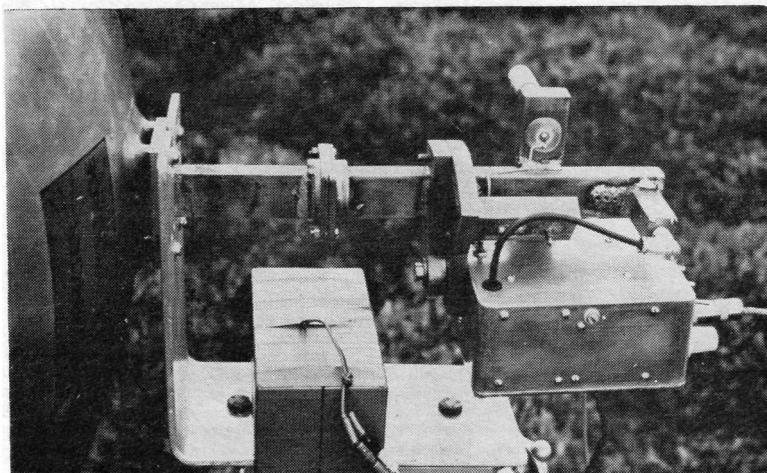
Activity on 70 cm. is increasing in the Edinburgh area. Now on the band are GM3BCD, GM6XI, GM4DIJ, GM8BJF and GM8BPL, most of whom are active on Tuesday evenings from 1900z.

GM3EDL has made a welcome appearance on 2m. using a transverter and an FT-101. He will be remembered as a pioneer of the SSB mode. An engineer specialising in microwave antennae and solid-state power supplies, his advice has been sought, and freely given, on behalf of the repeater and microwave groups.

GM3BFE in Rosyth has acquired a Liner and a Belcom linear, and the reported high quality of his signal suggests that he is *not* one of those who will tweak for maximum smoke regardless of the distortion products produced thereby! GM8JKG is also a newcomer to the band and uses a modified ship/shore rig which is switchable for AM/FM. GM8BZX also uses the Liner to good effect. Further North, in Aberdeen, Charlie Sherrit, GM3EOJ, is now pumping out some potent RF with the mobile rig. GM6XI and GM8IAP have both worked G4BWW in Southport from Edinburgh using low power mobile gear with 5/8 whips. GM8FJM (Cumbernauld) is putting out a fine signal from the QTH in a 12-storey block of flats. Congratulations to GM3YEW whose efforts have resulted in the Perth Technical College now having their own



Among the VHF fraternity at the Drayton Manor Rally on April 20 were Mike Foster, G8AMG (left) and G8AMD—both are concerned with beacon design, G8AMG having produced the digital circuitry for GB3LO, while Hayden Bate, G8AMD, has it in hand for GB3BM, Birmingham.



At left, showing the mechanics of the GM3OXX 3-centimetre gear, using a Gunn diode producing about seven milliwatts RF into a 30in. dish. (Below) GM8GEC with the same 10 GHz rig as set up, with which new records were made for the 3 cm. band, as reported in these pages last year. Much good line-of-sight GDX has been worked with this equipment.

from a ground-plane which is due for replacement by a four-ele. Yagi.

Don't forget the G3VPS/P trip at the end of May. Details were given on p.156 of the May issue of *SHORT WAVE MAGAZINE*.

Two Metres: G4DOJ of Cheadle, Cheshire, reports that his call is being pirated—so watch out if you want a QSL card. GW8HVP spent Easter in Malta and reports that 9H1CD and 9H1BT are getting ready for the Sporadic-E season with 2m. SSB using a QQV06-40A in the PA with the possibility of adding a 4CX250B linear later. G4CXL worked into Italy on the night of April 23 and was a bit mortified when he learned later that the same station had been worked from a *mobile!* Did anyone else manage an Italian contact that night? G3JVL (Hayling Island) made it with ON and DC the same evening. GM8FFX, who is such a big signal on 2m. SSB, is pressing on under the tutelage of GM3ZBE with the CW test and will be coming on 4m. and 70 cm. with high power shortly.

This month again, several readers have commented on the misuse of calling channels—on this as well as on other VHF/UHF bands. Major trouble arises when two mobiles get going and fail to QSY once contact has been established. It is quite likely that the channel may appear clear to them, but a fixed station with a horizontally polarised antenna, and no cross-polarisation loss therefore, may be trying to copy some weak DX through the QRM and finding the situation rather trying to say the least. G3FPK writing on this subject suggests that one should try and avoid 144-19-144-21 MHz so that any really weak stations calling CQ are not clobbered by strong locals slightly off-channel. This applies in areas of high density traffic only, of course. GW8GLG finds the situation aggravated by chaps who will tune up on the calling channel as well as operating on it. It may be added here that your scribe does not subscribe to the allocation of 2m. calling channels except for the more esoteric forms of communication—M/S, RTTY and the like—since band occupancy is such that they are really quite unnecessary these days and their nominated function is so frequently ignored. Incidentally, G3FPK is radiating a very nice, clean SSB signal from Purley, Surrey and attributes



some of this to the dodge of eliminating residual carrier in the USB mode at the expense of a little more in the unused LSB mode. A useful tip. He runs the *Europa* with HT-46 as the prime mover. Norman is trying to get an ARMS net going on Monday evenings at 1930z on 144-275 MHz. Members are welcome to join in.

Report has it that we may shortly be hearing news bulletins on Sunday mornings on RTTY on 144-6 MHz, and perhaps also on GB3SX on 70-685 MHz.

Seventy Cm.: G2AXI is now fully operational on this band from Basingstoke with 25 watts p.e.p. to a QQV03-20A driven by a QQV02-6 mixer which accepts an injection frequency of 362 MHz on the screens and SSB on the grids from the 4m. transverter. The aerial is a 46-ele. Multibeam.

GM8FFX and G3WSN are both on with SSB now, the former with 500 mW at present, to be increased to 50 watts in the near future, but he was able to work GM4CXP in Roxburghshire with this flea-power.

Twenty-Three: G4BEL and G3LQR are not by any means strangers to this Column, but of interest is that they both worked into

DL during the opening in April. Nice going! GD2HDZ has had more cross-band QSO's with G3KMS near Liverpool, but is not at present ready to transmit on the band.

G3JVL draws attention to a new front-end device for 23 cm. This is the DC5402 manufactured by AEI which out-performs the BFR91 at these frequencies as the gain is much higher. He has been testing with Paul Widger, G8AGU/P, up on Dartmoor with good results and says that Paul should be putting Devon on the map regularly. 'JVL runs skeds with G3KMS (Liverpool) on 432.2 MHz, with QSY to 23 cm., when Cdz are good, at 2300z each night; with G3OBD (Poole) on 1296.2 MHz at 2230z; and G6XM (Swindon) on 1296.4 MHz at 2200z. The PA0SSB sked on 23 cm. has been dropped *pro tem* as Jan has been concentrating on E-M-E.

Deadline

All correspondence by June 7 please, addressed as usual to: "VHF Bands," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18 1RQ. Cheers for now and *vy 73 de G3DAH.*

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for July issue: June 5)

PERHAPS this month we should start by giving a sort of "perpetual deadline" which will enable Club scribes to know their deadline for months ahead.

Everything is geared to publication day—the last Friday in the month, e.g., May 30 for the June issue, June 27 for the July issue, and so on. Come back twenty-two days, and you get May 8, which was the deadline for this piece, and June 5 for the coming crop; so it runs every month without fail, saving only that such an arrangement of necessity goes by the board at times of "industrial unrest" such as printing disputes or that which might arise if a power stoppage becomes a fact in the next few months. At such times arrangements may well have to be changed and we might even lose an issue.

National/International

First in the clip is the Royal Navy group, with their members scattered over the four corners of the earth and a *Newsletter* full of assorted varieties of entertainment, awards to be obtained, a QSL dept. and various other items of interest. As well as their Mobile Rally at Petersfield on June 1, planned events include G3BZU/A on the air from there for the Lee-on-Solent Air Day, July 26, and GB3RN activated from Portsmouth Dockyard over August 23-25 for this year's Navy Days. For the R.N. or old-sailer type this is the one to join. No doubt G3MTP would be pleased to give you all the details; his address appears in the Secretaries Panel.

The activities of the G-QRP Club are more or less explained by the title; this one is for the many amateurs who find satisfaction in operating on real low power and seeing what can be achieved with it, on any band. Apart from a couple of awards—one aimed at SWL's, who by the way can also become members—the *Newsletter* and the series of bulletins which are sent out between the Newsletters are in themselves well worth keeping as a digest of QRP ideas and circuits. Details from G3RJV at the address in the Panel.

A.R.M.S. enfold the interests of the /M operators, both SWL and transmitting, at home or abroad. They have designated certain channels on which members may look out for others with like interests: At 1330z G4AMS is the control for their international net, while on two metres Channel S20 (145.5 MHz) is the international calling frequency, and S21 for Southern working (145.525); S22 for London and the Home Counties (145.550), S23 at 145.575 Midlands working, and S24, 145.600 MHz which is the working channel in the North.

Limassol is situate in Cyprus, and they write to advise of a new forwarding address, as shown in the Panel, to which should go all enquiries.

Up North

Here our first call should be to the Star lads at the New Inn, Bramley Town Street, Leeds. It may be recalled that last time they reported they were searching for a new place as their Hq. was to be demolished—well, they duly got their notice, but they now are happy to say they have a reprieve at least until 1976, which will give them a breathing space. Another important point is the change of secretary's address, duly noted in the Panel.

Sunderland give details of their July activities instead of June; July 3, nothing firm: arranged, and July 17, the Annual General Meeting—visitors and new members welcome to both. No doubt the hon. secretary would be only too pleased to hear from you should you want to join during June—his address appears in the Panel.

One thing always stays the same at Northern Heights—G3MDW is always announcing "this is his last year," and he always remains in office! Lucky Club to have such a stalwart, and how he manages year after year to generate his programme is amazing. For June 11, the group are "away" for a quiz against, and at, Denby Dale, and June 25 is a ragchew session at Hq.; it should also be noticed that the lads are out again on July 2, this time "hunting treasure"—*Wot, no pirates?*

Any Thursday you can meet the York group, in their Hq. at the British Legion Club, 61 Micklegate. They are definite now that

GB2NRM will be operational at the opening of the new National Railway Museum, for a week commencing September 27. GB2TS is another of their call signs, this one for the Tollerton Show, and there is a plan afoot for a talk/demonstration at York University. A little oddity in its own way is that their Morse class is conducted, not by any of the licensed chaps but by SWL Daniel, who is credited with the best fist around for teaching Morse.

The QTH 83 Town Street, Armley, Leeds is home for the White Rose Club, every Wednesday evening, and from 10.30 to lunchtime on the first Sunday morning in each month; the evening affairs open at 7.30 for an 8 o'clock start to the lecture. In June also we notice they are out for NFD, the weekend of June 6-7, and on June 15 they have a "family luncheon date" at the Red Lion Hotel, Burnshall.

Midlands

Bury & Rossendale foregather informally in the Mosses Community Centre, Cecil Street, Bury every Tuesday, while making the second one in each month into the "proper" one with lecture, film show or whatever. In addition, of course, summer tends to bring on the outside activities, details of which G8ECM would be pleased to provide, either at a meeting or from his address in the Panel. The second week of June sees them being instructed by G4BVI on the subject of Basic Logic—a facet of electronics that offers more outlets for hobby projects, quite apart from its use in devising sophisticated control and keying arrangements in the shack.

At Nottingham there has been a change of staff, with G8IPH now doing the secretary chore. For June, he reports the group will have June 5 for a Forum and NFD preparation, June 12 for president G2FUB to talk about the £1.80 Electronic Keyer; on June 19 there is the preparation for the GB3RHR activity which takes place on Victoria Embankment, Nottingham at the Vintage Transport Rally. Finally, June 26 is down for a talk, topic not specified.

Wolverhampton have a fine *Newsletter* from which we learn that the Hq. is at Neachells Cottage, Danescourt Road, Stockwell End. The issue currently to hand covers all the programme from April to the beginning of June, when on the 2nd there is a talk on Marine Radio by G3IGK, an ex-professional in that game who still "does a bit" for holidaying. It seems, basically, that the Hq. is open on Sundays and Wednesdays for normal activities, and then on Thursdays there have been the R.A.E. sessions which by now will presumably have been dropped until September.

If you are a member or intending to visit Midland you should book the date June 17, subject not finalised at the time of writing. Venue, of course, is the Midland Institute in Birmingham—any Brummie should know where it is!

G8IJP writes to say he has been shotgunned into the secretary's job at Bristol; the Club have their premises with the University Settlement, Barton Hill—more details from G8IJP at the address in the Panel.

Now to Bromsgrove where they assemble at the Avoncroft Art Centre, on the second Friday in each month. This gives them June 13, at which time they will be hearing from G4AAL, all about Closed Circuit TV. Looking ahead, and thinking about the holiday season, we notice a Natter Nite set for July 11.

At Derby, the Hq. is at the Top Floor, 119 Green Lane, Derby, every Wednesday. Programme for June says a Surplus Sale on June 4, and a Film Show on the 11th. D/F Practice takes up June 18, and Technical Topics fill the 25th. And, oh, couldn't we wish other scribes would follow the practice of their G3VGW—he has it all there, never a waste word, gets it cleared up and leaves the chat till he has disposed of all the business.

This QRP lark is definitely getting a grip in U.K., and we notice that now South Manchester include a talk on the subject by G3FNM on May 30, our publication day. Then May 6 is down for the Technical Forum, and on the 13th the talk is on Modern Telephone Exchanges, by G4AUR. A "Mini D/F Contest" fills June 20, and then on June 27 there is a Night on the Air. Sale Moor Community Centre sees these Friday activities, and on Mondays the VHF and D/F element get

PLEASE NOTE!

Closing dates for this feature for the next few months will be: June 5, July 3 and August 7. These are final dates after which material cannot be taken in but will be held over for the month following.

Flying the A.R.M.S. flag at the Drayton Manor Rally on April 20 was Brian Meaden, G3BHT, from the vehicle that has carried him, with G3BA and others, on many successful DX-peditions. G3BHT is a committee member of the Amateur Radio Mobile Society.



together at the shack at "Greeba," Shady Lane, Manchester 23.

That address in Gaol Street for Hereford should not worry anyone—we have no reports of members being locked up! Expanding a little, the place to look for is actually the County Control, Civil Defence Hq. The date is June 6, and we would expect the activity to be not unconnected with NFD which is down for the next couple of days.

The first and third Wednesdays are booked at Wirral, although our current copy of their *Newsletter* cuts off giving detailed gen from the end of May. The venue will nevertheless still be the normal one at the Sports Centre, Grange Road West, Birkenhead.

Solihull are pleased to announce that Dud Charman, G6CJ, will activate his famous Aerial Circus for them; the venue is the Physics Lecture Room at Birmingham University—other Clubs are invited to attend, but will secretaries of these *please* write to Solihull's G4AEJ with an indication of the numbers likely to turn up. All we need to add is that if you haven't seen Dud's lecture, you really *must* make the effort to get there—he doesn't do it so often of late years since he retired to his DX hide-away in Dorset.

Mid-Cheshire have a place at the rear of Verdin Buildings in the Technical Activities Centre of Verdin Comprehensive School,

Winsford, where they can be found on the following dates: June 11, a talk on D/F Techniques, and details of the Club D/F Contest, times and frequencies; and on June 22, the Club D/F Contest proper. In addition, they put the Club rig on, on most Wednesday evenings, and would like someone to come back to G3ZTT's CQ's!

Gone West

The "brains trust" theme is revived at Cornish, though we doubt whether either Professor Joad or Commander Campbell will be appearing. The date for this one is June 5, and it will be at the SWEB Clubroom, Pool, Camborne.

The letter from Bath set your old scribe a bit of a problem; their Secretary writes very nicely, but just one word was a bit indistinct—Murphy's Law says it just had to be the important one! June 14 and 15 are the dates in question, when GB3CTR will be operational, from the Steam Traction Engine Rally at Camerton. Normal Club meetings are every Monday evening, starting at 8.30. Head for Coronation Avenue, Oldfield Park, Bath.

A new Hq. address is noted for Exeter, who are now quartered at Combe House, Coombe Street, South Street, where they foregather



The cities of Leeds and Dortmund (West Germany) are "twinned," as is the civic fashion these days. Here we see Connie Wade, G4CUI, of the White Rose Radio Society, presenting the Lord Mayor of Leeds with an "honorary White Rose award" after a successful link-up with Dortmund by Amateur Radio.

on the second Monday of each month—albeit there is a hint of a possible increase in the monthly ration of meetings. Over the weekend of June 21-22, they will be running GB3ESE for the Exeter and District Scout Jamboree.

At Torbay things are obviously going well as the entire slate of officers were re-elected *en bloc*, and they now have 100 members. The Hq. is Bath Lane, rear of 94 Belgrave Road, Torquay, and the date Saturday June 28, for a talk and checkover for the NFD effort.

Southern England

As usual, this is by far the largest heap of reports, although the density of the amateur population and so the number of radio clubs is probably higher in the Midlands and North—puzzling.

Newbury have pole position, and they announce that their get-together is on June 2, at South Berks College of Further Education, 7.30 to 9.30. G4DGU will be talking about a 70 cm. exciter and an eighty-metre transceiver; quite a contrast!

At Bishops Stortford, it was mentioned last time that they were a bit disorganised owing to letting in an extra-special even to the programme and the general change-round resulting. This continues, the May meeting having been fitted up with a talk and demonstration of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague G3KFE rattling on about something-or-other.

Colchester seem to be quite happy with their new Hq., which is at Stanway School, Stanway, near Colchester, where they meet every Wednesday evening. Much of the activity at the time of their letter was being devoted to the Anglian Rally preparations.

The contribution by G3LXP in the current *Verulam Newsletter* would bring back happy memories for all the older members—he discusses the activity of NFD in terms of those years just around

Hitler's War when things were so much simpler technically and the fun of Field Day that much greater. Talking of "more technical" we note that Verulam's meeting on June 18 will be devoted to SSB on VHF and UHF, as seen by G8DKK.

Emmanuel Church Hall, Barry Road, London S.E.22, is the venue, on Saturday June 21, for a talk on the GB3LO repeater, by way of both talk and demonstration of its use. The group—Crystal Palace.

At North Kent the current copy of the *Newsletter* recounts the adventures involved in getting the Club's assets from the old to the new Hq., at St. Mary's Institute, 2 North Cray Road, Bexley; the dates at the new place are given as the second and fourth Thursdays of each month, with, at the time of writing, nothing finalised as far as the June dates go.

June 17 is the date for Acton, Brentford & Chiswick at their usual Hq., which is Trades and Social Club, 66 High Road, Chiswick. It is understood G4DLK is to talk about the FR400-FL400 rig.

The third Tuesday in every month is the date they book at Sutton & Cheam; we can't tell you what will be taking place at the June get-together if only because the AGM has just been taken and the new committee have not had time to sort anything as this is written—no doubt something will have been arranged for the night. The venue is the Library, Cheam.

Meetings of the Echelford group are held at St. Martin's Court, Kingston Crescent, Ashford, Middlesex, on the second Monday and the last Thursday of every month, giving us June 9, for a "Chairman's Evening" and June 26 for a Transmitter Appreciation Evening.

For Farnborough we have no data on the June doings; but we can say that the dates are the second and fourth Wednesday in each month, at the Air Scouts Hut, Rectory Road, Farnborough, Hampshire—no doubt G8ECO would be pleased to give the latest gen, if you contact him at the address in the Panel.

Names and addresses of Club Secretaries reporting in this issue :

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

Another lot who like to keep their activities a deep secret is at **Southgate**—here we have to tell you that it is always the second Thursday in the month, and if you go to the Scout Hut, Wilson Street, Winchmore Hill Green to visit them, *keep off the grass!* It seems some twit parked on the grass, and in trying to get off again made a prize mess of the lawn, which nearly made the Scouts refuse further use of their place. And who can blame them?

Now to **Bedford** who have a two-metre D/F contest on June 5, with announcement of the results on the 12th. A guest speaker comes on June 19, to talk about Radio Control of Models, and on June 26 they will be readying for SSB Field Day, and listening to a mini-lecture. Hq. is at the United Services Club, The Broadway.

Cheshunt are, as it were, "reformed" characters; they now operate on a weekly basis, every Wednesday evening at Rosedale Sports Club, Andrews Lane. June 4 sees G3GBL talking about Aspects of Various Bands of Operation, and on June 11 there is, first, Morse, and second R.A.E.—this repeats on June 25. The intervening June 18 date is filled by G4DCP on Digital Logic.

Every evening of the week between Monday and Thursday the **Barking** lads have something going on at Westbury Recreation Centre, Westbury School, Ripple Road, with Wednesday evenings devoted to Closed Circuit TV activities. More details can be obtained from the G8JEG, as Panel.

From where we sit, it looks as though Cray Valley have booked the first and third Thursday at Eltham United Reformed Church Hall, 1 Court Road, S.E.9 but it is suggested you check first because this is not explicitly stated in the *Newsletter* we have to hand. Neither, come to think of it, do we have the programme for which we must refer you to the hon. secretary, G3YWO.

June at **Chiltern** means the 10th for an informal, and the 25th for the lecture—Telefax, by G8GGU. Both are at the Ernest Turner works (in the canteen), High Wycombe.

Lots of activities are available if you are in the **Maidstone YMCA** group, at the Sportscentre, Melrose Close. On June 6, there are, naturally, things to be done in preparation for NFD, and on the 13th there is a Beginners' Class, aiming at R.A.E. and Morse. The YMCA Convention on June 28 at Tonbridge will be prepared for on June 20, and on the 27th G3REM will be demonstrating and talking about "Tools and Materials used in Amateur Radio."

West Kent are based on the Adult Education Centre, Mounson Road, Tunbridge Wells, and on June 13 they will be wheeling and dealing at the Junk Sale. Simple Test Equipment, its Construction and Use, will form the diet on June 27. In addition there are informals on June 3, 17, and July 1, either for nattering or construction work, which will be based on the Drill Hall, Victoria Road, Tunbridge Wells.

The FT-220 transceiver will be the talk-and-demonstration by G3ZLQ at Maidenhead on June 5, while on June 17, G3VCT will discuss the business of Speech Processing. Both are at the British Red Cross Hall, The Crescent.

The weekly doings at **Dunstable Downs** are set down by the "temporary" hon. secretary, who realises he has probably been lumbered with the chore for good! Map-reading is on June 6, out on the Dunstable Downs, or, if wet, at Hq. A general natter-session appears on June 13, and on the 20th the St. Johns people will come along and demonstrate how they deal with electricity, or, rather, its consequences. Finally, on June 27, comes the half-yearly get-together for which one brings a YL or XYL. Hq. is at Chews House, 77 High Street South, Dunstable.

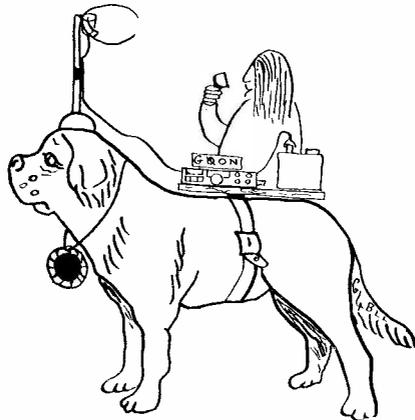
After forty years of continuous activity, **Surrey** are still going strong, says the secretary after he was re-elected at the AGM. They have a Constructional Contest on June 17, at the Ship Inn, 47 High Street, Croydon.

Epilogue

Which is where we sign off the programme for another month. Next time, we want the news for "Flaming July" with dates, venues, details of what goes on, secretary's address and phone number, and all the chat after the vital stuff, by June 5. Send it to "Club Secretary," *SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.*



One of the Trade stands at the White Rose Rally, Leeds, was that of Mike Hawkins, G3ZNI, Cobham, Surrey, doing a very nice line in callsign badges, car emblems and station plaques, in various sizes and designs. He produces a good job.



"... Mobile rig here is a bit unusual ..."

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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.*

E11CV, R. A. Smye (*G4DMN*), Douras, Woodford, Co. Galway, Eire (*QSL to G4DMN*)
 E10CV, M. H. Smye (*G4DHC*), Douras, Woodford, Co. Galway, Eire. (*QSL to G4DHC*)
 E17CS, M. B. Rooney, The Post Office, Glencar, Sligo, Co. Leitrim, Eire. (*Tel: Manorhamilton 44.*)
 G2BAH, L. S. Gumbrell (*ex-G4CJN*), 4 Finley Close, Kendal (*22541*), Cumbria, LA9 6DW. (*Re-issue.*)
 GM2FWK, Wg. Cdr. R. V. Smith, 12 Williamwood Park West, Netherlee, Glasgow, G44 3TE. (*Re-issue.*)
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 G8JWG, J. S. Edgar, 57 Finaghy Road South, Belfast (*613300*), BT10 0BW, Northern Ireland.
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 G8JYA, H. Herrick, 9 Ings Crescent, Thornhill, Dewsbury, West Yorkshire, WF12 0BT.
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 G4DPW, P. A. Leslie-Reed, c/o Yew Tree House, Kingsley Holt, Nr. Cheadle, Staffs., ST10 2BD.
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 G8GED, D. F. Richardson, 30 Westbury Avenue, Southall, Greater London, UB1 2UY.
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 G81YK, R. J. Sayers, 13 Hodge Bower, Ironbridge, Telford, Salop.
 CORRECTIONS
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 G8IMP, M. Connah, 27 Lismore Road, Highworth, Swindon, Wilts. (*"G8IMP," April.*)
 G8JGX, A. H. Bird (*ex-G2BLU*), 32 Downs Road, Maidstone (*58426*), Kent, ME14 2JN. (*"G8JBX," February.*)

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Crystal frequency : 18 MHz.

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IC-3PA DC PSU and speaker. Fitted with Automatic overload protection. Mounting harness to hold IC-22, IC-22A, IC-225 or IC-20, £35.00 + VAT.
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Crystals for IC-20, IC-22, IC-22A, IC-2F, IC-320 or IC-31, £4 + VAT per pair.
Crystals for IC-225 or IC-210—reverse repeater or special channels, £2 + VAT.
FT-501 Digital HF Transceiver bargain at £415 INCLUDING VAT AND PSU.
IC-225 80 channel Mobile transceiver—fitted 80 channels.
IC-210 FM main station. Fully VFO (see previous adverts), £200 + VAT.
IC-21A Updated version of the IC-21—takes the DV-21 direct, £178 + VAT.
DV-21 Digital frequency synthesiser VFO for IC-21A, IC-21, IC-22, IC-22A (the last three rigs need modification), £172 + VAT.
IC-320 UHF MOBILE TRANSCIVER. 12 channel capability, fitted with 4 channels including 433.2 MHz. 10 watts out. Ideal for UHF repeaters, £169 + VAT.
IC-31 Base station version of the IC-320, £220 + VAT.

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Statement of Policy

FROM THE DATE OF THIS ANNOUNCEMENT WE WISH IT TO BE KNOWN THAT OUR ONLY AUTHORISED DISTRIBUTORS FOR THE UNITED KINGDOM ARE AS FOLLOWS:

AMATEUR ELECTRONICS UK **Birmingham**
WESTERN ELECTRONICS (UK) LTD. **Southampton**

IN THE INTERESTS OF GOOD AFTER-SALES SERVICE ALL CUSTOMERS ARE RECOMMENDED TO PURCHASE FROM OUR MAIN AGENTS OR THEIR AUTHORISED OUTLETS.

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—the choice of Ships and Coast Stations the world over.

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Developed from the well-established ETM-2. Printed circuit, 11 transistors, 6 diodes. Ratio Control. Single paddle. Speed control. 8-50 wpm. Sidetone oscillator. Almost-inaudible sealed reed relay. Grey case 4" x 2" x 6". Powered by four ZM9 mercury batteries available world-wide. (Price includes batteries.) Well-engineered keying lever, fully adjustable gaps and tensions.

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Printed circuit with 4 ICs and 13 semiconductors. Twin paddles. Constant 3:1 ratio. Speed control, 8-50 wpm. Operate/Tune button. AC mains power supply, 110/220-240V. Almost-inaudible sealed reed relay. Grey case 4" x 2" x 6". The renowned SAMSON keying lever movement with fully adjustable gaps and tensions. Can be used either as an iambic mode squeeze-keyer (characters made with fewer paddle movements—you can make a "C" with one squeeze!)—or as a normal electronic keyer.

ETM-3b — with make-break relay contacts, (Ratings: 1A, 400v., 30W max.), £49.71.

ETM-3bS — with spdt changeover relay contacts, (Ratings: 0.5A, 250v., 10W. max.), £55.78.

— OR IF YOU LIKE IT STRAIGHT...

JUNKER PRECISION HAND KEY

A superbly engineered straight hand key used for many years by professionals afloat and ashore. With this key you can't help but send good morse.

Free-standing—it does not have to be screwed to the operating desk. Good weight distribution and large rubber feet stop it sliding or rocking. Weight: 2½ lbs. Front and back contacts of precious metal, with fine adjustment of contact gaps by positive click-stop action. Lever-action spring tension adjustment. Spring pigtail at keying arm pivots ensures good contact. Insulated keying arm, moulded knob with rubber anti-slip insert. 3-way terminal block and cable clamp at rear. Key-click filter (L, C & R) built into base. Rear-hinged cover (with spring catch) and other metal parts finished in attractive hammertone grey. Base area: 3¼"V. x 7½"D. Overall height: 2½", £21.48.

BAUER KEYING LEVER UNIT

We have imported this popular unit for many years for inclusion in home-built electronic keys. Adjustable contact gaps and spring tensions. Single paddle on moulded base 1½" x 2". Height: 1" (excluding paddle), so is compact enough to go inside most keys, £6.68.

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Mains or D.C. operated 2 Metre Tx with A1/A3H/A3J/F3 modes, full high stability Mixer VFO coverage plus one Xtal controlled A3J calling channel. 10 Watts RMS 25 Watts PEP output. Repeater Tone access. Integral solid state aerial C/O and Control/Muting Relays. Fully stabilised and protected PSU. £130.00.

TC 5

12 Volt negative earth 2 Metre Tx, 2 Watts output with up to 5 channels Xtal controlled A3, or with companion TC 6 A3/F3. Ideal for Mobile use, supplied with Ch 1 Xtal on 145.5 MHz complete with Ae C/O relay, Converter muting and Microphone. £35.00.

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2 Metre Bandpass Aerial Filter
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Enables automatic electronic scanning of the band to be selected with a TC 7 Tunable IF, by application of a decaying bias to the varicaps. Scans and Resets approx. once per minute. £5.00.

Solid State Ae C/O Relay

10 Watts capability up to 23 cms. Insertion loss 0.8dB. Isolation 28dB at 23 cms. 12 Volt Negative Earth required. £5.00.



Photo by Cris Cooper

G3AEV MK. 2 2 METRE CONVERTER

The well-known kit in ready-built form with 3 IF outputs for contest use etc. All popular IF's available. 12 Volt D.C. operated either polarity earthed. Typical gain 20dB, typical N.F. 3dB. Join the other 650 users for £13.00.

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Repeater Access outboard Unit available for an extra £10.00.

TC 6

Companion Unit to TC 5 providing full high stability coverage of the 2 Metre band with A3 or F3 mode.

Also available with 45 MHz output for the DIY S.S.B. enthusiast. £30.00.

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70 MHz Converters 28-28.7 MHz IF	£16.42
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28-30 MHz IF ...	£16.42
144 MHz " 2-4 MHz IF ...	£16.42
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144 MHz " 28-30 MHz IF with 116 MHz output	£17.60
432 MHz " 28-30 MHz IF ...	£19.55
432 MHz " 144-146 MHz IF ...	£19.55
1296 MHz " 28-30 MHz IF ...	£25.92
1296 MHz " 144-146 MHz IF ...	£25.92
432 MHz Varactor Triplers ...	£18.90
1296 MHz Varactor Triplers ...	£27.00
144 MHz Preamp (2 outputs) ...	£9.72

Other IF's to order. All above post free

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144 MHz Converters 4-6 MHz IF (75p)	£18.76
144 MHz Converters 28-30 MHz IF (75p)	£18.76
432 MHz Converters 144-146 MHz IF (75p)	£18.76
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YAESU

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5 ele. 2m. beam ...	(£1.50) £5.37
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10 ele. 2m. beam ...	(£1.50) £13.76
14 ele. 2m. beam ...	(£1.50) £21.13
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8 over 8 2m. beam ...	(£1.50) £13.13
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STORNO CQM13C HIGH BAND FM TX/RX for 2 metre conversion, with circuit. 10 watts output ... £14-00 + £2 c. & p.
 QOVO3-10PA driven by ECH81 osc., ECC81, 6AK5, 6AK5, QOVO3-10. Deviation limiter adjustable up to 5 kHz.
 PSU 24 volt inverter. RX double superhet cascade ECC84 RF, ECC81 & 6AK5 mix, 4x 6AK5 IF and limiters, ECC83,
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STORNO CQM13C aligned and tested on 2 metres ... £25-00 + £2 c. & p.
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 TX 10 watts output from QOVO3-10 PA. PSU 12 volt inverter. RX double superhet 6AK5 RF, mix, osc., 2nd mix.
 Transistor IF and AF. TX and RX crystals fitted (our choice), complete with control box, mic, cables and speaker.

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CRYSTALS SUITABLE FOR STORNO EQUIPMENT £2 each

2m CQ (1)13. TXx24 RXx17+455. 6000 6010 6020 6021 6026 6030 6032 6040 6043 6050 6065 6070 6076 8454 8472 8500 8550.
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 HIGH, MID and AIR BAND AM. Mobiles and Base stations. HF AM and CW. 10, 50 and 100 watt mobiles, 1/4 kW base stations.

CRYSTAL CONTROLLED MONITOR RECEIVERS FROM 750 kHz to 490 MHz IN STOCK

VHF TX/RX AND DIGITAL CRYSTAL UNIT, TYPE LRE35

1. Can be used as an air band receiver with digital crystal controlled tuning.
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CRYSTALS: Still 1000's in stock per previous adverts £2 ea.

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HEATHKIT DX100 Transmitter	£50-00 (£5-00)
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HAMMARLUND HQ-170 Receiver	£120-00 (£3-50)
KW-201 Receiver	£100-00 (£5-50)
KW-2000A with A.C. P.S.U.	£180-00 (£4-00)
KW-204 Transmitter	£180-00 (£4-00)
KW YESPA Mk. II, with A.C. P.S.U.	£105-00 (£4-00)
EDDYSTONE EA12 Receiver	£160-00 (£3-50)
STAR SR-550 Receiver	£50-00 (£2-00)
EDDYSTONE 730 Receiver	£95-00 (£3-00)
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EDDYSTONE EQUIPMENT. Please enquire.

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TX AND RX CRYSTAL AVAILABILITY AND PRICE CHART
PRICES: (a) £2.00 (b) £2.50
AVAILABILITY: (a) Stock item, normally available by return (we have over 3,000 items in stock), (b) Four weeks normally but it is quite possible we could be able to supply from stock.

CRYSTAL FREQUENCY RANGE Use (Tx or Rx) and Holder	CRYSTAL FREQUENCY RANGE											
	4 MHz-TX-HC6/U	6 MHz-TX-HC25/U	8 MHz-TX-HC6/U	10 MHz-RX-HC6/U 1#	11 MHz-RX-HC6/U	14 MHz-RX-HC25/U	18 MHz-TX-HC25/U	36 MHz-TX-HC6 & 25/U	44 MHz-RX-HC6/U	48 MHz-TX-HC6 & 25/U	52 MHz-RX-HC25/U	72 MHz-RX-HC25/U 1
144-030 ...	b											
144-4/433-2 ...	a	a	a	a	a	a	a	a	a	a	a	a
144-480 ...	b	b	b	b	b	b	b	b	b	b	b	b
144-600 ...	b	b	b	b	b	b	b	b	b	b	b	b
144-700 ...	b	b	b	b	b	b	b	b	b	b	b	b
145-000 ...	a	a	a	a	a	a	a	a	a	a	a	a
145-050/R2T ...	a	a	a	a	a	a	a	a	a	a	a	a
145-075/R3T ...	a	a	a	a	a	a	a	a	a	a	a	a
145-100/R4T ...	a	a	a	a	a	a	a	a	a	a	a	a
145-125/R5T ...	a	a	a	a	a	a	a	a	a	a	a	a
145-150/R6T ...	a	a	a	a	a	a	a	a	a	a	a	a
145-175/R7T ...	a	a	a	a	a	a	a	a	a	a	a	a
145-200 Rnet ...	a	a	a	a	a	a	a	a	a	a	a	a
145-300 ...	b	b	b	b	b	b	b	b	b	b	b	b
145-350 ...	b	b	b	b	b	b	b	b	b	b	b	b
145-400 ...	b	b	b	b	b	b	b	b	b	b	b	b
145-500/S20 ...	a	a	a	a	a	a	a	a	a	a	a	a
145-525/S21 ...	a	a	a	a	a	a	a	a	a	a	a	a
145-550/S22 ...	a	a	a	a	a	a	a	a	a	a	a	a
145-575/S23 ...	a	a	a	a	a	a	a	a	a	a	a	a
145-600/S24 ...	a	a	a	a	a	a	a	a	a	a	a	a
145-650/R2R ...	b	b	b	b	b	b	b	b	b	b	b	b
145-675/R3R ...	b	b	b	b	b	b	b	b	b	b	b	b
145-700/R4R ...	b	b	b	b	b	b	b	b	b	b	b	b
145-725/R5R ...	b	b	b	b	b	b	b	b	b	b	b	b
145-750/R6R ...	b	b	b	b	b	b	b	b	b	b	b	b
145-775/R7R ...	b	b	b	b	b	b	b	b	b	b	b	b
145-800 Rnet ...	a	a	a	a	a	a	a	a	a	a	a	a
145-950 ...	a	a	a	a	a	a	a	a	a	a	a	a

V.A.T. AS A RESULT OF THE BUDGET VAT AT THE RATE OF 28% MUST BE ADDED TO OUR PRICES WHICH ARE NOW SHOWN EXCLUSIVE OF VAT. HOWEVER WE ARE PLEASED TO ANNOUNCE THAT AS A RESULT OF A NEW AGREEMENT WITH OUR SUPPLIERS WE HAVE BROUGHT DOWN THE BASIC COST OF MANY OF OUR STOCK ITEMS.

N.B. Frequencies as listed above but in alternative types of holders are available as per code (b).

ORDERING: All we require to know is (1) output frequency, (2) crystal frequency range and (3) the holder. It is not necessary to give the exact crystal frequency when ordering any of the above range.

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We are pleased to announce we have been appointed Northern Stockist of **BURNS ELECTRONICS** kits, etc., and are able to supply most of their products from stock. We will also be representing them at many of this years rallies.

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1 MHz and 5 MHz in HC6/U and 10.0 MHz and 10.7 MHz in HC6/U and HC25/U at £2.50 each.

PYE POCKETPHONE (PFI) AND PYE CAMBRIDGE (U10B) UHF CRYSTALS

Crystals for the above equipments for use on 433.2 MHz (TX and RX) and for GB3PY are available at £4.00 per pair.

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New low price—all at £2.80 each, 38-6666 MHz (144/28), 42 MHz (70/28), 58 MHz (144/28), 70 MHz (144/4), 71 MHz (144/2), 95 MHz (432/52), 96 MHz (1296/432/144), 101 MHz (432/28), 105-6666 MHz (1296 MHz (1296/28) and 116 MHz (144/28).

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16p each plus 10p P. & P. per order (P. & P. free if ordered with crystals). **CRYSTALS SPECIALLY MANUFACTURED FOR AMATEUR USE**

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In either code PE (±0.003% at ambient) or code ID (±0.005% 0 to 60°C) in HC6/U 2-105 MHz and HC18/U and HC25/U 4-105 MHz all £2.80 each. Delivery usually about 4-5 weeks. Fundamentals (2-21 MHz) will be supplied to 30pf circuit conditions and overtone (21-105 MHz) will be supplied to series resonant conditions unless otherwise specified. For details of closer tolerance crystals please send S.A.E.

CRYSTALS TO COMMERCIAL SPECIFICATIONS

We can supply crystals to most commercial and MIL specifications, with an express service for that urgent order. Please send S.A.E. for details or telephone between 4.30-7 p.m. and ask for Mr. Norcliffe. (Regret no phone enquiries May 26-June 23)

TERMS: CASH WITH ORDER—PRICES EXCLUDE VAT WHICH SHOULD BE ADDED AT THE RATE OF 28%—S.A.E. WITH ALL ENQUIRIES—MAIL ORDER ONLY—PRICES INCLUDE P. & P. EXCEPT WHERE STATED.

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BY 103 1300 PIV 1 Amp SILICON DIODES at 15p each.

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365pf 3 GANG TUNING CONDENSERS. S121 2½ x 1½ x 1½ at 66p.

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DUAL GATE MOS FET's 40601 at 50p 40603 at 50p, 40673 at 55p, MEM 616 (40673) at 50p.

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10 SILICON BRIDGES. 10 amp type untested for £1.25.

VHFTUNING VARACTORS. Untested, 6 for 25p.

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X BAND DETECTOR DIODES like SIM 2 at 15p, IN 23 at 25p, 8 TO 1 VERNIER DRIVES. 1" at 88p, 2" at 99p, 2½" at £1.30.

SUB-MINIATURE TRANSISTORS. OC 57 at 5p, OC 58 at 10p, OC 59 at 6p, OC 60 at 10p.

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SUB-MINIATURE MICROPHONES. 150 ohm at 25p each.

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7-5K EDGEWISE POTENTIOMETERS at 15p each.

SUB-MINIATURE EARPIECES. Deaf-Aid Type at 25p each.

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1000 PIV 1 amp METAL DIODES. 10 for £1.

500+500+17+17pf TUNING CONDENSERS with S.M. Drive at 33p each.

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MULLARD POLYESTER CAPACITORS C280 Series 250v.w., .01uf, .015uf, .022uf, .033uf, .047uf, .068uf, .1uf. All at 15p doz. .15uf, .22uf, 6 for 12p; .33uf, .47uf, .68uf. All at 6 for 15p; 1uf, 2.2uf at 6 for 20p.

10-7 MHz TRANSISTOR I.F. TRANSFORMERS at 11p each. **SOLDER-IN FEED THRO's** 1pf, 2pf, 10pf, 15pf, 18pf, 22pf, 300pf. All 15p doz.

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UHF TRANSISTOR TV TUNERS. Brand new at £1.10.

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(P. & P. shown in brackets)

PRICES DO NOT INCLUDE VAT—PLEASE ADD 25% TO ALL ORDERS. ALL ITEMS EXCEPT AERIALS CARRIAGE FREE. Enquiries S.A.E. please. Part exchange welcome—secondhand equipment in stock. We also carry small components, eg capacitors, resistors, transistors etc. in stock from Mullard, Erie, Radiospares, Texas, Bulgin, Jacksons. We are situated close to the London end of the main A2 road near the Dartford Tunnel. Access and Barclaycard welcome—just phone in. Or use GIRO transfer, our AC No. 33 563 4001.

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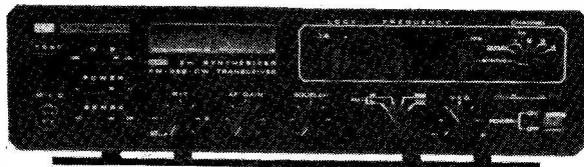
We offer a range of transistor preselectors for the H.F. bands covering the range 1.5 to 34 MHz in five overlapping bands, with an average gain of 32 dBs.

Mains or battery powered with a built in PI tank A.T.U. link coupled to the preselector proper. Making the most of your antenna situation by tuning and matching, getting that little extra bit of gain in signal before the preselector adds its own low noise high gain characteristics. Used the way we suggest these units will not cause large amounts of signal to be pushed into your receiver front end just a small signal with a very low noise level, allowing readable copy to be made of some of those intriguing low level signals.

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HAMGEAR ELECTRONICS

2 CROMWELL ROAD, NORWICH, NR7 8XH

JUST ARRIVED FROM JAPAN**MULTI 2000 TRANSCEIVER**

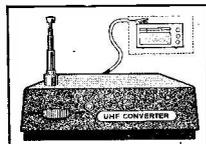
An advanced initial consignment of 50 sets at a special introductory rate.

2M SSB/FM/CW Transceiver the FDK Multi 2000 incorporating all the necessary features required by the Amateur.

2M SSB/FM and CW Synthesised 200 CH AC/DC 10w. O/p.

It is expected that this equipment will sell within a few days and the advertisement may not appear again for some time. We ask customers to place their orders immediately to ensure delivery.

Multi 2000 Cash Price £218-00 Postage £1-25

**UHF - VHF CONVERTER**

As most high level transmissions are now moving to UHF this unit enables their reception without the necessity of an expensive receiver.

The unit will receive frequencies in the range 420-470 MHz or to customers' requirements and allows any VHF radio to receive UHF transmissions.

To operate: Connect crocodile clip to any VHF radio aerial, in the down position, switch connector on, tune VHF radio to 100-108 MHz on dial and receive UHF communications band.

The converter is of rigid metal construction and housed in a strong plastic case. The circuitry uses tuned lines in oscillator and RF circuits facilities are made for peaking I.F. output between 100-108 Mc/s. Power supply is from an internal 9 volt battery.

Unit dimensions: App. 6" x 3" x 1"; aerial 6".

An interesting feature is that the converter can be used to feed several VHF radios enabling a number of UHF channels to be received simultaneously.

CONVERTER, ready to use — £25-50

MAIL ORDER and COD WELCOME

MULHALL ELECTRONICS

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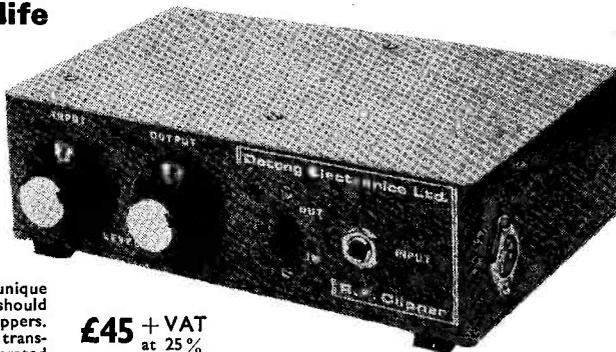
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Easy to install — long battery life

- ★ Simply connect in series with your microphone lead. Needs no internal connection to your transmitter. Push-to-talk facilities are retained.
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£45 + VAT
at 25%

DESCRIPTION : The Datong R.F. Clipper brings the unique benefits of rf clipping to any conventional transmitter. It should not be confused with age-type speech compressors or af clippers. The Datong R.F. Clipper is a complete closed-circuit ssb transmitter and receiver. Amplitude clipping of the internally generated ssb signal (at 60 kHz) greatly increases the average-to-peak amplitude ratio of the speech input signal. This is achieved without harmonic distortion.

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Telephone : 0532-755579

See August Rad. Comm. for a review of this equipment

JAPANESE MICROPHONE SOCKETS

The Datong Clipper is now also available fitted with a Japanese 4 pin screw-locking type of input connector in place of the normal stereo jack. This allows, for example, FT101 or TS700 microphones to plug straight in. Since connection details vary, please specify the actual connections required when placing your order. Price : £47 plus VAT, or, if ordered complete with output lead fitted with matching connector (i.e. lead type RFC/JAP4pin), £48.50 plus VAT for the pair. Add 50p for registered first-class delivery.

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NEW RADIO TELEPHONES. FM or AM. High, low and Marine bands. *Catalogue on request.*

LINER 2. Add on amplifier module comprising of 40 watts PEP amplifier and preamp for the RX. Extremely simple to use with any Liner 2, but could be easily adapted for use with any TX RX requiring more power and better sensitivity.

With RX preamp £60.53
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Steel cases blue for the above units £35.00

New 50 watt AM Transmitter chassis, less valves and coils £47.50
N.B. The above unit can be used on 12.5 kc/s.

5 pin type B plug 26p
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Toggle switches 10 amp—25v. (centre off position) 28p
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PT.4176C 20 watt £2.87
PT.4176B 92p
PT.4176A 65p
2N 4427 5 watt 92p

Various other transistors. List on application.

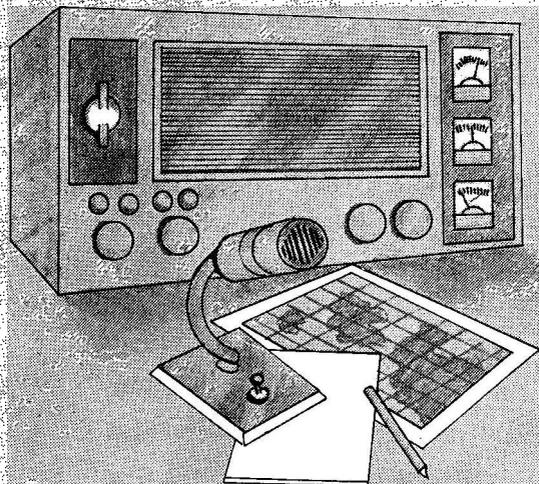
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(A COOKE INTERNATIONAL ELECTRONICS COMPANY)

ANNOUNCEMENT

We are sorry for the delay. However, we shall be at **11a High Street, Emsworth, Hants.**, from the 2nd June '75, onwards, just off the A27 between Chichester and Portsmouth. Free car parks at rear, and plenty of room to browse. Come and visit us, we shall be pleased to see you.

Prices and goods mainly as per April ad. except of course add 25% VAT now. Business hours will be 9.30 a.m. to 5.30 p.m. every day except Monday when we close.

Hope to see you at 11a High St., Emsworth, Hants.



MAGNUM TWO AND FOUR METRE TRANSVERTERS

Our transverters accept low level drive from most HF transceivers in the 28–30 MHz band (other IF's to special order) and transvert this signal to the corresponding frequency in the 70 MHz or 144 MHz band. Signals being received in either of these bands, are in a similar manner, converted back to the 28 MHz band.

All power requirements are taken from the accessory sockets of the HF transceiver as in the YAESU MUSEN or SOMMERKAMP range, or with very simple modifications to most other gear, either transceivers or separates. If any details on modifications are required please do not hesitate to contact us.

We have incorporated in our design one of the well known and highly respected "MICROWAVE MODULES" Mosfet converters.—Need we say more.

It has been our experience in industrial electronics that printed circuits, when used in valve circuitry, prove to be unreliable in many cases and because of this we have chosen to "Hand wire" the RF section of the transverter. In doing this, we are confident that it improves the stability and reliability factor of our product.

SPECIFICATION

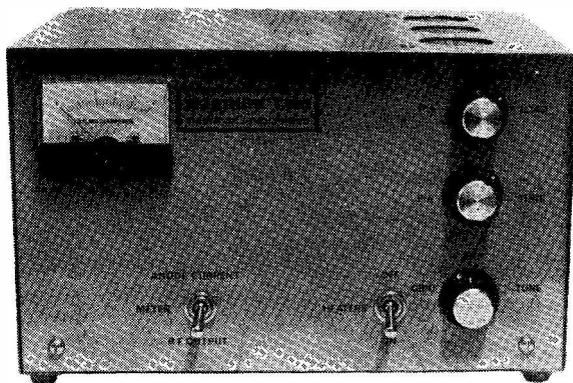
Modes : CW, SSB, AM and FM.
Input Drive : Typically $\frac{1}{2}$ Watt RMS.
Output Power : Minimum of 50% efficiency.
Typically when used with FT 200, 90–100 Watts SSB output.

SIZE

10" x 6" x 7".

No special cooling required.

Our transverters are constructed for good mechanical stability, while providing adequate ventilation.



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Sale: FL-2100, with one spare 572B, £150. DC input PSU's, 12v., s.a.e. for details.—Wake, G5RP, College Farmhouse, West Hendred, Wantage, Oxon., OX12 8RP. (Tel: East Hendred 384).

Wanted: General-coverage receiver, such as AR88D, AR88LE, NC-183D, SX-28, SX-100, HQ-145X, BRT-400, R.50M, SP-600JX. Must be in good working order and unmodified. Details and price please.—Box 5413, Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H 0HF.

Selling: Europa-A two-metre transceiver, updated by S.S.M. to "B" spec., complete with valves and blower unit, £68 post paid.—Denman, G3MEW, 24 Ascot Road, Copnor, Portsmouth (20315), Hants.

For sale: B.40 receiver, coverage 640 kHz to 30.5 MHz, in very good condition, complete with manual, £23. Also unmodified R.1155, very good condition, and two tatty '1155's for spares, with circuit diagram, price £15 — or £35 the lot, buyers to collect. — Lees, 450 Castle Lane West, Bournemouth (S17200), Hants. (Ring after 6.0 p.m.)

Sale: Yaesu FR-50B amateur receiver, coverage 10 to 160 metres, with speaker, 100 kHz calibrator and handbook, in hardly-used mint condition, price £50 carriage paid. — Hanson, 6 Woodhall Place, Parkside Estate, Newcastle-under-Lyme, Staffs.

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Wanted: R.C.A. AR88D trimming tools and S-meter. — Cleaver, ring Harwich 2195.

For sale: Yaesu FR-50B receiver, coverage 2-10-15 20-40-80-160 metres, in literally as-new condition, few hours' use only, still under guarantee for seven months, £78. — Ring Weston, Parkstone (Dorset) 742142.

Wanted: Eddystone 850 (glass) dial, with assembly. — Fletcher, 20 Rolleston Drive, Arnold, Nottingham, NG5 5JL.

Selling: National HRO general-coverage receiver, with seven coil packs. PSU and speaker, in nice condition, bargain at £23. — House, 10 Leagh Close, Kenilworth (S4556), Warwickshire. (Ring after 6 p.m.)

Wanted: Hammarlund HQ-180A receiver. Good price paid for model in immaculate condition. — Tooke, 6 Chelmer Avenue, Rayleigh, Essex, SS6 7TB.

Wanted: Communications receiver, transistorised preferred, in first-class condition; full details, please. — Box No. 5415, Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H 0HF. (Or ring Woolhouse, 01-643 7648, evenings, Sutton).

Wanted: Heathkit SB-10U (or similar) SSB adaptor. Good price offered. — Ring Mohammed, Nottingham 257675, evenings.

Wanted: Circuit diagram for HRO, and coil packs below 1 MHz. — Staurou, 11 Rayleigh Road, Wimbledon, London, SW19. (Tel: 01-542 9186, evenings).

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Wanted: Borrow or buy, circuit and/or instruction manual for Taylor Type 94A TV waveform and alignment generator. — O'Hara, EI9BY, Ardagh, Rocheston Road, Douglas, Co. Cork, Eire.

Wanted: DX-100U or similar Tx, preferably with handbook, and SSB transmitter covering Top Band. Also general-coverage and amateur-band receivers, small 'scope and good multimeter. Buyer can collect. — Box No. 5417, Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H 0HF.

For sale: Yaesu FL-200B Tx, 240 watts, coverage 10 to 80m., with p-t-t, Vox and break-in, in very good condition, £65. Delivery can be arranged. — Ring Hadler, G4CZU, Whitstable 62560.

Wanted: Trio 9R-59DS receiver, in mint condition. Details, please. — Fisher, 14 Colindeep Lane, Sprowston, Norwich, Norfolk, NR7 8EG. (Tel: 0603 692795, office hours).

Sale: First-class KW-2000E transceiver coverage 160 to 10m., WWV/calibrator, pair of R.C.A. 6146B's in final, with PSU and handbook, quite outstanding at £285. — Ring Beeker, G3WY, Evesham (Worcs.) 45497.

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Selling: KW-77 receiver and K.W. Viceroy Mk.IIIA transmitter, both in mint condition. £100 the pair. — Roebuck, G3VTZ, New Milton (Hants.) 616702.

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For sale: Trio 9R-59DE receiver, mint condition, one owner. £35. — Verity, 44 Tennovon Avenue, Dukinfield, Cheshire, SK16 5DP. (Tel: 061-303 9747).

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Selling up: Gem-Quad two-element aerial for 10-15-20m., nearly new, £55. Creed 7B teleprinter, with extra machine for spares, £10. Marconi Valve Voltmeter Type 1041C, £20. Siemens-Halske "Hellschreiber" Type GL-72C, £15. Marconi Type TF 1167 telegraph test generator, with handbook, but needs PSU, £7.50. Klienschmidt-160 teleprinter and tape-reader/transmitter, £25. Furzehill crystal calibrator, £5. Creed 6S6 tape reader for 50 and 75 bauds, £15. Marconi Type CT-208 Valve Voltmeter, £20. Hoffman CV-89 Terminal Unit, £40. — Phillips, 155 Franklands Village, Haywards Heath, Sussex, RH16 3RF. (Tel: 0444 50265).

Wanted: Ten-Tec RX-10 receiver with high impedance headphones. Condition and price, please. — Ring Hunter, Penicuik 72399 (Midlothian, Scotland).

Wanted: American General-Class licence holder, within 50 miles radius Bedford, to administer (U.S.) FCC test for Conditional Licence. I have all relevant information. — Ring Amos, Welwyn 6367, day time.

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Wanted: By Collector, any literature on Collins or Rascal equipment—such as leaflets, sales brochures, catalogues, instruction books, etc. — Terry, 104 Cheyne Walk, London, SW10.

For sale: Drake T4X-B with AC4 PSU, crystalised for all bands including 160m., in good condition, with spare PA and driver valves. Price £165, phone first for details. — Henman, G3UNT, Maidstone 55297.

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