

The SHORT WAVE

Magazine

VOL. XXXXVIII

JUNE 1980

NUMBER 4



TRIO R1000

£298 inc VAT Carr £4.50

The R-1000 uses an advanced PLL system in an up-conversion scheme to a high (48MHz) first IF to remove any possibility of image responses. The receiver covers the entire frequency range from below 200kHz right up to 30MHz in 30 bands, each 1MHz wide. The bands are selected, not by ambiguous knob twiddling as in receivers using the Wadley loop but by a 30 position band switch which controls the PLL system.

The band switch also electronically selects the appropriate band pass filter network in the RF stages of the receiver so there are no "preselector" or "antenna trim" controls to twiddle — simply set the band switch to the range required — that's it!

A highly stable VFO tunes each 1MHz range and its linear, back lit scale makes readout easy. However, in addition to this dial, Trio have also provided 5 digit true frequency digital readout so as to guarantee spot on accuracy on any frequency. As a further feature, the digital display can also be switched to read time, this being derived from a quartz standard. Marvellous for accurate log keeping. The display uses high intensity readout units which can be dimmed for use in low light conditions.

As for what else is inside this superb instrument — selectivity is catered for by three custom made IF filters; a 12kHz wide AM filter; 6kHz narrow AM filter; and a new 2.7kHz SSB filter with a shape factor of better than 1:2 6:60dB. Selectable sidebands are available at the touch of a switch.

For the first time in mid-price receiver, a true noise blanker is provided to remove pulse type ignition noise.

To minimise front end overload, a step RF attenuator is included which gives 0-60dB attenuation in four steps.

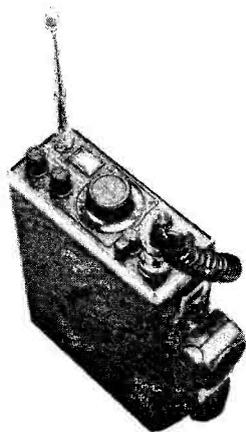
All the rear panel connectors are recessed on a sloping panel so that you can stand the receiver either on its back, or pushed hard against a wall when used in conventional shelf mounting. The antenna inputs allow the use of either a high impedance wire aerial or a 50ohm balanced input so that the proverbial long lump of wire will work really well with the R-1000.

This receiver is so advanced it makes everything in its price range completely obsolete.

LOWE ELECTRONICS LTD. CHESTERFIELD ROAD, MATLOCK, DERBYSHIRE.

LOWE ELECTRONICS Ltd.

TRIO TR2300



£166.75 inc. VAT

Nicad Pack £10.35 inc.

VB2300 £49.45 inc.

The high sensitivity receiver section uses a combination of effective RF filters providing optimum cross modulation rejection across the entire band. An extra low profile speaker uses a samarium cobalt magnet to reduce equipment size whilst improving speaker efficiency and clarity of reproduction.

The remarkable asset of the TR2300 has to be its unexcelled versatility. Using the carrying case and shoulder strap, you can take the 2300 anywhere, powered by the rechargeable ni-cad batteries, and this is certainly the way that most operators use the rig. Sit the 2300 on top of a 12V dc supply at home, however, using the power cord provided, and you have a terrific home station FM rig.

If you want mobile operation, slot the 2300 into an MB1 mounting bracket, possibly add the matching VB2300 amplifier and you have a really high performance mobile transceiver — and being so small, the TR2300 fits almost anywhere. The front panel layout was designed for ease of operation and the back illuminated dial is so easy to read that it's a delight to use.

TR2300 — truly the transceiver for all seasons.

Now — if you insist on a hand held, and don't need the versatility of the 2300, take a look at the new TR2400. Full details on request.

Trio have always been acknowledged leaders in the field of portable VHF equipment and this leadership is amply demonstrated by the TR2300. Following the long established, TR2200 line, the TR2300 combines all the virtues of small size, ease of use and rugged go-anywhere construction but introduced for the first time, full band coverage in 25kHz steps from the same advanced synthesiser used in the TR7500. This provides all 80 FM channels from 144-146MHz together with 600kHz repeater shift (and reverse repeater if requested). Automatic tone burst is provided for repeater operation thus catering for all operational needs.

TRIO TS120V/S

TS120V £347.30 inc. VAT

TS120V	£347.30	TS120S	£432.40
PS20 4 Amp	£44.85	PS30 20 Amp	£85.10
AT120	£55.20	MC35S mic	£13.80
SP120	£25.30	TL120 linear	£128.80
VFO120	£89.70		

THE SYSTEM APPROACH

What do we mean by the "System Approach"?

Well, take the TS120V and you have the finest 20W p.e.p. mobile HF transceiver you could buy. Many operators are even buying it as a second station because it's so good. Consider its features, the single conversion PLL derived top performance; the accurate digital readout; the passband tuning; the noise blanker; the superb engineering; THEN may be add the PS20 mains power supply and you have an equally great home station; OR maybe add the multi-function VFO120 second VFO unit; OR the SP120 external speaker; OR the 100W AT120 antenna tuner or maybe even a superb Microwave Modules 2 metre or 70 cm transverter to get you up on the VHF and UHF bands. It all adds up to a fine station tailored exactly to your own needs.



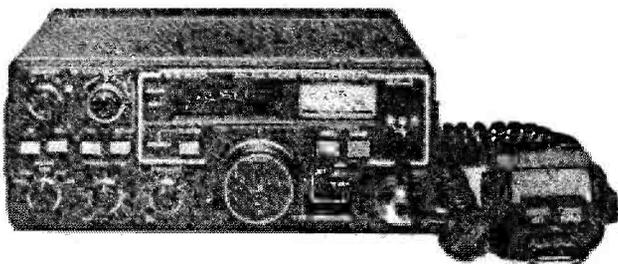
If you need more power, the TL120 200W p.e.p. linear is now available, but you will need a heavier 12V supply to run it. A suitable unit would be the PS30 which delivers up to 20 amps fully regulated and protected. Lots of people are buying the PS30 as a general purpose heavy duty supply for shack use.

Finally, should you really want high power all the time, consider the TS120S which incorporates all the features of the TS120V but has a built-in high power, fully protected 200W p.e.p. linear and it's still not too expensive to enjoy!

TAKE A GOOD LOOK AT THE PRICES!!!

Don't forget, we stock almost everything that the keen DXer, short wave listener or radio amateur could possibly need, including the complete range of J Beam aeriels, Microwave Modules equipment, feeder, clamps, insulators — in fact our catalogue makes good reading for 48p and includes honest advice on aerial matters. For all that's good in Amateur radio, contact Lowe Electronics at Matlock.

LOWE ELECTRONICS Ltd.



TRIO TR9000

2 metre MULTIMODE
£345 inc. VAT

If you sat down at some time and designed your ideal 2 metre multimode rig, you probably laid down the specification for the new Trio TR9000. I believe that this transceiver will satisfy the needs of every radio amateur, combining as it does small size (same as the TR7600), light weight (same as the TR7600), and powerful performance.

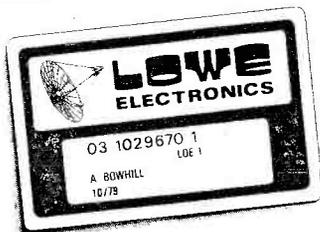
As you can see, the TR9000 has a complete array of facilities including all mode operation, noise blanker, RIT, 5 memories, twin digital VFOs and digital frequency readout to 100Hz. Now for the smart parts.

The TR9000 is based on a 100Hz synthesiser controlled either by a photo microsensor on the main dial or by the remote up/down microphone. On FM, the operator has instant selection of either 25kHz steps (for convenient mobile use), 12.5kHz steps (for future use), or 100Hz steps (for continuous tuning). On SSB and CW, the synthesiser steps are automatically switched to 100Hz and the digital display is extended to match.

A special feature is the search facility on SSB which tunes the whole band, and the scan facility on FM which scans in 25kHz or 12.5kHz steps, stopping momentarily on any received signal. The scan may then be held by touching the HOLD button or depressing the PTT switch on the microphone.

The TR9000 has so much to offer, it's bound to be yet another leader, from Trio. Contact us soon for further details.

REMEMBER. Only an authorised Trio dealer can give you the service, spares and advice that you may need, and only an authorised dealer can give you full advantage of the regular meetings between the distributors and Trio factory personnel at which there is a constant exchange of information and advice.



THE WAY TO HAVE TOMORROW'S EQUIPMENT TODAY

GENERAL

Frequency range: 144,000.0 to 145,999.9 MHz
 Frequency synthesizer: Digital control, phase locked VCO
 Mode: SSB (A3), FM (F3), CW (A1)
 Frequency stability: Within ± 500 Hz during the first hour after 1 minute of warm up, and within 50 Hz any 30 minutes thereafter at 25°C (constant)
 RPT tone burst frequency: 1,750 Hz
 Power requirement: 13.8V DC $\pm 15\%$ negative earth
 Operating temperature: -20°C to $+60^{\circ}\text{C}$
 Current drain: 0.4A in receive mode with no input signal

2.3A in Hi transmit mode (approx.)
 1.3A in low transmit mode (approx.)
 Less than 2.5 mA for memory back-up
 170 x 68 x 234 mm
 2.5 kg (5.5 lbs)

Dimensions:
 Weight:

TRANSMITTER SECTION:

RF output power: Hi (SSB, FM, CW) 10W
 Low (FM, CW) 1W approx.

Frequency tolerance: SSB, CW: less than $\pm 10 \times 10^{-6}$
 FM: less than $\pm 20 \times 10^{-6}$
 Less than -60 dB
 Better than 40 dB

Spurious radiation:
 Carrier suppression:
 Unwanted side band suppression:
 Maximum frequency deviation (FM):

± 5 kHz
 Dynamic microphone with PTT switch, 500 Ω

RECEIVER SECTION

Circuitry: FM: Double conversion superheterodyne
 SSB, CW: Single conversion superheterodyne

Intermediate frequency: 1st IF: 10.695 MHz
 2nd IF (FM) 455 kHz
 FM: better than 0.2 μV for 12 dB SINAD

Receiver sensitivity: SSB, CW: 0.2 μV for 10 dB S/N
 FM: More than 12 kHz (-6 dB)
 Less than 25 kHz (-60 dB)
 SSB, CW: More than 2.2 kHz (-6 dB)
 Less than 4.8 kHz (-60 dB)

Spurious interference: Better than 70 dB
 Squelch sensitivity: 0.16 μV (threshold)
 Auto scan stop level: Less than 0.2 μV (threshold)
 Audio output: More than 2.0 Watts across 8 ohm load

AUTHORISED DEALERS IN THE UK

Yorkshire	Leeds Amateur Radio
Birmingham	Ward Electronics
South London	Catronics Ltd
North London	Radio Shack Ltd
Lancashire	Stephens-James Ltd
Wales	M.R.S. Communications Ltd
Essex	Waters & Stanton Electronics
Sussex	Bredhurst Electronics

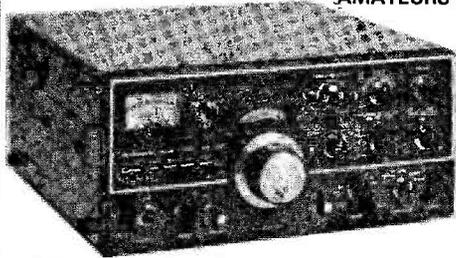
Everyone is talking about the new Lowe credit card scheme, following its introduction at Leicester. This is the new, easy way to have the rig you wanted right away and avoid any future price rises. How does it work? You simply agree to pay a fixed amount each month and you then get instant purchasing power of 24 times the payment. For example, a payment of £10 gives you £240 of credit, more than enough to buy that TR2400, aerial and accessories. No fuss and no hefty deposits needed. A further advantage is that as the payments continue your credit is automatically extended to allow further purchases. Why not send for full details right away and join the growing numbers who hold the Lowe blue card — the way to have tomorrow's equipment today. A major advance to your purchasing power.

As sole official distributors for Trio, we recommend that you purchase your Trio equipment from an approved dealer (full list above). Any dealer NOT on this list has no connection with the Trio UK sales and service organisation and cannot, despite claims to the contrary, offer any meaningful guarantee of backup service on Trio equipment.

LOWE ELECTRONICS Ltd.

TS520SE

VOTED "MY FAVOURITE
TRANSCIVER" BY RADIO
AMATEURS WORLDWIDE



In the face of ever increasing complexity in amateur radio equipment, its comforting to know that the TS520SE is still in volume production. Radio amateurs all over the world (and dealers too) have voted the TS520SE "my favourite transceiver" because of its astounding reputation for reliability, high sensitivity receiver, and of course the unequalled Trio audio quality coming from the transmitter. The TS520SE incorporates all of the features demanded by today's amateur, and at an outstandingly low price. No wonder it's top of the list in popularity, and comparison with other transceivers will convince you that the TS520SE is the best value for money on the market today.

Of course, the bare figures cannot tell you just how nice the TS520SE feels in use, nor can they tell you the pleasure of hearing other operators saying "never heard better audio QM, what rig are you using?"

The TS520SE standard specification includes CW wide/narrow switching (using the optional 500Hz filter), semi break-in keying with sidetone, PTT or VOX operation, really effective noise blander, switched AGC time constants, 5 function metering, switched RF attenuator, "RIT, speech processing for punchy transmit audio, fixed channel facilities, 25kHz calibrator, fan cooled PA, internal loudspeaker, and of course the TS520SE will take all the wide range of current matching accessories including the DG5 true frequency digital readout, the VFO520S remote VFO unit, the SM220 station monitor scope and panoramic display and so on.

When talking to prospective purchasers of the TS520SE, the question we are most often asked is "how does it compare in price to its rivals?" and the transceiver it is most compared with is the Yaesu FT101Z series. The price for the FT101Z taken from March 1980 RadCom is £575 including VAT and you also should add PA fan at £13.80 (the fan is standard on the TS520SE) making a grand total of £588.80.

THE TS520SE costs **£437** including VAT.
Now tell me if that's not value for money.

HOKUSHIN AERIALS

From the makers of our popular HF5 vertical, we have a complete range of vehicle aerials for VHF and UHF use. All the whips terminate in a PL259 plug so that you have complete flexibility, and any aerial in the range will fit the RG4M base or the magnetic mount. The 2E, 2NE, and 430E have a quick foldover joint at the base so that you can drive in and out of your garage without dismantling the aerial.

2E	2M 5/8, 3.4dB gain foldover whip	£6.50 inc VAT
2NE	2M 7/8, 4.5dB gain foldover whip	£11.00 inc VAT
430E	70cm 5/8 + 5/8, 5.5dB gain	£10.00 inc VAT
HS-F1	2M rubber helical on PL259 plug	£3.95 inc VAT
320	2M stainless quarter wave on PL259	£1.50 inc VAT
RG4M	Base for all above units including 4 metres of cable ready terminated in PL259	£3.00 inc VAT
GSS	Heavy duty gutter/boot mount to take RG4M base	£3.15 inc VAT

SPECIFICATIONS	
General Frequency range:	160 meter band: 1.8 to 2.0MHz 80 meter band: 3.5 to 4.0MHz 40 meter band: 7.0 to 7.5MHz 20 meter band: 14.0 to 14.35MHz 15 meter band: 21.0 to 21.5MHz 10 meter band: 28.0 to 28.5MHz 28.5 to 29.1MHz 29.1 to 29.7MHz
Mode:	WWW: 15.0MHz (receive only) SSB (USB, LSB), CW
Antenna Impedance:	50 to 75 Ohms
Frequency Stability:	Within ±1KHz during one hour after one minute of warm-up, and within 100Hz during any 30 minutes period thereafter
Tubes and Semiconductors:	Tubes: 3(2 × 6146B, 1 × 12BY7A) Transistors: 52 FETs: 19 Diodes: 101
Power Requirements:	120/220 V AC 50/60Hz
Power consumption:	Transmit: 280 Watts Receive: 26 Watts (with heater off)
Dimension:	333 (13 1/2) wide × 153 (6.0) high × 335 (13 1/8) deep mm (inch)
Weight:	16.0kg (35.2 lbs)
Transmitter RF Input Power:	SSB: 200 Watts PEP CW: 160 Watts DC
Carrier Suppression:	Better than 40dB
Sideband Suppression:	Better than 50dB
Microphone:	High impedance microphone (50k Ohms)
AF Response:	400 to 2,600HZ
Receiver Sensitivity:	0.2 μV for 10dB (S+N)/N
Selectivity:	SSB: 2.4kHz/-6dB, 4.4kHz-60dB CW: 0.5kHz/-6dB, 1.5kHz/-6dB (with optional CW filter)
Image Ratio:	Better than 50dB
IF Rejection:	Better than 50dB
AF Output Power:	2 Watts (8 Ohms load, with less than 10% distortion)

Great News!

The AR240 is back in town but with higher battery capacity, provision for separate microphone and the hot performance (better than 0.2μV for 12dB SINAD, and 2W output on TX) that you all appreciate. PRICE? Even better value at £168 inc. VAT (price includes Nicads, charger, etc). It has a new name too — the AR240A.

144-148MHz synthesized
FM Hand-Held



MB5 Magnetic mount complete with 5m of cable and PL259 £7.95 inc VAT

Also two really great base station aerials

GPV5 High performance 2m base station colinear. Forget THE S...MJ...M and R...OR...R £22.00 inc VAT
GDx2 3dB gain over the range 50-480MHz. The classic wideband aerial. 500W p.e.p. £36.80 inc VAT
HF5 Our original success. 5 band vertical 80-10m with great performance, great savings. only £41.40 inc VAT

**SEND 48p IN STAMPS FOR COMPLETE CATALOGUE AND ANTENNA BOOK
PLEASE SPECIFY ANY PARTICULAR INTEREST AND WE WILL SEND FULL INFORMATION**

HEAD OFFICE AND SERVICE CENTRE

CHESTERFIELD ROAD, MATLOCK, DERBYS. TEL: 0629-2817 or 2430. TELEX 377482. OPEN 9-5.30 TUES-SAT. PHONE IN 9am-9pm

For personal attention on the South Coast contact John, G3JYG, 16 Harvard Road, Ringmer, Lewes, Sussex. Ringmer 812071.

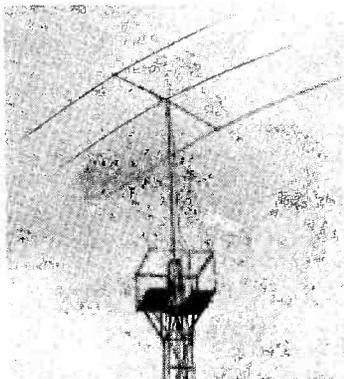
For equally helpful attention in Scotland contact Sim, GM3SAN, 19 Ellismuir Road, Baillieston, Nr. Glasgow. 041-771 0364.

FOR ALL THAT'S BEST IN HAM RADIO CONTACT US AT MATLOCK ANYTIME

New From Barmeco

Introducing a new 3-element H.F. Tribanda with proven performance and reliability.

THE WORLD RANGER TRIBANDER



Designed, engineered and manufactured in the UK. Use of high quality materials ensures high electrical stability under all weather conditions with exceptional mechanical rigidity and strength. All traps are high grade P.T.F.E. formers with insulated windings.

Specification:

Frequency	10, 15 & 20 metres
Impedance	52 ohms
R.F. Power (max.)	1 kW (AM) 2 kW (PEP)
VSWR (at resonance)	Less than 2.0 : 1
Forward gain	Up to 8.0 dB
Front-to-Back Ratio	25 dB
Mast diameter	31.75 mm to 41.30 mm
Wind survival	80 mph
Turning radius	14' - 10'
Longest element	26' 0''
Boom length	12' 0''
Net weight	21 lbs.

£135 plus carriage @ **£3.50**.

High quality 50 ohm coaxial cable available @ **50p per metre**.

Balun available separately at **£12.50 each**.

All items subject to current VAT.

COMING SOON:

A range of HF Monobanders and a 2 metre base station vertical.

Orders to:

BARNET METAL CAR AND CO. LIMITED

Tewin Road, Welwyn Garden City, Hertfordshire.

Telephone: Welwyn Garden City 24327

Telex: 28125 Cable: BARMECO.



South Midlands

SMC FOR NO CHARGES CREDIT

FREE FINANCE FROM SMC

Money today is expensive, very expensive. Unfortunately many people ask only "what are the repayments" when entering into an agreement. We take Access and Barclaycard over the 'phone, sure it costs us a few per cent, but it permits speedy despatch of your order and if you pay your statements promptly there are no charges, but use it for credit at 2.25% per month means an effective annual equivalent rate of 30.6%!!! Get yourself hooked on a "budget plan scheme" where you pay a fixed amount by banker's order — whether you use credit facility or not (remember you get minimal 5% or no interest on a credit balance) — you are tied to one retailer and will be paying say 1 3/4%, 2% or 2 1/2% per month (23.5%, 26.8% or 34.5% per annum), so if you put down £10 today and pay £10 a month that £240 radio will finally be yours in 1983 at best!

Now, with SMC's prices much the same or a little lower than 18 months ago and inflation forecasts of 23%, this must be a good time to buy — and owning one of the best communications equipment in the world have never been easier than with SMC's new credit scheme . . . Free Finance. How does it work?

**Simple: 6 months — pay 20% down, split the balance into 6 parts
OR 12 months — pay 50% down, split the balance into 12 parts**

Give us a ring for full details (subject to clearance and a minimum of £100 invoice) we will help you to enjoy a regular priced Yaesu, KDK, Gem Quad, Ascot, SMCHS, CDE, Hy Gain, Stolle, SMC, Leader, Hansen, MFJ, KLM, Mirage, Nag, Hi-Mound — Tomorrow!



FT225RD Transceiver £485.00

FT225RD MULTIMODE 2 METRE TRANSCEIVER

144-146-148MHz, USB, LSB, AM, FM, CW (semi-break-in with side tone). Smooth dual speed VFO control and 11 (x4) crystal channels. Simplex and (auto tone burst) repeater, 600kHz and auxiliary shifts both up and down. Single signal mix, with phase locked conversion oscillator, for spurious free output. Mains 234-100V 50/60Hz and 12V DC for world wide portability. Excellent selectivity, SSB 2.4kHz with 1.75:1 SF, FM 12kHz at -6dB. High sensitivity with modern MOSFET RF stage. Good strong signal handling by careful gain distribution, mixer and crystal filter design. High power output 10W AM, 1-25W CW and FM, SSB 25W + + with great reliability and low IMD's. Mode sensitive digital readout to 100Hz and easy to service superior plug in board construction. Front panel controls for: SSB mic gain, FM power, squelch, Vox/Mox sensitivity, noise blanker, AGC, readout brightness, meter functions (S/centre plus relative power) etc., Digital and Analogue versions and memory option.

FT225R Transceiver £445.00

MEM memory option £85.00

COUNT Counter R/RD £50.00



FT207R Transceiver £173.04
NC-1A Slide-in charger £16.50
NC-2 Charger eliminator £34.50



NC-9C Small charger £6.50
NBP-9 Nicad pack spare £14.50
FBA-1 Pack/charger adaptor £2.25

YM24 Speaker/mic £14.50
FLC1 Heavy duty case £18.00
AA Nicads, each £0.87

FT202R Transceiver £103.50
NC-1 AC charger '202 £16.50
PA-1 12V PSU '202 £16.50

FT207R — FT202R: 2m HANDHELDS

The FT207R is a microprocessor controlled synthesized handheld that offers 12.5kHz channel steps!! 4 memory channels are provided and these may, as can the whole band, be scanned. Any one of the memories can be used as a priority channel. Simply operate as normal on any frequency, designate one of the memories as priority, and every few seconds, for a few milliseconds, the set will check occupancy of the channel. All frequency entry is by the keyboard (which includes touch tone). The readout displays frequencies (to 100Hz), memory channel number and 'P'. Switches are provided for keyboard lock (prevents accidental operation) and display "time out". A 600kHz shift, and any programmable split, is available, both of course plus and minus. Memory back-up is provided but can be switched off for long-term storage. 2.5W + 200mW outputs and a whole host of accessories complete the brief specification of this exciting transceiver.

The FT202R is an economical 6 channel handheld physically similar to the FT207R.

PRICES EXCLUDE VAT (15%) BUT INCLUDE DELIVERY — SECURICOR/POST IN THE UK

SOUTH MIDLANDS COMMUNICATIONS LIMITED

OSBORNE ROAD, TOTTON,
SOUTHAMPTON SO4 4DN
9-5.30 Mon-Fri 9-1.30 Sat.



Head Office, Showrooms
Cables: Aerial Southampton
Telex: 477351 SMCOMM G
Tel: Totton (0703) 867333

AGENTS STOCK AND SALES			
G3JUL	Brian	Stourbridge	(03843) 5917
G13KDR	John	Bangor	(0247) 55162
G8BGE	Jack	Edinburgh	(031665) 2420
G13WVY	Mervyn	Tandragee	(0762) 840656
GW3TMP	Howarth	Pontybodkin	(035287) 846/324
GW4GSW	Alan	Swansea	(0792) 24140

Communications Ltd



SMC & YAESU FOR VHF — SMC & YAESU FOR VHF

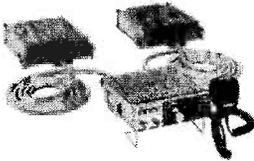
YAESU MUSEN FROM SMC

THE BEST OF TODAY'S COMMUNICATIONS EQUIPMENT WITH
TWO YEAR GUARANTEE AND SECURICOR DELIVERY

Visit our showrooms and service facilities. Examine the best.
Weekdays: 9 till 5.50. Saturdays 9 till 1.30, at our Totton HQ
Motorway 1 mile; parking for 100+ on the doorstep; rail station 300 yards
If Totton is too remote try: Leeds, Chesterfield, Woodhall Spa or any SMC Agent

REMEMBER: When you deal with SMC you get:

The SMC two-year guarantee. The speedy free Securicor service.
The security of dealing direct with the largest authorised importer.
The spacious, very well equipped, ably staffed test and service facility.
The knowledge that we carry tens of thousands of pounds of spare parts.
Our discreet 'instant' H.P. Our personal export documentation scheme.
Our in-person, or over the phone, time saving credit card acceptance.
Our honest advice and evaluation of part exchange equipments' worth.
Our deep interest and knowledge in most facets of our common hobby.



FT720R NEW 'REMOVABLE'

The FT720R is a new concept in mobile FM. Take a neat 'removable' control head (2m or 4m of extension cable and your choice of 2m (10 or 25W) and 70cm 10W main units. Add if you wish a switching box and then both 2 and 70cms are available from the one money and space saving controller.
The package offers sophisticated microprocessor PLL control system, optical coupled tuning, 5 memory channels, priority channel, up/down scanning from the mic (stop on busy or empty), auto or man. Tone burst up/down repeater shift and a string of yellow and red leds for power out and S meter etc.

FT720R S72	Control Head Switching Box	£130.00 £47.50	E72S 720RV	2m Cable Transceiver 10W 2M	£20.00 £148.00	E72L 720RVH	4m Cable Transceiver 25W 2M	£23.50 £153.00	720RU 70cm	Transceiver 10W	£179.00
---------------	-------------------------------	-------------------	---------------	--------------------------------	-------------------	----------------	--------------------------------	-------------------	---------------	-----------------	---------



FT227 SYNTHESIZED MOBILE TRANSCEIVER

The FT227s are 10W output 2 metre transceivers whose receiver performance — sensitivity and immunity to overload has become the standard against which others are compared. They use a signal knob (photo interrupter) to control the synthesiser, which basically turns in 10kHz steps with a 5kHz 'fill in' oscillator. FT227RXS is an FT227R fitted with SMC's scanner. This maintains all the normal features of the 227 but the neat internal installation provides automatic tuning from 145 to 146 in 25kHz steps. When finding an occupied frequency the scanner pauses for about seven seconds and if not held will move on. A flick of the P.P.T. will lock out one (or all) unwanted channels next scan around. FT227RBXSt is an FT227RB fitted with SMC's stepper. A four channel memory is provided in this model and tuning may also be accomplished by push buttons on the microphone. A single push moves the transceiver 25kHz, hold the button down for 1/2 second and it scans the band until a station is found.

FT227RXS Transceiver	£252.17	FR227RBSt Transceiver	£247.83	FP4 12V 4A PSU	£35.00	YD148 Desk mic	£18.50
----------------------	---------	-----------------------	---------	----------------	--------	----------------	--------

PRICES EXCLUDE VAT (15%) BUT INCLUDE DELIVERY — SECURICOR/POST IN THE UK



SMC (Jack Tweedy) LTD.
Roger Baines. G3YBO
79 Chatsworth Road,
Chesterfield, Derby.
Tel.: Chesterfield (D246) 34982
9-5 Tuesday-Saturday.

NORTHERN (Leeds) BRANCH
Colin Thomas. G3PSM
257 Otley Road,
Leeds 16, Yorkshire.
Tel.: Leeds (0532) 782326
9-5 Monday-Wednesday & Friday-Saturday

SMC (Jack Tweedy) LTD.
Jack Tweedy. G3ZY
150 Horncastle Road,
Woodhall Spa, Lincs
Tel.: Woodhall Spa (0526) 52793
9-5 Tuesday-Saturday (+ appoint.)





South Midlands

SMC & YAESU FOR HF — SMC & YAESU FOR HF



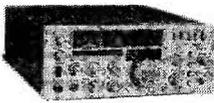
FT707 Transceiver 100W **£455.00**
FT707S Transceiver 10W **£425.00**

FV707DM Ext. Dig. VFO **£157.00**
FC707 Antenna Tower **£83.00**

FT707 NEW SOLID STATE TRANSCEIVER

The FT707 'The Wayfarer' is an ultra-compact solid-state transceiver covering 80-10m, including 30, 17 and 12m — all factory installed, with 100W output (10W 'S' model) 50% out developed in 3:1 VSWR, digital (bright LED's in mode sensitive counter) and analogue readout, status at a glance (from string LED and single displays) 16 poles of crystal filtering adjustable IF bandwidth 2.4kHz to 300Hz. Noise blanker of most advanced design using local AGC loop, Schottky diode ring module, power transistor buffers, ultra-clean low noise local oscillator are combined to produce, size and price notwithstanding: Probably the best receiver you have ever used.

FP707 12 Volt P.S.U. **£95.00**
MR7 Rack Mount Cabinet **£11.50**
MMB707 Mobile Mounting **£12.00**
VM35 Scanning Microphone **£11.00**



FT107M

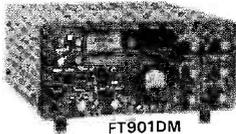
FT107M Transceiver **£660.00**
MEM/DMS Memory **£87.00**
FP107E AC PSU Extnl. **£92.50**
FP107 Int AC PSU **T.B.A.**

FV107 Ext. VFO **£90.00**
FC107 Antenna Tuner **£92.50**
SP107 External Speaker **£24.00**
FTV107(2) Transverter **£181.50**

FT107M NEW SOLID STATE TRANSCEIVER

All solid state transceiver. 160-10M (+ WWV Rx and 2 Aux). 12V DC, SSB, CW, FSK and AM. 240W PIP. The fan cooled (thermostatically controlled) no tune "broad band" power amplifier delivers 75% power output into 3:1 VSWR. Analogue and digital readout to 100Hz. Sensitive and with excellent dynamic range (hard driven Schottky diode ring mixer). Continuous variable bandwidth 300Hz to 2.4kHz plus optional "basics" of 350/600Hz and 6kHz. Full equipment includes: audio peak/notch filter, full metering including SWR, RF speech processor, advanced noise blanker, semi break-in with side tone, VOX, clarifier on Tx, Rx, or both, 20dB attenuator etc. The optional memory system provides 12 stored channels (with fine tuning), and offers scanning from the microphone. The store employs DMS — digital memory shift — to allow tuning, via a photo interrupter of any of the memorised frequencies (equivalent to 13 VFO's!!).

FTV107 Transverter frame **£96.50**
430-440 70cm module **£158.50**
144-148 2m module **£88.50**
50-54 6m module **£68.50**
YM34 Mic. desk **£18.50**
YM35 Mic. hand. scan **£11.00**
YM36 Mic. noise cancel **T.B.A.**
YM37 Mic. Hand **T.B.A.**



FT901DM

FT901DM Transceiver **£800.00**
FT901D Transceiver **£710.00**
FT901DE Transceiver **£700.00**
YR901 Morse/TTY read **£395.00**

YVM-1 Video Monitor **£125.00**
YQ901 Monitorscope **£240.00**
YQ901P YQ901 with pan **£280.00**
PAN KIT Mod kit **£47.00**

FTV901 Transverter **£245.00**
430-440 70cm module **£160.00**
50-54 6m module **£60.00**
70-74 4m module **£75.00**

FC901 Antenna Tuner **£115.00**
FL2100Z Linear Amp. **£355.00**
FTV901DM Synth. Ext. VFO **£215.00**
SP901 External Speaker **£24.00**

FT901DM THE SUPERB PERFORMER

160-10M (+ WWV Rx), 12 and 234V (PSU Built-in). SSB, AM, CW, FSK and FM (Tx & Rx), 180W PIP, 80W FI. Analogue 1kHz and digital to 100Hz. Sensitive 1/2V with AGC controlled Mosfet RF, to push pull FET RF. Balance active mixer, push pull IF amp, to crystal filter then noise blanker. Continuously variable selectivity 300Hz to 2.4kHz and fixed 350/600Hz, 2.4kHz, 6kHz and 12kHz (at 6dB), 80dB cross mod rejection, 90dB desensitisation immunity (at 20kHz off at 14MHz). Audio Peak and separate notch tuning. Negative RF feedback on 6146B stage (-31dB 3rd order). RF processor, VOX, Curtis electronic keyer, tune button (10sec on full power), PLL VFO with memory for any Tx, Rx or T/Rx frequency. Modular plug-in construction, permeability tuning (for new band allocations) 25kHz calibrator, 20dB switchable attenuator, sidetone, clarifier and an advanced noise blanker, etc.

FT101ZD PERFORMANCE AND ECONOMY

A hybrid HF transceiver. 160-10M (+ WWV Rx + Aux). 234V AC and 12V DC (inbuilt inverter option). SSB, CW and AM. 180W PIP from a pair of 6146B with negative feedback. Analogue and "mode sensitive" digital readout to 100Hz. Continuously variable IF bandwidth 300Hz-2.4kHz plus optional "basic fixed" of 350/600Hz. Full equipment includes: adjustable level RF processor, advanced adjustable level noise blanker, front panel adjustable VDX, semi break-in with side tone, 0-10-20dB attenuator, switchable AGC, Slow/fast/off, clarifier (RIT) selectable on Tx, Rx or both, etc., etc. The FT101ZD is compatible with nearly all the FT901 accessories listed above — Morse reader and video display, monitor scope with panadaptor, 3 band transverter, ATU, linears, speakers, and a choice of synthesized or conventional (NEW FV101Z) external VFO's.



FT101ZD

FT101ZD Transceiver Digital **£575.00**

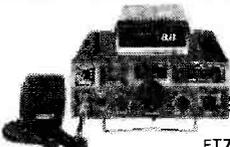
FT101Z Transceiver Analogue **£500.00**

Count Analogue/Dig. Kit **£80.00**

FV101Z **£110.00**

FT7B MOBILE AND BASE TRANSCEIVER

A compact all solid state HF transceiver, 80-10M (full 2MHz coverage of 10 with optional crystals). USB-LSB CW-AM. 100W PIP (A3j and A1), 25W (A3). VFO control with clear analogue scale to 1kHz, plus an optional digital readout unit that can be conveniently sited above the transceiver, on the dash or steering column. The front panel remains remarkably uncluttered for a transceiver boasting a: crystal calibrator, vox, clarifier, side tone, and an excellent audio peak filter for CW. A mosfet RF stage for sensitivity, and a Schottky diode ring mixer for dynamic range. Complete with mobile bracket, microphones, leads, plugs, etc. The FT7B provides the economic answer to world wide communications from home or from the car.



FT7B & YC7B

FT7B Transceiver **£375.00**

YC7B Digital Readout **£60.00**

FP712 12V 12A PSU **£67.00**

Y0148 Desk Mic. **£18.50**

PRICES EXCLUDE VAT (15%) BUT INCLUDE DELIVERY — SECURICOR/POST IN THE UK

SOUTH MIDLANDS COMMUNICATIONS LIMITED

OSBORNE ROAD, TOTTON,
 SOUTHAMPTON SO4 4DN
 9-5.30 Mon-Fri 9-1.30 Sat.



Head Office, Showrooms
 Cables: Aerial Southampton
 Telex: 477351 SMCOMM G
 Tel: Totton (0703) 867333

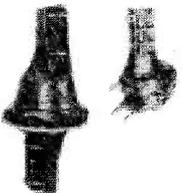
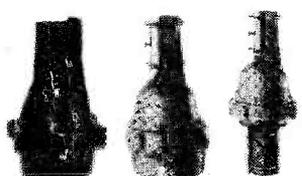
AGENTS STOCK AND SALES

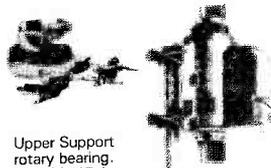
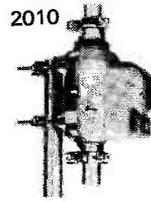
G3ZUL	Brian	Stourbridge	(03843)	5917
G13KDR	John	Bangor	(0247)	5516Z
GM8GEC	Jack	Edinburgh	(031665)	2420
G13WVY	Mervyn	Tandragee	(0762)	840656
GW3TMP	Howarth	Pontybodkin	(035287)	846/324
GW4GSW	Alan	Swansea	(0792)	24140

Communications Ltd

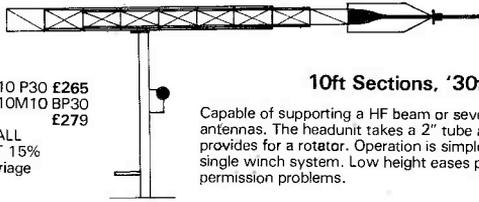


SMC for CHOICE in ROTATORS: CDE and STOLLE

<p>AR40 AR30</p>  <p>Accurate, silent, self-calibrating control box. Dial up desired beam heading, push knob motor rotates to that position and then switches off.</p> <p>£52 + VAT Post and packing Free. £41 + VAT Post and packing Free.</p> <p>AR30 UHF QRP VHF AR40 VHF QRP HF</p>	<p>BT1</p>  <p>Four position preset plus normal manual controls. Handles aerials up to 5 sq ft of wind area. Supplied (as AR40) with lower mast fit casting etc.</p> <p>£79.50 + VAT Post & packing Free.</p>	<p>T2X HAM IV CD45</p>  <p>Large illuminated meter gives read-out of antenna heading at all times. Superior brake mechanism. Low voltage motor. CD45 to 8 1/2 sq ft. HAM IV 15 sq ft. T2X to 30 sq ft.</p> <p>£99 + VAT Carriage by Securicor Free (UK Mainland) £145 + VAT £199 + VAT</p>
--	--	---

<p>RZ100 2050</p>  <p>Memomatic control with moving light. That gives beam heading during rotation. Rotor is similar to 2010. Uses inexpensive 3 core cable.</p> <p>£37.50 + VAT Post & packing Free.</p> <p>Upper Support rotary bearing. £10.00 (45p)</p>	<p>2010</p>  <p>Automatic control box. Dial desired direction and the rotor turns to the position and stops. Turning shaft (up to 1 3/4") passes through rotor.</p> <p>£45.83 + VAT Post & packing Free.</p>
--	---

<p>SMC-HF5</p> <p>SMC-HF5 Five band self-selecting trapped vertical only 15ft 9in high, handling up to 500w PEP. Mount at ground level or with loaded radial kit.</p> <p>SMCHF5R £26.65 + VAT SMCHF5V £35.00 + VAT</p> <p>Carriage: Antenna or radials — or both together. Securicor £3.30 + VAT Rail £1.50 + VAT</p>	<p>CUSHCRAFT</p> <p>RINGO RANGER: 6dB gain over 1/4 ground plane. Uses 3 phased 1/4 and 1/4 stub. Ultra low angle radiation. No radials required.</p> <p>ARX2 144MHz 9ft 6in tall, 1 1/2lbs (p&p £1.00) New Low Price £20.00. Other Cushcraft VHF antennas — horizontal and vertical in stock. All at 10% off list prices!!!</p>
--	--

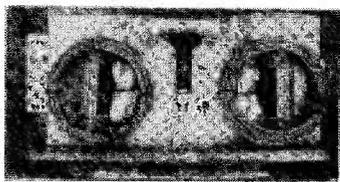
<p>VERSATOWERS</p> <p>Telescopic for planning permission, and tiltover for antenna installation and maintenance. 12 years of development — 50 models: 25-120 ft, post, wall, base plate or fixed base.</p> <p>Contact SMC for further details of the range.</p> <p>13M20 P40 £323.50, 13M20 P60 £392.50, 16M20 P40 £476.50, 16M20 P60 £541.00</p>  <p>10ft Sections, '30ft'</p> <p>Capable of supporting a HF beam or several VHF antennas. The headunit takes a 2" tube and provides for a rotator. Operation is simple with single winch system. Low height eases planning permission problems.</p> <p>10M10 P30 £265 10M10 BP30 £279</p> <p>N.B. ALL + VAT 15% + Carriage</p>	<p>GEM QUAD</p> <p>A light strong, boomless, quad antenna covering 10-15-20 metres. The centre spider is aluminium and the spreader arms (13.6' and 2.2lbs) are of a glass fibre tri-lectic construction. (Thin rods forming a triangle with tape criss-crossing for light, rigid, low wind resistance structure.)</p> <p>GQ2E 18' x 18' x 9.5' 8dB Gain GQ3E As 2 ele plus 6.5' Boom GQ4E As 2 ele plus 13' Boom</p> <p>All prices exclude VAT and delv. ()</p> <p>GQ2E 2 ele quad (£3.75) £124.00 GQ3E 3 ele quad (£6.45) £187.00 GQ4E 4 ele quad (£7.05) £249.00</p> <p>CK1Q Conversion Kit ... (£2.90) £63.00 CK2Q Conversion Kit (£4.70) £125.00 SPD Spider (Spare) ... (£1.25) £26.25 ARMS Spreader Arms ... (£1.50) £9.85</p>
---	---

PRICES EXCLUDE VAT AT 15%

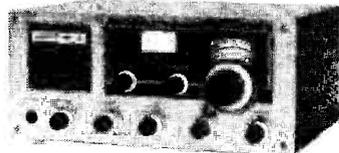
<p>SMC (Jack Tweedy) LTD.</p> <p>Roger Baines, G3YBO 79 Chatsworth Road, Chesterfield, Derby. Tel.: Chesterfield (0246) 34982 9-5 Tuesday-Saturday.</p>	<p>NORTHERN (Leeds) BRANCH</p> <p>Colin Thomas, G3PSM 257 Otley Road, Leeds 16, Yorkshire. Tel.: Leeds (0532) 782326 9-5 Monday-Wednesday & Friday-Saturday</p>	<p>SMC (Jack Tweedy) LTD.</p> <p>Jack Tweedy, G3ZY 150 Harncastle Road, Woodhall Spa, Lincs. Tel.: Woodhall Spa (0526) 52793 9-5 Tuesday-Saturday (+ appoint.)</p>	
--	--	---	---



WATERS & STANTON ELECTRONICS



EL40X 80/40 Mini Dipole
1KW 70 ft long £29.95 inc VAT



**LOWE
SRX30**

The SRX30 is designed as a budget priced receiver that outperforms many receivers costing 3 times as much. Featuring the Barlow Wadley loop, it will enable you to explore the exciting world of short wave radio — amateurs, broadcast, aircraft, shipping, etc. This is a completely self-contained package, having all the features necessary for complete and reliable coverage of the frequency range 0.5 MHz to 30 MHz.

£178 inc. VAT and delivery

Dear Sirs,

Thank you for your most excellent service and unbiased advice when I called in to purchase a short wave receiver. I might say that I did intend to buy in London but when I was told by one dealer that their repairs were done elsewhere, I became suspicious. How confident I was when I saw your large service department — my message to any other customer would be: Go to Waters and Stanton — they have the experience and facilities at their new premises that far exceeds any other retailer in the South I have visited!

R. THOMSON, London, E17.

YAESU FRG7000



£357 inc. VAT and Delivery

The FRG7000 is based on the successful FRG7 design with a host of features that make it a deluxe receiver for the really serious short wave listener. Digital readout, electronic clock and timer, superb selectivity all go to make up the receiver that everyone aspires to own. Frequency coverage is 0.2 MHz to 30 MHz and the clear digital readout makes it one of the easiest receivers to use.

Interested in RADIO or HI-FI?

HERE'S
JUST A FEW OF
OUR BARGAINS

TRIO HI-FI

KA3700 Amp 2.5w	£69.00
KA305 Amp 40w	£89.00
KA405 Amp 55w	£131.00
KT5500 Tuner	£79.00
KR2010 20w Receiver	£91.75
KR3010 27w Receiver	£118.00
KR4010 35w Receiver	£152.00
KD1033B Turntable	£49.00
KD1500 Turntable	£55.00
KX530 Dolby Cassette	£116.00

PIONEER HI-FI

SX590 20w Receiver	£99.00
SX690 30w Receiver	£129.00
SX790 40w Receiver	£203.45
SA408 20w Amp	£59.90
TX408 FM Tuner	£59.90
PL512 Turntable	£51.00
PL200x Turntable	£92.00
PL300x Turntable	£112.00
CTF500 Dolby Cassette	£89.00
CTF600 Dolby Cassette	£109.90

Securicor £3.50 extra on above.

FANTASTIC OFFER

FDK 2 m 1 watt Portable

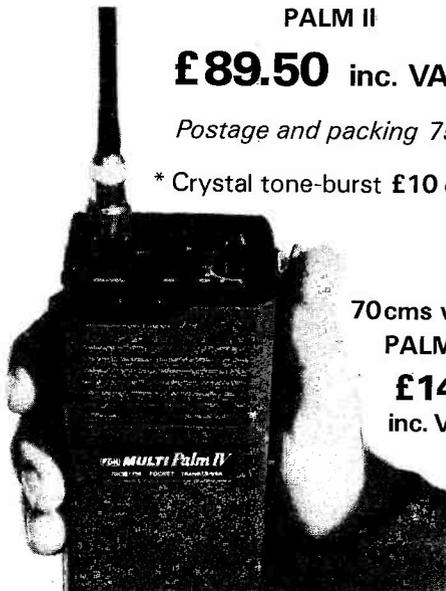
Complete with: Flexible antenna, ni-cads, AC charger, S20 and S22, cigar lighter, DC lead and 6 channel capability.

PALM II

£89.50 inc. VAT*

Postage and packing 75p.

* Crystal tone-burst £10 extra



70cms version

PALM IV

**£149
inc. VAT**

MONDAY - SATURDAY 9-5.30

18-20 MAIN ROAD, HOCKLEY, ESSEX

PHONE ORDERS

ACCESS

BARCLAYCARD

MAIL ORDER

RETAIL CALLERS

WATERS & STANTON ELECTRONICS

Telephone (03704) 6835

EARLY CLOSING WED 1.00pm

Telex 995895

AGENTS: — G3PWJ (03844) 77778 G3WRA (0432) 67864 G8NNU (0272) 669454 G3XTX (0708) 68956 GM3GRX (0324) 24428

WATERS & STANTON ELECTRONICS



All major items delivered by Securicor within
24 hours

A NEW EXPERIENCE — R1000



TRIO

R1000

TRIO

The R-1000 uses an advanced PLL system in an up-conversion scheme to a high (48MHz) first IF to remove any possibility of image responses. The receiver covers the entire frequency range from below 200kHz right up to 30MHz in 30 bands, each 1MHz wide. The bands are selected, not by ambiguous knob twiddling as in receivers using the Wadley loop but by a 30 position band switch which controls the PLL system.

The band switch also electronically selects the appropriate band pass filter network in the RF stages of the receiver so there are no "preselector" or "antenna trim" controls to twiddle — simply set the band switch to the range required — that's it!

A highly stable VFO tunes each 1MHz range and its linear, back lit scale makes readout easy. However, in addition to this dial, Trio have also provided 5 digit true frequency digital readout so as to guarantee spot on accuracy on any frequency. As a further feature, the digital display can also be switched to read time, this being derived from a quartz standard. Marvellous for accurate log keeping. The display uses high intensity readout units which can be dimmed for use in low light conditions.

As for what else is inside this superb instrument — selectivity is catered for by three custom made IF filters; a 12kHz wide AM filter; 6kHz narrow AM filter; and a new 2.7kHz SSB filter with a

shape factor of better than 1:2.6:60dB. Selectable sidebands are available at the touch of a switch.

For the first time in mid-price receiver, a true noise blanker is provided to remove pulse type ignition noise.

To minimise front end overload, a step RF attenuator is included which gives 0-60dB attenuation in four steps.

All the rear panel connectors are recessed on a sloping panel so that you can stand the receiver either on its back, or pushed hard against a wall when used in conventional shelf mounting. The antenna inputs allow the use of either a high impedance wire aerial or a 50ohm balanced input so that the proverbial long lump of wire will work really well with the R-1000.

Up until now we have been taking orders on a waiting list system because of short supply of this item. Hopefully by the time you read this we will be able to supply from stock. And remember all our R1000 are given our full pre-delivery check and then despatched promptly to reach you within 24 hours of us receiving your order. That's real service! Just one of the many things that make more and more people come to us for all their amateur radio needs.

£298 inc. VAT

WATERS & STANTON ELECTRONICS



FULL RANGE
IN STOCK



DELIVERY ANY-
WHERE IN U.K.

STOP PRESS

TR9000 2m all mode £340 inc. VAT

**SOLID STATE RIG
RELIABLE AT LAST**



TRIO

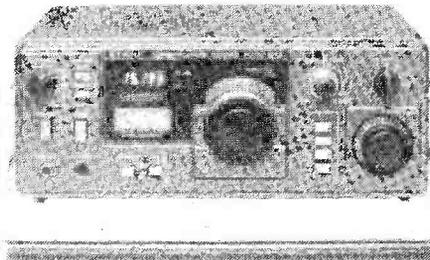
**TS120V. £408
TS120S £495**

Up until now there has been a natural reluctance to accept solid state HF rigs as anything but a second rig or mobile unit with dubious reliability of the PA devices. Now at last the new TS120 series gives you 80-10 metre coverage at either 10 watts output or 100 watts output. Digital readout and variable selectivity are just two features that put them in a class above any other solid state rig we know of (apart from the TS180S) — even those costing nearly £1,000. The TS120 will put to shame many of the older valve PA designs and can confidently be regarded as a good reliable base or mobile station — and no tune-up means instant QSY from band to band at the flick of a switch.



**SPECIAL OFFER TR7600 £220 + FREE MICROPROCESSOR
144-148 MHz**

Here's a really super deal. A brand new TR-7600 transceiver together with the RM76 microprocessor for £220. Full coverage 144-148MHz in 5kHz channels with 10 watts output gives you a highly versatile transceiver. The basic transceiver has plus and minus repeater shift tone-burst and memory. Plug in the microprocessor and you open up a new world of operating convenience. Electronic tuning up and down, full band scanning and 6 memories. The memories can be programmed at the touch of a button and then scanned. At £220 the transceiver is a first-class buy and if we offer you the RM-76 for nothing you'll have to admit that it's a bargain you won't see again.



NEW TRIO

R-1000 £298 inc VAT

At last the Trio R1000 has been announced — a real purpose-built receiver for the serious short wave listener. 200kHz to 30MHz in 30 bands. This receiver has many features that are not available on other models and, of course, has the technical backing of the world's largest manufacturers of amateur communications equipment. Features include: 1kHz digital readout and separate analogue dial, large high quality speaker, digital 12 hour clock — AM and PM, three separate filters for razor sharp selectivity, noise blanker (try finding this on any other receiver!), automatic preselector tuning via the 1MHz band switch, three-stage attenuator, dimmer control, tone control, timer circuit, and all this in a diminutive package measuring 12½ x 4½ x 8½ in. Trio have now solved the problem of choosing a receiver — there is no choice — it's got to be Trio!

ALL PRICES INCLUDE 15% VAT

KING OF THE PORTABLES

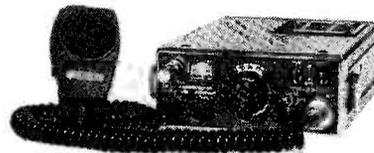
**TRIO TR2300 £166 inc VAT
NEW LOW PRICE!**



NEW

**TRIO
TR2400 £210 inc VAT**

The new TR2400 really does eclipse all other hand-helds in its sheer technology. There's no other model that can approach its performance. The large LCD readout has low current drain and the 1.5 watts output is a good compromise between effective communication and reasonable battery drain. 10 memories, automatic scanning, instant reverse repeater operation, 16 key touch-tone encoder, 144-148MHz etc. etc. . . . all adds up to the new leader in hand-helds . . . the Trio TR2400. Get your Barclaycard or Access cards ready for this one . . . half its fascination is operating it — the other half is owning it.



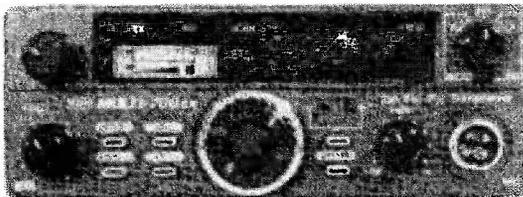
The TR2300 is a remarkable package which combines all the advantages of a portable station with those of a mobile transceiver. In many ways it's the ideal "starter rig" in amateur radio. Full band coverage from 144-146MHz in 80 x 25kHz channels plus 600kHz repeater shift and 1750Hz automatic tone-burst complete its versatility. The dial is directly calibrated in frequency and has illumination for night use. The transmitter is exceptionally clean with an output power in excess of 1 watt. Receiver sensitivity is every bit as good as the best mobile rigs and either internal batteries or an external DC source may be used. Fits easily into a suitcase or on the corner of a desk and makes a really compact mobile rig. Price includes carrying case, shoulder strap, battery charger, external DC cord and, of course, the Waters & Stanton 12 month warranty. An absolute bargain — we even sell them to our staff!

WATERS & STANTON ELECTRONICS

FDK NEW UNITED KINGDOM SPRING COLLECTION!

MULTI 700EX 25 WATTS 2M FM 25 & 12½kHz CHANNELS PRIORITY SCANNING

Price **£199**
inc. VAT

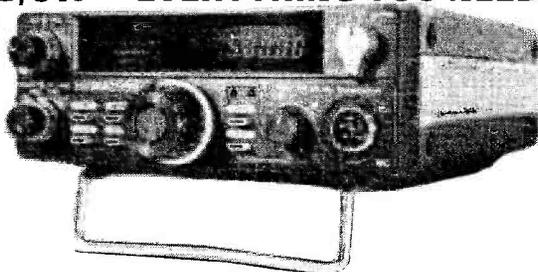


The Multi 700EX is the replacement for the Multi 700E, having an updated specification — without making it too complex for safety under mobile conditions! Its powerful 25 watts output has been retained together with the front panel continuously variable power control. The frequency range has been expanded to cover the entire band 144-146mHz in 25kHz steps. Of course, essential to all current equipment is its ability to operate on 12½ kHz channel spacing and this you can do at the press of a button. Four priority channels that are user programmable have been added and these can be electronically scanned. The channels are not lost when the equipment is switched off! The stable crystal controlled tone-burst is automatic and both normal and inverse repeater operation is possible at the press of a button. By simple alteration of the diode matrix the plus 600kHz facility can be changed to 1.6mHz for operation through the proposed FDK 70cms transverter (in matching cabinet). Altogether a simple but highly effective mobile transceiver that provides everything you could wish for in a 2 metre FM mobile.

MULTI 750 15 WATTS FM/SSB/CW — EVERYTHING YOU NEED AT A VERY SENSIBLE PRICE!

This rig will really set the pace for
1980 — 70cms Expander coming soon.

Price **£299** inc. VAT

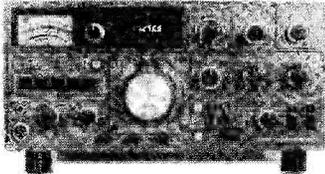


The Multi 750 is FDK's new, all mode 2 metre unit for both base or mobile use. Using the same cabinet dimensions as the M700EX, this really does provide the basis for an action-packed, go-anywhere station. To list all its features would be impossible in the space available on this page. However, we will list its main points so you can get some idea of just what this amazing package is capable of.

144-146mHz at 10 WATTS OUTPUT (Minimum!!); ALL MODES — FM/USB/LSB/CW; REPEATER OPERATION — normal or reverse with automatic crystal controlled tone-burst; DUAL VFO's — these are selectable at the press of a button so that one vfo can be left at the SSB end of the band and the other at the FM end; NOISE BLANKER — a really efficient circuit to take out those ignition pulses on ssb; DUAL SPEED TUNING — enables 5kHz or 100Hz step tuning; RIT — essential for accurate tuning of the received SSB signal; High/low power — switchable between 1 and 10 watts; Remote frequency control — electronic tuning via microphone if desired; 12 months warranty — parts and labour — want to know more? THEN SEND US A S.A.E. FOR LATEST INFORMATION ON THIS MOST EXCITING PRODUCT.

STEPHENS-JAMES LTD. G3MCM

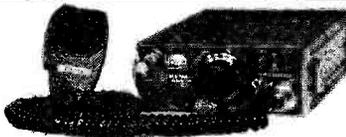
47 WARRINGTON ROAD, LEIGH, LANCs. WN7 3EA
Telephone (0942) 676790



R820 RECEIVER

... THE ULTIMATE IN RECEIVERS ...

Frequency coverage 160-10m plus SW Broadcast Bands. All modes CW-USB-LSB-RTTY. Digital Readout. Noise Blanker. Fully variable. I.F. Bandwidth, plus Bandpass tuning, plus rejection notch filter. **£690.00**

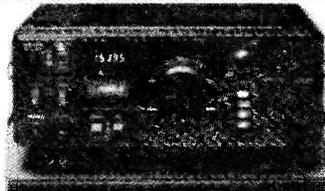


TR2300

TR2300 2m Synthesised Portable Transceiver. We have lost count of the number of this model we have sold over the last 12 months. Hikers, campers, climbers, you can hear them all over the country and reliability which is the essence of TRIO equipment. **£166.75**

JAYBEAM

5Y/2m 5 element yagi	£10.24
8Y/2m 8 Element yagi	£13.23
10Y/2m 10 Element	£28.41
PBM/14/2m. 14 element Parabeam	£40.38
5XY/2m. 5 element crossed yagi	£20.70
8XY/2m. 8 element crossed yagi	£25.88
10XY/2m. 10 element crossed yagi	£34.27
Q4/2m. 4 element Quad.	£21.51
Q6/2m. element Quad	£28.52
D5/2m. 5 over 5 slot fed yagi	£18.29
D8/2m. 8 over 8 slot fed yagi	£24.84
UGP/2m. ground plane	£9.37
MBM/48/70cms. Multibeam	£28.18
MBM/88/70cms. Multibeam	£37.49
TAS 2m. Whip mobile	£15.30
C5/m. Collinear	£40.02
C8/70cm. Collinear	£45.43
D15/1296 23cm. Antenna	£30.94
Carriage on Antennas	£3.00



TRIO R1000

R1000 Receiver **£298.00**
The latest general coverage from Trio. Frequency coverage 200 KHz to 30 MHz in 30 bands. Using an advanced PLL system. Full digital readout. Three filters 12 KHz for AM -6KHz narrow AM and 2.7 KHz SSB. Also incorporates a noise blanker. Operation is from 100-240 V AC or 12 V DC.

TR9000

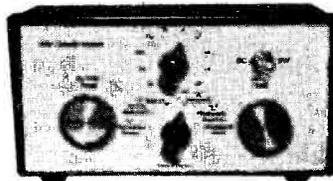


The TR9000 is a compact lightweight 2 mtr FM/USB/LSB/CW Transceiver with an outstanding array of functions. FM1 for 25KHz steps (for mobile use) FM2 for precise 100Hz steps (for base station use). Microcomputer control giving many advanced features. Built in 5-channel memory. New type microphone with UP/DOWN switching. Built in high performance. N. Blanker. Side tone for CW. ALL THIS PLUS MUCH MORE FOR **£345.00** inc. VAT.

TRIO

R820 Receiver	£690.00
TS820 Transceiver	£669.30
VFO820	£118.45
DSIA 12v. DC Inverter	£42.93
SPB20 Speaker	£37.95
SM220 Monitorscope	£197.80
TL922 Linear Amplifier	£672.75
VFOE20S	£98.80
SP520 Speaker	£17.25
DG5 Digital readout for TS520S	£103.50
TS120V 80-10m. Mobile Transceiver	£347.30
PS-20 AC power supply for TS120V	£44.85
MB100 Mobile mounting bracket	£17.25
SP70 Speaker	£18.40
R1000 Receiver	£298.00
TS770 2M + 70cm All Mode Transceiver	£690.00
TR2300 2m. Portable Transceiver	£166.75
PB15 Battery Pack	£20.25
TS520SE HF Transceiver	£437.00
TR2400 Hand held 2m Transceiver	£210.45
DM800 Grid Dip Meter/Wavemeter	£59.80
TS120S200 watt Transceiver	£432.40
TL120 Linear Amplifier	£128.80
HS5 Headphones	£21.85
HS4 Headphones	£10.35
MC50 Desk Microphones	£24.15
MC30S Hand Microphone 50K	£13.80

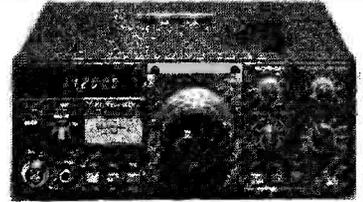
Crystals and accessories in stock



The Mk. 2 Multituner was designed by us to many requests who found our Mk. 1 the finest they had ever used but required a wider frequency range. This covers 650 kHz to 30 MHz. The circuitry gives 50 switchable, tunable positions to match any antenna over 5 metres in length to practically all communication receivers. Our "Multituners" are designed and manufactured by ourselves and have been exported to over 50 Countries. Many operators use them for QRP Transmitting also. Send SAE for details. **£28.00** inc. VAT and postage

NEW ANTENNA MODELS

H.S. HFS Vertical 10-80cm	£41.40
HFR. Ground Plane Kit	£23.00
GDX 2 Discone Antenna 50-460MHz	£36.80



TRIO TS120 TRANSCEIVER

ALL SOLID STATE HF BAND TRANSCEIVER

Freq. 3.5-30 MHz Amateur Bands and WWV. I.F. Shift System, Noise Blanker, Vox, Single conversion system using PLL circuit. Digital display dial.

TS 120V 10 watts PEP	£347.30
TS 120S 200 watts PEP	£432.40



TS 180S

TS 180s. HF Transceiver. An all solid state Transceiver with Digital Frequency Control. A rig that has the facilities that DXer, Contest operator or any Amateur would desire for maximum flexibility on the 160 through 10 metre bands. Up to 200 watts PEP input. No tune final amplifier. With digital readout. **£679.65**

RECEIVERS AND TRANSCEIVERS

(Inc. VAT and Postage)	
SR9 Tunable 144-146MHz Receiver	£46.00
AMR217B Scanner Receiver. AC or DC operation	£113.50
R512 Aircraft Band Scanning Receiver	£135.00
Regency Digital Flight Scan Synthesised Aircraft Band Receiver	£230.00
Phillips FM321 70cms FM Transceiver	£264.00
Yaesu FRG7 Receiver	£214.00
Tomaco 318 Scanning Receiver 30 Channel	£95.00 + Crystals
FDK TM563 Scanning 2m Receiver	£109.00
'SkyACE' Hand held Aircraft Band Receiver	£49.50
Bearcat 220 Scanning Receiver	£241.50

SUEDONHAND EQUIPMENT

Due to delay in publishing secondhand lists please send SAE for our up to date lists. We have a very quick turn over in secondhand equipment, especially in receivers. If you require a specific model please let us know and we will inform you as soon as we have one available. Our secondhand equipment carries a three month guarantee. We would be pleased to sell your equipment on a commission basis, which saves you time and money advertising.

ACCESS and BARCLAYCARD facilities.
Instant HP service

Part exchange always welcome. Spot cash paid for good clean equipment. If you have equipment surplus to your requirement we would be pleased to sell this on commission for you.

Shop Hours: 9.30 to 5.30 Monday to Friday, 4.30 p.m. Saturday

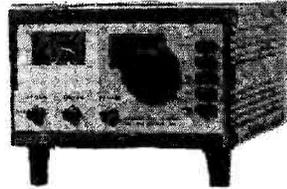
No parking problems. Turn at the Greyhound Motel on the A580 (East Lancs.) Road, S.A.E. with all enquiries. 25p will bring you latest information and prices, credited to your first purchase over £5. Postage carriage extra.

ALL OUR PRICES INCLUDE VAT

ROTATORS	
DR7500X	£98.04
DR7500R	£107.98
DR7600X	£135.00
Sky Mark	
L530X	£86.25
Sky King	
SU200	£46.46
SRX-30	
Solid state Receiver 550kHz-30 MHz	£178.00

CABLE	
UR43	24p metre
UR67	80p
300 ohm Ribbon	
11p metre	
75 ohm low loss	20p

Hy Gain	
12AV3 3band Vertical	£43.12
14AV7/WB 4 band Vertical	£60.37
18AV7/WB 5 band Vertical	£87.40
ASP and Diawa 144 MHz anfd 70 cms Antennas in stock	



ARAC 102 Receiver, 28-30 MHz. 144-146 MHz AM-SSB-FM-CW Price £107.50

S.T.E. Prices include VAT and postage

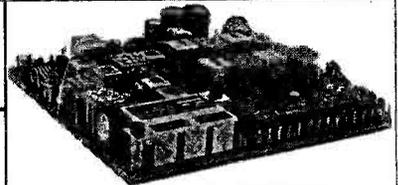
ARAC 170 10m and 70cm Receiver	£129.00
AAI Audio Module for AR10	£4.10
AD4 FM Discriminator	£5.00
AL8 Linear Amplifier	£27.60
AG10 Tona Generator	£4.50
ATAL 2m AM-FM Tx	£129.00

STANDARD

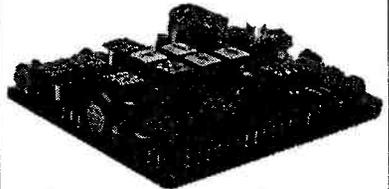
C8800 2M FM Mobile Transceiver	£252.00
C7800 70cm Transceiver	£00.00
G-WHIP	
Tribander Helical 10-15-20m	£24.72
LF Coils for Tribander	£6.55
LF Telescopic Whip Section	£3.35
Basemount standard type	£4.48
Multimobile 78, 10-15-20m	£28.75
MM Coils	£6.55
MM Telescopic whip section	£3.33
Flexiwhip basic 10 metres section	£17.25
Basemount standard	£4.48
Ball type Basemount	£6.32
Coils for Flexiwhip	£6.55
Base thread adaptor USA/G Whip	£0.75
Extended 40"	£11.50

DRAKE

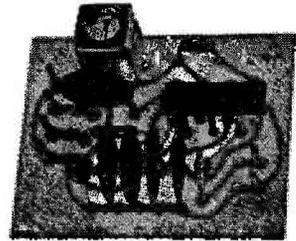
TR7 TRANSCEIVER AND MOST DRAKE ACCESSORIES AVAILABLE FROM STOCK - P.O.A.



AR20. 12 channel FM receiver 144-146MHz. Input impedance 50-75 ohm. AM-FM modes. Sensitivity 0.2uV AF output 3 watts. 12v DC operation Price £50.00



AT23. 12 Channel PM Transmitter. 3 watts 144-146 MHz. Frequency deviation 3-10 kHz adjustable. 12v DC operated AF input sensitivity 2mV adjustable to 50mV Price £50.00

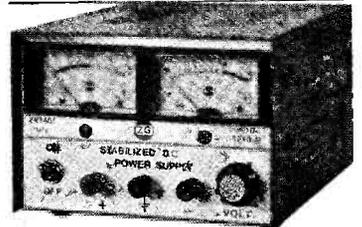


455 kHz FM DISCRIMINATOR AMPLIFIER. Limiting threshold 100uV. Amplitude modulation rejection 40dB. Audio output voltage at 1 kHz 20-300mV frequency deviation ± 3kHz Price £5.00

SOLID STATE STABILISED POWER SUPPLIES

Maximum ratings quoted. Prices include postage.

Model 122 12.6V 2.5A	£15.55
Model 125 10-15V 5 amp	£28.00
Model 153S 4-20V 3 amp Dual Meter	£29.35
Model 156S 4-15V 5 amp Twin Meter	£35.00
Model 1210S 4-20V 10 amp Twin Meter	£85.00
Model 1210SV 4-20V 10 amp Digital Readout	£110.00
Model 153SV 4-20V 3 amp Digital Readout	£38.00
Model 1220/1 13.5V 20 amp	£90.00
Model 1220/2 13.5V 12 amp	£80.00



Mod. 1210 S

Mobile Antenna Range	
5/8th Whip PL259 fitting	£6.00
Magnetic Mount PL259 fitting	£8.00
7/8th Whip	£11.00
Basemount and lead	£3.00
Gutter mounts	£3.15
Bantex Magnetic mounts	£14.25
Bantex S/S Whip 5/8th	£9.50
Bantex G. fibre 5/8th whip	£9.10

Accessories	
2 way Antenna Switch 50 ohm-200 watt	£6.60
3 way Antenna switch SWL push button type	£4.60
3 way Antenna Switch 2 kW PEP 0.500MHz	£10.60
4 way Antenna Switch 50 ohm 200 watt PEP	£10.60
Single Meter SWR Wall type	£10.87
Single Meter SWR Desk type	£11.00
Twin Meter SWR Desk type	£13.55
T345N Thru Line Wattmeter 140-435MHz	£34.45
DL20 20 watt 50ohm Dummy Load	£6.30
DL50 50 watt 50ohm Dummy Load	£7.50
OSCERBLOC SWR200B	£40.00
Morse Keys Lightweight	£3.25
Nye King Morse Keys	£10.15
HyMound HK70B	£10.50
Katsumi EK150 Electronic Keyer	£79.00
Katsumi MK 1024 Electronic Keyer, with memory	£135.00

DX-008 Programmable Frequency Counter	£116.25
HP3A High Pass Filter	£3.25
Twin Keying Paddle Chrome plated with heavy base. Precision Unit	£26.50
OSCERBLOC SWR2000B	£40.00
Full Range of Microwave Modules Converters, Transverters, Linears, etc.	

Mini Products	
C4X 3band Vertical	£48.00
HQ1 Mini Beam	£96.00

TECHNICAL ASSOCIATES

Rx Band Pass Filter. 9 I.C.'s. 1 watt output* 8 switched positions of filters* High pass 2.5 kHz-2.00 kHz-1.5 kHz-200 Hz-110 Hz-80 Hz* Ideal for increased selectivity with FRG7, SXR30, etc. Price £30.45

MULTIFILTER

This unit is the complete answer to interference and bandwidth problems. The unit contains the well proven peak and notch filter and band pass filter. Ideal for users of the FRG7, SXR30, SSR1 type of receivers. No internal connections to your receiver Price £51.75

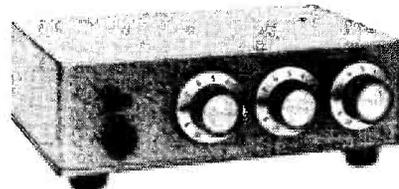
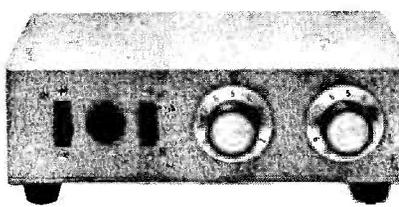
Pre-Selector. Coverage 1.6 MHz to 31 MHz* Three switched bands* Type I with antenna changeover relay for Transceiver op Price £30.45

Type 2 for SWL without relay Price £27.25

Crystal Calibrator. Seven ranges down to 1 kHz. Selected from front panel. Complete with antenna Price £22.80

Some Models in New Type Cabinets

These prices include VAT and postage.



STEPHENS-JAMES LTD.

47 WARRINGTON ROAD, LEIGH, LANCs. WN7 3EA
Telephone (0942) 676790



Western

TRIO *Have you seen the R-1000 yet?*

A high class general coverage (0.2 to 30 Mhz) receiver with digital and analogue display. Built-in quartz clock, selectable bandwidth, simple operation, well finished, lightweight and compact.

Price **£289**

DCK-1 (DC kit) **£5.95**

OTHER TRIO EQUIPMENT

(Phone or write for latest prices and details)

TR-2300 2m FM PORTABLE
TR-2400 2m FM HAND HELD
TR-7625 2m FM MOBILE (25 watts)

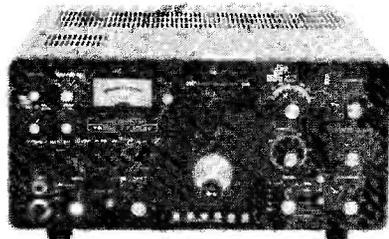
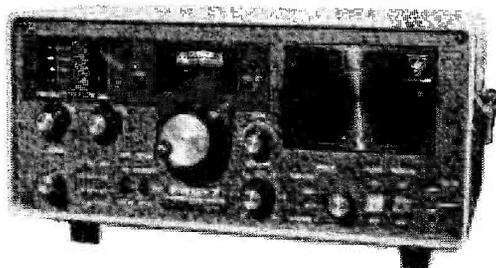
TS-120S HF SOLID STATE MOBILE (High Power)
TS-180S HF SOLID STATE TRANSCEIVER (with Memories)
TS-520SE BUDGET PRICED HF TRANSCEIVER
TS-820S DE-LUXE DIGITAL HF TRANSCEIVER



FAST BECOMING AN ESTABLISHED FAVOURITE —

- ★ Latest in a famous line of HF transceivers
- ★ Digital frequency readout
- ★ QRM-beating Variable IF Bandwidth
- ★ High performance RF processor
- ★ Rugged 6146B PAs with RF negative feedback
- ★ Full band coverage 160-10 metres
- ★ Compatible with all 901 accessories
- ★ Analogue FT-101Z available

FT-101Z £550; FT-101ZD £639



FRG-7

ANOTHER WELL KNOWN
YAESU PERFORMER

ONLY

NOW DOWN IN PRICE!

£199

The general coverage receiver for the SWL with a limited budget.
Good all-round performance at a down-to-earth price.

- ★ Full and continuous coverage from 500KHz to 29.999MHz.
- ★ SSB/AM/CW operation.
- ★ Fine tune control for ease of SSB tuning.
- ★ Accurate readout of frequency to 10KHz or better, using MHz and kHz controls.
- ★ Wadley loop circuitry for minimum drift and maximum stability.
- ★ Operation from mains supply, internal batteries or external 12V DC.

OTHER YAESU BARGAINS

FT-227RB 2m FM mobile Down to **£229**
FV-901DM Scanning/memory VFO for FT-101Z/901..... Down to **£199**

WATCH OUT FOR OUR PRICES ON FT-707 AND FT-720

(Phone or write for details and prices of other models)

ALL ADVERTISED PRICES INCLUDE VAT — ACCESS/VISA ACCEPTED

Electronics (UK) Ltd

The UNIQUE **ALUMAST** "The Tower That Comes in a Tube"

The ALUMAST is a 15" (375 mm) wide triangular cross section lattice sectional aluminium mast based on a 10ft (3.05 m) section length. It is supplied "knocked-down" in a tubular carton for ease of transport, but can easily be assembled needing no special tools or skills. The system includes top plate with bearing sleeve, rotor plate and a choice of a fixed base frame (FB-1) or one with hinge joints (HB-1) to enable the mast to be pivoted at ground level. Guy brackets are available for use at heights above 30ft.

★ Made from high strength corrosion resistant alloy using WESTERN's exclusive "W" section leg extrusions.

★ Easy assembly using bolts and "Nyloc" locking nuts for security.

★ Free-standing to 30ft (9.15 m) with a typical tri-bandier plus VHF/UHF antennas.

★ Heights to 250ft (75 m) with appropriate guy configurations (ask us for quotes).

★ Lightweight — only 25lbs (11 kg) per 10ft (3.05 m) section.

★ 30ft (9.15 m) mast is delivered in a tube only 10ft 6ins (3.2 m) long, 6ins (0.126 m) dia.

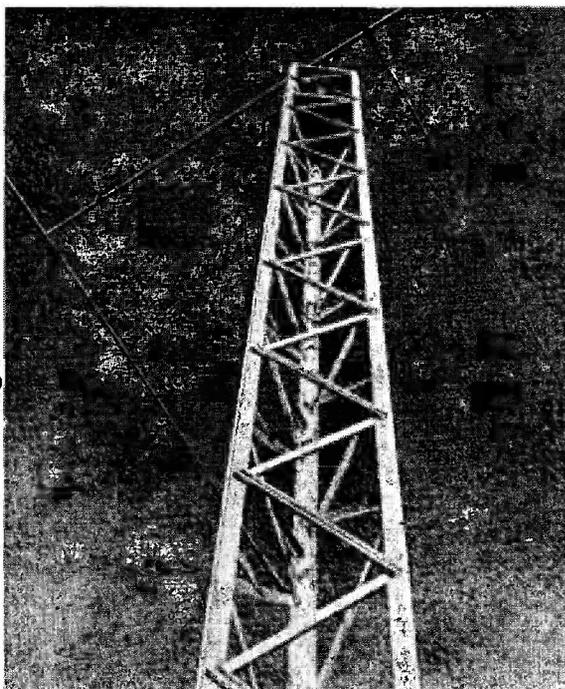
**A COMPLETE
30FT (9.15 m) MAST for £240.35**

FULL PRICE LIST

375/PSS/3	30ft mast (3 sections)	£184.00
375/PSS/1	Additional 10ft section	£62.68
HB-1	Hinged base unit	£31.05
FB-1	Fixed base unit	£21.85
RMP-1	Rotor mounting plate	£12.08
TP-1	Top plate with sleeve	£13.23
GB-1	Guy brackets (set of 3)	£11.50

All prices include carriage and VAT at 15%

DEALER ENQUIRIES WELCOME



DESIGNED and MANUFACTURED in GREAT BRITAIN by

Western

BUY BRITISH AND HELP THOSE BALANCE OF PAYMENT FIGURES!

* * * SPECIAL SUMMER OPENING HOURS * * *

For the benefit of personal callers we are OPENING ALL DAY ON THE SECOND SATURDAY EACH MONTH from MAY to OCTOBER. This is in addition to our normal hours of 9-12; 1-5 on weekdays.

TELEPHONE ENQUIRIES WILL BE TAKEN BY OUR ANSWERING MACHINE AS USUAL.

MAKE A NOTE OF THE DATES NOW!

14 June; 12 July; 9 August; 13 September; 11 October. 9 a.m. to 5 p.m.

COME and BROWSE over the gear, or natter over a COFFEE!

HEAD OFFICE (All Mail/Enquiries)

**FAIRFIELD ESTATE
LOUTH, Lincs LN11 0JH**

Tel: Louth (0507) 604955/6/7 Telex: 56121 WEST G

Our Agents

Southern: Alan Paxton, G4BIZ, Southampton, Hants
(0703) 582182

N. Ireland: Les Lyske, G13CDF, Newtownards (0247)
812449

Opening hours:

LOUTH: 9-12: 1-5pm Mon-Fri. By appointment Sat 9-12.

LEICESTER: May's Hi-Fi, Churchgate (Tel: 0533-58662).

Mon-Sat 9-6pm; closed Thurs.



Western

THE Western NEW GOODIES PAGE!

TRIO TR-9000

A superb new multimode 2m transceiver with all the expected Trio/Kenwood quality. FM/SSB/CW operation. 10 Watt capability. This beautiful transceiver is much the same size as a normal mobile

rig but packs so much more into a small space. Put your name on the list now, there's bound to be a rush!

PRICE

AROUND **£360**

YAESU FT-707

Yaesu's latest masterpiece — the FT-707 "Wayfarer". An up-to-date, compact HF rig that nevertheless leaves nothing out that the serious

operator needs. Don't let the size fool you — this rig is as "big at heart" as many much larger sets!

PRICE

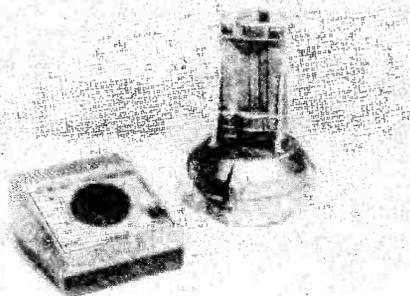
AROUND **£495**

YAESU FT-720

The modular concept for VHF/UHF FM. Two transceivers — one control box. Mix and match how you like. These two new ones from Yaesu enable

remote or local control of two bands (2m and 70cm) from one control unit using a switching box or independent control with each transceiver having its own control unit

EP-200 ROTOR

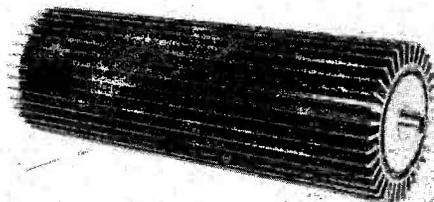


A new rotor at a reasonable price for those lightweight VHF/UHF beams. Silent control box, robust construction, good value for money! Needs 5-wire control cable. Mast bracket included.

PRICE

ONLY **£29.95**

MDL-1000 DUMMY LOAD



A high power finned, sealed oil-filled dummy load. Takes 300 Watts continuous or 1000 Watts intermittent. Suitable for HF or VHF. Fitted SO239 socket and chrome stand. No need to buy the oil — it's already in. Ex-stock NOW! No station should be without one!

PRICE

ONLY **£29.95**

ALL PRICES INCLUDE VAT AT 15% AND CARRIAGE

Western Electronics (UK) Ltd

HEAD OFFICE (All Mail/Enquiries)
FAIRFIELD ESTATE
LOUTH, LINCS. LN11 0JH

Tel: Louth (0507) 604955/6 Telex: 56121 WEST G

Our Agents

Southern: Alan Paxton, G4BIZ, Southampton, Hants
(0703) 582182

N. Ireland: Les Lyske, G13CDF, Newtownards (0247)
812449

Scotland: Jim Henderson, GM4HKW, Falkirk
(0324) 25559

Opening hours:

LOUTH: 9-12: 1-5pm Mon-Fri. By appointment Sat 9-12.
LEICESTER: May's Hi-Fi, Churchgate (Tel: 0533-58662).

Mon-Sat 9-6pm; closed Thurs.



ADVERTISERS' INDEX

	Page
Aero & General Supplies ...	258
Amateur Electronics UK ...	246, 247
Amcomm Services ...	254, 257
Barnet Metal and Car Co.;	
Ltd. ...	199
J. Birkett ...	255
Bredhurst Electronics ...	249
British National Radio and	
Electronics School ...	258
Cambridge Kits ...	262
Catronics Ltd. ...	253
C.B. Electronics ...	256
Colomor Electronics Ltd. ...	262
Crayford Electronics ...	262
Datong Electronics Ltd. ...	214
G2DYM Aerials ...	263
G3HSC (Rhythm Morse	
Courses) ...	262
Heathkit ...	259
D. P. Hobbs Ltd. ...	258
K.W. Communications Ltd. ...	254
Lee Electronics Ltd. ...	251
Leeds Amateur Radio ...	258
Lowe Electronics <i>front cover, inside</i>	
<i>front cover, 197, 198</i>	
Northern Communications	256
Partridge Electronics Ltd. <i>back cover</i>	
P. J. Communications ...	261
P.M. Electronics Services ...	252
Quartslab Marketing Ltd. ...	248
Radio Shack Ltd. ...	244, 245
R.T. & I. Electronics Ltd. ...	256
Small Advertisements ...	256-262
South Midlands Communications	
Ltd. 200, 201, 202, 203	
Spacemark Ltd. ...	257
Stephens-James Ltd. ...	208, 209
S.W.M. Publications	
<i>inside back cover, 260, 263, 264</i>	
Thanet Electronics Ltd.	
240, 241, 242, 243, 253	
T.M.P. Electronics ...	261
Uppington Tele/Radio	
(Bristol) Ltd. ...	263
Reg Ward & Co. Ltd. ...	257
Waters & Stanton Electronics	
204, 205, 206, 207	
Geoff Watts ...	263
Western Communications	
(Galway) Ltd. ...	250
Western Electronics (UK) Ltd.	
210, 211, 212	
W. H. Westlake ...	263
Williamsons ...	260
Colin Wilson ...	262

SHORT WAVE MAGAZINE

(GB3SWM)
ISSN: 0037-4261

Vol. XXXVIII JUNE, 1980 No. 440

CONTENTS

	Page
Editorial	215
VHF Bands , by N. A. S. Fitch, G3FPK	216
The G4FRX Transverter/Control System, Part III , by John H. Nelson, G4FRX	220
Clubs Roundup , by "Club Secretary"	224
Converting the FRG-7 Receiver to Transceive Exciter , by Ian Keyser, G3ROO	228
A Low Cost Scanner System for the IC-240 , by Ian H. Moth, B.Sc., GM8SOH	232
Solar Energy on the Amateur Bands , by J. J. Davis, O.B.E., GW2CVY	236
Communication and DX News , by E. P. Essery, G3KFE	237

Editor: PAUL ESSERY, G3KFE/G3SWM

Advertising: Charles Forsyth

Published at 34 High Street, Welwyn, Herts. AL6 9EQ, on the last Friday of the month, dated the month following. Telephone: 04-3871 5206 & 5207

Annual Subscription: Home: £6.50, 12 issues, post paid
Overseas: £6.50 (\$13.00 U.S.), post free surface mail

Editorial Address: Short Wave Magazine,
34 High Street, Welwyn, Herts. AL6 9EQ, England.

Prices shown in advertising in this issue do not necessarily constitute a contract and may be subject to change.

AUTHORS' MSS

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.

© Short Wave Magazine Ltd.

E. & O. E. VAT Reg. No. 239 4864 25 213



DATONG ELECTRONICS LIMITED

PRODUCTS FOR THE SERIOUS COMMUNICATOR

WORK MORE DX

Datong RF clippers make your speech sound louder and clearer. The worse the conditions the greater the benefit. This is exactly what you need for working DX. After all, if they can't hear you, you can't work them!

All three models use the same innovative r.f. clipping techniques which have made the name Datong synonymous with r.f. clipping.

MODEL ASP

is fully automatic with calibrated push-button selection of degree of r.f. clipping in steps of 6 db from 0 to 30 db. It adjusts itself to suit your voice and microphone.



MODEL RFC/M

is a fully tested printed circuit module for building into your own case.

All three units feature very long life battery operation and connect in series with your microphone.

No internal modifications are required to your rig.

MODEL D75

is manually adjusted and has LED monitoring to aid in setting.



IMPROVE RECEPTION

Our two no-compromise audio filters give a remarkable ability to filter out the intelligence from the noise.

MODEL FL2

the new "top-of-the-line" filter, offers extremely sharp pass-band edges for truly exceptional filtering performance on all modes, but especially for SSB. Its 10 poles of fully variable low and high pass filtering give sharper filter edges even than normal crystal filters. A separate manually tuned notch filter is also fitted.



MODEL FL1

on the other hand, was recently described in '73 Magazine" (October 1979) as "truly the Rolls Royce of the current filter market". It is the only filter in the world which can notch out an interfering whistle from SSB

signals automatically. Additionally, for CW, bandwidths down to 20 Hz are practicable thanks to the use of "limited AFC" - another Datong exclusive.

Both filters connect in series with the loudspeaker and will improve virtually any receiver. An external DC supply is required.

RECEIVE MORE BANDS



The Datong UP-CONVERTER (Model UC1) converts any good quality ten-metre or two-metre receiver or transceiver into a really high performance general coverage receiver.

It gives full coverage in thirty 1MHz segments from 60 kHz to 30 MHz.

At low cost, UC1 adds a new dimension to your expensive amateur bands only equipment and for sheer performance beats most of the common general coverage receivers.

INDOOR ANTENNA



MODEL AD170

Active Antenna is designed for under-roof mounting and gives sensitive reception right through from below 60 kHz to Band 1 TV around 50 MHz. It needs no tuning and includes a switchable 12 db broadband amplifier.

Although only three metres long, Model AD170 has the same directional properties as a full size dipole, even at 60 kHz.

LEARN MORSE THE EASY WAY

The Datong Morse Tutor (Model D70) is your passport to a full licence. Compact, with internal battery and speaker plus personal earphone it provides unlimited random morse to practice on. With D70 you can practice morse anywhere, anytime and at your own pace. With the Morse Tutor, practice

becomes a pleasure because you get results quickly.



Prices: All prices include delivery in UK. Basic prices are shown with VAT inclusive prices in brackets.

ASP £69.00 (£79.35)	D75 £49.00 (£56.35)	RFC/M £23.00 (£26.45)
FL2 £78.00 (£89.70)	FL1 £59.00 (£67.85)	UC1 £119.00 (£136.85)
D70 £43.00 (£49.45)	AD170 £33.00 (£37.95)	AD170 + Mains Power Unit £37.00 (£42.55)
MPU (Mains Power Unit) £6.00 (£6.90)		

Full data sheets on any product available free on request. New literature includes: short form catalogue, new ASP data sheet, FL2 data sheet.

DATONG ELECTRONICS LIMITED

Spence Mills, Mill Lane, Bramley, Leeds LS13 3HE, England Telephone (0532) 552461

The SHORT-WAVE Magazine

EDITORIAL

Industrial Action

We apologise to readers for the late appearance of this, and the previous, issue of *Short Wave Magazine*, caused by the recent weeks-long dispute in the printing industry — and therefore a matter over which we had no control.

Although the industrial scene is now back to normal, it can take a considerable time to re-establish printer's schedules which take only a few days to completely disrupt: this means that it is likely to be the August issue before publication of this journal is back to normal.

Open Channel

In a House of Commons written reply on May 7th the Home Secretary, Mr. Whitelaw, announced that the Government was in favour — in principle, at any rate — of Citizen's Band radio. The name which would be used in this country would be "Open Channel". He said that a discussion document on the subject would be published by the Government within the next few weeks and that public reaction (which means radio amateurs as much as anyone else!) would be taken into account in reaching a final decision — although in any event it would be some time before a channel could be introduced.

As far as Amateur Radio is concerned, Open Channel is likely to have both positive and negative effects. Positive because many OC-ers, finding the inherent limitations of OC frustrating, would turn to amateur radio to fully satisfy their needs and interest. Negative because abuse of the Open Channel, such as occurred in Australia and the United States, would bring the whole of the non-professional use of the air-space into disrepute: safeguarding and promoting the interests of the separate entity of Amateur Radio in the corridors of power would then be very much harder.

We look forward to the discussion document with great interest - and not a little concern.

Ed. Whelan
K3KFE.

VHF BANDS

NORMAN FITCH, G3FPK

Award News

THE ninth QTH Square Century Club certificate has been awarded to the Radio Club of the Technical University of Gdansk, in Poland, the call-sign of which is SP2PZH (JO44f). The date of issue was April 17 and the band, 2m. Their cards comprised confirmations of 76 tropo., 21 Ar and 3 MS contacts. Roger Thorn, G3CHN, holder of QTHCC No. 3, is now up to 151 squares confirmed and his "150" sticker was issued on May 2.

The QTHCC awards rules require applicants to possess confirmations of QSOs with stations in at least 100 primary QTH squares, e.g. ZL, AG, EM, etc. The starting date was Jan. 1, 1975 and there are separate awards for 2m. and 70cm. An *s.a.e.* will bring full details and an application form.

Two more VHF Century Club, 2m. certificates have been issued. No. 320 goes to Julie Rose, G8MKD, from Oldbury, West Midlands. First licensed in Sept. 1976, she operated on low power FM for a couple of years. Then an *Icom* IC-202E was purchased and used with a *Modular Electronics* 25 watts amplifier. Julie's present station comprises a *Trio* TS-700 fitted with a *J-Fet* preamplifier, the aerial array being a pair of 9-ele. *Tonna Yagis*, at 30 feet. She is also operational on 70cm. and has plans for 23cm. too.

John Cleaton, G4GHA, from Wareham in Dorset, wins certificate no. 321 and all his contacts were over 100 miles. John's interest in the hobby goes back to his youth but it was not till a few years ago when forced, early retirement for health reasons provided the time to study for the *R.A.E.* He is a "white stick" operator and now fairly housebound due to multiple sclerosis. The VHF station comprises a *Trio* TS-700S with a 6-ele. *Quad* aerial at 30ft.

For FM, a colinear is used. He has a transverter for 70cm. and an 88-ele. *Multibeam* is envisaged. John is also on the HF bands and, in spite of his handicaps, admits to some painting and decorating!

Beacon Notes

Paul Galea, 9H1BT, has written to advise of a new Mediterranean 2m. beacon. The call-sign is 9H1VHF and the locator HV03f, his old QTH before moving after his recent marriage. The frequency is 144.830 MHz and the power, 1.5 watts to an omni-directional turnstile aerial. It sends its callsign only on A1, with small breaks between calls. Reception reports should be sent directly to 9H1BT at his new QTH, which is;— 63 Housing Estate, Dingli, Malta, G.C.

Jimmy Bruzon, ZB2BL, is reported to have the 4m. Gibraltar beacon going again from his QTH. The call is ZB2VHF and the frequency 70.26 MHz. It is a valved Tx which he does not leave on unattended. Consequently, it operates only in the evenings and at weekends, when he is at home.

The first U.K. 6m. beacon, GB3SIX, was due to start up on May 18. Due to the occupancy of the band by TV stations, the beacon can only be operated between 0100 and 0830 local time.

On 70cm., GB3SUT (ZM31b) is back again on 432.890 MHz beaming north and south as before. Any reception reports to Tom Douglas, G3BA (*QTHR*). Dave Sellars, G3PBV, asks if the southerly aerial could be turned towards Devon. This seems a very sensible suggestion since those in the southeast have Emley Moor.

Contest News

Results;— From *GB2RS*, the following information was gleaned concerning the 144/432 MHz contest of March 1/2. In the 144 Mhz, single-op. section, the winner was G3NAQ, with G8GGP and G8NEY in 2nd. and 3rd. place. The winning multi-op. station was GW3OXD/P with G4BW/P, runner-up, and GW8CSA/P in 3rd. spot. In the 144/432 MHz, single-op. part, G14GVS won, with G8OPR 2nd., while the multi-op. section was won by the Addiscombe ARC, with the Lagan Valley RS 2nd.

The Barking R & ES 2m. event on March 30 attracted 45 entries, about double that of last year. No doubt this

was due to better advanced publicity and perhaps that it was an afternoon event?

Coming events;— The 2nd. *AGCW-DL* VHF/UHF Contest date is June 28, this leg being the 2m. one. The times are 1900-2300 GMT, 144.010 to 144.150 MHz. For details of the exchanges and scoring see page 41 of the March issue. Entries should go to DK3UZ at P.O. Box 38, D-2358 Kaltenkirchen, Fed. Rep. of Germany, by July 31. Although a German event, the scoring and potential level of U.K. CW activity can enable Gs, etc., to do very well, so why not have a go in this Saturday evening event?

The Satellite Scene

By the time you read this, if all went according to plan, the first of AMSAT's *Phase 3* satellites should be in its transfer orbit, awaiting the firing of its *Thiokol* kick motor to tilt it into the desired elliptical orbit, inclined at 57° to the equator. No attempt should be made to access the satellite until AMSAT gives the "go ahead." This means that no transmissions should be made in the 200 kHz band centred on 435.215 MHz. Thus it would seem advisable *not to use 0-8 in Mode "J"* which would create signals in part of this area and which could be picked up by the new satellite's transponder. (The suggestion last month to keep off 0-7 Mode "B" was unnecessary as the uplink for that is *not* on 435 MHz. Sorry!)

AMSAT has confirmed that *right hand circular polarization* is preferable for the 70cm. uplink Tx, and *left hand circular polarization* for the 2m. downlink Rx. An *e.r.p.* of up to 1,000 watts may be necessary for reliable access at extreme range and a good, low noise receiving system is a "must".

Bill Johnston, N5KR, has written to advise he will produce *Orbital Prediction Computer Printouts for A-O-9* as soon as the final parameters are known accurately enough. The elliptical nature of the orbit, plus the perturbations over the years, make it impossible to produce a perpetual prediction printout for a specific QTH, so these will be valid for three months. Each printout will cost \$6.00 *via* 4th. class mail or \$8.00 *via* air mail. Inquiries to N5KR at;— 1808 Pomona Drive, Las Cruces, NM 88001, U.S.A.

AMSAT-UK held its Annual General Meeting on April 12 at which 22 members were present. New folk

ected to the Committee were G4IQQ and G8TMN. Secretary Ron Broadbent, G3AAJ, was invited to meet the AMSAT Board of Directors in Washington at which it was agreed that he arrange a meeting in Britain for all AMSAT reps. of the numerous worldwide groups to attend. This has been fixed for Sept. 19-22, 1980 at the University of Surrey, in Guildford. For details, an *s.a.e.* to Ron is suggested to;— 94 Herongate Road, London, E125EQ.

Perry Klein, W3PK, the erstwhile President of AMSAT-USA, has resigned from the Board of Directors and from AMSAT.

Rare Stuff

Eddi Ramm, DK3UZ, writes that during VHF NFD on July 5/6, the rare QTH square DO will be activated from the island of Heligoland using the local callsign, DL0IH. The actual locator is DO70j and they will be QRV on both 2m. and 70cm. They hope to arrive on the island on the 3rd. and stay till the 8th. As it is impractical to make skeds in advance and they do not contemplate taking any HF bands gear, Eddi suggests telephoning their shack between those dates to fix up skeds. The number from England is given as;— 010 49 4725 310, and MS skeds will be possible for those out of tropo. range.

Barry Titmarsh, GM8SAU, will be on St. Kilda in VR18 in August and September and will be available for skeds on 2m, 70cm. and 23cm. using QRGs of 144.260, 432.260 and 1296.260 MHz respectively. Further details from;— Sgt. Titmarsh, c/o Sgts. Mess, R.A. Range, Benbecula, Outer Hebrides, Scotland.

Repeaters

UHF repeater GB3PH at Portsdown Hill on RB2 has been moved to a new site and was to be on from May 15. Bill Jarvis, G8APX (Lancs.) is seeking support for a Dumfries/Stranraer 2m. repeater. He suggests that a relay in the Wigtown/Creetown/Gatehouse vicinity would provide useful links with GI and GD if necessary, but more importantly better serve the A75 than does GB3AS. Supporters should contact Bill at;— Salewheel House, Salesbury Hall Road, Ribchester, PRESTON, PR3 3XU. (Phone;— Ribchester 215).

When the notorious London repeater GB3LO was changed to

QTH LOCATOR SQUARES TABLE

Station	23 cm.	70 cm.	2 m.	Total
G3POI	—	—	282	282
I4EAT	—	25	238	263
DK3UZ	—	—	218	218
G8HYV	12	73	130	215
G3IMV	—	—	210	210
G8GML	11	74	122	207
GJ4ICD	—	54	150	204
G3JXN	36	73	94	203
G3VYF	—	60	138	198
9H1CD	—	13	178	191
G8LEF	22	62	101	185
G3CHN	—	—	185	185
G4ERG	—	16	168	184
G3COJ	24	66	93	183
G3SEK	—	—	179	179
G4CMV	—	35	140	175
9H1BT	—	11	163	174
GM4COK	—	12	154	166
G18KNV	—	46	118	164
GM4CXP	—	25	136	161
G3FPK	—	—	158	158
EA3LL	—	15	137	152
G2AXI	2	54	93	149
G3BW	3	26	120	149
G4BWG	—	29	118	147
G8LHT	7	39	98	144
G3OHC	4	33	104	141
G8ATK	5	43	93	141
G4IJW	1	30	108	139
G8HHI	—	36	103	139
G4AWU	—	22	110	132
GD2HDZ	12	41	76	129
G4IGO	—	—	127	127
G4IJE	—	—	127	127
G4HYD	—	40	83	123
G3SPJ	10	36	71	117
G8OPR	1	30	86	117
G3KPU	—	25	91	116
G4ERX	—	41	72	114
G8KGF	—	20	94	114
G8IFT	14	27	68	109
G8IXG	—	—	104	104
G8KAX	—	40	63	103
G4FBK	—	5	98	103
G8LGL	—	15	87	102
GJ3RAX	1	27	73	101
G4DEZ	—	—	101	101
G3PBV	—	35	64	99
GM8NCM	—	12	84	96
G4AEZ	5	29	61	95
G3FIJ	—	27	68	95
G8MFJ	—	17	78	95
G8KPL	—	7	87	94
G18EWM	—	25	67	92
G8GXE	—	33	56	90
G6UW	—	—	89	89
G4GEE	—	28	60	88
G8JJR	—	9	78	87
G8JAG	—	7	79	86
G8LEJ	—	—	83	83
G8KSP	—	2	76	78
G4GET	—	—	72	72
G4GHA	—	—	67	67
G4GXT	—	1	56	57
G8JGK	—	—	52	52
G8PRG	—	12	39	51
G4GSA	—	1	50	51
G8RWG	—	—	29	29

Starting Date January 1, 1975. No satellite or repeater QSO's.

GB3SL and supplemented by three others, the so-called "experts" suggested it would lessen the deliberate interference. Those who concluded that it would give the squeakies, whisperers and foul language

merchants four times the opportunity to indulge in their "hobby" have, alas, been proved only too right. Observations by your scribe suggest that use by licensed amateurs is steadily declining and that most evenings and weekends, GB3SL in particular is taken over by pirates and frustrated CB-ers. Few of the callsigns given actually exist.

One would have thought, and expected, that our national society, which holds the licences for these repeaters, would wish to promote and encourage responsible use of amateur radio. In many fields, such as propagation study, members do a superb job and their achievements are deservedly recognized internationally. Since the Society stubbornly refuses to close down these offensive relays and the Home Office seems either unable or disinterested in a concerted crack-down on the offenders, it would seem that the only recourse open to those who feel they should be closed down is to lobby their respective Members of Parliament. Perhaps if enough constituents send their members a few minutes of the filth and rubbish being broadcast from an amateur radio station on a tape, some positive action would result.

Six Metres

Scant news this month on the 6m. scene. However, ZB2BL made the first Europe to Japan two-way contact at 0012 on Apr. 10 working JA1BK in Tokyo during a 30 min., long path opening. Jimmy had QSOs with several other JAs afterwards. From Namibia, ZS3E now listens on 28.330 MHz for crossband contacts. Brian Bower, C3COJ, reports that SV1DH in Athens is on 50.015 MHz and that I5TDJ has 6m. capability. 5B4AZ has had a crossband QSO with G4BPY.

Four Metres

John Baker, GW3MHW, (Dyfed) continues to champion the band. He read that G3FDW (Notts.) was holding nightly skeds at the same time and QRG as he and G2AOK. Correspondence has resulted in a round-table on 70.205 MHz from 2300-2330 with 30% success. G4FXW (Sheffield) has called in on CW. G3IKR (Worcs.) is a consistent signal and John thinks another three or four GWs are coming on. GW4DRR (Anglesey) is QRV, as is GW4BCD in Mid-Glam. Gs are requested to beam towards north, mid

and south Wales more often. John mentions an 80m. net on 3718 kHz 0830-1030 clock time as a meeting place for 4m. buffs.

Two Metres

G3CHN, (Devon) has now worked 185 squares with 153 confirmed, a return rate of 82% — not bad! Even so, he *still* awaits cards from GM3JIJ and OH0JW. Roger reports, "... terrible conditions for some time ..." which makes for little news. He mentions that whenever FICRP/P is heard, Alain will have 70cm. gear too, soon with 80 watts to a 19-ele. aerial. From Essex, Frank Howe, G3FIJ, used the May 3/4 contest to add to his table score, best DX being GI4BAC/P in Co. Down and G4FJK/P on the Lizard.

Dave Sellars, G3PBV, found conditions in the contest poor although he did work into ON and PA from Devon. Virtually no fixed stations were worked and he feels that the single call sign rule did not help activity. His best DX to the north was G3ZQM/P in Co. Durham. Ken Osborne's, G4IGO, (Bristol) letter arrived too late for last month. He mentions MS successes with LA7KK (FU62j) on March 30 and with SM5CNQ (HS46c). On April 4, there was *E*'s propagation up to 80 MHz with good TV pictures on Band 1 from Italy and Norway. EA3ADW was copying GB3SU on 70.695 MHz.

John Pilags, G8HHI, (Surrey) found a lot of activity in the contest. He heard GM3WOJ (YP72c) and part of a QSO a DL was having from GI square. John Lemay, G8KAX, (Essex) enjoyed the Barking club's contest on Mar. 30. He and G8HGN operated portable from Havering Village and amassed 3213 pts. in spite of deliberate QRM. Dave Cox, G80PR, (Hants.) is now 17 pts. clear of other contenders in the annual table but cannot seem to work Gwynedd. (Neither can your scribe!) Dave had a QSO with GM4CVI/P in the Grampian Region and with GM80DN/P in Dumfries & Galloway. An Ms sked with I6WJB on Apr. 20 produced nil.

Neil Montanana, G8RWG, (Surrey) does not have too much time to get on the band due to college studies. He uses a *Trio* TR-7010 and 100 watts amplifier to a 9-ele. *Tonna* Yagi at 35ft. A *Lunar* preamp. is used as the 7010 is a bit deaf. Tony Haas, G8VJJ, is another new correspondent from

THREE BAND ANNUAL VHF TABLE
January to December 1980

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL POINTS
	Countries	Countries	Countries	Countries	Countries	Countries	
G80PR	—	—	62	17	44	7	130
GJ4ICD	—	—	54	13	37	9	113
GD2HDZ	15	3	39	10	32	6	105
G4HNS	—	—	55	10	35	5	105
G3BW	—	—	57	13	25	7	102
G3PBV	—	—	46	10	36	8	100
G8GXE	—	—	47	10	34	8	99
G8MFJ	—	—	49	12	23	6	90
G4BYP	17	4	32	9	19	3	84
G4ERX	15	2	30	10	18	8	83
G8HHI	—	—	31	8	34	9	82
G8VLQ	—	—	52	10	16	3	81
G3FPK	—	—	64	15	—	—	79
G4DEZ	—	—	53	21	—	—	74
G3KPU	—	—	33	5	28	6	72
G8KAX	—	—	26	8	29	8	71
G3FIJ	12	1	37	8	10	2	70
G8KGF	—	—	42	13	10	4	69
G8JJR	—	—	28	7	19	1	55
G8RWG	—	—	45	9	—	—	54
G4IGO	—	—	35	17	—	—	52
G8IFT	—	—	19	4	19	6	48
G8RZA	—	—	36	9	—	—	45
GM8TSI	—	—	37	4	2	1	44
G8JGK	—	—	33	9	—	—	42
G8VJJ	—	—	36	5	—	—	41
GW3CBY	2	2	22	6	2	2	36
G3KEP	9	4	12	4	2	2	33
G4FKI	10	1	15	1	3	1	31
GM8MNG	—	—	21	3	—	—	24
GM4CXP	—	—	16	7	—	—	23
GM4COK	—	—	4	9	—	—	13

Essex who uses a *Mizuho* SB-2M transceiver and 25 watts amplifier. A BF900 preamp. is used and the aerial is a 5-ele. Yagi at 50ft. Tony has had a total of 530 QSOs in 2½ months, best DX being DK0VL (Eh). For a while, some clut was "borrowing" Tony's call on FM and was heard through some London repeaters.

From Jersey, Geoff Brown, GJ4ICD, mentions *E*'s openings on April 16, 17, 21 and 22 wherein French stations worked into HG, IT9, RA3 and YU. He has now fitted gold-plated lines to his K2RIW amplifier and reckons this has increased the efficiency somewhat. Next a confession from Derrick Dance, GM4CXP, that other commitments, including a YL, have drastically curtailed amateur radio operations.

"Noticing the lack of GMs in your three band annual table, we have decided to submit entries to encourage you sassenachs to turn your beams towards Jockland!" Thus starts a letter from Chris and Ian Raine, GM8s MNG and TSI respectively, from Midlothian. The station consists of an *Icom* IC-211E plus QV06-40A amplifier, the aerial being a 16-ele. *Tonna*. The QTH is 650ft. *a.s.l.* with good take-offs to G, GW and Scandinavia. They are willing to arrange skeds with anyone wishing to work Lothian Region (YP) on 2m. The QTH is;— "Broomhill," Edgehead, Pathhead, Midlothian.

Also QRV from the same QTH is Alan, GM8VYZ.

The first genuine *E*'s wherein a QSO resulted, this season, occurred between 0715 and 0720 on May 4. During the contest, G4JAR/P in YK21g, had a CW "CQ" call answered by YU3ES in GF39d. Subsequent QSOs were with YU3CAB (HG55f) and OK2KRK (IJ05h). All these were at a QRB of about 1450 kms. The operator at the time was G4FUF who reckons he logged a QSO with YO5AVN/3 (NE01h) at the end of this brief event. That would be a QRB of 2307 kms. worth 93 pts!

YU3ES said the opening lasted about two minutes and confirms the QSO. He had an uncompleted exchange with G3ZQM/P. John Hunter, G3IMV, was on CW too at this time and heard a YU calling a German station and also heard HG5KDQ. One wonders how many of these fleeting openings are missed just because nobody is listening? Had it not been for the contest, would anyone have been monitoring the CW band to the east at such a time on a Sunday morning?

G4BWG team operated portable from AL45e in the contest and chalked up 596 scoring QSOs including Y350 (GM65). They used a single *Cushcraft* "Boomer" aerial at 70ft. G6UT/P in AL21b made 506 contacts but thought conditions poor. No HBs were heard and there were precious few French

stations copiable.

On May 10, there was a fine example of coastal ducting across the North Sea to Denmark in the late evening and early morning of the 11th. Pete Etheridge, G4ERG, (Hull) told your scribe about very strong OZ signals from stations running low power. In London, signals were only about S5 at G3FPK and the strongest OZs were OZ1BRJ (EQ69c); OZ1CWM/A (EP17b) and OZ4VV (EQ17a).

Arthur Tait GM8TLO, has sent in a welcome first, detailed account of 2m. activity in the Shetland Isles. Since the old AM days of 1954, 2m. operation has been sporadic with never more than one or two stations active. However, 1979 saw an upsurge in interest when the Lerwick club, GM3ZET, acquired an *Icom* multimode transceiver, 6-ele. *Quad* and rotator. The station is mainly operated by Tommy Goodlad, GM8SOP. The 2m. brigade grew to include Bruce Spence, GM4FNE; John Sinclair, GM3HTH; Billy Williamson, GM8MMA; Billy Goudie, GM8RUI; John Young, GM4DQD; Sam Polson, GM3RFR; Neil Onions, GM8HUT, and Andy Halcrow, GM3KZH. 4FNE and 8HUT have been active on FM and SSB with QSOs to the mainland, the former also using the satellites occasionally.

Arthur himself was licensed in Sept. 1979 and had his first taste of real DX on April 25/26. The highlight of an impressive list of DX was the contact with Dave Aram, G8DVK, (Oxon) at 2200 on the 25th, a distance of about 600 miles. The signals from the north of England were very strong.

From the car, using a seven-eighths wavelength whip, LA2BR, GM8SVB, LA4EV and GM3DZB/M were worked *via* the Bergen repeater, the latter from a site on top of the Ward of Scousburgh in ZT04j, 860ft. *a.s.l.* Subsequent portable operation from there using a 9-ele. *Tonna* in the next couple of hours produced QSOs with 10 GMs, two LAs and possibly G6WR.

Seventy Centimetres

During the contest on Apr. 13, G3PBV's best DX was G8SFI (N. Yorks.) giving Dave his 40th all-time county on the band. He worked 30 stations for an average of 7 pts. per contact in poor conditions. He

mentions that G4DGU (Oxon.) worked G3AUS (Devon) *via* and *Aurora* on Apr. 11, and that on the 14th, G8SFI worked over to DN and FN squares in a nice, North Sea duct, Dave says that G3WKF is quite active from St. Austell (Cnwl.) and that G4HFO has recently moved down there too and should be QRV on the band soon.

Mike Lee, G3VYF, (Essex) has added another seven squares recently. He took advantage of the ducting on May 10/11 and started at 1840 with a QSO with DB1BP (DN). Later, 11 OZs in FP, FQ and GP squares were worked plus SM6HYG (FS) and SM6FHZ (CQ). The event was still in full swing when he switched off at 2400 GMT. Alan Scott, G4BYP, (Cheshire) added 11 more 1980 counties during the Apr. 13 contest and kept on 70cm. for the last half of April. He mentions a lot of SSB activity now.

Gary Allitt, G4HNS, also found conditions in April, "... pretty average..." but reports activity a little better than usual from his Notts. QTH. Both GD2HDZ and G3BW have been good signals but he has not been able to raise either of them. During April, Tony Collett, G8GXE, (Berks.) made his first GD contact with GD8EXI. Coinciding with the re-appearance of GB3SUT on the 4th, he made 11 QSOs and remarks, "Must be an all-time record!"

G8HHI now has his aerials up at the maximum allowable for anyone living within half a mile of an airport, namely 50ft. John has also built a 12v, 30A. *p.s.u.* for his *Microwave Modules* amplifier. He has also heard, but not worked, GD2HDZ, but reports activity as, "... very low..." which is at odds with others' views. G8KAX thought the contest on Apr. 13 interesting in flat conditions and he did get *Glos.*, an all-time new county, out of it. He is still looking for Cornwall, though.

G80PR added Clwyd, Powys and *Glos.* in the contest but was unable to contact G8EEM in Co. Durham. On the 17th., in flat conditions, F1DBN in AK gave Dave his 30th. square on the band. The contest provided Arthur Breese, GD2HDZ, with 8 more 1980 counties and a couple of countries. From Jersey, GJ4ICD worked G3WKF in Cornwall on the 4th and EA1CA (ZC12c) on the 13th. The GM8MNG/TSI team hope to increase

their 70cm. scores in the coming months using borrowed gear; good news for Lothian Region seekers.

During the excellent conditions on May 10/11, G4ERG in Hull listened to an hilarious "howl around" between an English and Norwegian repeater. This is possible because the outputs of our RB relays are on the inputs of the IARU Region 1 RU repeaters. Once triggered off, they will continue to access one another until propagation no longer sustains the possibility.

Your scribe has been told by several operators that the French amateurs are to lose SSB and CW facilities on 70cm. some time this year due to the demands of the land mobile and military services. If true, this would be a serious blow. F1ANH mentioned their contest on June 7/8 — HF NFD weekend! — when many unusual squares will be activated; this *via* G3PBV.

Gigahertz Bands

Chris Whitmarsh, G8CIU, was with the HADRABS Contest lads during the May 3/4 contest at YK21g. He set up a sked on 10 GHz with GW3PPF/P at Prescally which came off in foggy conditions on the morning of the 3rd. The QRB was 154 kms. and Chris used 10mW. to a 20 dB. horn aerial.

During the ducting event on May 10/11, several 23cm. enthusiasts are reported to have worked Scandinavian stations so perhaps we can have details for next month? G8HHI is all set for 23cm. but is seeking anyone with some spare *Quad Loop* aerials.

Final Miscellany

On the operating tactics subject, G3PBV mentions that many new stations do not indicate when they have finished calling "CQ." Also, many such calls are far too short to enable them to be tuned in properly, let alone peak the beam. As Dave says, these habits may be alright on FM with vertical aerials and squelch, but are hardly suited to serious DX-ing on SSB.

Deadlines

Please send all your reports, claims and comments for the July feature by June 4 and for the August issue, by July 2. Everything to;— "VHF Bands", SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. 73 *de* G3FPK.

THE G4FRX TRANSVERTER/ CONTROL SYSTEM

PART III

A METHOD OF INTERFACING TRANSVERTERS
WITH AN HF TRANSCEIVER

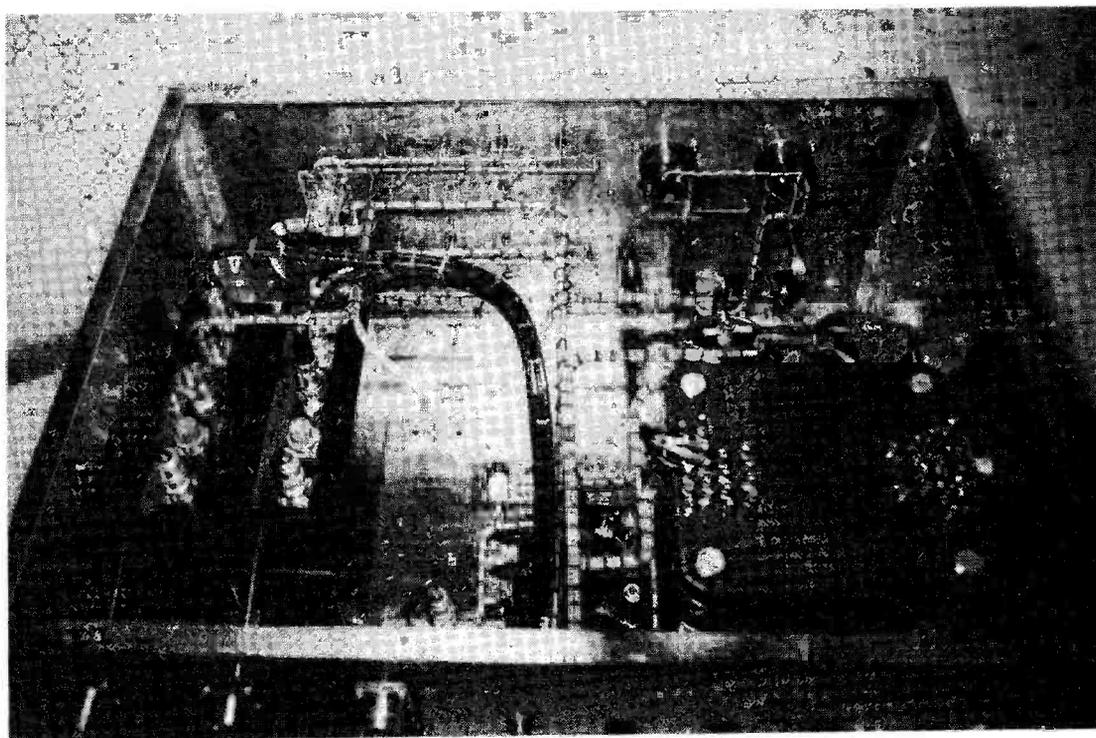
JOHN H. NELSON, G4FRX

RLD/5 (CO) has three functions. It is used to switch the 12v. relay supply to two pins of a 6-pin socket on the rear of the chassis so that relay volts are available as required on receive or transmit — this facility is useful for interfacing other equipment. An unswitched output from the relay supply line is also routed to this socket. RLD/5 (NC) on receive applies 12v. to RX4 and hence the “VHF2 receive” LED, RX3 having applied 12v. to the “VHF2 receive standby” LED. On transmit, RLD/5 (NO) applies 12v. to TX3 and hence RLF, which applies to 28 MHz drive made

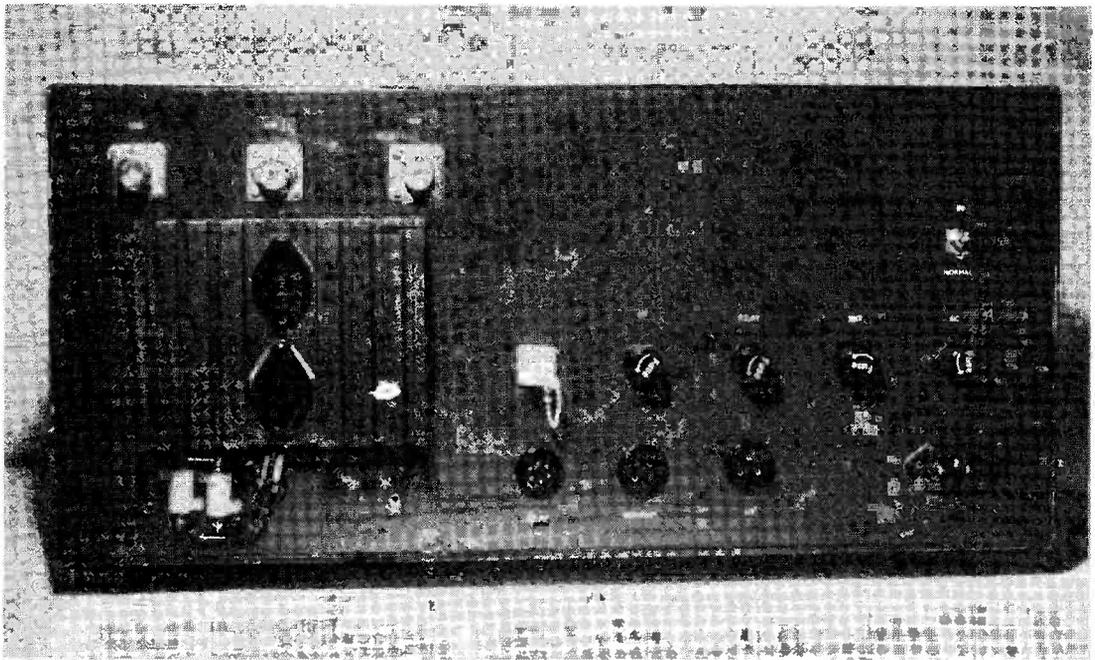
available by RLB to the transverter input socket. This voltage also lights the “VHF2 transmit” LED, which has been selected by TX3. On transmit, of course, 12v. is removed from RX4 by RLD/5 (NC) so that the “VHF2 receive” LED extinguishes; the “VHF2 transmit standby” LED, selected by TX5, remains on. The converse occurs with RLD/5 (NO) on receive, which removes 12v. from RLF so that it falls to the “receive” position and passes transverted 28 MHz output to the IC-701: the “VHF2 transmit” LED also extinguishes, since its voltage is the operating voltage of RLF.

RLD/6 is used to extend an earth to another pin of the 6-pin socket for equipment requiring this facility to switch to transmit; this facility is useful for transverter testing outside the cabinet. On receive, this relay connects the same pin to another pin on the socket to provide a further switching facility.

TX4 and RX2 switch the stabilised HT supply to wherever it is required. In the “simplex” case, of course, they switch the supply to the same place, whereas in the crossband situation, both transverters required have HT switched to them all the time. If we wish to transmit on 2m. and receive on 4m., for instance, TX4 feeds HT to the 2m. transverter, and RX2 feeds the 4m. transverter. This is done so that drift does not occur, as it would if the HT were switched between the two alternately during transmission and reception.



Inside view looking towards front panel, showing co-ax runs from RF relays to transverters. Note LP1 on connexion to right-hand electrolytic. The three RF output sockets are visible at bottom left of photo.



Rear view of cabinet, showing R3 and R4 at bottom left of heatsink, and TR2 and TR3 on heatsink. 'On-Normal' switch is S1 across thermistor; BNC input socket has dust cap. The IEC mains socket and filter can be seen at the bottom right.

It will be seen that in crossband working the system is substantially similar except that the "master transverter select" relays RLA, B and C will also switch depending what band is required for what function. Taking the 2/4m. case mentioned above, for instance, on "receive" RLA will be operated by RX1 and RLD/3 and RLE unpowered; 28 MHz output from the 4m. transverter is therefore fed to the IC-701. Although the 2m. transverter is powered, its output will not be passed to the IC-701 because RLB is not operated at this stage (RX1 is selected to RLA and TX1 is receiving no voltage because RLD/1 is open). On "transmit" RLD/3 removes voltage from RLA, breaking 28 MHz away from the 4m. transverter, RLB operates via RLD/1 and TX1, thus selecting 28 MHz drive to the 2m. transverter and RLF is operated by TX3 and RLD/5 to apply the drive to the transverter input. The transverter is put into "transmit" condition via RLD/2 and TX2. A similar analysis can be performed for any crossband condition, including the use of HF.

It is necessary to mention here the circuitry around the master transmit/receive changeover relay, RLD. With many rigs it would be possible to drive this relay directly from an output on the transceiver itself; almost all HF equipments that the author knows of provide a socket connected to an internal relay which grounds a contact on transmit, and it would then be a simple matter to connect the 12v. supply in series with RLD and connect it to this socket, thus operating the relay directly. Probably because it makes use of diode switching, the IC-701 provides an 8v. output on transmit, which cannot be used for direct control

of a relay in this way because the available current is too small. It is therefore fed to the base of a BFX85 transistor via a 1K resistor and used to turn the transistor on or off. The coil of RLD is in series with its collector and its emitter is earthed, so that on transmit the transistor is turned on and RLD operates. In order that back-e.m.f. from the relay coil does not damage the BFX85, a diode is wired across it. This unit was built on a small PCB and can be seen in the photograph adjacent to the RF switching relays; details are not given because this requirement, so far as the author knows, is peculiar to the IC-701. One point of interest, however, is that the relay RLD is mounted in its matching socket, which is itself soldered to the PCB: relays can fail, and it would be annoying to have to unsolder all the connexions (and indeed difficult to remove and desolder the 20 pins on the relay from the PCB) when a simple socket, costing about 40p, can be used instead.

This brings us to the point mentioned earlier regarding the necessity for thorough decoupling of all input and output lines to the power supply stabiliser board and the relay supply lines. Even though all the relays have diodes across their coils to remove back-e.m.f. and extend the life of associated contacts, it was discovered at an early stage in the development that every time one changed bands or went from transmit to receive or *vice-versa*, the power supply crowbar would operate, with the demise of another fuse. This was traced to small switching transients or back-e.m.f. spikes from the relays finding their way, presumably by capacitive coupling, on to the output rail from the stabiliser board. The crowbar detector, quite oblivious to the fact

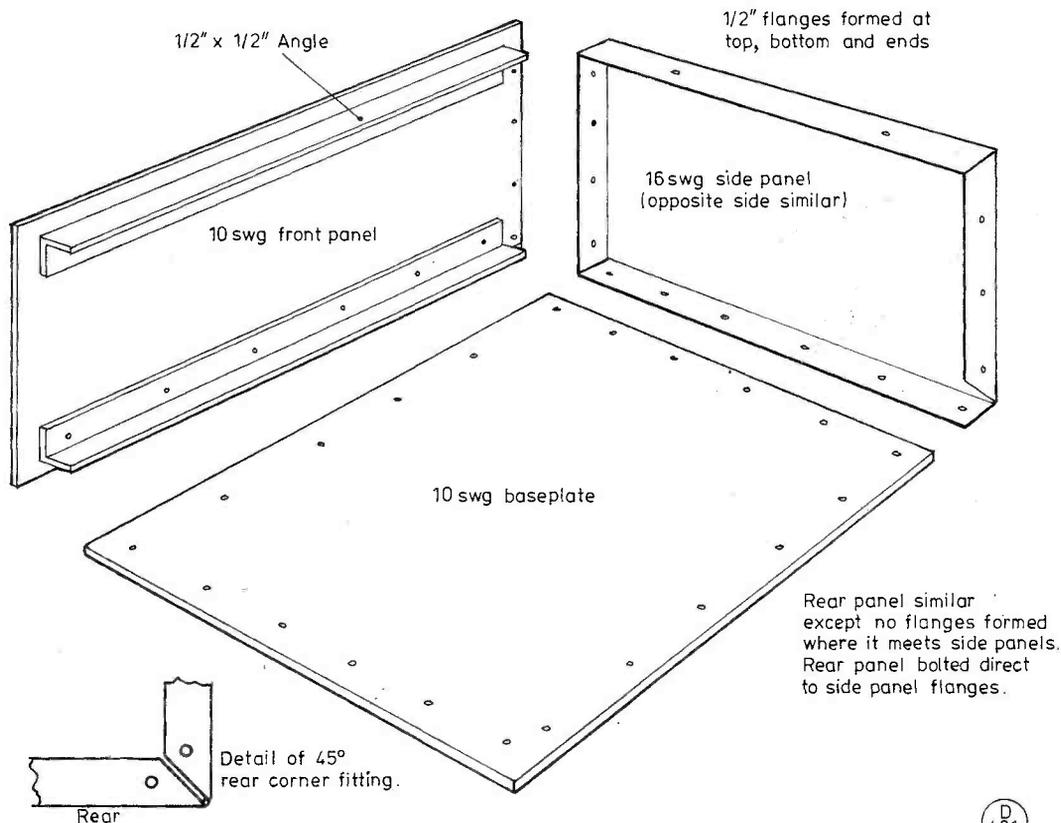


Fig. 5 DETAILS OF METALWORK

that these small surge voltages were originating outside the power supply and easily able, with its 3 microsecond response time, to detect them, was evidently reacting to them as though they represented a power supply overvoltage fault and shutting the system down. Reassuring but rather operationally tiresome; each over would have to end with "QRX one while I stand by to change the fuse OM" and certainly rather detrimental to the QSO rate in a contest! The remedy proved to be thorough decoupling of all input and output rails, including a 100 pF ceramic capacitor directly across the relay supply smoothing capacitor, and, for some reason, the replacement of the original 1N4001 diodes across the relays with BY127's (perhaps to do with different self-capacitance of the two types of diode).

That really concludes the electronic part of the transverter system, except that to set up the crowbar trip voltage, fuse F4 should be removed and replaced by a 24v. lamp. An accurate voltmeter is then connected to the output and the "crowbar set" potentiometer VR2 set fully anti-clockwise. Apply power, and temporarily set VR1 to the required crowbar operating voltage, in this case 13.5v. Adjust VR2 until the lamp lights. Remove power and back off VR1; reapply power and note whether crowbar fires as voltage reaches 13.5v. as VR1 is advanced. Remove power, back

off VR1 and reapply power: VR1 can now be set to required voltage, in this case 12v. Remove lamp and replace with 7.5A fuse.

Cabinet

We may finally consider mechanical construction and finishing. Precise details of metalwork, dimensions, etc, are not given since the author feels that few people will wish to make a "Chinese copy" of the system, but it is hoped that some of the ideas mentioned here may be incorporated into designs meeting individual requirements. Also the author, whilst admiring very much commercial equipment such as the IC-701 from the point of view of electrical performance, has a personal fondness for mechanical construction which would not have been out of place forty years ago. (Indeed, one of the author's friends observed "Did you get that out of a Centurion tank?" One reason I enjoy home-brewing is that it becomes possible to indulge in massive over-design, but not everyone shares this neurosis!).

As can be seen from the photographs and Fig. 5, the basis of the metalwork is a piece of 10 s.w.g. aluminium alloy around which 16 s.w.g. panels are bolted to form the sides and rear. The front panel is a piece of 10 s.w.g. 19in x 8¾in

standard rack front, and a 16 s.w.g. lid covers the whole assembly. All these pieces were made to my drawings by *H. L. Smith & Co.* in the Edgware Road, since 10 s.w.g. is rather beyond the capacity of my junior hacksaw! Half-inch flanges were formed at top and bottom of the side and rear panels, and half-inch angle bolted to the top and bottom of the front panel with countersunk 6BA bolts. If the holes for these are deeply recessed and the small cavities left after the aluminium angle has been bolted on filled with *Plastic Padding* or similar, it becomes possible to achieve a good finish later which is unspoiled by that bane of home-builders, protruding bolt-heads. In fact, the author treated the front and side panels as one entity in this way after all the metalwork was drilled and before spraying, so that the bolts holding the side panel flanges to the front panel do not show either.

At this stage, the transverters can be modified by bolting tapped standoffs to their cases and, along with the transformer, rectifiers, RF relays, retaining clips for the smoothing capacitors and the relay driver board, they can be bolted to the baseplate. The power supply stabiliser board was mounted vertically on the rear panel by standoff insulators, and the pass-transistor heatsink also bolted to the back of the cabinet along with the two emitter ballast resistors. SO-239 sockets for 4m. and 2m., with an N-type for 70cm., are mounted above the power supply board, and the transverter outputs routed to them *via* coaxial cable. This can be seen clearly in the photographs; note that the 4m. transverter has been removed for clarity.

The 28 MHz input from the IC-701 is routed to the relays *via* a BNC socket, and the previously mentioned 6-pin socket — along with a 4-pin socket for the PTT line and control voltage from the IC-701 and a 3-pin socket for the stabilised HT output — are also on the rear of the chassis. The IEC mains socket and all fuse-holders are mounted on the rear panel, and switch S1, associated with the termistor TH1, is seen above the socket. When the stabilised HT is switched by the front panel switch to the 3-pin socket, the LED adjacent to the socket illuminates as a reminder.

The front panel has the two meters, two function switches, the LED indicators and ancillary switching mounted directly on to it, and much of this can be wired before mounting it to the rest of the cabinet. Before this it can, if required, be painted, and a few words on finishing may be helpful.

Cabinet Finishing

Many horror stories have come over the air to G4FRX about the difficulties of obtaining a good finish on aluminium alloy such as that used for amateur metalwork, and indeed the chief engineer of my local flying club, who ought to know, assured me that it could not be done well without using etch primer or rather esoteric (and expensive) chromate or cadmium-based primers and paints. He might have missed them, and anyway I didn't particularly like the colours, nice though they look on our aircraft!

Some experimentation, however, showed that it was possible to produce quite a reasonable finish without resorting to such tactics. An 8 oz. box of *ICI* washing soda dissolved in moderately hot water (about three inches in the bath in my case) formed a good solution for removing the surface oxide layer, and all the metalwork was left in that for about ten minutes. Then, after being thoroughly rinsed, the surfaces to be painted were rubbed down with fine wet-

and-dry paper. The next step was to spray with grey primer from the local car accessory shop. If found *Holt's Dupli-Color* worked well, and three or four coats produced a good finish. This can then be lightly rubbed down. Primer applied directly to aluminium alloy will not "key" to it: it seems to take well but a small jolt will cause large areas to flake off, whereas the washing-soda-cum-wet-and-dry treatment gives the primer something to key to.

Have primed the metalwork, it can then be sprayed with the required colour. Since it was considered that the system should look reasonably in harmony with the IC-701, a colour as close as possible to Icom's was chosen, which for those interested is Holt's "Dupli-Color" No. D8-R9, known as "Chrysler Charcoal". (I am told that the corresponding Yaesu colour is called "Rootes, Mayflower"!). Three coats produces a good gloss finish, but it is important to use the paints at somewhere around room temperature: too low a temperature tends to cause uneven "glossiness" on different areas of the paint. When dry, a substance rather endearingly known as "Color-Bak" (also from the car accessory shop) can be used to polish the paintwork and bring up an even high gloss.

The front panel was treated in a slightly unorthodox manner. Since the author wished if possible to avoid a gloss finish on it and also rather liked the flat matt grey of the primer, it was resolved to keep that colour if at all possible. Primer, however, is a very soft finish, showing up scratches and fingermarks very easily, and very soon looks scruffy if left in its natural state. After some experimentation, the technique was found to be to *Letraset* all the required legends and then to take it outside on a calm, dry day for several thin coats of clear cellulose lacquer. The only important point here is to use a brand (such as "Spectra") which contains additives to prevent it yellowing with age. Some cellulose finishes are prone to this, which looks dreadful after a while. Polyurethane clear lacquers are, unfortunately, taboo; they can produce an excellent semi-gloss finish but seem to interact chemically with cellulose or acrylic paints to produce bad crazing; they also dissolve *Letraset* very quickly. The clear cellulose lacquer produces a slightly lustrous finish over the primer, and is also hard enough to resist the rigours of normal handling.

Certain parts of the interior, notably the connexions to the transformer and the nuts and bolts used in assembly of the metalwork, were given a coat of electrical insulating varnish.

Summary

This, then, is an outline of a transverter system and power supply which I enjoyed building and which offers scope for further expansion. It would be easily possible, for instance, to add transverters for 50 MHz or 1296 MHz simply by providing a little more space, two more RF relays per band and another way on the switch wafers, plus indicators as required. The system works very well, and the power supply alone is a useful addition to the station. Probably the most useful thing, as always, is the tremendous amount one learns when home-brewing even a fairly simple project like this; right the way from how to paint aluminium, to how clean the 50 Hz mains is!

The author would like to acknowledge the help of his colleagues Dave, G8IXG, and Peter, who freely gave of their time and skill.

CLUBS ROUNDUP

By "Club Secretary"

The Mail

QUITE a fat wodge lies in front of us, and so we had better just drive our way through to the bottom of it. Amateur Radio can count its blessings in the way of devoted club members who write, reproduce and distribute newsletters: without them the club movement, so vital to the health of our hobby, would be very much weaker.

First off, we have **Liverpool** who can be found every Tuesday evening at the Conservative Rooms, Church Road, Wavertree. June 3 is down for HF NFD preparation; and on 10th we see a tape/slide lecture on Propagation, and the question of whether Marconi was right or not, by G3IOR; July 17 is about LF-bands DX-ing, and on 24th there is the matter of VHF NFD to get ready for!

Bishops Stortford are to be noted as one of the most non-competitive groups ever, but nonetheless the committee are going to try. Meantime the programme on the third Monday in each month carries on at the British Legion club in Windhill, at the top of the steep hill west of the traffic lights of the town centre. There is something of interest each time.

Cornish have G3VWK and the theme "You and your Test Equipment" on the first Thursday of June, and the venue is the SWEB Clubroom, Pool, Camborne.

Over the water to Eire, and **IRTS**, their national society and leading local club all rolled into one. We refer you to the Hon. Sec. for all the details — see Panel. We were a little sad to see that EI3CP has retired from the editor's chair but EI2ACB will, we are assured, be a fine successor.

A new Hon. Sec. takes over at **Tyneside**, and he indicates that the group is booming along; if you want to look them up as a visitor, or to join, then go along to the Community Centre, Vine Street, Wallsend, on any Monday evening.

In **Hull** we hear of a Mobile Rally, to be held at the University of Hull Students Union Building, Cottingham Road, North Humberside, on . . . no date given! It sounds as if a contact with the Hon. Sec. would be in order; and at the same time he can give you details of what we recall as a very keen and active group. His address is in the Panel.

Verulam are now in the Jubilee Centre, Catherine Street, St. Albans, on the fourth Thursday in each month. On June 26 the SW Herts UHF Group will be taking the members from 1296 MHz upwards. The informals on the second Thursdays of each month are taken at Salisbury Hall, London Colney. Contact the Hon. Sec. — see Panel — if you are thinking of a "main" meeting.

Pink paper from **Crawley** makes their newsletter more obvious than most; however, the one we have was written before the June programme had been finalised, so we have to refer you to the Hon. Sec. at the address in the Panel.

Crystal Palace will be foregathering at Emmanuel Church Hall on the evening of Saturday June 21, to hear G3IIR expounding on microphones.

Over to **Reigate**, and the upstairs meeting room of the Constitutional and Conservative Centre, Warwick Road, Redhill. Their date is June 17, and G3LHZ is the speaker with his theme as ATUs and Matching.

A change of Hq address is reported by **Malvern Hills**; to be on the second Tuesday of each month, at the Foresters Arms, Wilton Road, Malvern.

At **Hereford** we note some discussion as to a change of a meeting-night, and for that reason we suggest a contact with the Hon. Sec. before setting off. He is down in the list in the Secretaries Panel.

Northern Heights newsletter carries on its front page an obituary notice to G3MDW, who died on February 24. Arthur was known far and wide among club secretaries booking the W1BB tape talks, and meeting him at shows and rallies. He had been disabled from birth, but that did not stop him founding the club, and being secretary-treasurer for 16 years, while running a successful business on his own which had a wide reputation for being "always open." This, in part, may have been because he combined business and pleasure by having his station in the shop. The club have lost a founder member, and many, many people a good friend and adviser. The funeral service was conducted by founder member Rev. Hubert Makin, G3FDC, and fourteen members and ex-members were there. To say he will be missed is an understatement of the feeling of loss in all sorts of places.

Deadlines for "Clubs" for the next three months—

(July issue—May 30th)

August issue—June 27th

September issue—July 25th

October issue—August 29th

Please be sure to note these dates!

To turn to the Northern Heights club, things have to carry on, and they gather at the Bradshaw Tavern, Illingworth, Halifax, on Wednesday evenings.

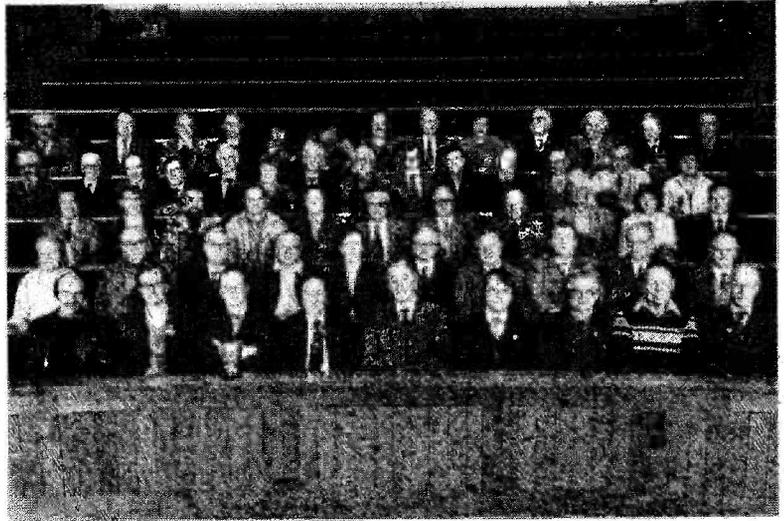
Turning now to **Cheltenham**, they have June 5 for a talk about Meteor Scatter at the Old Bakery, Chester Walk, Clarence Street, Cheltenham. The routine is first Thursday and third Friday in each month.

The Chiswick Town Hall in Chiswick High Road is now the Hq of the **Acton, Brentford and Chiswick** gang. Tuesday June 17 should be of some considerable interest in that ZL1BEP, an ex-member, is returning to talk about the hobby in ZL.

Chiltern had fingers crossed at the time of their letter for several members in for the May RAE. Good luck to all candidates, nationwide! Details of the club from the Hon. Sec. — see Panel.

One wonders a little about the **Brighton** club newsletter called *B.A.D. News*. However it tells us they have a mobile Rally on June 1 at Brighton Racecourse, with all welcome after 11 a.m. June 18 sees them back in Hq, to listen to the

The occasion of the AGM of the Bristol Group. Front row, left to right, is the 1980 committee: G3TKF, G8GLQ, G3JMY Vice Chairman, G4FRG Hon. Sec., G2BAR Chairman, G8FNR Hon. Treasurer, G3SXY, G3COP and G4BKU.



Post Office Interference Branch telling them how it's all done. However, we'd like to know the Hq address, and for that we must refer you to the Hon Sec — see Panel.

All we can tell you, at the time of writing, about **Bournemouth**, is that they will foregather at the Dolphin Hotel, Holdenhurst Road, on the first and third Fridays, which gives us June 6 and June 20.

On we go now to **Axe Vale** where we are notified of a change of Hon Sec; the post is now held jointly by G4JBG and his XYL Thelma. (Bert is a White Stick operator.) For details of the club, Hq address, programme and whatever, contact the name and address shown in the Panel. And please could we have the Hq details as well? It does so help when someone new to the hobby is looking for a local club or group for us to be able to give all the dope, rather than leave him scratching with half a story.

Next we look at the **Royal Navy**, catering not only for the present but also the ex-RN, and MN chaps and, as associates, members of foreign navies. They even let your "Club Secretary" in! Seriously, if you are qualified, it is definitely worth being a member; the *Newsletter* alone is worth a sub.

Next we turn to **Cheshunt**, where they get together every Wednesday at 2000, at the Church Room, Church Lane, Wormley, Herts. June 11 and 25 are down for a natter, G3KFE is down for a talk on 18th and on June 4 they have a VHF station in operation on Baas Hill Common. That leaves us to mention that they will be showing the flag on 7th, at Broxbourne School Fete. Keep an ear open for them.

"Talkthrough" is the title of the newsletter put out by the **UK FM Group (Western)**, who are the sponsors of, or associated with, lots of repeater projects from Wales to Cumbria; they have a monthly meeting at Grappenhall Community Centre, Bellhouse Lane, Grappenhall, on the first Thursday of each month.

For **Stockport** our last news is that they have a place at Blossom's Hotel, Buxton Road, every Wednesday evening. However the details we have only go to the end of May, so

we have to refer you to the Hon. Sec. for the real up-to-date stuff. His name and address are in the Panel.

If you are into RTTY, either the old-fashioned mechanical or the newfangled VDU, you need to be a member of **B.A.R.T.G.** Get the details from the Hon. Sec. now, while it's in your mind.

At **Yeovil** the Hq address is at Building 101, Houndstone Camp, Yeovil, where they are to be found on Thursdays. There is no note of a firm programme as such — often the case with clubs who are not in the area of many electronics companies, who therefore must grab who they can when they can. In any case, they have a pretty comprehensive radio station there, a library of electronics, and a lecture room, all separate and convenient.

Next we come to the **Ex-G Club** founded to bring together those who, though born in UK, have found their living elsewhere in the world. Details from the UK Hon Sec at the address in the Panel.

There can hardly be a single reader who does not know of **R.A.I.B.C.** and the fine work done for the blind and invalid of our fraternity, enabling them to be full members of our hobby. We fully fit and sighted ones can become associates, representatives or supporters (gaining a look at the chatty newsletter), and we could even nail the Hon Treasurer of the local club at AGM time to propose a donation from the club funds; or a whip-round, a raffle or whatever. The objective is to get all full members, qualified by virtue of their disability, to first become SWLs, and then if they wish to go further get them on the air.

Now Amateur TV, and the **B.A.T.C.** who look after the interest, whether it be in Slow Scan, normal fast-scan, or even the historical low-definition system, of the enthusiasts who transmit and receive pictures.

AMSAT-UK: the arm of AMSAT in this country. It is of interest to realise just how deep the involvement in UK has been — even the editor of the *Newsletter* who lives in Maryland holds the call G3ZCZ. The Hon. Sec. of the UK branch is noted in the Panel, and he is the one to contact for more details of AMSAT-UK membership.

Names and Addresses of Club Secretaries reporting in this issue:

- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3 8LB. (01-992 3778)
- AMSAT-UK: R. Broadbent, G3AAJ, 94 Herongate Road, Wanstead Park, London E12 5EQ
- AXE VALE: Mr. and Mrs. Retter, G4JBG, 48 Fairway Rise, Chard, Somerset TA20 1NT. (Chard 4163)
- AYLESBURY VALE REPEATER GROUP: R. Piper, G3MEH, 26 Fimmere Crescent, Aylesbury HP21 7DG.
- B.A.R.T.G.: J. Binning, G3AJS, 293 Perry Street, Billerica, Essex.
- B.A.T.C.: M. Cox, G8HUA, 13 Dane Close, Broughton, Brigg, South Humberside
- BISHOPS STORTFORD: T. White, G8LXB, 79 Elmbridge, Old Harlow, Essex.
- BOLTON: J. A. Debnay, G8RWY, 2 Coverdale Avenue, Henton, Bolton BL1 5HX.
- BOURNEMOUTH: G. R. Freeth, G4HFQ, 9 South Avenue, New Milton, Hants BH25 6EY. (New Milton 618092)
- BRIGHTON: J. Trimmer, G4JDM, 7 Dale Crescent, Patcham, Brighton.
- BURNHAM BEECHES: Mrs. J. Britton, 12 Bulkeley Avenue, Windsor, Berks. (Windsor 61723).
- BURY: C. D. W. Macroft, G4JAG, 24 Lancaster Avenue, Ramsbottom, Bury BL0 9QA. (Ramsbottom 2168)
- CAMBRIDGE: D. Leary, G8JKV, 9 Priory Avenue, Swavesey, Cambs. CB4 5RY. (Swavesey 31120)
- CHELTENHAM: G. Cratchley, G4IL1, 47 Golden Miller Road, Prestbury, Cheltenham. (Cheltenham 43891)
- CHESHUNT: W. Pooley, G8VBL, 36 Montayne Road, Cheshunt, Herts. (Waltham Cross 32198)
- CHILTERN: B. Catteral, G4IWC, 78 Fairacres, Prestwood, Gt. Missenden, Bucks. (Gt. Missenden 4504)
- CORNISH: S. T. S. Evans, G3VGO, "Glengormley", Carnon Downs, Truro, Cornwall. (Devoran 864255)
- CRAWLEY: D. L. Hill, G4IQM, 6 Reigate Close, Pound Hill, Crawley, West Sussex RH10 3TZ. (Crawley 882641)
- CRAY VALLEY: P. J. Clark, G4FUG, 42 Shooters Hill Road, London SE3. (01-858 3703)
- CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London SE23 3BN (01-699 6940)
- DUMFRIES & GALLOWAY: C. Rodgers, 5 Elder Avenue, Lincluden, Dumfries DG2 0NL.
- EDGWARE: D. L. Lisney, G3MNO, 119 Draycott Avenue, Kenton, Harrow HA3 0DA.
- EX-G: F. W. Fletcher, 53 St. Ives Park, Ringwood, Hants. BH24 2JX (Ringwood 3561)
- FARNBOROUGH: I. Ireland, G4BJQ, 118 Mychett Road, Mychett, Camberley, Surrey. (Farnborough 43036)
- HEREFORD: S. Jesson, G4CNY, 181 Kings Acre Road, Hereford. (Hereford 3237)
- HULL: R. Watson, 19 Goodrich Close, Fountain Road, Hull, North Humberside.
- IPSWICH: J. Tootill, G4IFF, 76 Fircroft Road, Ipswich, Suffolk IP1 6PX. (Ipswich 44047)
- IRTS: G. Gerwin, EI8CC, 185 Elton Court, Leixlip, Co. Kildare.
- KIDDERMINSTER: R. Manton, G4ILQ, 7 Osborne Close, Offmore Farm Estate, Kidderminster, Worcs. DY10 3YY. (Kidderminster 4930)
- LAGAN VALLEY: R. McClurg, G14ASR, 4 Alfred Terrace, Dollingstown, Craigavon, N. Ireland. (Lurgan 3173)
- LIVERPOOL: A. Neilson, G4CVZ, 79 Ackers Hall Avenue, Liverpool L14 2EA.
- MALVERN HILLS: H. C. Nash, G8JAO, 3 Wilton Road, Great Malvern.
- MID-SUSSEX: J. Brooker, G3JMB, 20 Farnham Avenue, Hassocks, Sussex.
- MID-WARWICKSHIRE: Mrs. M. E. Palmer, G8RZR, 12 Edmondes Road, Woodloes Park, Warwick CV34 5TX (Warwick 496453)
- NORTH BRISTOL: G. E. Taylor, G2HDG, 66 Burley Crescent, Downend, Bristol BS16 5PW.
- NORTH DEVON: H. G. Hughes, G4CG, Crinnis, High Wall, Sticklepath, Barnstaple, Devon EX31 2DP.
- NORTHERN HEIGHTS: M. Topham, G8NUC, 1200 Great Horton Road, Bradford. (Bradford 73271)
- ORMSKIRK: J. K. Higgins, G4IGX, 8 Delph Top, Greetby Hill, Ormskirk L39 2DX. (Ormskirk 75546)
- R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 9 Rannoch Court, Adelaide Road, Surbiton, KT6 4TE.
- REIGATE: J. S. Roberts, G8FDJ, 15 Bakehouse Road, off Horley Row, Horley, Surrey.
- ROYAL NAVY: M. Puttick, G3LIK, 21 Sandfield Crescent, Cowplain, Portsmouth, Hants. PO8 8SQ.
- St. HELENS: P. Gaskell, G8PQD, 131 Greenfield Road, St. Helens, Lancs WA10 6SH (St. Helens 25472)
- SALTASH: R. S. Pridham, G4BVB, "Lambs Fold", Latchley, Gunnislake.
- SOUTHGATE: J. Fitch, G8EWG, 16 Kent Drive, Cockfosters EN4 0AP. (01-440 7353)
- STOCKPORT: G. R. Phillips, G3FYE, 6 Ross Avenue, Davenport, Stockport (061-456 7239)
- STOURBRIDGE: C. Williamson G4IEB, 14 Lawn Street, Stourbridge. (Stourbridge 2006)
- TYNESIDE: J. Dingwall, G4ILW, 10 Loweswater Road, Gateshead, Tyne & Wear NE9 6TN.
- UK FM GROUP (Western): G. L. Adams, G3LEQ, 2 Ash Grove, Knutsford, Cheshire WA16 8BB.
- VERULAM: A. Clarke, G8MAE, 24 Kiln Ground, Hemel Hempstead, Herts. HP3 8EZ. (Hemel Hempstead 64751)
- WEST KENT: B. P. Castle, G4DYF, 6 Pinewood Avenue, Sevenoaks, Kent. (Sevenoaks 56708)
- WHITE ROSE: R. R. Hughes, G4DZI, 3 Primley Park Crescent, Leeds LS17 7HY.
- WIRRAL: H. I. Crofts, G3DLF, 3 Barmouth Road, Wallasey. (051-638 2515)
- WIRRAL (West Kirby): I. Brooks, G8PMW, 59 Mosslands Drive, Wallasey, Merseyside L45 8PF.
- WORCESTER: M. Tittensor, 16 Durcott Road, Evesham, Worcs. WR11 6EQ. (0386 41105)
- YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset. (Yeovil 24956)

It is a very long time since we last heard from **Mid-Warwickshire**. They are now based on 61 Emscote Road, Warwick, on the first and third Mondays of each month. More details from the Hon Sec — see Panel.

Ipswich at this time of year is somewhat taken up with the East Suffolk Wireless Revival. However, in June they have two sessions "at home" — the only snag is to be sure you are at the right one of their homes! If you are new to them it is suggested you get in touch with the Hon Sec at the address in the Panel for the details on which is where, on June 11 and 25.

Now here is one that has it all settled — **Mid-Sussex** have just had an AGM, and the very next issue of the newsletter contains a full programme through to the autumn! The Hq address is Marle Place, Burgess Hill, Sussex, and it is a crowded June: 1st is the Sussex Mobile Rally, then 12th for

a real revival of their longstanding summer 'do' at Clayton Windmills, and on 26th it is back to Marle Place for the SWLs evening. Often the SWL evenings are the most instructive. . . .

Edware are booked for June 12 and 26. On the first date they have not yet announced the details of the goings-on; but on 26th everyone falls-to with a will and helps the preparations for VHF NFD.

Now **Cray Valley** seem to have the first and third Thursdays as their routine, using Christchurch Centre, High Street, Eltham, London SE9. More details from the Hon Sec — see Panel; at the time of writing he could hardly have had the dope as the ink was still wet on the AGM report in the newsletter!

We don't seem to have heard any outcome of the **Aylesbury Vale Repeater Group** proposal and the hope that

a club may result — if we hear nothing by next time we'll just have to assume it didn't get off the ground.

Farnborough are still at the Railway Enthusiasts Club on the second and fourth Wednesdays; this is up Access Road, off Hawley Lane near the M3 bridge. More details can be obtained by turning up — or you can contact the Hon Sec at the address in the Panel.

Burnham Beeches is based on the St. John Ambulance Hq in Slough, where they get together on the first Thursday in the month. Further details from the Hon Sec — see Panel.

Now **Southgate** who have a place at the Scout Hut, Wilson Street, which is just off Winchmore Hill Green. June should be interesting as there is a talk by G8NGF on Video Recording; the 12th of June if they stick to routine.

It is quite a while since we heard of **Bolton** but they seem to be still going strong. The Hq is at Horwich Leisure Centre, at the junction of Church Street and Victoria Road, on the first, third and fourth Wednesdays.

Over the water now, to **Lagan Valley**, at the Scout Hall, Dromore, where they are in session on the second Monday of each month. The programme comprises a short talk or film, followed by an informal chat and operation of the club station (and hopefully to turn visitors into new members!).

North Bristol's place is the oddly-named SHE-7, Braemar Crescent, Northville, Bristol 7 on Fridays. The letters SHE, in fact, stand for Self Help Enterprise.

Over to **Saltash**, who still are based on the Burraton Toc-H at the junction of Warraton Road and Oaklands Drive, Saltash; they are booked for the first and third Fridays.

There are two venues for the growing **North Devon** gang; on the second Wednesday in each month they are at Pilton Community College, and on the fourth one Bideford School and Community Centre in Abbotsham Road. Thus the North Devon coastline is quite well covered by the changing venues, despite the large catchment area.

If you are in **St. Helens**, pop in to the club there, any Thursday evening at the YMCA — more details from the Hon Sec at the address in the Panel.

Worcester have their corporate being in the Old Pheasant in New Street, Worcester; we see the June date is 2nd, when G8ASO dons his RAEN hat and explains what it is all about.

At Mosses Youth and Community Centre, Cecil Street, **Bury**, we find that on June 10 there is a booking in the name of the club, who will be having a talk on Electronic Traffic Control Systems given by G8SMB.

Off we head for **Cambridge**, where the Hq is — usually — the Visual Aids Room at Coleridge Community Centre, Radekund Road, Cambridge, on Friday evenings. The latest date we can give is June 6 for a Junk Sale. Otherwise, the Hon Sec — see Panel.

Wirral (West Kirby) is one of three known groups having Wirral as part of their title — we wish they would get together, either as one club, or at least to sort out distinct titles; meantime we have done our own separation. They gather at the West Kirby Sports Complex, on the second and fourth Wednesdays.

The older **Wirral** club is based on the Sportscentre in Grange Road, Birkenhead, and they have their evenings on the first and third Wednesday

For **Kidderminster** we can tell you the Hq, Aggborough Sports and Social Centre, in Hoo Road, and we can say that they are there on alternate Tuesdays; for the rest we must refer you to the Hon Sec — see Panel.

Ormskirk do not state a definite programme, as they normally fix things up at the last minute with a film or talk, at the "Over-Sixties Hut" Liverpool Road, opposite Christ Church, every Tuesday.

Stourbridge alternate main and constructional meetings; the Hq for these is at Longlands School, Brook Street. This gives June 2 for Construction, and June 16 for a main meeting. And, of course, as with most clubs, there is the occasional treat of a trip out.

Into GM-land now, to **Dumfries and Galloway**, who have on June 16 a lecture by GM8GC discussing all the latest gear for the 1980s. In general they are at the Gargenholm Hotel, New Abbey Road, Dumfries on the first and third Mondays.

Finally we come to **White Rose**, who are now at Moortown Rugby Club, Moss Valley, King Lane, Leeds 17, every Wednesday.

QRT

That will be the fate of some clubs if we don't get an update in good time. The deadlines are in the 'box' in the piece, all letters addressed to "Club Secretary" SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. And we must stress that the deadline date is for arrival with us, not your posting!

As we write there are long production delays due to industrial action. However, deadline dates will be held regardless.

Meantime, we'll be seeing you!

RALLIES

A clutch more mobile rallies to mention: **July 27**, Scarborough A.R.S. Mobile Rally, at Scarborough Technical College, Scalby Road, Scarborough. **July 27**, Anglian Mobile Rally, Stanway School, Colchester, talk-in on 2m., full details from G3YAJ (QTHR). **August 17**, Preston Amateur Radio Rally, Walton-le-Dale High School, Bamber Bridge, Preston (one mile from Junction 29 on the M6), talk-in on S22, further information from G8SIV (QTHR). And, of course, don't forget **Longleat Mobile Rally on June 29th**, at Longleat House, Longleat, Warminster, Wilts.

STOLEN

G. B. Phillips, G3XTZ (QTHR), is offering a reward of £100 for information leading to the recovery of his stolen equipment, as follows: Trio TS-820 s/n 610800, Motorola System 500 AM/SSB transceiver s/n SSM23688. Also, without serial numbers, Shure 444 mic. with 4-pin plug, S. G. Brown 'Classic' stick mic. with 4-pin plug, fist mic. with built-in gain control, black fist mic. with 4-pin plug, stereo phones wired with mono jack plug.

CONVERTING THE FRG-7 RECEIVER TO TRANSCEIVE EXCITER

IAN KEYSER, G3ROO

WHEN the author opened his FRG-7 to change the filter for one suitable for SSB working, he realised that there was plenty of room to convert the unit for transceive operation. After investigation of the board layout and circuit diagram the idea became even more exciting.

Description

The microphone signal is amplified by an SL630 and fed to the balanced modulator, SL640 (Figs. 1 and 2). The double sideband signal is fed to the filter by a small co-ax cable. SSB output from the filter is fed back to the exciter board into a 455 kHz IF amplifier; the gain of this amplifier is adjustable by RV1, which adjusts the negative feedback. The amplified SSB signal is fed to the mixer, SL640, and mixed with the 2.5-3.5 MHz VFO to produce a sideband signal tunable between 2 and 3 MHz by the main

dial; this signal is fed via a 1K resistor into T401, where it is tuned and amplified. The output is taken from the drain of Q401 via a small reed relay mounted alongside on the chassis.

This signal, about 100 mV. p/p, is fed by miniature co-ax to the HF exciter board, Figs. 3 and 4, where it is mixed in an SL641 with the signal from TP109. The output at 54 MHz is amplified and filtered in the Mosfet stage, then fed to an SL640 and mixed with the VHF VFO. The output is a signal which, among others, is tunable between 1.6 and 30 MHz; this signal passes through a 3:1 wideband transformer and relay to the input of S2a. The RF stage is used on transmit to filter and amplify this signal, the output

Table of Values
Fig. 1

C101, C102,	R101, R102,
C106, C108 = 2 µF tant.	R105 = 220 ohm
C103, C109, C112,	R103 = 22K
C114, C115, C117 = 0.001 µF cer.	R104 = 10K
C104 = 0.0001 µF cer.	RV101 = 2K2
C105 = 0.002 µF	IC1 = SL630
C107, C110, C111,	IC2, IC4 = SL640
C113, C116 = 0.01 µF cer.	IC3 = SL610
IFT1 = 455 kHz (from old transistor radio mixer)	TR1 = BC107

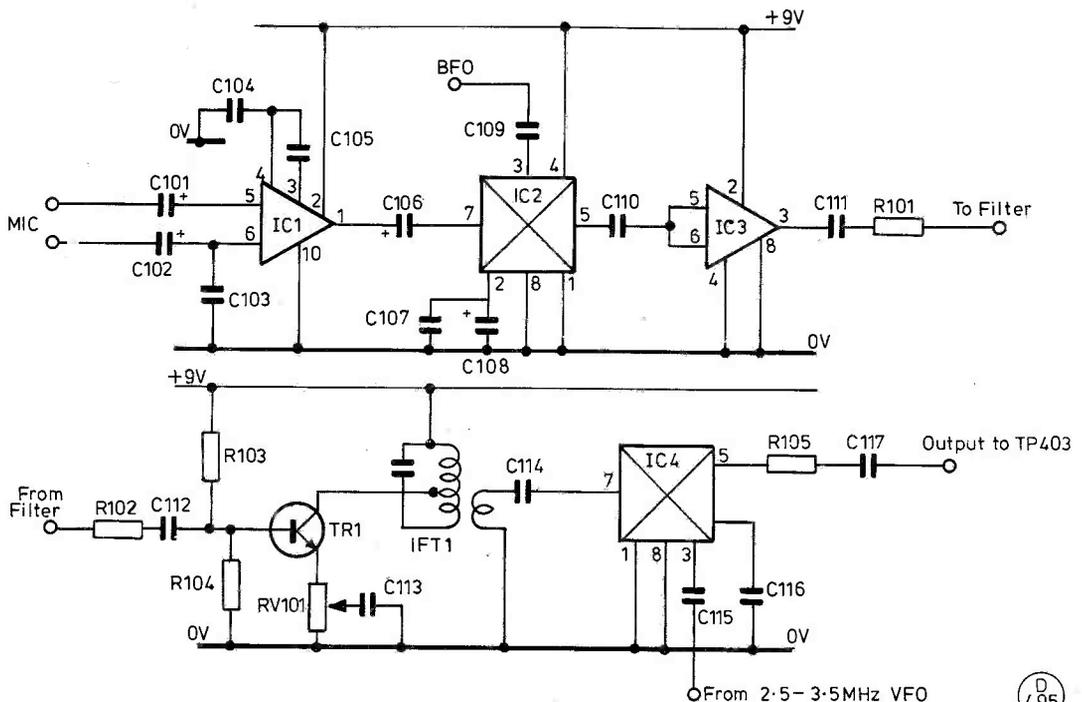


Fig.1 SSB GENERATOR AND 2-3MHz MIXER

being taken from the gate of Q102 via a relay — where an output of about 1 volt p/p is available at 50 ohms.

Owing to a mishap which put the original transformer 'to sleep', the writer is unable to comment on whether the original transformer is able to handle the additional load, but it is suspected that it could. However if it is considered necessary to change the transformer, take care of its positioning as the magnetic field can modulate the VFO.

Order of Modification

The first thing to be done is to arrange the method of disabling the stages not required on transmit. The IF stages are muted by cutting the track between R424 and R427,

Table of Values
Fig. 3

C200, C202, C203,	R204, R205 = 33K
C210, C212, C213, C214 = 0.001 μ F disc	R206 = 220 ohm
C201, C206, C207, C208,	R207, R210,
C211, C215, C216 = 0.01 μ F disc	R211 = 100 ohm
C204, C209 = 2.5 pF	IC201 = SL641
C205 = 100 pF	IC202 = SL640
VR201, VR202 = 2K2	TR201 = BC108
R201, R202, R208, R209 = 22K	TR202 = BC109
R203 = 47K	TR203 = 40822 (Ambit)

Coils: 5 turns tapped 2½ turns on Toko 10K coil formers from *Ambit*;
resonating capacitor 13 pF.
Note: all resistors are ¼-watt.

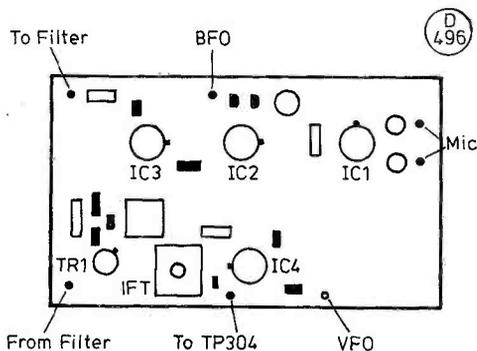


Fig. 2 SSB GENERATOR AND 2-3MHz MIXER (BOARD 1)

joining a wire to R424 and connecting this to the receiver's 9v. supply. Also it is necessary to disable the two HF mixers and the HF IF amplifier; again this is easily accomplished by cutting the track.

Next, arrange the outputs from the various oscillators. The VHF VFO output is taken from TP101; VC201 may require slight tuning to get the "Set MHz" dial to read correctly. The 52.5 "down convert" signal is taken from TP109. However, the output is a little low so C160 is increased to 30 pF; this also means that T116 may need very slight trimming to ensure that the 'lock' light goes out over

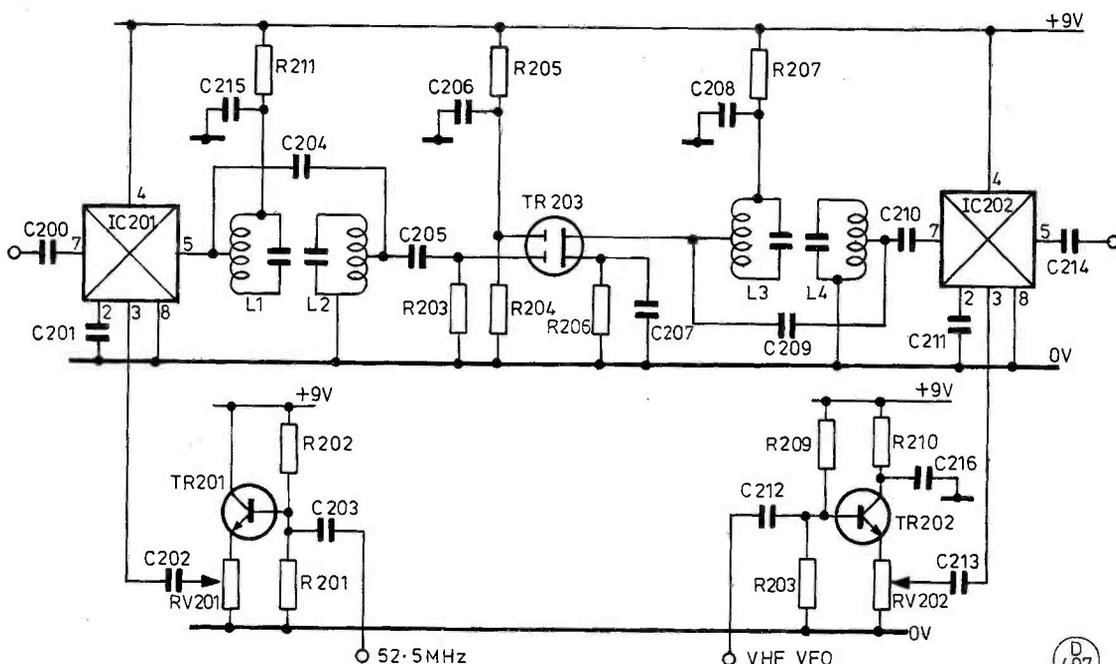


Fig. 3 MIXER CIRCUIT

the entire range at each MHz mark. The output for the 2.5 to 3.5 MHz VFO is taken from TP404; these outputs are taken from the boards by mounting miniature 2K2 ohm presets on the board in the case of the BFO and 2.5-3.5 MHz VFO, and in the case of the two high-frequency oscillators direct through miniature co-ax.

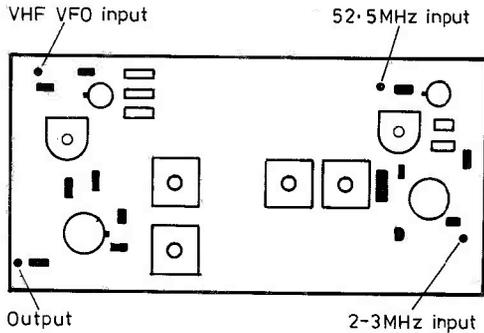


Fig. 4 HF MIXER (BOARD 2)

D
498

The MFL-455 filter supplied by *Ambit International Ltd.* was used in this design: unfortunately, however, this is no longer available in the UK. Therefore, whichever filter is decided upon care must be taken, especially on the receive side, that the matching of the filter is correct: this will ensure that the passband of the filter is as flat as possible.

The filter board is mounted on the underside of the IF strip using wire feet, just to the rear of the original filter

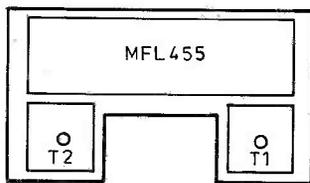


Fig. 5 FILTER (BOARD 3)

D
499

position. Two miniature co-ax's are taken from the input and output of the filter assembly towards the rear of the set and going to the sideband generator.

The next problem is to match the output of the final to the input of the RF stage. Emitter followers were tried, but the most successful arrangement was a wideband transformer of five turns quadfilar-wound onto an FX2049 balun transformer core and wired as 3:1. This worked as well as anything tried and, being passive, was much easier to install.

The output of the RF stage is taken from the gate of Q102 where R12 joins the board; it is impossible to use the same relay as for the input switching for this position, because of the feedback produced in the RF stage. However, the spare relay contact on the input relay can be used to switch the 9v. supply on transmit and receive.

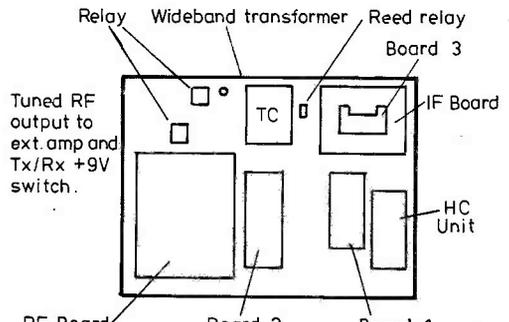


Fig. 6 TRANSCEIVER UNDERSIDE

D
500

After these preliminary works are completed, tested, and found to be satisfactory, the more constructive side of the conversion can be tackled. The exciter and HF mixer boards are separate for two reasons: firstly, the boards are easier to position in two pieces and, secondly, different boards can be tried out without too much rebuilding.

The boards are mounted on *Radiospares* plastic pillars which are *Superglued* to the chassis. The relays are also mounted using a single drop of *Superglue*; if required these

Amateur radio retailers who also stock "Short Wave Magazine" include:— D. P. Hobbs Ltd., Amateur Radio Shop (G4MH), Derwent Radio, Waters and Stanton Electronics, Amateur Radio Exchange.

joints can be broken without too much difficulty. The reed relay is mounted in the same way.

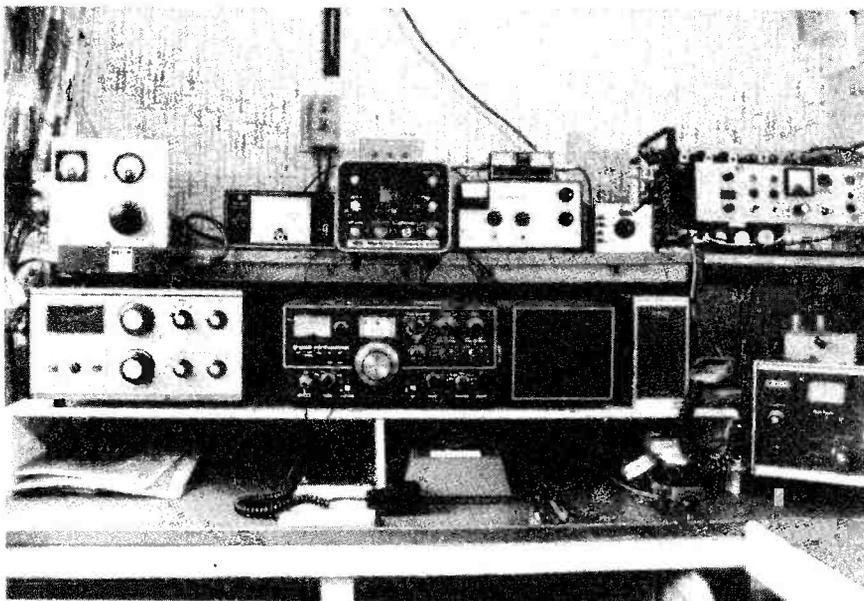
The foil pattern has not been given as the boards in use have not been optimised. However the basic component layout is shown, from which the design can be easily deduced.

Conclusion

It must be stressed that this is not a modification to be undertaken lightly: although the writer had the rig on the

air within two weeks, it took a further three months to iron out the problems. It is hoped that the G3ROO design will work without any additional design optimisation, but as a second set has yet to be converted this is by no means certain! At this point the author would like to thank G2ACG for many hours spent in QSO correcting the problems.

The rig has now been in use for five months with a small wideband amplifier giving a couple of watts, and reports have been very favourable — including a couple of VK's.



This tidy station belongs to A. F. (Bert) Bower, G3MKU, of Shepshed, Loughborough, and comprises a TS-520, a TL-911 linear and a Europa 'B'; for experimenting on 70cm. there is a U.450L Tx and a receive converter feeding a 9R-59DE Rx. Antennas consist of a 90-ft. long-wire for 80m., a Mosley TA-32 for 20-15-10m., an 8-ele Yagi for 2m., and a 9-ele for 70cm. On the ancillary front, there is a PM-2000 wattmeter, monitorscope, SWR bridge and home-brew Z-match.

July issue due to appear on Friday, July 4th

A LOW COST SCANNER SYSTEM FOR THE IC-240

IAN H. MOTH, B.Sc., GM8 SOH

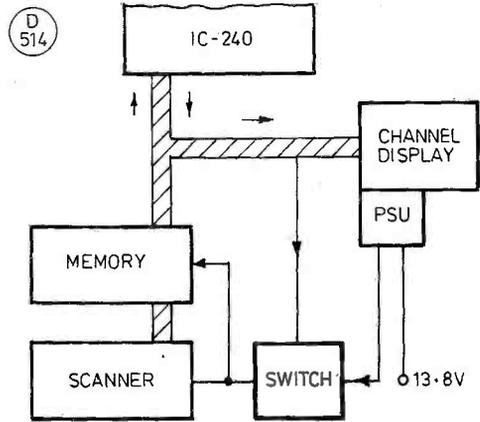


Fig. 1 SCANNER SYSTEM BLOCK DIAGRAM

THIS article describes how the digital channel display featured in the March 1980 issue of *Short Wave Magazine* may be uprated to a full automatic scanner. Fig. 1 is a block diagram of the system.

It will be remembered that the frequency synthesiser inside the radio is controlled by an 8 bit binary number, normally set up by a diode matrix board switched by the IC-240's channel selector switch. This number may be brought out to the accessory socket on the transceiver's rear, and a method of doing this was discussed in a similar IC-240 project published in the January 1980 issue of *Short Wave Magazine*. The binary number may be decoded and displayed by the display module as a channel number between 0 and 39, but obviously only those channels pre-programmed onto the diode board will appear on the display. At one particular position of the channel selector switch, however, the diode matrix can be disabled and a 9v. control signal made to appear on the 9th wire of the connecting cable: this signal operates the switch and powers-up the scanner and memory. The socket connection at the IC-240's rear then becomes an input device, as the number fixing the channel is inserted by the scanner and/or memory — while the channel display continues as before, monitoring the number on the cable and displaying what is there.

Scanner Details

Fig. 2 shows the switch circuit. When 9v. appears at point 'A', Q1 will turn on, operating the relay, and connecting the 9v. stabilised voltage (derived from the PSU stage of the display unit: see March 1980 issue of *Short Wave Magazine*) to supply the scanner and memory circuitry. C1, 2 and 3 are decoupling capacitors and should be connected close to the integrated circuit's supply rails. Thus the scanner is inoperative unless deliberately called for by the IC-240 channel selector switch.

Table of Values Figs. 2 and 3

R1 = 39K	D1 to D9 = 1N914
R2, R4, R8, R9 = 10K	Q1 = BC108
R3 = 18K	IC1 = 555
R5 = 4.7K	IC2, IC3 = CMOS 4029
R6, R7 = 1M	IC4 = CMOS 4011
C1 = 10 μ F, electrolytic	PB1, PB2, PB3 = pushbutton
C2, C3, C4 = 0.01 μ F, ceramic	RLA = reed relay
C5 = 1 μ F polycarbonate	

Note: All resistors are 1/4-watt, 5%.

Miscellaneous: Veroboard, IC sockets, memory switches (see text).

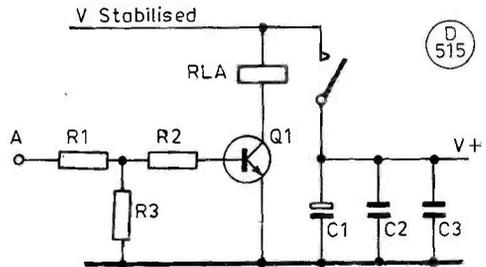
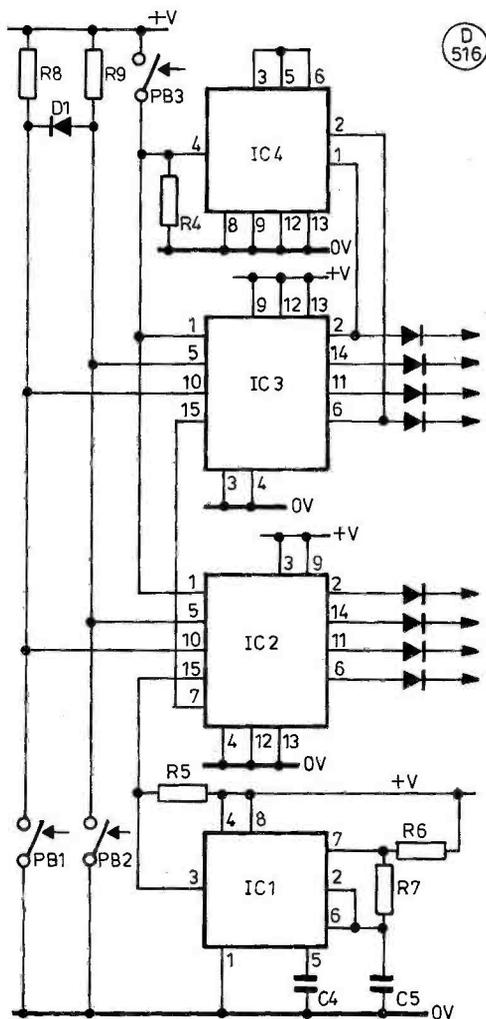


Fig. 2 SWITCH CIRCUIT



D 516

Fig. 3 SCANNER CIRCUIT DIAGRAM

In addition, pins 16 of IC2 and IC3, and pin 14 of IC4 should be wired to positive voltage; pins 8 of IC2 and IC3, and pin 7 of IC4 should be grounded.

Fig. 3 is a circuit diagram of the scanner. IC1 is a simple 555 timer device wired as a stable multivibrator. It runs continuously providing a slow pulse train with a period of around 2 secs. This pulse train is fed to the clock input of IC2, a CMOS 4029 counter. IC3, another 4029, is wired in to provide an 8 bit counter. The counter will not operate unless pin 5 is taken to logical 0, which can be effected by pressing either PB1 or PB2. If PB2 is pressed, D1 is reversed biased and pin 10 remains at logical 1. In this condition the counter will count upwards. If PB1 is pressed, pin 10 goes to logical 0 and in this case the counter would count downwards. PB3 is a reset button. When pressed, the

RADIO AND ELECTRONIC LABORATORY HANDBOOK

by M. G. Scroggie and G. G. Johnstone

(Newnes-Butterworths)

The brand new 9th Edition of this standard Handbook has chapters on the general principles of measurement and laboratory practice, including interpretation of results; on sources of power and signals; indicators and standards; measurements at AF, RF and on active devices; and a comprehensive reference section. This latest edition emphasizes the trend towards replacing discrete semiconductor devices with integrated circuits, and a number of new techniques are included for the first time or dealt with in greater detail; the subject of filters has been extended. The Handbook runs to 592 pages including an excellent index. Published in hard-back.

£19.05 inc. post/packing.

Order from:

Publications Dept.
SHORT WAVE MAGAZINE LTD.
34 HIGH STREET, WELWYN,
HERTS. AL6 9EQ

ELEMENTS OF ELECTRONICS

by F. A. Wilson

This book, published by Babani in three volumes, aims to provide a comprehensive introduction to the fundamental principles of modern electronics — while assuming no more than ordinary arithmetical skills on the part of the reader. Each volume consists of over 200 pages, and each is priced at £2.50 inc. post/packing.

- Book 1:** The Simple Electronic Circuit and Components.
- Book 2:** Alternating Current Theory.
- Book 3:** Semiconductor Technology.

Order from:

Publications Dept.
SHORT WAVE MAGAZINE LTD.
34 HIGH STREET, WELWYN,
HERTS. AL6 9EQ

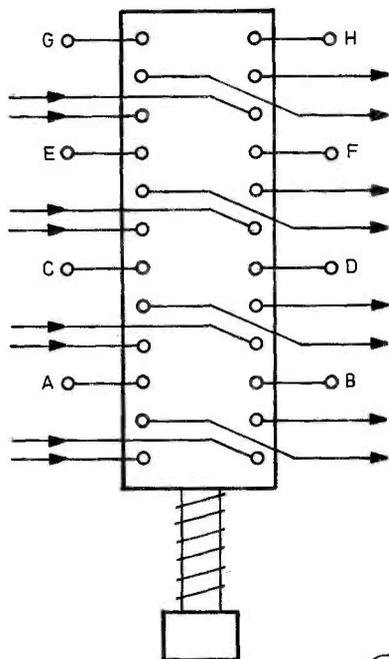


Fig. 4 MEMORY PUSH-BUTTON

Any number of memories may be mounted in cascade.

counter outputs are forced to that number preset on the "jam" input pins 4, 12, 13 and 3. In this application 104 binary is set up on the jam inputs, so when the reset button is pressed the counter goes to "104" which is the IC-240's code for channel 0 in the FM band.

If PB2 is a latching button, or if an on-off switch is wired in parallel with PB2, then the unit will scan upwards through 1 channel per 2 secs. "hands off". When the top of the band is reached, pins 2 and 6 of IC3 will both go to logical 1; IC4 is a quad NAND gate wired to detect this condition, sending pin 4 of IC4 high, resetting the counter back to channel 0.

Diodes D2 to D9 protect the ICs when their supplies are off, and the outputs go to the memory module to be described below.

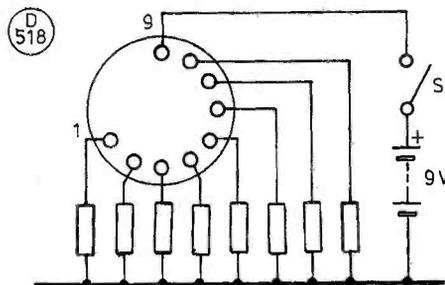


Fig. 5 SCANNER TEST RIG.

The rig is a dummy IC-240 accessory socket, i.e. a B9A valve base; all resistors are 10K, 1/4-watt. A 9v. calculator battery will suffice to supply the control voltage.

Repeater Operation

It may be felt that the design is rather clumsy in respect of repeater operation. As it stands repeater input frequencies will be monitored between 0 and 9, and the corresponding outputs between 24 and 33. To join in a QSO the operator would need to subtract 24 from the number displayed, scan downwards to match that number, and switch to duplex on the radio. This is actually easier than it may sound, but keen repeater users may care to consider the following modification: If a connection is made between the reset line (pin 4 IC4, or pin 1 IC2, 3) and the first bit (i.e. least significant) of the "tens" word of the display unit, then the counter will reset on encountering channel 10 on each scan. Therefore the IC-240 may be switched to duplex, and the scanner allowed to scan through the repeater channels only.

Memory

Fig. 4 shows how a simple, cheap and reliable memory system may be implemented. With the pushbutton out, the number on the input appears at the output: the switch has no effect, but when the switch is depressed, the input is disconnected and replaced by that number hardwired onto the terminals 'A' to 'H'. The switch is an eight, or more, pole-changeover latching pushbutton and kits are available to mount several side by side. Any number of pre-programmed memories may be provided this way.

Coming soon in "Short Wave Magazine": a review of the new Yaesu FT-707 'Wayfarer' transceiver.

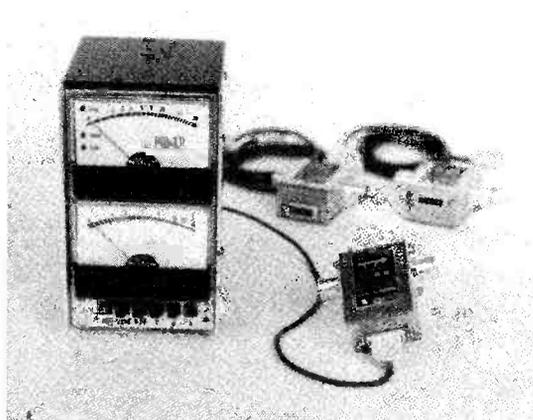
Construction and Testing

Layout is not critical and the circuit may be easily built up on *Veroboard*. The use of IC sockets is recommended as a precaution against static electricity damage to the CMOS during building and as an aid to subsequent troubleshooting and repair. The use of colour coded wire will be found a great help, both during the build stage and when trying to trace the circuit through afterwards.

The circuit may be tested by plugging the input/output plug into a B9A valve socket wired as in Fig. 5. The scanner should come on when the switch on the test rig is made, and the display should monitor the scanner's output. Pressing the memory buttons should change the display to that channel number hardwired onto the corresponding push-button switch. Voltages should be measured at the pins of the test rig socket, and should be 9v. or slightly less; each channel number should correspond to the same binary number as recorded in the IC-240 handbook.

Conclusion

The scanner is a cheap and straightforward project for the IC-240 owner. It is an accessory rather than a modification which allows the transceiver to be used perfectly ordinarily if required. When in use, the scanner will alert the operator to any activity in the FM band.



This combined VSWR/Power meter is available from Zycomm Electronics Ltd., 47 Pentrich Road, Ripley, Derbys DE5 3DS. The unit offers direct reading of both functions without interpolation. In operation it is autoranging for power output, covering 20W to 2kW in three ranges for 1.8-30 MHz and 50-150 MHz, and 2W to 200W for the 430-470 MHz range; VSWR from 1:1 to infinity can be measured. Separate sensing heads are provided for each frequency range, and these can be connected at any position in the feed line including the mast head.



Marketed in the UK by Electronic Brokers Ltd., the West German Hameg HM-307 oscilloscope is aimed specifically at the advanced radio amateur. This 10 MHz, single-trace, 'scope features a sweep circuit using a special LPS trigger technique and built-in component tester, plus several optional accessories. The HM-307 weighs 3.7 kg, and costs £149 plus VAT and carriage. Detailed specifications are available from the marketing firm, at 49/53 Pancras Road, London NW1 2QB. (Tel: 01-837 7781).

Subscription rate to
Short Wave Magazine
is £6.50
for a year of twelve
issues, post paid

SHORT WAVE MAGAZINE, LTD.
34 HIGH STREET,
WELWYN, HERTS AL6 9EQ

Always mention "Short Wave Magazine" when
contacting Advertisers — it helps you, helps them
and helps us.

SOLAR ENERGY ON THE AMATEUR BANDS

SOME PRACTICAL ENERGY CONVERSION

J. J. DAVIS, OBE, C.Eng., MIEE, FIMechE, FRAgS,
GW2CVY

ON March 23 1979 the use of mains electricity for the transmitter station here was superseded by the use of solar energy, and since that date all continents have been worked on SSB from west Wales. Only the solar cells have been used for the GW2CVY station since then.

In essence, the solar cells are used in a battery-charging configuration, so that energy is stored against the moment the shack is entered. No mains power has been applied to the rig since March 23.

By kind permission of *Ferranti Limited*, a description follows of the 'solar module'. The silicon photovoltaic cell generates a difference of potential when the thin, accurately doped, slice is exposed to light. The magnitude of the

voltage so developed is dependent upon the structure and purity of the crystal, the amount of light falling on to it, and the degree to which it can be made to absorb light shone on it; the latter is improved by an anti-reflection layer coated-on. Ohmic contacts are made to each side, so that a group of cells can be interconnected into a solar module. Thus a 36-cell module based on 76mm. diameter cells, will have an output of 14.4 watts with each cell yielding 0.4 watt. The cells are mounted on a rigid base, and the set-up here is 22x18 inches in the form of a panel specifically designed for ease of assembly into multi-arrays. The practical situation is that as dawn breaks, the infrared spectrum yields a terminal voltage of 17/18 volts regardless of cloud density, while maximum sunshine conditions result in 21/22 volts on open circuit.

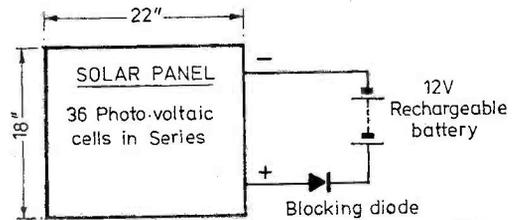


Fig. 1

D
394

The *Ferranti* cells are being used on the Army round-the-world trek over the Polar route, and in various outback spots in Australia they are used for such exercises as opening and closing crossing gates on railway.

Two new short wave receivers, the CRF320 and the CRF330K, have been launched by Sony in the UK. The basic model is the CRF320 (photo) which covers 29 SW bands, plus AM/FM/LW/MW/CW/SSB; a double-superheterodyne circuit is used, and a quartz crystal frequency synthesiser provides tuning accuracy of 1 kHz on SW, MW and LW, with digital frequency readout. The CRF330K is basically the same as the CRF320 but has, in addition, a built-in cassette recorder and extra low-band VHF capability. Both models are fitted with a separate ATU. Price of the CRF320 is £887.15, and the CRF330K costs £1,306.



COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

BY the time you come to read this, it will be high summer, with all that that implies — gardens to be attended, summer static, and the rest. But doubtless there will be plenty in the way of radio-activity to please us as well.

Here & There

A letter from Douglas, G3KPO, asks us to mention the annual get-together at Alverstone Manor Hotel, Shanklin, Isle of Wight, which this year is on Sunday September 14. Douglas also asks us to mention the ways of obtaining a reciprocal permit for G stations going abroad. In answer to that we feel G4FTJ's "Amateur Radio Operating Manual" has it pretty well sewn up in Appendix 2. Another possible source for those who are members of A.R.M.S. lies in the club listings and data.

On a totally different tack, after reading the editorial by Jim Fisk W1HR, editor of *Ham Radio*, the shock of opening the current copy of Geoff Watts' *DX News Sheet* to read that W1HR has joined the ranks of the Silent keys. We hope *Ham Radio* can continue, it having a distinctive style of its own now, with as little change as can be with a new man at the head. One may say W1HR will be missed sadly, and know that this time it isn't cliché but stark truth.

Ten Metres

Quite a decent clip all round. G3CED/G3VFA (Broadstairs) used his usual ten watts and Joystick at 30 feet to work quite a lot of Ws, nearer Russians, and ZE2JD in Salisbury — the wolf-pack howling round this one George describes as being like Wembley on Cup Final day! This one is of interest in that the QSO came to a sticky end: after raising the ZE with the two watts, lost the full return from the ZE who was using an 820!

It's quite a while now since G3VLX found time to report from Petts Wood — he is usually too busy changing QTHs! However, he faithfully reports on things that happen from 9H3AM — like TZ4AQS, KH2AD, XT2AT,

VS6AG, YB0ACL, VP2MH, FM7AV, 9GIJX, VK3AQR, YB0BWW, VU2AWL, 9Y4LL, P29MJ, and JW8FG.

It seems to have been the case at G3NOF (Yeovil) that things have been more or less as before, but the summer conditions have knocked the reliability of the band for six. However, he did get a good crack of the SSB whip, with A4XGC, A6XJA, C5AAP, DU1FR, DU1KDA, FG0DMM/FS7, FM7AV, FP8HL, HL9UG, I2YXH/MM in the Red Sea, J28CC, JAs, P29GC, P29NLB, Vks, VS5SR, VS6AG, VS6FI, VU2MKS, VU2YK, YJ8NMB, various W7s in the rare states, YB3AP, YB0WR, ZL4BO, 5B4IT, 9M2MW, 9Q5GB, and 9V1UH.

A quickie from G4BUE (Upper Beeding) who added three new countries: FR0ACB/G on five watts of CW, plus ZS2MI, and the third on 21 MHz to take Chris to 290 worked overall, and 198 countries with the five watts. Chris is wondering what happened to his piece on QRP working; it's standing at the ready here, waiting for a slot to fit into.

G4EZA (Colchester) has been QRT for several weeks for one reason or another, and when he did find time to get 21 days when operation was possible, the Big Rig decided to protest by eating its own 6JS6. Once the rig had been beaten into submission, Tim found it possible to work VK6ZT on CW; and A4XGC, JA4LAZ, LU2KAE, TF3IRA, VE4VV, and 9K2DR on SSB, with N4HX/TT8 as a Gotaway.

How nice it is to hear Ron Barker (Worksop) — he of FRG-7 mods and other matters — now signing G4JNH. On the day of writing, Ron had just completed his first week of operations as G4JNH. The Woolworth's bell-wire indoor dipole is still serving faithfully, for 7 MHz the inverted-vee has to be partly in and partly outside, and on Eighty the thing is resonated by an ATU. So far it has been mainly 21 MHz, but on Ten we note WB2LHY, KA1BWT and WA1TJB, the former for New Jersey and the latter two in Connecticut.

From the *M/S Cast Osprey* (GRHL) we have another report from G3ZGC/MM. Richard spent March and much of April in European waters, Rotterdam-Narvik, Rotterdam again, and to Taranto where he stepped off for home. He says the best band by far was the 28 MHz bit; G3ZGC/MM found that once he was out of the skip QRP Gs with poor aerials were quite easily workable. For example, G3KUB with the FT-7 and a dipole was RS58 from Narvik area, and on the same day G3OHK in Workington was worked with a 66-foot wire wrapped round the skirting-board of the shack and an FT-75. A busy six weeks which saw off yet another logbook; not so dusty for a small mobile rig.

After Ron, G4JNH comes another fugitive from Justin Cooper, namely Steve Sharred, now G4JGD in Newcastle-on-Tyne. Steve seems to have progressed from the indoor bit of wire to a bit of wire round the brick-work, and on 27 February, thirteen days after getting the ticket and making a start, a quarter-wave inverted-L at 40 feet went up for Top Band.

G3OUC (Newbury) runs a rig in his company car park, with ten watts of AM, around 29 MHz, from where he has worked most USSR call areas plus several W/K stations; many of these AM and FM stations use very low power, and G3OUC had, at the time of writing, completed and tested a one-watt SSB rig, but hasn't plucked up the courage to displace the old rig from the car yet!

G2ADZ sticks to CW on Ten, although he agrees that from Chessington there are more pickings on SSB. This month there has been more listening than actual operating, after the chores are done and the youngsters safely in bed, the band being open quite late at times. There has usually been an hour to listen in the mornings too, but the band is often too tardy waking up to allow DX working. So: CW it was, on Ten, to KL7AF, VK3YD (long path at 21.35z), PPOMAG, HK4UT, MIC, 4S7KG, 4S7RS, UA0JDC near the

Chinese border, XE1OE, AP2ARS, K2FJ/PJ5, H16XQL, VP2GE, HM0W, AH2G and AH2C in Guam, ZL2BCW at 2200 on the long path, EA9EO, 9H3AK (Gozo), plus of course the usual long list of those who wouldn't play. One of these was A7XE on a (unusual) very clear spot, not to mention BY2QZ heard at a time when no signs were evident that UAO, UA9, or JAs were about, which is about proof positive that the station was a phoney. For G2ADZ, though, the biggest kick was in working VK6NLH, so keen at less than 5 wpm and the QSO lasting over an hour; for a first QSO that VK will reckon it the biggest thrill of his life. It was 1540 here when the QSO started, so it must have been around three in the morning over there.

More Here & There

We've already mentioned Peking Slim, and any ZA is also a phoney; the rumours that DL7FT was going there to operate were false.

Older readers will remember Don Miller, W9WNV and his DX station expeditions which resulted in a dust-up with ARRL and the DXCC desk. More recently we reported (from the old *WCDXB*) that he was up on a murder and fraud rap. The DX Bulletin now indicates he was found guilty on all counts in his murder trial, sentencing to begin June 10.

Some have wondered about 5N0DOG; he is K4QX and works for the Nigerian Minister of Telecommunications.

Another Slim is around signing A6XJA — NG for DXCC as UAR closed all amateur stations in February last year; indeed the chap has been heard to admit he is not licensed.

In Gaborone, the capital of the Republic of Botswana there is a Trade Fair in the month of August, and the Botswana Police Amateur Radio Club will be activating A22GTF. Each day, in addition to the normal operation, there will be a period of special activity; on Day 1 for example they will be using the Project Goodwill transmitter and receiver, on Day 2 a Commonwealth Capitals hook-up, not to mention an African net on Day 3. Between August 27 and August 31, they hope to make DXCC and WAS during the operation. Thanks A22AJ for the information.

Hong Kong A.R.T.S. have a couple of awards. The "Firecracker" has

been around for some years and we have a timely reminder of it, plus a sample, from VS6EZ. The requirement is to work six VS6 stations on any band or mode. This year being the club's 50th anniversary, they have a new award, called the "Nine Dragons" which we understand is the meaning of the word which we have anglicised into "Kowloon". Only QSOs on or after January 1 1979 to count. This one requires a QSO with a station in each of Zones 18, 19, 24, 25, 26, 27, 28, 29, 30, one of the nine QSOs to be with a VS6. If the applicant happens to reside in any of the nine zones, he must make two QSOs with each zone. Categories will be CW, Phone, or mixed, and the award can be so endorsed if desired. The cost of the Firecracker will be £1 or 10 IRCs, and the Nine Dragons three dollars, £1.50 or equivalent. Thanks VS6EZ, who is the VS6 QSL Manager at P.O. Box 541 Hong Kong. VS6EZ is also on the look-out for cross-band QSOs between 50.150 MHz, listening on 28.490 MHz, or for those countries having 50 MHz, listening on 50.150 and 52.1 MHz.

Incidentally, we also have it from VS6EZ, and others, that the number of VS6s on the air should be on the increase ere long, as there is now a local centre for the British RAE — wonder if a pass there would be valid in UK?

Now 9M2FK from Malaysia, with the SEANET 1979 results indicating just one G in the upper brackets, G4CVZ, the Hon Sec of the Liverpool Club, heading the single-band single-op Phone listings. The 1980 affair is aimed at bringing a timely reminder that the tenth SEANET Convention is coming up; this year's is to be held in Manila on 28-30 November. The contest for 1980 is down for (CW) 0001z Saturday July 19 to 2359 Sunday 20th July, and (Phone) same times August 16-17, 1980. All bands, 1.8-30 MHz. The call is "CQ SEA" for the keyers, and "CQ SEATEST" for the Phone men. Points are as follows: — For stations outside SEANET area who work DU, HS, YB, 9M2, 9M6, 9M8, or 9V1 stations, 20 points on Top Band, 10 points on 80/40m., and 4 points on 14/21/28 MHz. Other stations within the SEANET area may also be worked and count for half the ones above mentioned, e.g. 14/21/28 MHz QSOs are worth a couple of points. The

Multiplier will be 3 points for every country worked within SEANET area. QSOs by stations outside SEANET areas do not count. SEANET countries number some 50-odd, so it is suggested entries be made by sending for a copy of the rules to Eshee, 9M2FK, 281-C Jalan Pekeliling, Bukit Glugor, Penang, Malaysia. Anyone doing this might pass on our current address too!

Next a letter from WAB. The new Awards Manager is Keith Draycott, G3UQT, 175 Oliver Road, Kirk Hallam, Ilkeston, Derbyshire DE7 4JW. The WAB record books are now £2, plus £1 post/packing within UK and £1.50 post/packing outside, from Mr. B. J. Morris, G8JBI, 22 Burdell Avenue, Sandhills Estate, Headington, Oxford OX3 8ED. Cheques etc. to Worked All Britain Award Account. Proceeds of this exercise are essentially in aid of RAIBC, so you can have fun and do someone somewhere a good turn.

Now a letter from P29JS, Jim Swith, about the Heard Island expedition which was unlucky enough to fall flat a few weeks back. Prior to VKORM, there had been nothing on this one for a decade, and it is undoubtedly a tough nut, possibly the toughest of them all. The time slot for a visit has to be mid-December to mid-February. Heard Island DX Association has been set up to handle a trust fund, offers of help and all the rest of it, with a view to the first ever full-blown DX-pedition; the aim is to have several good experienced operators, and at least a place for a scientific type to do some research. Offers of equipment have already been received but no final decisions made as yet. The group solicit donations, all of which will be receipted: if the expedition does not take place, then funds will either be returned or allocated to another DX-pedition or worthy charity. Write: Heard Island DX Association, c/o Box 2053, Konedobu, Papua New Guinea.

Next the YLs. BYLARA got off to such a good start we rather expected they would soon produce an award: Britain and Europe work 15 BYLARA members, including 10 in UK; those outside Europe, 10 BYLARA members including 6 in UK. Starting date April 29 1979; send log data with £1.50, 12 IRCs, or three US dollars to G4EZI — QTHR. Contacts for the award may be made on the 3.605 MHz

net on Monday evenings after 7.45 local time, or on the YL Activity Days, 6th of every month, 14.288, 21.388, 28.688 on the hour GMT any hour.

Space and time crowds in upon us apace. We must return to the DX.

Fifteen

G3ZGC/MM reckons he worked nothing of interest on the band, the main interests having been elsewhere.

G4JNH next, and his first week's work on the band resulted in K4TXD, W2TTQ, OH7KJ, W6USG, SV0AE, AD7N in Idaho, ZS6XP, 9H1FZ, W7KT1, VP8PP, KA1DFF, N4ZQ, JR1SSH, VE6BD, JI1OQQ, OD5NG, PY7BTX, 9Q5GB, JI1BMB, W6USG again, AF3V, ZS1LQ, VK2AVA, KB9EX, W7DND, K7A1I, WD4ROD, VK2APJ, VK3BUL, VK2NLE, VE3QE, W6RR, SM2GFV, UA6JB, W3EAX, VE3IFS, JR7BYW, WD8BCM, AE3T, W3KJW, WB0RSH, and PT2FD.

KL7JAA, S79GM, SV1JG/A on Mount Athos, SV0AP (Crete), SV0BC also on Crete, VKs, VU2RX, W0WO, ZD7HH, ZD8MH, ZL2AQF, 4S7RS, 8Q7AR, 9M6MU and 9V1UH.

G3VLX's expedition to 9H3AM, shows on 21 MHz, VK3MQ, VK3AQR, the rest being mainly on Ten.

There's not a lot on this band in the log of G3CED/G3VFA: UA1HT, YU5CPR, AF7F in Oregon, and VE1BSK all at 2 watts, while an unaccustomed shift to 100 watts and an indoor Joystick gave 9A1ONU, WB3LGQ, N7EF, UK5UDX, UK6LAI, and some EUs; but the return to 2 watts gave more success with W1GUE and K2LFP. Incidentally the log this time, apart from the unexpected CW 100 watts, also yielded the first SSB QSO the writer has ever seen in the logs from this station!

Twenty

G3PKS (Wells) has the pleasure of a "Nil" report this time round, he having been tempted to do some gardening during the fine Wx, despite all the medical contra-indications, and of course he paid the penalty! However, it did give him the chance to write a long 'newsy' letter with some ideas which bear thinking about.

G3ZGC/MM found an interesting one in P11LC/MM, on the weather ship *Cumulus*. It seems the PAs don't normally have /MM permission, but in this particular case the permission was granted because both operators aboard are licensed amateurs. A couple of UA0s, OK4EW/MM on *MV Praha* (OLGN), a pleasant SSB surprise with a QSO to VEDDS/VE5, JA1TRP on CW, SSB to ZB2FA/MM of Gibraltar, VK4NVJ/MM on a yacht in Crete, and VP9HX/MM of the *Fort Norma* en route from Capetown to South America. Since the end of March VKs and ZLs most mornings.

G4JNH (Worksop) found WA0AHR, KA7AHN, N7AFA, ZL4PD, VK2LW, KB7DT, W7WSW, W2EEQ, WA2JOO, VK2AMD, and VK2ALK.

It was 150 watts SSB for G4EZA on this band, to contact OY9R/M, VK5LC, and VK5QB.

Only one mentioned by G4BUE: A51PN on Twenty SSB to bring the worked total up to 290.

On to G3NOF, who mentions QSOs with CR9AK, P29JS, TN8AJ, VE8MB, VKs, W6ENK/KH4, WH6AED, XE1JJA, YI4SC, ZLs, and ZL2UW/C on Chatham Island.

The LF Bands

Can only rate a mention this time, and then only because of the activities of our latest recruit G4JGD, who now has 15 countries up on Top Band. SSB found 4U1ITU, G4GFN/M in Devon (a fair old haul for a /M contact), G3YXM/M in Birmingham at teatime, DF1OW, DJ8UV, DK3FB, N2AA, RB5IEK, W3HHN/MM, and YU3EF; turning to CW we see 50NOK (Reef Is.), K2GNC several times, N41N, OE1TKW, OK1AZM, OK2BUE, OK2PGU, OL6AWY, OL8CIR, OL8CNE, SP7JWZ, RT5AB, W1BB/1, UA3FZ, UC2AAK, UK2PCR. The Reef Is effort sounded genuine enough and gave the QSL address as P.O. Box 66, Limassol.

Eighty of course, is its usual self. From our point of view, although we know DX is worked at the top and bottom of the band, we rarely get reports other than the QRP chaps, around 3560 KHz, while the middle part of the band seems to be occupied with local nets and such; not to mention the AM people on the CW end of the band. We feel that everyone who could, should sit on these AM stations and force them to return to their own territory by sheer weight of CW at S9 plus. Call CQ, work somebody, raise them somewhere else on the band and QSY on top of the AM Phone; finally treat them with the lack of courtesy with which they treat others in intruding in the first place.

What about 7 MHz? We have the odd report, and there is most definitely DX there for the taking; but space precludes our going into more details for this time.

Finale

Deadlines as normal — see the 'box' in the body of the piece for the dates (but as this issue is likely to be late, we hope you noted the July deadline in the May issue); address to arrive by the given date, to "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Till next time, keep the mower sharp!

'CDXN' deadlines for the next three months—

July issue—June 5th

August issue—July 3rd

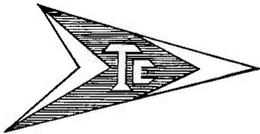
September issue—August 3rd

Please be sure to note these dates.

G4EZA, having dusted off the rig, fired it up and on QRO CW managed JH4XAH, and WA6SZZ, while the SSB switch accounted for N6CR, N7XX, and TF3GN.

21 MHz QRP on 21 MHz for G4BUE included SSB QSOs with ZL4BO and 8Q7AR, plus CW ones with KP4DJ, J28CBB, and 8Q7AW.

Most days the long path to the Antipodes has been good from 0600-0900, with occasional openings to KH6, KL7, W5 and W6 at the same time. Short path openings to the Pacific and S.E. Asia were noted around 1700, but no openings the other way. Ws of course from 1100 to 2300 or later. Thus there was SSB to C5AAS, EP2TY, FROACC/G, HS1AMT, K6LPL/KH3, KH6BOG, KH6CY, KH6IJ, KH6JPY, KH6LW,



Tried — Tested and Popular



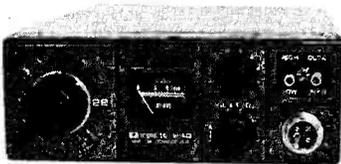
IC-202S
£169 inc.

ICOM's range of sideband portables has been recently expanded. The well known and tested IC-202E has now been improved in the form of the IC-202S which has lower side band fitted also and provides sidetone on CW. The receiver has been hotted up making it even more suitable for use as a base station, either barefoot or as a prime mover. The new IC-402 is the 70cm version of the 202S giving the same facilities as its 2m cousin over the range 432-435.2 MHz. Both use a very stable VXO circuit, to give fully tuneable coverage of the band at 200 kHz segments and both have extremely clean signals so that using them to drive a linear to the full legal limit presents no problems. We are very impressed with both the 202S and the 402.

IC-202S Less VAT = £146.96 With VAT = £169.00
IC-402 Less VAT = £210.43 With VAT = £242.00



IC-402
£242
inc.



IC-240
£169 inc.

The IC-240 is the ideal mobile rig for most people. Apart from the fact that it is quite a lot cheaper than most, it is, in fact, more suitable than many to use in the car while driving (and let's face it, it is under those conditions that most mobiles are used). It can be operated with ease without taking your eyes off the road and provides up to 22 channels (which is more than you are likely to need). Being synthesized, of course, there are no crystals to buy for extra channels. Full repeat, reverse repeat and automatic tone burst plus a low power facility are selectable from the front panel.

The IC-240 is a superbly built and very reliable piece of equipment as witnessed by the many thousands in use. All Icom equipment is built to a very high standard and the IC-240 is no exception. It has an excellently sensitive receiver and a very clean transmitter and will give you hours of headache-free pleasurable use — so why not get one now before the price goes up again!

PRICE.

Less VAT = £146.96 With VAT = £169.00



IC-280E
£250 inc.

★ WITH SCANNER £260

As usual, ICOM have kept ahead with technology and have produced their revolutionary new IC-280E which uses a microprocessor to produce frequencies throughout the 2m band at the ideal 25kHz spacing required today. The IC-280 has the ideal advantage of being separable into two parts for easy mounting into today's cars which so often forget to leave space for a rig. The removable front panel, with all controls, is only 3" deep and will fit in any convenient spot — in the glove pocket, on the dash or even on the sun visor! The main part of the set can be mounted anywhere within 4 feet — or even further in many cases — under the passenger's seat is quite handy! Display is of frequency on an LED readout and there are three memories for your favourite channels. These are not cleared when the set is switched off as long as it is left connected to the car battery.

Less VAT = £217.50 With VAT = £260

AGENTS (PHONE FIRST — All evenings and weekends only, except Barnsley and Burnley)

Scotland — Jack GM8GEC (031-665 2420)

Wales — Tony GW3FKO (0222 702982) **Burnley** — (0282 38481) **Midlands** — Tony G8AVH (021-329 2305)

North West — Gordon G3LEQ (Knutsford (0565) 4040) **Yorkshire** — Barnsley (022678 2517) Evenings
Barnsley (0226 5031) Days

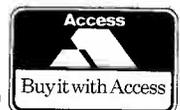


H.P. TERMS AVAILABLE

FOR ALL MAIL ORDERS AND SALES DURING BUSINESS HOURS
YOUR SOLE AUTHORISED UK IMPORTER FOR ICOM

THANET ELECTRONICS LTD.

143 Reculver Road, Beltinge, Heme Bay, Kent (02273 63859)





IC2E



AT LAST!! A two-metre FM handy Talkie from the famous ICOM stable; probably the smallest sized one, too!

CHECK THE FEATURES —

FULLY SYNTHESIZED — covering 144-145.995 in 400 5KHz steps.

POWER OUTPUT — 1.5W with the 9V rechargeable battery pack as supplied — but lower or higher output available with the optional 6V or 16V packs.

BNC ANTENNA OUTPUT SOCKET — 50 ohms for connecting to another antenna or use the Rubber Duck supplied.

WEIGHT — 450 Grams with supplied power pack and antenna.

DIMENSIONS — Height 116.5mm (without battery pack), width 65mm, depth 35mm.

SEND/BATTERY INDICATOR — Lights during transmit but when battery power falls below 6V it doesn't light indicating the need for a recharge.

FREQUENCY SELECTION — by thumbwheel switches, indicating the frequency.

+5kHz SWITCH — adds 5KHz to the indicated frequency.

DUPLEX SIMPLEX SWITCH — gives simplex or plus 600kHz or minus 600kHz Transmit or 700kHz for you travellers!

HI-LOW SWITCH — reduces power output from 1.5W to 150mw reducing rapid battery drain.

EXTERNAL MICROPHONE JACK — If you do not wish to use the built-in electret condenser mic an optional microphone/speaker with PTT control can be used. Useful for pocket operation.

EXTERNAL SPEAKER JACK — for speaker or earphone. This little beauty is supplied ready to go complete with nicad battery pack, charger, rubber duck AND the famous THANET WARRANTY.

By skilful design and the use of highly advanced technology ICOM have produced this gem for

£159 incl VAT!

THIS IS THE CHOICE FOR THE MAN WHO WANTS THE MOST FROM HIS MOBILE — THE IC260E

THE NEW ALL-MODE MOBILE

£339
inc.

The IC-260E is obviously going to be one of the best selling multimode 2M Transceivers of all time. Never before has so much been offered in such a small package.

Replacing the IC-245E, the IC-260E offers such extras as full frequency read out, upper and lower sideband, and scanning. Thus, it makes an ideal base station, when used with a DC power supply, as well as a mobile. The use of a microprocessor instead of an LSI chip has enabled Icom to offer this at a lower price than the IC-245E.

144 MHz ALL-MODE TRANSCIVER INCORPORATING A MICRO-COMPUTER — CPU control with Icom's original programs provides various operating capabilities. No backlash dial controlled by Icom's unique photo-chopper circuit. Band edge detector and Endless System provides out-of-band protection. No variable capacitors or dial gear, giving problem-free use. The IC-260E provides FM, USB, LSB, CW coverage in the 144-146 MHz frequency range. Thus the IC-260E can be used for mobile, DX, local calls and satellite work. Easily extendable to 144-148.

MULTI PURPOSE SCANNING — Memory scan allows you to monitor three different memory channels. Program Scan provides scanning between two programmed frequencies. Adjustable scanning speed. Auto-stop stops scanning when a signal is received, in all modes.

DUAL VFO'S — Two separate VFO's can be used either independently or together for simplex operation, and any desired frequency split in duplex operation.

CONTINUOUS TUNING SYSTEM — Icom's new continuous tuning system features an LED display that follows the tuning knob movement and provides an extremely accurate readout. Frequencies are displayed in 7 LED digits representing 100 MHz to 100 Hz digits. When in Duplex and using the tuning-knob the two VFO's track together. Automatic recycling restarts tuning at the top of the band, i.e. 145.999.9 MHz



when the dial goes below 144.000.0 MHz. Recycling changes 145.999 MHz to 144.000.0 MHz as well. Quick tuning in 1 kHz steps is available, and fine tuning in 100 Hz steps in the SSB and CW modes, and 5 kHz steps and 1 kHz steps in the FM mode, is provided for trouble-free QSO.

OUTSTANDING PERFORMANCE — The RF amplifier and first mixer circuits using MOS FET's and other circuits provide excellent Cross Modulation and Two Signal Selectivity characteristics. The IC-260E has excellent sensitivity demanded especially for mobile operation, high stability and with Crystal Filters having high shape factors, exceptional selectivity. The transmitter uses a balanced mixer in a single conversion system, a band pass filter and a high performance low pass filter. This system provides distortion free signals with a minimum spurious radiation level for an output of 10W or more.

ADDITIONAL CIRCUITS — The IC-260E has a built-in Noise Blanker, CW Break-in CW Monitor, APC and many other circuits for your convenience. The IC-260E has everything you need to really enjoy VHF operation, in an extremely compact rugged transceiver.

Phone — or put a message on the ansafone for further details

ALSO AVAILABLE FROM OUR SHOP IN HERNE BAY

MICROWAVE MODULES

WESTERN

ANTENNA SPECIALISTS

STANDARD

J-BEAM

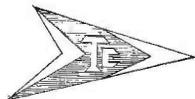
G WHIP

YAESU MUSEN

RSGB PUBLICATIONS

BEARCAT

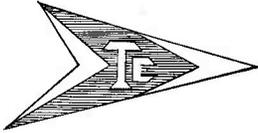
HP AND PART EXCHANGE WELCOMED



FROM

THANET

OF COURSE


ICOM

THE MOBILE OF CHOICE FROM THE WORLD FAMOUS ICOM STABLE — THE IC-255E



25 WATTS — 5 MEMORIES — SCANNING — 600 KHz AND USER SELECTABLE REPEATER SHIFT — FULL COVERAGE IN 5 KHz or 25 KHz STEPS

We have had a poke around one of these little beauties and are certain that Icom, yet again, have come up with a winner. As you can see, it has the expected smart Icom appearance. Features include: —

- ★ Crystal controlled Tone Burst
- ★ Full band coverage — extendable to 148 MHz if required
- ★ Four digit LED display
- ★ 25 Watts output or 1W low power. A superb receiver using grounded gate FET front end
- ★ Scanning over a user programmable range
- ★ Memory scan
- ★ Stop on empty or busy channels
- ★ Tuning in 25KHz or 5KHz steps
- ★ 5 Memories — retained while the power is connected to the rig
- ★ Built-in 600 KHz Repeater shift
- ★ Alternative programmable shift
- ★ Reverse Repeater facilities
- ★ RIT (± 3 KHz) for those off channel stations
- ★ Good loud audio
- ★ Optically coupled tuning between control knob and CPU
- ★ Multiway 24 pin socket on back for touchpad, computer, or external control (note the current RM3 cannot be used but a new version is to be introduced)
- ★ Rugged modular PA (guaranteed of course!)
- ★ Mobile mount which can be padlocked

Price
£255 inc.

At £255 including VAT these are such value for money that demand may exceed supply for a while — but they are worth waiting for! (Delivery is free of course by Registered First Class Letter Post.)

FROM

THANET

OF COURSE


ICOM

"NEW" IC251E £479 inc.

**DON'T WORRY — WE GUARANTEE
ALL SOLID STATE RIGS
INCLUDING PAs**

AFTER YEARS OF SUCCESS THE IC211E HAS NOW BEEN REPLACED BY THE IC251E. NOT JUST A FACELIFT, BUT A NUMBER OF IMPORTANT DEVELOPMENTS HAVE BEEN INCORPORATED.

MICROPROCESSOR CONTROL — CPU control with Icom's original programs provides various operating capabilities. No backlash dial controlled by Icom's unique photo-chopper circuit. Band edge detector and Endless System provides out-of-band protection. No variable capacitors or dial gear, giving problem-free use. The IC251E provides FM, USB, LSB, CW coverage in the 144-146 MHz frequency range. Thus the IC251E can be used for mobile, DX, local calls, and satellite work.

MULTI-PURPOSE SCANNING — Memory Scan allows you to monitor three different memory channels. Program Scan provides scanning between two programmed frequencies. Adjustable scanning speed. Auto-stop stops scanning when a signal is received in all modes.

DUAL VFO's — Two separate VFO's can be used either independently or together for simplex operation, and any desired frequency split in duplex operation.

CONTINUOUS TUNING SYSTEM — Icom's new continuous tuning system features a luminescent display that follows the tuning knob movement and provides an extremely accurate readout. Frequencies are displayed in 7 digits representing 100 Mhz to 100 Hz digits.

Automatic re-cycling restarts the tuning at the bottom of the band when the top is reached — and vice versa. Quick tuning in 1 KHz steps is available, and fine tuning in 100 Hz steps in the SSB and CW modes, and 5 KHz steps and 1 KHz steps in the FM mode, is provided for trouble free QSO.

EASIER OPERATION AND LIGHTER WEIGHT — The most compact, lightest weight all-mode 144 MHz transceiver. First



to use a pulse power supply in communication equipment, for lighter weight. 50 mm-diameter large tuning control knob for smooth and easy tuning. Trouble-free controlling knobs for both receiving and transmitting. LED indicator for transmit and receiving modes.

MOST SUITABLE FOR BOTH FIXED AND PORTABLE STATIONS — Built in 240V AC and DC power supplies. Convenient Dial Lock switch for mobile operation. Easy carry handle. Effective Noise Blanker. IC SM5 high quality stand microphone is suitable for fixed station operation. Powerful audio output 1.5 Watts at 8 ohm, for easy listening even in noisy surroundings.

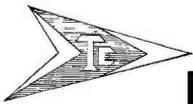
OUTSTANDING PERFORMANCE — The RF amplifier and first mixer circuits using MOS FETs and other circuits provide excellent Cross Modulation and Two-Signal selectivity characteristics. The IC251E has excellent sensitivity demanded especially for mobile operation, high stability, and with Crystal Filters having high shape factors, exceptional selectivity. The Transmitter uses a balanced mixer in a single conversion system, a band pass filter and a high performance low-pass filter. The system provides distortion-free signals with a minimum spurious radiation level.

MODES — USB, LSB, CW and FM output.

SENSITIVITY — CW and SSB — Less than 0.25 microvolts for 10 dB S+N/N. FM — More than 30 dB S+N+D/N+D at 1 microvolt or less than 0.3 microvolts for 20dB Noise quieting.

IC-251E Typical Technical Characteristics: General. Numbers of semiconductors: Transistors 99, FETs 12 ICs 37. Diodes 132. Frequency coverage: 144-146 MHz (easily extended to 148 MHz at no extra charge). Frequency resolution: SSB 100 Hz steps FM 5 KHz steps. 1 KHz steps with TS button depressed. Frequency Control: Microcomputer based 100Hz step Digital PLL synthesizer Independent Transmit-Receive Frequency Capability. Frequency Readout: 7 digit LED 100 Hz readout. Frequency stability: Within ± 1.5 KHz Memory channels: 3 channels, any inband frequency programmable. Usable conditions: Temperature: -10°C — 60°C (14°F — 140°F). Operational time: Continuous. Antenna impedance: 50 ohms unbalanced. Power supply requirement: 13.8V DC $\pm 15\%$ (negative ground) 3A max. or 240V AC $\pm 10\%$. Current drain (at 13.8V DC): Transmitting, SSB (PEP 10W). Approx. 2.3A, CW, FM (10W). Approx. 2.3A FM (1W). Approx. 1.0A. Receiving. At max. audio output. Approx. 0.6A. Squelched. Approx. 0.4A. Dimensions: 141mm (h) \times 241mm (W) \times 264mm (D). Weight: Approx. 5.0 Kgs. Transmitter. Output power: SSB 10W (PEP). CW 10W. FM 1 — 10W (Adjustable). Emission mode: SSB (A3J),

USB/LSB), CW (A1). FM (F3). Modulation system: SSB Balanced modulation. FM Variable reactance frequency modulation. Max. frequency deviation: ± 5 KHz. Spurious emission: More than 60 dB below peak power output. Carrier Suspension: More than 40 dB below peak power output. Unwanted Sideband: More than 40 dB down at 1000 Hz AF input. Microphone: 1.3K ohm dynamic microphone with built-in preamplifier and push-to-talk switch. Operating mode: Simplex. Duplex. (Any inband frequency separation programmable). Receiver. Receiving system: SSB. CW Single conversion superheterodyne. FM Double conversion superheterodyne. Receiving Mode: SSB A3J, USB/LSB, CW (A1), FM (F3). Intermediate Frequency: SSB, CW 10.7 MHz, FM 10.7 MHz, 455 KHz. Sensitivity: SSB, CW Less than 0.25 microvolts for 10dB S+N/N. FM more than 30dB S+D/N+D at 1 microvolt. Less than 0.3 microvolts for 20 dB Noise quieting. Squelch sensitivity (FM only): Less than 0.4 microvolts. Spurious response rejection ratio: More than 60 dB. Selectivity: SSB, CW More than ± 1.2 KHz at -6 dB point. Less than ± 2.4 KHz at -60 dB point. FM More than ± 7.5 MHz at -6 dB point. Less than ± 15 MHz at -60 dB point. Audio output power: More than 1.5W. Audio output impedance: 8 ohms.


FROM
THANET
OF COURSE

RADIO SHACK for BEARCAT 220

THE VERSATILE BEARCAT 220FB

Bearcat® 220FB

Features:

- 20 Channels/2 banks — Scan up to 20 frequencies at once or either of two banks of 10 channels.
- 7 Band Coverage — Includes Low, High, UHF, UHF-Gov't and UHF-T public service bands, the 2-meter amateur (Ham) band, plus the aircraft band.
- Automatic Search — Seek and find new, exciting frequencies.
- Aircraft Search — Automatically search the entire Aircraft Band.
- Marine Search — Automatically search Marine frequencies by pressing one button.
- Priority — Samples designated priority frequency on channel 1 every 2 seconds.
- Limit — Sets upper and lower frequencies of search range.
- Speed — Choice of either 5 or 15 channels per second scan and search speed for closer monitoring of desired frequencies.
- Automatic Lockout — Locks out channels and "skips" frequencies not of current interest.
- Selective Scan Delay — Adds a two-second delay on desired channels to prevent missing transmissions when "calls" and "answers" are on the same frequency. Patented by Electra.
- Simple Programming — Simply punch in the frequency you wish to monitor.
- Decimal Display — The large decimal display shows channels and frequency as well as features selected.
- Patented Track Tuning — Receive frequencies across the full band without adjustment. Circuitry is automatically aligned to each frequency monitored.
- Crystalless — Without ever buying a crystal you can select from all local frequencies.
- Automatic Squelch — Factory-set squelch automatically blocks out unwanted noise.
- Direct Channel Access — Move directly to desired channel without stepping through all channels.
- Deluxe Keyboard — Makes frequency and feature selection easy for simple programming.
- Space age Circuitry — Custom integrated circuits... a Bearcat tradition in scanning radios.
- Rolling Zeros — This Bearcat exclusive tells you which channels your scanner is monitoring.
- AC/DC — Operates at home or in authorised vehicle.
- UL Listed/FCC Certified — Tested for sale, quality design and manufacture.



Bearcat® 220 FB Specifications

Frequency Range:

Low Band Mobile	66-88MHz
Aircraft	118-136MHz
Amateur Band	144-148MHz
Public Services & Marine	148-174MHz
UHF Amateur	420-450MHz
UHF Band	450-470MHz
UHF Band	470-512MHz

Size:

10 $\frac{1}{2}$ " W x 3" H x 7 $\frac{1}{8}$ " D

Weight:

5 lbs.

Power Requirements:

240V AC, 50 Hz.
12-15V DC, 8 Watts

Audio Output:
2.0 W rms.

Antenna:

Telescoping (Supplied)

Sensitivity:

0.6 μ v for 12dB S/N on L and H bands
 μ bands slightly less
1.0 μ v for 10dB S/N on aircraft

Scan Rate:

5 or 15 channels per second

Connectors:

External antenna; external speaker;
AC power, DC power

Accessories (included):

Mounting bracket and hardware;
DC cord

Hear It All With One Antenna Total Frequency Coverage — 40 To 700 MHz

DISCONE

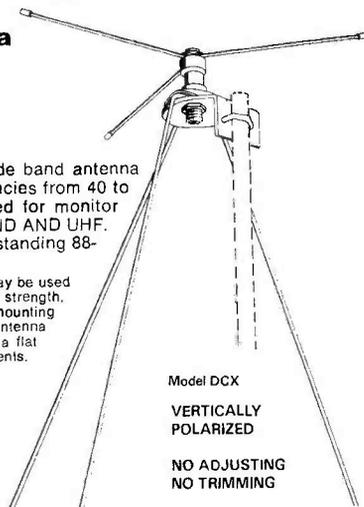
The Hustler Discone Model DCX is a wide band antenna and has complete coverage of all frequencies from 40 to 700 MHz. This design is especially suited for monitor radio reception of LOW-BAND, HIGH-BAND AND UHF. As a plus feature, use the Discone for outstanding 88-108 MHz. FM stereo reception.

The Discone is easy to assemble and install and may be used with any length coax cable. Manufactured from high strength, solid aluminum rod, zinc plated hardware and mounting assembly, complete with SO-239 connector. Antenna mounts on vertical support up to 1 $\frac{1}{2}$ " O.D. or on a flat surface. Cone elements, 55" in length. Disc elements, 20" in length. Shipping Wt. 2.5 lbs. **£13.80**

Discone With Cable

Discone antenna supplied with 50' coax and factory installed connectors; PL-259 one end and monitor pin plug type on the other. Shipping Wt. 4.5 lbs.

£20.70



RADIO SHACK LIMITED

TELEX 2371B

188 BROADHURST GARDENS, LONDON, NW6 3AY

TELEPHONE 01-624 7174

Securicor Delivery

£4.60

RADIO SHACK LTD for



DRAKE



DRAKE PRICES

4 international reply coupons

(Inclusive of 15% VAT)

	£
TR-7/DR-7	1035.00
PS-7	207.00
RV-7	132.25
MS-7	29.90
R-7/DR-7	989.00
SL-300	39.10
SL-500	39.10
SL-1800	39.10
SL-4000	39.10
SL-6000	39.10
AUX-7	32.20
RRM-7	5.75
RTM-7	5.75
NB-7	66.24
FA-7	20.70
MMK-7	34.50
MN-7	207.00
MN-2700	197.80
WH-7	59.80
385-0004	18.50
7037	37.95
L-7	759.00
TR-4CW(RIT)	496.80
AC-4	109.25
34-PNB	73.60
DC-4	138.00
RV-4C	109.25
FF-1	39.10
MS-4	29.90
TV-42LP	10.35
TV-3300LP	18.40
RP-500	73.60
7072	18.40
7073	13.80
7077	25.30
DL-300	20.70
DL-1000	37.95
RCS-4	82.90
B-1000	20.70
1525-EM	36.80
AA-10	46.00
WV-4	69.00
SPR-4	460.00
DC-PC	4.60
FL-Filters	39.10
Manuals	6.00
Crystals	6.44

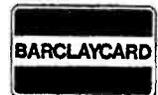
BE READY FOR THE
NEW BANDS
WITH YOUR DRAKE TR-7!

CARRIAGE EXTRA ALL ITEMS

BARCLAYCARD

DRAKE ★ SALES ★ SERVICE

RADIO SHACK LTD.



AMATEUR ELECTRONICS UK

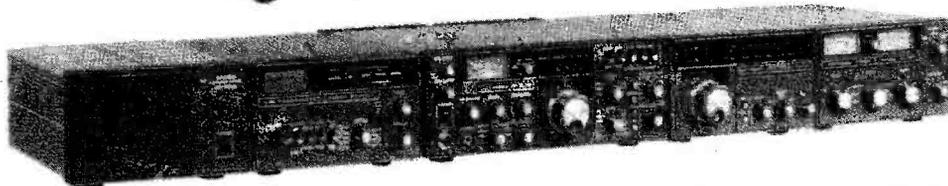
AEUK — Your number one

AS FACTORY APPOINTED DISTRIBUTORS WE OFFER YOU—
WIDEST CHOICE, LARGEST STOCKS, PROMPTEST DEAL AND
FAST, SURE SERVICE RIGHT THROUGH



(Normally in grey livery)

YAESU FT-107M



AMATEUR ELECTRONICS UK has been established for over twenty years and specialises for the amateur by employing licensed operators on our staff. At our H.Q. in Birmingham will be found the following Call signs:

G3FIK — Ken
G3RGD — Ray

G4EWD — Peter
G4GSJ — Ken
G8GUS — Martyn

G8VXM — Gary
G8VXN — Paul

HOW TO REACH US (EASY PRIVATE PARKING ON OUR 90ft FORECOURT)

FROM SOUTH AND EAST. We are located approximately two miles from Junction 5 of the M6 from which follow signposts to Birmingham. Within ¼ mile turn right at Clock Garage and proceed towards city. After one mile look for traffic lights at Fox & Goose and immediately over the lights take minor left fork in to Alum Rock Road. We are located one mile from this point.

FROM NORTH. Leave M6 at Junction 6 (Spaghetti) and follow left fork down to traffic island beneath motorway complex. Take third turning off to Lichfield. One mile further on follow A4040 to the right and within 100 yds veer again to the right, approximately one mile further on brings you to the Fox & Goose. Turn right and see preceding directions.

FROM THE WEST AND SOUTH/WEST. Follow M5 then M6 to Spaghetti Junction (see above). Alternatively, leave M5 at junction 4 or 3 and proceed to inner ring road. Turn South on ring road and leave on A47 (East). We are located three miles from this point.

Hours: 9.30 – 5.30 Continuous including Saturdays—Early closing Wednesday, 1 p.m.



Access or attractive H.P. terms readily available for on-the-spot transactions. Full demonstration facilities. Free Securicor delivery.



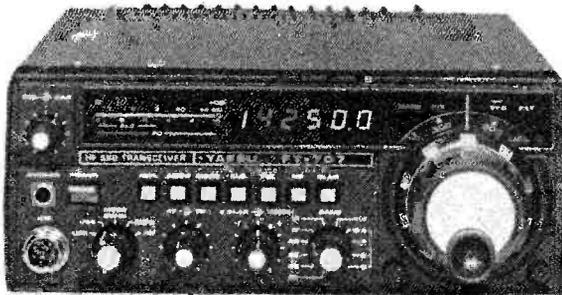
AMATEUR ELECTRONICS UK

source for YAESU MUSEN

The superb FT-107M all Solid State H.F. Transceiver is now appearing in increasing numbers on the bands and the impressive reputation that it has already built is largely due to the fact that it incorporates time proven design techniques borrowed from the outstanding FT-101Z and FT-901 transceivers. The receiver performance of the new FT-107M has brought high praise from experienced and critical operators and this, coupled with the undoubted convenience of all solid state construction, makes operating a joy and a delight indeed. The specification of the new FT-107M includes variable IF band width, audio peak/notch filter, RF speech processor, variable — threshold noise blanker, and full metering including SWR. An all new memory system is included providing twelve memory channels with fine tuning, scanning from the optional scanning microphone and YAESU's exclusive digital memory shift system. Modes include SSB, CW, AM and FSK with variable band width on CW.

Also pictured is the FT-107M together with its matching accessories which include separate VFO, transverter, tuning unit and speaker which interface to build a high technology base station designed for the 80's.

This month we also include a view of the new YAESU FT-707 compact H.F. all Solid State Transceiver which combines the technology engineered in the FT-107 and the FT-7B. The new FT-707 is, as would be expected, typically YAESU in design, construction and cosmetics and sets new standards for equipment in its class. Taking into account the time, money and effort which YAESU MUSEN put into their extensive research and design laboratories it is no wonder that YAESU MUSEN, the world's largest manufacturers of amateur radio equipment, always lead the field.



YAESU FT-707



THE ABOVE IS ONLY PART OF THE YAESU STORY — FOR FULL DETAILS OF ALL THE MODELS 36p IN STAMPS WILL BRING YOU THE LATEST GLOSSY CATALOGUE OF THE FULL PRODUCT RANGE TOGETHER WITH OUR CREDIT VOUCHER FOR £3.60 — A 10-1 WINNING OFFER!



AGENCY APPOINTMENTS

We are pleased to announce that we have extended our service to out-of-town customers with the appointment of two new agents in areas which are, in our view, lacking in amateur sales facilities at the moment. AMATEUR ELECTRONICS UK is now fully represented by the following additional AGENTS and the personnel involved, named or otherwise, are fully licensed operators who have been selected for their interest in and knowledge of, the hobby not to mention their impeccable bona fides.

EAST ANGLIA — Dr. T. THIRST (Tim) G4CTT, NORWICH. 06925 403.

NORTH EAST — NORTH EAST AMATEUR RADIO, DARLINGTON. 0325 55969.

We hope customers in the above areas will avail themselves of the service now offered and we are sure they will derive great benefit from expert local help.

Our existing representatives remain, of course, as below.

- BRANCH: AMATEUR ELECTRONICS, UK — COASTAL, CLIFTONVILLE, KENT, KEN McINNES, G3FTE, THANET (0843) 291297. 9 a.m-10.30 p.m.
- BRANCH: AMATEUR ELECTRONICS UK — SCOTLAND, 287 MAIN STREET, WISHAW, LANARKSHIRE, GORDON McCALLUM, GM3UCI. TELEPHONE WISHAW 71382. (EVENINGS CARLUKE 70914)
- AGENT: WALES & WEST — ROSS CLARE, GW3NWS, CAERLEON, NEWPORT. (CAERLEON 422232) — ONLY 20 MINUTES OVER THE SEVERN BRIDGE.



508-514 ALUM ROCK ROAD
BIRMINGHAM 8

021-327 1497
Telex 337045 6313



**FOR QUALITY CRYSTALS—AT COMPETITIVE PRICES
POPULAR FREQUENCIES IN STOCK
MADE TO ORDER 10 kHz to 225 MHz**

**STAFF HOLIDAYS — Please note we shall be closed from
9th to 30th August inclusive. Any inconvenience to our
customers is regretted.**

QSL leads the field in supplying crystals world wide to major communications companies, broadcasting authorities and posts and telecommunications administrations. As a result we can supply the amateur with a high quality, competitively priced product over a frequency range from 10 kHz to 225 MHz. Get the power of the professionals in crystal supply behind you!

**2 METRE STOCK CRYSTALS. Price £1.83 for one crystal. £1.74/crystal
when two or more purchased.**

	HC6/U	HC6/U	HC25/U 30pF and 40pF TX	HC25/U 20pF and 30pF RX	HC25/U 25pF and 20pF TX	HC6 & 25/U SR RX
RO	4.0277	8.0555	12.0833	14.9888	18.1250	44.9666
R1	4.0284	8.0569	12.0854	14.9916	18.1281	44.9750
R2	4.0291	8.0583	12.0875	14.9944	18.1312	44.9833
R3	4.0298	8.0597	12.0895	14.9972	18.1343	44.9916
R4	4.0305	8.0611	12.0916	15.0000	18.1375	45.0000
R5	4.0312	8.0625	12.0937	15.0027	18.1406	45.0083
R6	4.0319	8.0638	12.0958	15.0055	18.1437	45.0166
R7	4.0326	8.0652	12.0979	15.0083	18.1468	45.0250
S8	—	—	12.1000	14.9444	18.1500	44.8333*
S9	—	—	12.1020	14.9472	18.1531	44.8416*
S10	—	—	12.1041	14.9500	18.1562	44.8500*
S11	—	—	12.1062	14.9527	18.1593	44.8583*
S12	—	—	12.1083	14.9555	18.1625	44.8666*
S13	—	—	12.1104	14.9583	18.1656	44.8750*
S14	—	—	12.1125	14.9611	18.1687	44.8833*
S15	—	—	12.1145	14.9638	18.1718	44.8916*
S16	—	—	12.1167	14.9667	18.1750	44.9000*
S17	—	—	12.1187	14.9694	18.1781	44.9083*
S18	—	—	12.1208	14.9722	18.1812	44.9166*
S19	—	—	12.1229	14.9750	18.1843	44.9250*
S20	4.0416	8.0833	12.1250	14.9777	18.1875	44.9333
S21	4.0423	8.0847	12.1270	14.9805	18.1906	44.9416
S22	4.0430	8.0861	12.1291	14.9833	18.1937	44.9500
S23	4.0437	8.0875	12.1312	14.9861	18.1968	44.9583

SR = Series Resonance *HC25 only

Also in stock: RO to R7 for FT221 RO to R7 and S8 to S23 for following: Beicom FS1007, FDK TM56, Multi 11 Quartz 16 and Multi 7, Icom IC2F, 21, 22A and 215, Trio Kenwood 2200, 7200, Uniden 2030 and Yaesu FT2FB, FT2 Auto, FT224, FT223 and FT202.

Also in stock 4 and 8 MHz TX in HC6/U for 145.8 MHz. Icom crystals TX for 145.6 MHz (RO). 44 MHz RX crystals in HC6 for 145 (RO). All at above price.

4 METRE CRYSTALS for 70.26 MHz in HC6/U at £2.25. TX 8.78250 MHz. RX 6.7466 or 29.78 MHz in stock.

70cm CRYSTALS in stock 8.0222 and 12.0333 in HC6 £1.85. Pye Pocketfone PF1, PF2, PF70 and Wood and Douglas £4.50 a pair or TX £2.25, RX £2.50, SUB (433.2) RBO, RB2, RB4, RB6, RB10, RB11, RB13 and RB14.

CONVERTER CRYSTALS in HC18/U at £2.85. In stock 38.666, 42.000, 70.000, 96.000, 101.000, 101.500, 105.666 and 116.000 MHz.

TONE BURST AND I.F. CRYSTALS in HC18/U at £2.25 in stock. 7.168 MHz for 1750 kHz and 10.245 MHz for 10.7 MHz IF's.

FREQUENCY STANDARDS in stock £2.75, HC6 200 kHz, 455 kHz, 1000 kHz, 5.000 MHz and 10.000 MHz, HC13 100 kHz, HC18 1000 kHz, 7.000 MHz, 10.700 MHz, 48.000 MHz and 100.000 MHz.

PRICES ARE EX VAT. PLEASE ADD 15%.

QuartSLab

**MARKETING LTD
P.O. Box 73
Summit House
London SE18 3LR**

Telephone: 01-690 4889 24 hr. Ansafone: Erith (03224) 30830
Telex: 912881 CWUKTX-G (Attention QUARTSLAB)
Cables: QUARTSLAB London SE18

MADE TO ORDER CRYSTALS SINGLE UNIT PRICING

	Price Group	Adjustment Tolerance ppm	Frequency Ranges	Price and Delivery A B
Fundamentals	1	200 (total)	10 to 19.999 kHz	— £23.00
	2	200 (total)	20 to 29.999 kHz	— £16.50
	3	200 (total)	30 to 99.999 kHz	— £10.50
	4	200 (total)	100 to 999.999 kHz	— £6.00
	5	50	1.00 to 1.499 MHz	£9.00 £6.00
	6	10	1.50 to 1.999 MHz	£4.75 £4.20
	7	10	2.00 to 2.599 MHz	£4.75 £4.00
	8	10	2.60 to 3.999 MHz	£4.55 £3.70
	9	10	4.00 to 20.999 MHz	£4.55 £3.60
	10	10	21.00 to 24.000 MHz	£6.00 £5.40
3rd OVT	11	10	21.00 to 59.999 MHz	£4.55 £3.60
5th OVT	12	10	60.00 to 99.999 MHz	£5.00 £4.00
	13	10	100.00 to 124.999 MHz	£6.15 £5.20
5th, 7th & 9th OVT	14	20	125.00 to 149.999 MHz	— £6.00
	15	20	150.00 to 225.00 MHz	— £7.50

Unless otherwise requested fundamentals will be supplied with 30pF load capacity and overtones for series resonance operation.

HOLDERS — Please specify when ordering — 10 to 200 kHz HC13/U, 170 kHz to 170 MHz HC6 or HC33/U, 4 to 225 MHz, HC18 and HC25.

DELIVERY. Column A 3 to 4 weeks (this service is subject to availability), Column B 6 to 8 weeks.

Please note that it is not always possible to provide the A delivery service but a telephone call will confirm its availability. Any orders received for A delivery when it is not available will automatically be placed on B delivery and a credit note issued for the difference in price.

DISCOUNTS. 5% mixed frequency discount for 5 or more crystals at B delivery. Price on application for 10 or more crystals to same frequency specification. Special rates for bulk purchase schemes including FREE supply of crystals used in UK repeaters.

EMERGENCY SERVICE SURCHARGES (to be added to A delivery prices). 4 working days £8, 6 working days £6, 8 working days £4, 13 working days £3 (maximum of 5 crystals on 4 day delivery).

CRYSTAL SOCKETS HC6/U and HC25/U 16p.

MINIMUM ORDER CHARGE £1.50.

COMMERCIAL USERS. Crystals can be supplied for MPU, industrial control, etc. in the range 4-21 MHz fundamental and 3rd OVT 18 to 60 MHz at £1.15 for 100 off. This is only a limited example of our capabilities. Please enquire about other quantities, frequency ranges, watch and sub-carrier crystals. We can supply crystals for marine and land mobile radio telephone use. Send for details.

TERMS. Cash with order, cheques and postal orders payable to QSL Ltd. All prices include postage to UK and Irish addresses. Please note Southern Irish cheques and postal orders are no longer acceptable. Please send bank draft in pounds Sterling.

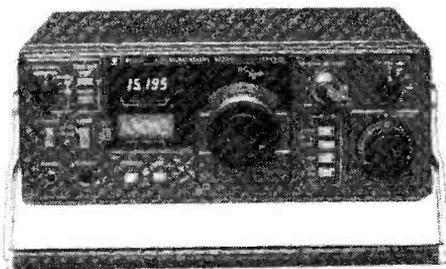
OVERSEAS DISTRIBUTORS

West Germany, Austria and Benelux countries — SSB Electronic, Karl Arnold Str. 23, 5860 Iserlohn, West Germany.
Denmark — Asbjorn Jorgensen, Aabrinken 1, Tapdrup, DK800, Viborg.
Denmark. Portugal — Sorubal SARL, Rua General Pimenta de Castro, 15-81, Lisboa 5, Portugal.
(Enquiries invited from companies in other countries.)

Bredhurst electronics

HIGH ST., HANDCROSS, W. SUSSEX 0444 400786

"THE" H.F. RECEIVER



R 1000

AVAILABLE FROM STOCK

£298 inc. VAT and Carriage

SPECIAL OFFER



SR11 MARINE VHF RECEIVER **£69** inc. VAT & carriage

The SR11 is fully tunable over the entire VHF Marine band of 156-162 MHz. It also incorporates automatic scanning of 6 crystal controlled channels to allow continuous monitoring of important services such as weather reports, harbour movements etc.

The SR11 is a self contained unit measuring 5 1/4 x 1 3/4 x 6", includes a loudspeaker and requires 12V d.c. to operate.

Suitable power supply for 240V use **£14** (£1 carr)

Suitable home antennas—

Ringo Ranger **£25** (£1 carr)

TRANSCEIVERS

H.F.

Trio TS 120V	£347.00
Trio 120S	£432.00
Trio TS 520SE	£437.00
Yaesu FT 101Z	£574.00
Yaesu FT 101ZD	£661.00
Trio TS 180S	£679.00
Yaesu FT 107M	£859.00

2 M MOBILES

Icom IC 240	£169.00
FDK Multi 700EX	£199.00
KDK FM 2025	£250.00
Standard C8800	£250.00
Icom IC 255E	£255.00

2 M HANDHELDS

FDK Palm II	£99.00
Yaesu FT 202R	£119.00
FDK Palmsizer	£149.00
AOR AR 240A	£165.00
Trio TR 2300	£166.00
Yaesu FT 207R	£199.00
Trio TR 2400	£210.00

2 M MULTIMODES

Icom IC 260E	£339.00
Icom IC 251E	£479.00
FDK Multi 750	£295.00
Trio TR 9000	£345.00

RECEIVERS

H.F.

Lowe SRX 30	£178.00
Yaesu FRG 7	£199.00
Trio R 1000	£298.00
Yaesu FRG 7000	£359.00

2 METRE F.M.

Search 9	£45.00
FDK TM56B	£105.00
Bearcat 220	£258.00

MARINE V.H.F.

Search 9	£45.00
SR 11	£69.00
TM56B	£115.00
Bearcat 220	£258.00

AIR BAND

Waltham W144	£29.95
R517	£49.95
AP12	£120.00
Bearcat 220	£258.00

SECOND-HAND BARGAINS

We have fast changing stocks of second-hand equipment.

Please phone your enquiry.

ACCESSORIES

(C.&P.)
75p

Mobile Safety Mics	£20.95
500Ω Hand Mics	£6.75
World Clocks QTR 24	£18.40
QTR 24D	£24.50
Headphones YH55	£10.00
Trio HS4	£10.35
Trio HS5	£21.85

SWR Meter

SWR 25	£13.00
SW 110	£35.40
CN620	£52.81

Coax Switches

2 way Toggle	£6.75
5 way Rotary	£10.20

A.T.U.'s

KX2 for Listeners	£29.95
Trio AT 120	£55.20
Trio AT 200	£82.80

Microwave modules

Jaybeam Antenna	All at com-
2M Mobile Antenna	petitive
High Gain HF Antenna	prices

PLEASE PHONE YOUR ENQUIRY

INSTANT HP • ACCESS • BARCLAYCARD • PART EXCHANGE

MID SUSSEX HOUSE • HIGH ST. • HANDCROSS • WEST SUSSEX RH17 6BW

Mail Order

Tel.: 0444 400786 9 am - 5.30 pm

Retail Callers

TO ORDER ANY OF THE ABOVE ITEMS SIMPLY WRITE ENCLOSING A CHEQUE OR PHONE YOUR CREDIT CARD NUMBER.

EIØCL

EI 8 DC

G4CIV

WESTERN COMMUNICATIONS (Galway) LTD.

KILCOLGAN, GALWAY, IRELAND

Tel. Within the State: 091-86206 or 22567.

U.K. Callers: 0009-86206 or 22567

Telex: 8933 MHTC EI

Importers — Exporters — Factors **Distributors of Telecommunication Equipment**

Your nearest AGENT West, Midlands &
South for:

YAESU MUSEN; STANDARD; DRAKE
TR7/DR7/L7

Note our Drake Tx/Rx, 1.6-30 MHz
Continuous.

BEARCAT. 210/220/FB/250FB.

Distributor for: H.M.P. Commercial,
Marine, Amateur Antennas.
Agents required.

Distributor for: G. WHIP of Wales — full
line in stock.

SYT. Land line, interface equipment.

Stockist of: J. Beam, Bantex, Cushcraft.

We also have all the accessories and hard-to-get plugs, sockets, etc.

We will distribute quality communication products on a sole agency basis and are equipped to handle our own Warranty.

DANCOM Landmobile — MPT + P&T
approved. — Agents required.

QUARTZ — Crystals — fastest delivery.

Microwave Modules Products Stocked.

LUNAR — Amps and Pre Amps.

SPECTRUM — Repeaters — Duplexers
Amateur and Commercial to order

DANCOM — Marine, Type Approved.

SAXTON — RG8u + 58u — Agents
required.

Sure Bros - microphones.

Lee Electronics Ltd

LEE

LEE

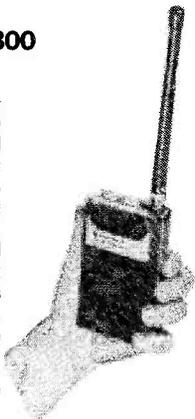
We shall continue to give away, Free All Risk Insurance Cover on any new equipment purchased from us over the value of £150!!

THE STANDARD RANGE

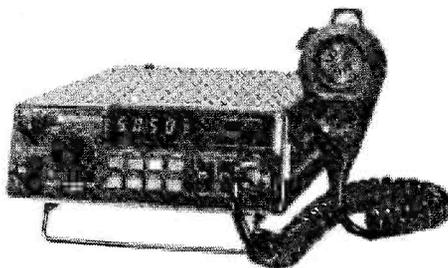
THE AMAZING NEW C800

This 10-channel scanner outperforms many of its rivals due to its highly sensitive front end and excellent filtering. A one channel 50Mw transmitter is incorporated that's ideal for local use. Controls include squelch, volume, autoscan and manual channel stepping. The unit comes complete with channels S20, R1, R2, R7, ni-cads, charger, helical antenna and wire antenna.

Price **£69.95** + VAT carriage free



THE POPULAR C880 2MTR + C7800 40CM



The **FRG7** needs no introducing, this low price receiver must be one of the best buys around. The unit covers 500kHz to 30MHz in four ranges using the famous Barlow Wadley Loop technique. The unit operates from 100-240V AC or 12V DC (batteries can be used with the optional battery holder)

£199 inc. VAT. carr. £3

We have just made a new batch of our own Digital Readout. This can be fitted inside the set or mounted externally to give a very accurate read out.

£39.95 inc. VAT and Postage



YAESU FRG7

The **Trio R1000** uses the latest techniques to produce a truly remarkable Receiver covering 200 kHz to 30 MHz in 30 bands. Excellent selectivity is obtained by 12, 6 and 2.7kHz filters, the 2.7kHz filter producing a shape factor better than 1:2, 6:60dB. Accurate frequency readout is achieved by a 5 digit Display, the unit operates from 100-240V AC and 12V DC.

£289 inc. VAT. Carriage £3



TRIO R1000



Credit Facilities and Part Exchanges Welcome

Nearest Main Line Station: PADDINGTON.
Nearest Underground: EDGWARE ROAD

LEE ELECTRONICS LTD.
400 EDGWARE ROAD
LONDON W2
Tel: 01-723 5521 Tlx: 298765

P.M. ELECTRONIC SERVICES

PROFESSIONAL COMPLETE CRYSTAL SERVICE AMATEUR

Prices shown exclude VAT — UK Customers please add 15%.

TWO METRE — CRYSTAL RANGE

CRYSTAL FREQUENCY RANGE USE (Tx or Rx) and HOLDER	6 MHz-TX-HC25/U	8 MHz-TX-HC6/U	10 MHz-RX-HC6/U	11 MHz-RX-HC6/U	12 MHz-TX-HC25/U	14 MHz-RX-HC25/U	18 MHz-TX-HC25/U	36 MHz-TX-HC6 & 25/U	44 MHz-RX-HC6/U	44 MHz-RX-HC25/U	48 MHz-TX-HC6 & 25/U	52 MHz-RX-HC25/U
OUTPUT FREQUENCY												
144.4 (433.2)	b	e	e	e	e	e	e	e	e	e	e	e
144.480	e	e	e	e	e	e	e	e	e	e	e	e
144.800	e	e	e	e	e	e	e	e	e	e	e	e
144.850	e	e	e	e	e	e	e	e	e	e	e	e
145.000/ROT	e	e	e	e	e	e	e	e	e	e	e	e
145.025/R1T	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/R8T	a	a	a	a	a	a	a	a	a	a	a	a
145.300/S12	e	e	e	e	e	e	e	e	e	e	e	e
145.350/S14	e	e	e	e	e	e	e	e	e	e	e	e
145.400/S16	e	e	e	e	e	e	e	e	e	e	e	e
145.425/S17	e	e	e	e	e	e	e	e	e	e	e	e
145.450/S18	e	e	e	e	e	e	e	e	e	e	e	e
145.475/S19	e	e	e	e	e	e	e	e	e	e	e	e
145.500/S20	e	e	e	e	e	e	e	e	e	e	e	e
145.525/S21	e	e	e	e	e	e	e	e	e	e	e	e
145.550/S22	e	e	e	e	e	e	e	e	e	e	e	e
145.575/S23	e	e	e	e	e	e	e	e	e	e	e	e
145.600/R0R	e	e	e	e	e	e	e	e	e	e	e	e
145.625/R1R	e	e	e	e	e	e	e	e	e	e	e	e
145.650/R2R	e	e	e	e	e	e	e	e	e	e	e	e
145.675/R3R	e	e	e	e	e	e	e	e	e	e	e	e
145.700/R4R	e	e	e	e	e	e	e	e	e	e	e	e
145.725/R5R	e	e	e	e	e	e	e	e	e	e	e	e
145.750/R6R	e	e	e	e	e	e	e	e	e	e	e	e
145.775/R7R	e	e	e	e	e	e	e	e	e	e	e	e
145.800/R8R	e	e	e	e	e	e	e	e	e	e	e	e
145.850/S38	e	e	e	e	e	e	e	e	e	e	e	e

PRICES: (a) £1.95; (b) £2.32; (c) £2.80; (e) £3.94.

AVAILABILITY: (a), (b), (c) stock items, normally available by return (we have over 5000 items in stock). (e) 4/6 weeks normally but it is quite possible we could be able to supply from stock.

N.B. Frequencies as listed above but in alternative holders and/or non stock loads are available as per code (e).

ORDERING. When ordering please quote (1) Channel; (2) Crystal frequency; (3) Holder; (4) Circuit conditions (load in pf). If you cannot give these, please give make and model of equipment and channel or output frequency required and we will advise if we have details.

JAPANESE AND AMERICAN EQUIPMENT We can supply crystals for YAESU (FT2F, FT2 Auto, FT224), most of the ICOM range and the TRIO-KENWOOD range. We can also supply from stock crystals for the HEATHKIT HW202 and HW17A.

\$18 and \$19 are now added to our stock range

CRYSTALS FOR BRITISH 70CM CHANNELS

Due to the much higher multiplication involved (3 times that on 2m.) all our stock 70cm. crystals are now to much closer tolerances than our standard amateur range.

We are stocking the following channels RBO (434.60/432.00), RB2 (434.66/433.05), RB4 (434.70/433.10), RB6 (434.75/433.15), SU8 (433.20), RB10 (434.85/433.25), RB14 (434.95/433.35), SU18 (433.45) and SU20 (433.50) — TX and RX for use with: PYE UHF Westminster (W15U), UHF Cambridge (U10B), Pocketfone (PFI) and STORNO COL/COM 662 all at £2.32. For the U450L Base Station we have the Tx crystals for all the above channels. The RX crystals for the U450L Base Station, together with the TX and RX crystals for the remaining SU channels (SE12—433.30 RTTY, SU16—433.40 and SU22—433.55) for all the above equipments are available at £3.94 to Amateur Spec. or £4.64 to same spec. as stock items. Delivery approx. 4/6 weeks.

4M. CRYSTALS FOR 70.26 MHz—HC6/U

TX 8.7825 MHz and RX 6.7466 MHz or 29.780 MHz £2.32.

10.245 MHz 'ALTERNATIVE' IF CRYSTALS £2.32. For use in Pye and other equipment with 10.7 MHz and 455 kHz IF's to get rid of the "birdy" just able 145.0 MHz in HC6/U, HC18/U and HC25/U.

CRYSTAL SOCKETS—HC6/U, HC13/U and HC25/U (Low loss) 16p each 10p p&p per order (p&p free if ordered with crystals).

CONVERTER/TRANSVERTER CRYSTALS—HC18/U

All at £3.00, 38.6666 MHz (144/28), 42 MHz (70/28), 58 MHz (144/28), 70 MHz (144/4), 71 MHz (144/2), 95 MHz (342/52), 96 MHz (1,296/432/144), 101 MHz (432/28), 101.50 MHz (434/28), 105.6666 MHz (1,296/28) and 116 MHz (144/28).

TEST EQUIPMENT FREQUENCY STANDARD CRYSTALS

100 kHz in HC13/U and 100 kHz in HC13/U and 200 kHz and 455 kHz in HC6/U, £2.95.

1 MHz and 5 MHz in HC6/U and 10 MHz and 10.7 MHz in HC6/U and HC25/U, £2.80

ANZAC MD-108 DOUBLE BALANCED MIXER

5-500 MHz supplied with full details for only £5.95.

EXPRESS SERVICES

Many types made to order crystals are available on our EXPRESS SERVICE with a delivery of three days on our class "A" service. Telephone or Telex for details.

TERMS: CASH WITH ORDER—MAIL ORDER ONLY—S.A.E. WITH ALL ENQUIRIES—PRICES INCLUDE P.&P. (BRITISH ISLES) EXCEPT WHERE STATED—OVERSEAS CHARGED AT COST.

CRYSTALS MANUFACTURED TO YOUR SPECIFIC REQUIREMENTS

Prices shown are for one off, to our amateur spec., closer tolerances are available, please send us details of your requirements.

A Low frequency fundamentals in HC13/U or HC6/U

Adj. tol. ±50ppm. Temp. tol. ±100ppm 0 to +70°C
 6.0 to 19.999 kHz £28.12 (£31.63) 80 to 99.999 kHz ... £7.30 (£8.21)
 20 to 29.999 kHz ... £17.75 (£19.97) 100 to 149.99 kHz ... £6.68 (£7.51)
 30 to 59.999 kHz ... £15.51 (£17.45) 150 to 499.99 kHz ... £6.20 (£6.97)
 60 to 79.999 kHz ... £12.41 (£13.19) 500 to 799.99 kHz ... £7.30 (£8.21)

B High frequency fundamentals/overtones in HC6/U, HC18/U or HC25/U

Adj. tol ±20 ppm, Temp. tol ±30 ppm —10 to +60°C
 †800 to 999.9 kHz (fund) ... £9.50 *25 to 30 MHz (fund) ... £7.56
 *†1.0 to 1.499 MHz (fund) ... £9.45 *15 to 20.99 MHz (3O/T) ... £4.72
 *†1.5 to 2.599 MHz (fund) ... £4.21 *21 to 62.99 MHz (3O/T) ... £3.94
 *†2.6 to 20.99 MHz (fund) ... £3.94 *60 to 105 MHz (5O/T) ... £4.53
 *†3.4 to 3.999 MHz (fund) ... £5.43 *†105 to 125 MHz (5O/T) ... £7.09
 *†4.0 to 5.999 MHz (fund) ... £4.21 125 to 180 MHz (O/T) ... £6.48
 *†6.0 to 20.99 MHz (fund) ... £3.94 180 to 25 MHz (O/T) ... £10.64
 *†21 to 24.99 MHz (fund) ... £6.14

*Delivery * Normally 4/6 weeks (express available), all other frequencies 6/8 weeks. †Holders: Low frequencies HC13/U or HC6/U dependent on frequency. High frequencies are available in HC6/U, HC18/U or HC25/U unless marked † only available in HC6/U or † only available in HC18/U and HC25/U, HC17/U (replacement for FT243) and HC33/U (wire end HC6/U) available as per HC6/U above at 25p extra on HC6/U price. Unless otherwise specified, fundamentals will be supplied to 30pf circuit conditions and overtones to series resonance.

2 ALEXANDER DRIVE, HESWALL, WIRRAL, MERSEYSIDE L61 6XT
Tel: 051-342 4443. Cables: CRYSTAL BIRKENHEAD. Telex: 627371

Buy your TRIO Rig from a Specialist Trio Dealer — CATRONICS

Because CATRONICS specialise in TRIO, YOU get a BETTER DEAL
 (1) SALES: Only a TRIO specialist such as Catronics knows and stocks the full TRIO range of equipment and accessories.
 (2) SERVICE: Only a TRIO specialist such as Catronics can offer the servicing arrangements required for today's microprocessor controlled equipment. We have probably the best equipped service workshop in the south of England with trained engineers who know how to use the equipment.

ALL OUR TRIO PRICES INCLUDE VAT

TS820	160-10m transceiver 200W PEP	£669.30	TS770E	2m/70cm all mode dual bander	£763.60
DG1	Digital readout to 100Hz	£121.90	SP70	Matching speaker	£18.40
SPB20	Speaker	£37.95	TR7600	2m Synthesised mobile/fixd transceiver 10 watt	£199.50
VFO820	External VFO	£118.45	RM76	Microprocessor control unit	£40.50
YG88C	CW filter 8pole	£36.80	TR2300	2m FM portable transceiver PLL with all 80FM channels	£166.75
R820	The ultimate matching receiver to the TS820	£690.00	VB2300	10W booster	£49.45
YG455C	CW filter 500Hz	£58.65	MB2	Mobile mount	£17.25
YG455CN	CW filter 250Hz	£60.95	RA1	Helical rubber antenna	£6.90
YG88A	AM filter 6kHz	£34.50	PS1200	Power unit and charger TR2300/3200/2200GX	£29.50
TS520SE	160-10m Transceiver	£437.00	TR2400	2 meter synthesised handheld transceiver	£210.45
SP520	Speaker	£17.25	ST1	Base stand and quick charger	£43.70
YG3395C	8pole CW filter	£37.95	BC5	12V quick charger	£17.25
DG5	Digital display/counter	£103.50	SC3	Carrying case	£11.50
DK520	Conversion for older TS520	£10.35	TS180S	160-10m solid state transceiver	£589.95
TS120S	80-10m mobile transceiver 200W PEP	£432.40	TS180S	As above but with digital frequency control	£679.65
TS120V	80-10m mobile transceiver 20W PEP	£347.30	VFO180	External VFO	£96.60
PS20	AC power supply for TS120V	£44.85	SP180	Speaker	£36.80
MB100	Mobile mounting bracket	£17.25	DF180	Digital frequency control	£104.65
YK88C	500Hz CW filter	£28.75	AT180	1.8-30MHz antenna tuner	£95.45
SP120	External speaker	£25.30	PS30	AC power unit for TS180S	£85.10
VFO120	External VFO	£89.70	TR8300	70cm FM mobile 10W transceiver fitted 4 channels	£225.00
AT120	Antenna tuner (100W)	£55.20	TR3200	70cm FM handy transceiver fitted 3 channels	£164.45
PS30	AC PSU for TS 120S	£85.10	MB1A	Matching mobile mount	£9.20
AT200	1.8-30MHz antenna tuner	£82.80	R1000	0.2-30MHz receiver	£297.85
SM220	Monitor scope	£197.80	SP100	External speaker	£26.45
BS8	TS820 scanboard for SM220	£48.30	R300	General coverage receiver	£149.50
TL120	80-10m 200W linear	£128.80	HS4	Communications headphones, tailored response	£10.35
TL922	HF linear amplifier 160-10m/2kW PEP 2 x 3500Z tubes	£672.75	BPF2A	2m band pass filter 144-146MHz 50W rms 100W PEP	£21.85



CATRONICS ARE 300 yards from Wallington Railway Station (London Bridge or Victoria). Frequent buses from Croydon and Sutton. Three large car parks within 100 yards. Hire purchase facilities available on all equipment. Credit cards accepted. Mail orders — normally dealt with on day of receipt. Securicor delivery arranged. All prices include VAT.

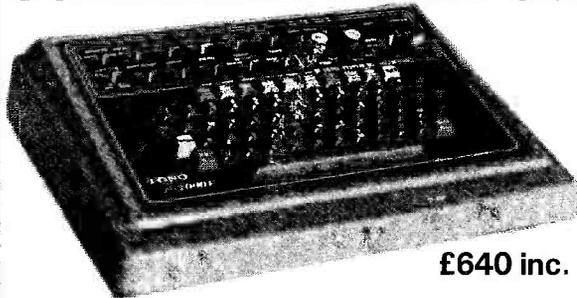


CATRONICS LTD., Dept. 916, Communications House, 20 Wallington Square, Wallington, Surrey SM6 8RG

Tel: 01-669 6700, Shop/Showroom open Mon to Fri 9am to 5.30pm. Sat 9am to 1pm. Closed for lunch 12.45 to 1.45pm

ANNOUNCING A NEW COMMUNICATIONS COMPUTER!

TONO



£640 inc.

Theta 7000E

receiving speeds — 10CW speeds + 8RTTY ★ Built-in demodulator for high performance for 170, 425 and 820 Hz shift ★ Crystal controlled modulator for AFSR — Hi or Lo tone ★ Convenient ASCII key arrangement ★ Large capacity display memory — 2 pages 32 chr x 16 lines split screen for Rx & Tx if required ★ Automatic transmit/receive switch ★ Anti noise circuit ★ Battery backed-up memory 7 channels of 64 chrs ★ Send function ★ Buffer memory — 53 character type ahead, rub out function ★ Simultaneous access of the memory ★ Pre-loading function ★ CR (carriage return) LF (line feed) cancel function ★ Cursor control function ★ Word mode operation ★ Automatic CR/LF (72, 60 or 80 chrs per line) ★ Echo function ★ Word Wrap around function ★ Transmit/receive in ASSC11 mode in RTTY ★ CW identification function ★ Mark and break (space and break) system ★ Monitor circuit ★ CW practice function ★ Variable CW weights ★ Cross pattern checking output terminal ★ Log computer output provided ★ Test message function (Ry and QBF).

The new THETA 7000E means that every Amateur can enjoy the visual display of CW, RTTY, and ASCII in both transmit and receive modes. Just connect the TONO to any TV set via the antenna terminals or to a page printer from the parallel port provided. Bring up your CW speed in receiving or sending by either watching receiver sent or from recorded cassettes. Connection to the transceiver is via the key, phone and mic sockets.

Some of the Outstanding Features

COMMUNICATIONS COMPUTER THETA 0-7000E
 VHF and Composite Video Output Provided
 Printer interface ★ Wide range of transmitting and



THANET ELECTRONICS

143 Reculver Road, Beltinge, Herne Bay, Kent (02273 63859)



WE HELP YOU WHERE IT HURTS

(WITH YAESU TRIO FDK STANDARD AND ICOM)

Pretty pictures are fine . . . Journals these days are packed full of them — Trouble is they're so repetitive . . . Same Gear . . . Same Price . . . Even the same dialogue! Check now, you'll see what we mean — Only the address is different! The question is — What do they cost you? The quality of sales and service comes down to overheads, you know it and we know it — Simply stated, use it one way and you can't use it the other — So that's why we're at the end of this Mag — No pretty pictures here; only value for money deals — in a nutshell that's our aim — TO HELP YOU WHERE IT HURTS — In your pocket! For example look at our HP deal — A real super saver — The best ever offered to Radio Amateurs, so if you're looking for easy payments — Look no further — Our deal is aimed TO HELP YOU WHERE IT HURTS and we know WHERE IT HURTS — In your pocket! Ask the Amateurs who've bought from Amcomm — They'll tell you — First Class Service — Absolutely No Quibble Guarantee — Express collection and return guarantee service — Average Repair Time 48 Hours — That's where our overheads go — No pretty visuals, just top deals and service TO HELP YOU WHERE IT HURTS — In your pocket! — More Good News — By the time you read this we'll have added the Yaesu 707, Icom 255, Icom 261, Trio R1000, Trio TR9000 and FDK Multi 700 to the List above — So Get Cracking! Calculator first! — Telephone Next! — WE'LL HELP YOU WHERE IT HURTS — Call 01-864 1166 or 01-422 9585 for the Gen.

Yaesu FT 901DM	Yaesu FT 101ZD	Yaesu FT 225RD	Yaesu FT 7B	
Cash Price £920.80	Cash Price £670.20	Cash Price £557.76	Cash Price £432.12	
Deposit £352.00	Deposit £240.00	Deposit £216.00	Deposit £168.00	
12 mthly rpymts £47.40	12 mthly rpymts £35.85	12 mthly rpymts £28.48	12 mthly rpymts £22.01	
Yaesu FT 107M/107E	Yaesu FRG 7000	Yaesu FT 207R	Standard 8800	Standard 8700
Cash Price £862.04	Cash Price £377.04	Cash Price £199.60	Cash Price £252.80	Cash Price £275.08
Deposit £335.00	Deposit £150.00	Deposit £91.00	Deposit £99.00	Deposit £109.00
12 mthly rpymts £43.92	12 mthly rpymts £18.92	12 mthly rpymts £9.05	12 mthly rpymts £12.75	12 mthly rpymts £13.84

MAIL AND TELEPHONE ORDERS! . . . Well our competitors are terrific at this — We just do our best. That means if we have your order before Midday it leaves before 4.00, no parcel post — Everything First class Mail or Securior (not Jaybeam or Hygain) because you want it NOW. If we're short on stock (almost never) we'll ring you. If you can't wait we'll recommend another dealer to you. So whatever you're after, check the glossies then call the "Try Harder People" at Amcomm.

The opportunity is below — Try us once and we'll prove it — Cash or Terms we're with you — TO HELP YOU WHERE IT HURTS — In your pocket!

- ★ Check our Mail Order list in last 3 Radcomms. Prices haven't changed.
- ★ If you need pretty pictures send us 25p and we'll send you a bundle — in colour too!
- ★ Other low charge deals available over 18 and 24 months. Call us with your requirements and we'll tailor a deal for you.

JAYBEAM — HYGAIN — BANTECH — AMTECH — CUSHCRAFT — SWAN — ATLAS
and 50 other major lines — all ex stock

AMCOMM SERVICES

194A NORTHOLT ROAD, SOUTH HARROW, MIDDX.

Tels: 01-864 1166 & 01-422 9585

OPENING HOURS: Mon-Sat 9.00-5.00, Sunday 12.00-3.00



Optimum Performance with KW Ancillaries



DECCA-KW E-ZEE MATCH
Antenna Tuner 10-80 metres, matches 50/75 ohm input to co-ax fed antenna's, also twin feeder and single wire systems.

DECCA-KW107 SUPERMATCH
Antenna Tuning System Incorporates E-ZEE Match, SWR/RF power meter; Dummy Load; Antenna switch.

DECCA-KW109 SUPERMATCH
A high power version of the KW107 is available.

DECCA-KW ANTENNA SWITCH. Selects up to 3 Antennas. Low-insertion loss up to 200 MHz. 1kW P.e.p. rating.

DECCA-KW BALUN Mk. II
The Decca-KW Balun is broadband-3 to 30 MHz, rated up to 2 KW p.e.p. 1:1 Ratio 50 ohms "unbalanced" feed to "balanced" output. Waterproof moulded case. Suitable for Dipole and Beam Antenna.

Other KW Favourites—Decca KW Dummy Load, KW Traps (original and the best); KW Trap Dipoles; Stockist for HY-Gain beams and Verticals; CDR Rotators; Shure Microphones, etc.
Write or phone for catalogue..



Amateur Radio Products,
DECCA COMMUNICATIONS LTD.
Cramptons Rd., Otford, Sevenoaks, Kent TN14 5EA
Tel.: Sevenoaks (0732) 50911

SERVING RADIO AMATEURS WORLD-WIDE

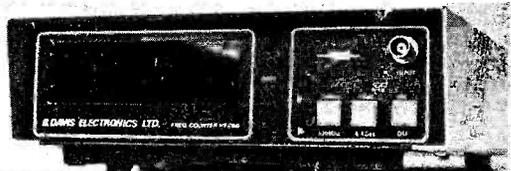
J. BIRKETT *Radio Component Suppliers*

25 THE STRAIT · LINCOLN · LN2 1JF

Telephone: 20767

UHF POWER AMPLIFIER MODULE 50mW Input, Output 2.5 watt 420-480MHz, 13 Volt, 50 ohm Type 8GY 22C with data at £12.50.
 BLY34 3 WATT 13 VOLT 175MHz with data at 75p.
 HF-VHF POWER TRANSISTOR 587BLY 28 to 70MHz SSB, FM, 40 Watts 28 Volt with data at £3.
 BLY55 175MHz 4 WATT 13 VOLT with data at £2.50.
 BLY97 24 VOLT 175 MHz 4 WATT with data at £3.
 BFR64 470MHz 13 VOLT 3 WATT with data at £4.
 SPECIAL SUB-MINIATURE TUBULAR TRIMMER 0.5 to 3pf at 15p.
 R.F. SIGNAL TRANSISTORS 2N918 at 25p, AF239 at 50p, 2N 5179 at 50p, 2N 5180 at 50p.
 EDDYSTONE TRANSMITTING VARIABLES 30+ 30pf (60pf) at £2.20.
 VHF-UHF STRIPLINE FET 2N4417 with data at £2.20.
 FERRITE BEADS FX 1115 at 15p doz. 1/2" Long type at 6 for 20p.
 MINIATURE AIRSPACED TRIMMERS 10pf at 20p each.
 SOLDER-IN FEED THRU'S 6.8pf, 300pf, 1000pf at 20p doz.
 MINIATURE VARIABLE CAPACITORS 250 + 250pf (500pf) at 85p.
 VALVE HOLDERS B7G, B9G Both 10p, Ceramic B9D at 15p.
 6 TO 12 VOLT SPCO 5 AMP CONTACTS RELAY at 60p.
 MINIATURE DISC CERAMICS 22, 33, 270, 330, .01uf 50v.w., All 20p doz., .1uf 63v.w., at 5p., .22uf 6v.w. at 5p.
 VHF MINIATURER F. CHOKES 10U.H., 30U.H., 300U.H., All 7p each.
 TTL I.C.'s 7400, 7410, 74L00, 7453, 7430, All at 6 for 50p.
 BUTTERFLY PRE-SET VARIABLE CAPACITORS 25 x 25pf at 50p, 38 x 38pf at 60p, 38 x 38pf Wide Spaced at 65p.
 ELECTRET MICROPHONE INSERTS with FET Pre-Amp at £1.85.
 1 WATT WIRE ENDED ZENERS 3.6, 5.6, 6.8, 8.2, 9.1, 11, 12, 13, 15, 16, 20, 22, 27, 30, 36, 56, 62, 91, 110, 120, 130, 150, 160, 180, 200 Volt all at 15p each.
 10 WATT STUD MOUNTING ZENER DIODES 4.7, 6.8, 7.5, 8.2, 12, 15, 18, 20, 22, 27, 30, 36, 56, 62, 91, 110, 120, 130, 150, 180, 200 Volt All at 50p each.
 50 ASSORTED DISC CERAMICS for 60p.
 100 C280 POLYESTER CAPACITORS assorted for 60p.
 10.7MHz VERNITRON FM4 FILTERS at 50p, 3 for £1.
 MURATA 10.7MHz FILTERS Type SFC10.7 at 30p each.

200 ASSORTED 1/4 WATT RESISTORS for 75p.
 50. BC 107-8-9 TRANSISTORS assorted untested for 60p.
 MINIATURE 12 WATT CERAMIC TAG STRIPS at 15p.
 X BAND GUNN DIODES with data at £1.65.
 ITRON 9 VOLT 9 DIGIT SEVEN SEGMENT DISPLAY Type FG95A at £2.20.
 3 GANG VARIABLE CAPACITORS 25 x 25 x 25pf at 75p.
 HP HOT CARRIER DIODE 5082-2800 at 40p each.
 NUT FIXING SO 259 VHF SOCKETS at 50p each.
 SPECIAL 5 PIN DARLINGTON TRANSISTORS in 14 PIN DIL PACKAGE HFE 5000, 10 Volt, 500mA with connections at 50p.
 SUB-MINIATURE 1000pf 50v.w. DISC CERAMICS at 25p doz.
 SUB-MINIATURE SPCO TOGGLE SWITCHES at 50p each.
 VHF-UHF FETS BF256C at 4 for 75p, E304 at 30p, 4 for £1.
 VHF POWER TRANSISTORS RE174 10 watt 13 volt 175MHz at £2.50.
 VHF STRIPLINE TRANSISTORS Type 1, 2GHz 18 volt Emmitter connected one leg only at £1, Type 2, 2 GHz 18 volt Emmitter Fully connected at £2, Type 3, 5 GHz Low Noise with data sheets at £3, Type 4, like BFR 96 at £1.95.
 HFC 600 8 DIGIT FREQUENCY COUNTER 600MHz at £123. SAE for leaflet.



HFC 600 FREQUENCY COUNTER 8 Digit 600 MHz at £123. SAE for leaflet.
 Please add 20p for post and packing on U.K. under £2. Overseas postage charged at cost.



NORTHERN COMMUNICATIONS

AMATEUR ★ COMMERCIAL ★ MARINE

YAESU, FDK, ATLAS, DENTRON, STANDARD, JAYBEAM
 NAG, ASP, SWAN, G WHIP, MM, CDE, SEM



CUSHCRAFT Power and Performance ANTENNAS

ATV3 - Vertical 10/15/20	(a)	£35.40
ATV5 - Vertical 80/10m	(b)	£76.00
A144/11 - 11 element 13db Yagi 144 Mhz	(b)	£27.85
214B - 14 element 15db long Yagi 144 Mhz	(c)	£45.00
A3219 - 19 element "Boomer" 16.5db long Yagi 144 Mhz	(c)	£64.00
ARX2 - Ringo ranger 6db Vertical 144 Mhz	(a)	£26.50
AR10 - Ringo Ranger Vertical 10 metres	(a)	£22.00
A10/3 - 3 element Yagi 7.6db 10 metres	(b)	£52.00
A15/3 - 3 element Yagi 7.6db 15 metres	(b)	£72.00
A20/3 - 3 element Yagi 7.6db 20 metres	(c)	£139.75
ATB34 - 3 Band HF Yagi 7.5db 10/15/20 metres	(*)	£235.75
A144/7 - 7 element 10db Yagi 144 Mhz	(a)	£24.95
A144/11 - 11 element 11.3db Yagi 144 Mhz	(a)	£27.35

Prices include VAT, * carriage extra. (a) £1.00; (b) £2.00; (c) £3.00

OR our very own 2 metre 12 element ZL SPECIAL
 13db gain from a 10ft 6in long split boom

OR our very own 2 metre 12 element ZL SPECIAL
 ZL-12 13db gain from a 10ft 6in long split boom ... (a) £28.75

NEW Portable, Compact 8 element ZL SPECIAL
 ZL-8-9.5db gain only 6ft 0in long split boom

SWAN 100MX HF TRANSCEIVER - Now at a Price You Can Afford

80-10 metre Solid State, compact HF rig for mobile and fixed operation. 235 watts input. Send for details of this amazing rig! Limited period offer, including VAT

Mains PSU also available.

STANDARD MOBILES ARE HERE!

C8800 2 metre FM Mobile, the best value around, in its price range. Superb list of operating features and an excellent performer tool (we're convinced - drop in for a demonstration)

C7800 70 centimetres FM Mobile - a no compromise rig, at a sensible price. All the features of a good 2 metre unit in a purpose designed package for UHF

FDK - MULTI 700EX & 750EX

In the very best traditions of FDK the new M700EX (2m FM25 watts) and M750EX (2m Multimode Mobile SSB/FM) are here to offer you the very best in 2 metre operating at economic prices.

If you liked the Multi 700E then you'll love the EX version! The new M750EX makes it possible to work the SSB DX, without breaking the bank! Contact us for details.

M700E £199.00 M750 £299.00



Bradford (0274) 814218 Mon.-Sat.

Halifax (0422) 40792

VISIT OUR SHOWROOM - Thursday, Friday, Saturday

303 CLAREMOUNT ROAD, HALIFAX HX3 6AW, West Yorkshire



C.B. ELECTRONICS

UNIT 3, 771 ORMSKIRK ROAD, PEMBERTON, WIGAN, WN5 8AT

Telephone: Wigan (0942) 216567

THE BEST IN THE NORTH-WEST

HOW TO FIND US — From M6 junction 26 follow signs for Wigan A577 at first traffic lights (T junction) turn right towards Wigan. At next traffic lights you are there, *BUT* turn left and 10 yards further turn right by telephone kiosk. Premises are slightly to your right. Plenty of parking space. Mileage from motorway ½ mile. From Wigan follow the A577 Skelmersdale to traffic lights at Fleet Street, Pemberton (Ye Olde White Swan on your left). Turn right then 10 yards right again. By Co-op. Mileage from Wigan 2½ miles.

YAESU		Charger	£18.87	Multi Ull	£249.00	ASP Antennas	
FT901DM	£920.00	QTR24	£18.40	Palmsizer	£159.00	2009 5/8 wave	£11.38
FT101Z	£575.00	YP150	£67.27	Palm IV	£159.00	201 1/4 wave	£4.31
FT101ZD	£661.25			TM56B	£104.00	397 Low Band	£7.13
FL2100Z	£408.25					E462 UHF	£6.75
FT7B	£431.75	SWR Bridges		CDR Rotators		677 5/8 wave	£14.95
FC301	£124.20	Single meter	£12.30	AR30	£47.15	462 5/8 wave	£7.56
FC901	£132.25	Twin meters	£15.51	AR40	£54.62	Magnetic Base	£10.50
FRG7	£210.00			CD44	£109.25	Boot mount	£3.50
FL101	£500.00	Morse keys				High Pass Filter	£3.00
FL110	£149.50	Standard	£3.15	Emotator		Headphones	£5.20
FT225R	£560.32	Nye King	£12.00	103LBX	£98.00	PTT mics	£4.50
FT225RD	£557.75	Nye King heavy duty	£13.50	502CXX	£145.12		
FT227RB	£263.35			1102	£239.00	WESTERN	
FT202	£119.00	F.D.K.				ANT SW. 5w	£10.50
FT207R	£199.00	Multi 700E	£229.00				

TERMS: ACCESS, C.W.O. CARRIAGE AND POST EXTRA AT COST.

BUSINESS HOURS

Mon, Tues, Thurs, Fri 9.30-5.30
Sat 9.30-4.30
Closed Wednesday

INSTANT H.P. FOR LICENSED AMATEURS

S.A.E. ALL ENQUIRIES

H.P. AND CREDIT TERMS

R. T. & I. ELECTRONICS LTD.

where equipment is fully overhauled

COLLINS 51J4 Receiver	...	P.O.A.	
DRAKE SPR4 Receiver	...	£405.75	
EDDYSTONE EB35 Receiver	...	£118.45	
EDDYSTONE EC10 Mk. 1 Receiver	...	£118.45	
EDDYSTONE 830/7 Receiver	...	£465.75	
EDDYSTONE 990S Receiver 230-870 MHz, AM/FM	...	P.O.A.	
G.E.C. RC410 Receiver 2-31 MHz	...	P.O.A.	
G.E.C. RC411R Receiver 0.15-30 MHz	...	P.O.A.	
TRIO 9R59DS Receiver	...	£91.60	
TRIO JR310 Amateur Bands Transceiver	...	£131.10	

We are MAIN DISTRIBUTORS for AVO, MEGGER, TAYLOR and SULLIVAN INSTRUMENTS

THE LATEST AVO AND TAYLOR METERS IN STOCK

AVO Digital Multimeter Model DA211	...	£51.75
AVO Digital Multimeter Model DA212	...	£74.75
AVO Digital Multimeter Model DA116	...	£122.93
AVO Digital Multimeter Model DA117	...	£155.25
Taylor Analogue Multimeter Model 131	...	£14.37
Taylor Analogue Multimeter Model 132	...	£20.70

Cases for AVO, TAYLOR & MEGGER instruments in stock.
Send for Details

We also repair all types of instruments
Trade and Educational enquiries invited

S. G. BROWN'S HEADPHONES, Type "F" 120 ohm, 2000 ohm, 4000 ohm, £18.05; Rubber Earpads for same, £2.87 per pr.; Standard Jack plugs, 50p.

SINCLAIR EQUIPMENT

DM235 Digital Multimeter	...	£58.99
Carrying Case for DM235	...	£10.92
Mains Adaptor for DM235	...	£5.17
PDM35 Pocket Digital Multimeter	...	£35.59
PFM200 Pocket Digital Frequency Meter	...	£58.42
YAESU MUSEN FRG-7 Receiver	...	£204.75
YAESU MUSEN FRG-7000 Receiver	...	£344.75

At R. T. & I.

- ★ We have full H.P. facilities.
- ★ Part exchanges are a pleasure.
- ★ We purchase for cash.
- ★ We offer a first-class overhaul service for your electronic equipment, whether you are an amateur or professional user.
- ★ We have EASY PARKING facilities.
- ★ We welcome your enquiries for specific items which although not advertised, may very well be in stock.

PARTRIDGE "JOYSTICK". New improved VFA, £29.00. JOYMATCH IIB, £22.55. LO-2500, £28.62. JOYMATCH A.T.U. Kit, £10.50. A.T.U. Kit assembled, £12.75. Artificial earth and bandswitch, £10.50.

TRIO EQUIPMENT.

New Trio R-300 Receiver, in stock, £193.89
All Bands with xtal calibrator.

SHURE MICROPHONES, 526.T £35.42; 444, £29.21; 401A, £14.95; 202, £13.80; 201, £13.11; 414A, £22.43; 414B, £22.43. Full details on request.

SCOPEX OSCILLOSCOPES IN STOCK.

VALVES. Please state your requirements.

TMK METERS: Model TP10S, £18.05. Model 500TU-B, £33.23. Model TW20CB, £39.56. Model TP5SN, £21.27. Model 700, £68.42. Also in stock Leather cases for above.

Model 700B, £72.16. Model 3020E (Digital) £115.00. Full details on request.
In present conditions we regret that all prices are subject to alteration without notice.

R. T. & I. ELECTRONICS LTD.

Ashville Old Hall, Ashville Road, London E11 4DX Tel. 01-539 4986

NEAREST STATION: LEYTONSTONE (Central Line)

ALL PRICES INCLUDE VAT AND CARRIAGE. *Terms:*
C.W.O., Approved Monthly Accounts, Hire Purchase and
Part Exchange. Special facilities for export.

HOURS—9.30 am - 5.30 pm MON.-FRI. CLOSED SATURDAYS

MAKE IT A GOOD START

A GOOD START is essential to short wave listening and expert advice is important in achieving this — So here's some — If you've made up your mind to buy a receiver you should be aware it will perform only as well as the antenna it sees. The old adage regarding wire antennas "As long and as high as you can" is still good, but at best is only good for PEAK PERFORMANCE on one or two frequencies, at worst none.

Whichever frequency you tune your receiver to, for PEAK PERFORMANCE on all frequencies you need good matching between your Receiver and Antenna to hear the best from it. If you plan to listen on the high frequency bands up to 30MHz then you know you can't have an antenna for every frequency! Or can you? — Well, not quite! BUT we can offer you MUCH IMPROVED PERFORMANCE from your receiver by using an antenna tuning unit, that will electrically change the length of your antenna to match the frequency you select — In other words — A MATCH AT ALL FREQUENCIES.

You'll see many antennas being advertised under gimmicky names, but when it comes down to it they're only random wires or odd configurations. At the end of the day, if you're expecting the performance the manufacturers specified, then you'll still have to buy an antenna tuning unit.

Tell you what we'll do — we'll prove it to you — we'll give you one ABSOLUTELY FREE when you buy your FRG 7 or FRG 7000 and we'll give you complete advice on an antenna to suit your available space, which should only cost you a couple of pounds!

So let's put the offer in big print for you!

1 YAESU FRG 7 + AMTECH 200 ATU £214.00

1 YAESU FRG 7000 + AMTECH 300 ATU £376.00

VAT included

What's the difference between the Amtech 200 and Amtech 300? Well both will tune any random length of wire but the Amtech 300 will do a little extra — it will also tune co-axial fed antennas — Their normal selling price? The Amtech 300 £39.95 — The Amtech 200 £25.95 — What can you lose?

So get cracking MAKE A GOOD START! HAVE PEAK PERFORMANCE FROM THE OFF.

JAYBEAM — HYGAIN — BANTEX — AMTECH — CUSHCRAFT — SWAN — ATLAS
and 50 other major lines — all ex stock



AMCOMM SERVICES

194A NORTHOLT ROAD, SOUTH HARROW, MIDDX.

Tels: 01-864 1166 & 01-422 9585

OPENING HOURS: Mon-Sat 9.00-5.00, Sunday 12.00-3.00



REG. WARD & CO. LTD. (G2BSW)

YAESU

FT901DM	£800.00	FC301	£108.00
FT901D	£710.00	FT225F	£455.00
FT301D	£585.00	CPU2500RK	£308.00
FP301D	£142.19	FT227RB	£229.00
FT1012D	£575.00	FT227R	£213.00
FT101E	£515.00	FT207R	£173.05
FT1012	£500.00	FT202R	£103.48
FT200B/FP200	£380.00	FP12	£67.00
FT7B	£375.00	FP4	£35.00
FT7	£265.78	YC601	£113.00
FL110	£130.00	SP101B	£19.00
FR101DD	£615.00	YD148	£18.50
FR101S	£395.00	YD844	£18.50
FRG7000	£327.00	YD846	£7.50
FRG7D	£235.00		
FRG7	£185.00		
YO101	£169.50		
YO100	£145.00		
YF500J	£168.50		
YP150	£55.00		

SHURE

444	£28.20
201	£12.60

Add 15% VAT to all prices.

VALVES. Most types kept. All valves for Yaesu in stock, valves for K.W. also.

S.E.M. Equipment. Most items held. K.W. Ancillary equipment.

Agents for G2DYM antennas.

J Beam. 2m. antennas. Ascot antennas.

Aerial wire insulators, co-ax cable, twin feeder CO-AX SWITCHES

H.P. available

Carriage extra

Please check prices and availability before ordering.

ACCESS / BARCLAYCARD / TRUSTCARD

GEORGE STREET, AXMINSTER, DEVON

Telephone Axminster 33163 (STD 0297)

SAMSON ETM-3C C-MOS KEYS

1µA battery drain — Why switch off!

- Self-completing dots/dashes/spaces • Can be used either as normal electronic keyer or as an imbic mode squeeze keyer • 8-50 wpm • Constant 3:1 dash-dot ratio • 6 C-MOS ICs and 4 transistors • Plug-in PCB • Long battery life — typically 1µA drain when idling — Built-in battery holder for 4 x 1.5 v. batteries (but will work over 3-10 v. range) • PCB has both a reed relay (250 v., 0.5 amp., 25 w. max.) and a switching transistor (300 v., 30 mA max.) — either keying method can be used • Has the well-known fully-adjustable Samson precision twin keying lever assembly • Operate/Tune button • Sidetone oscillator • Grey case 4" x 2" x 6". ETM-3C, £65.30.

ETM-4C MEMORY KEYS: Has ETM-3C features plus 4 memories of 22 characters each (or 2 of 44). Erase/Rewrite memories as needed — Send CQ's etc. by pressing button. £122.46.

BUILT FOR DEPENDABLE MARINE AND COMMERCIAL SERVICE

JUNKER PRECISION HAND KEY: A superbly engineered straight key used for many years by professionals afloat and ashore. With this key you can't help but send good morse. Free-standing — no screwing down. Front and back contacts — fully adjustable gaps/tension. Key-click filter. Hinged grey cover. £37.89.

BAUER KEYING PADDLE: Single-paddle unit on 1 1/4" x 2" base for home-built El-bugs. Adjustable gaps/tensions, £11.92.

88mHTORIODS: For CW, RTTY, SSTV and other filters, £1.15 each.

All prices post paid UK and include 15% VAT

Please send stamp with enquiries

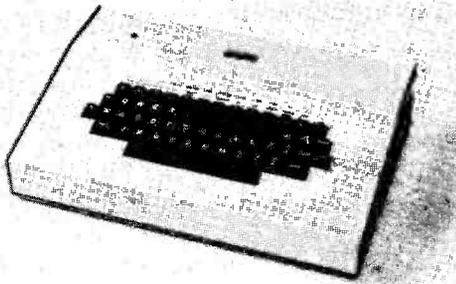
SPACEMARK LTD.

THORNFIELD HOUSE, DELAMER ROAD

ALTRINCHAM, CHESHIRE

(Tel: 061-928 8458)

NEWSFLASH! *Robot present the Model '800' Super Terminal*



THE FIRST INTEGRATED RTTY, ASCII, MORSE, SSTV TERMINAL

The Super Terminal has everything you need for speciality mode operation built in. Just add a standard TV monitor and you have full send/receive RTTY, ASCII, MORSE and character generation on SSTV. Typical of robot this is a no compromise design employing the powerful 8085 microprocessor with broad capabilities and varied facilities too many to list here. The demodulator employs the latest state of the art technology with separate two tone active discriminator filters and though built in is superior in quality and performance to any external unit offered to Radio Amateurs.

PRICE £645 incl. VAT (HP available if required)

Please send a large stamped addressed envelope or 12p in stamps for complete description and full details of this exciting unit. It is hoped by the time this advert appears delivery will be from stock, but please check with us for the latest position.

AERO AND GENERAL SUPPLIES

**Building 33, East Midlands Airport,
Castle Donnington, Derby**

Tel: 0332 812570 or 0602 397588

LAR THE SHORT WAVE WIZARDS



TRIO R1000 PLL SWL Receiver 200 kHz to 30 MHz £297.85
(Securicor delivery arranged if required)

TRIO EQUIPMENT	Price inc VAT
SRX30 SWL Receiver	178.00
RB20 The ultimate SWL receiver	690.00
SPB20 Speaker	37.95
HS5 Communications headphones, tailored response	21.85
HS4 Communications headphones, tailored response	10.35
TR9000 Multi Mobile	345.00
VHF AMATEUR RECEIVERS	
SR9 Tuneable/crystal 2m Fm receiver 144-146MHz	46.00
AMR217B Scanner with B crystals, Mains/battery	120.75
TUNERS & SWITCHES	
KX25WV Antenna Tuner 500 KHz to 30 MHz	29.90
CX3 SWL 3-way Antenna Switch	7.20
KW SWL 3-way Antenna Switch	14.80
AIR BAND RECEIVERS	
SHARP FX-213 AU Air Bands Portable Receiver	18.75
SKY ACE R517 Air Bands Portable	49.50
Cobalt 24 Hour Digital Clock, Mains Operated	12.95

Buy by post or phone your Barclaycard or Access number. Alternatively, call in for a chat. The shop is just 10 minutes from Leeds City Station, and there's easy parking if you travel by car * Instant HP for licensed Amateurs * Extended Credit Terms Available * Send 50p for Catalogue and Price List.

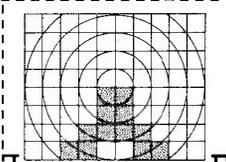
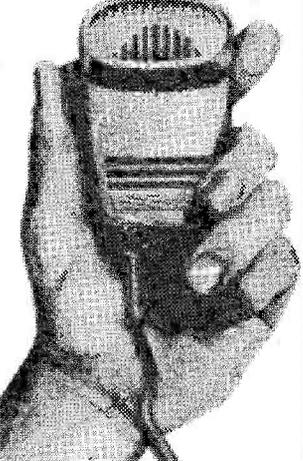
LAR Leeds Amateur Radio
27 Cookridge Street, Leeds, W. Yorks.
Tel: 452657

TRIO DISTRIBUTOR. LAR are area distributors for Jay Beams, Antenna Specialists, Hiломast Icom and Microwave Modules and Ascot Products.

We give you the world.

Enrol in TUTORCOURSE and we'll take you step by step towards a full Amateur Radio Operator's Licence. Clip the coupon and discover the world.

FREE BROCHURES



TUTORCOURSE Amateur Radio Operator

Please rush me details of your AMATEUR RADIO COURSE

Name

Address

Block Caps. Please Post now, without obligation to SWT/6

British National Radio & Electronics School
P.O. Box 156, Jersey, Channel Isles

G4DSG D. P. HOBBS LTD. G3HEO
THE COMPONENT SPECIALISTS

- FDK Palm II 2mtr Hand Portable with Nicads and AC Charger S20, S22/SU20. £99.95
- FDK Multi 700EX 144-146 MHz 12½ & 25 KHz steps scanning etc. £199.00
- FDK Multi 750 15 watt FM/SSB/CW Transceiver 144-146 MHz £299.00
- YAESU FRG7 P.L.L. Receiver 0.5-30MHz, 1 MHz segments £212.75
- LOWE SRX30P.L.L. Receiver 0.5-30MHz, 1 MHz segments £178.94
- R517 Aircraft Band monitor Receiver VFO + 3 fixed channels £49.75
- DAIWA SR9 2mtr monitor Receiver VFO + 11 fixed channels £46.00
- BELLSONIC 13.8v, 750MA stabilised power supply £10.93 + 90pp&p
- BELLSONIC 13.8v 3 amp stabilised power supply £4.83 + 20p p&p
- DM350 50kΩ P.T.T. Mics £6.04 + 20p p&p
- DL20 dummy load 15 watt cont. 30 w peak PL259 £50.00 2050 £45.00
- Stolle 2010 Rotators £69.00
- MICROWAVE Modules 2 mtr, 4 mtr, 70 cm and 23 cm converters. Transverters MMT144/28 £90.85, MMT 432/28S £136.85, MMT 432/144R £173.65, MML 144/25 linear amp £48.30, MMD 050/500 Counter £69.00.

Ascot and Bantex Mobile Aerials & Bases in Stock. Jaybeam Aerials Full Range Stocked.

BRITISH MADE TRANSFORMERS

3-0-3V 300mA	£2.07 + 50p p&p
6-0-6V 500mA	£2.41 + 50p p&p
6-0-6V 1A	£2.60 + 50p p&p
6-0-6V 2A	£3.12 + 90p p&p
9-0-9V 500mA	£2.50 + 50p p&p
9-0-9V 1A	£2.95 + 90p p&p
10-0-10V 800mA	£2.95 + 90p p&p
12-0-12V 500mA	£2.60 + 90p p&p
12-0-12V 750mA	£2.95 + 90p p&p
15-0-15V 1.2A	£4.35 + £1.20 p&p
25-0-25V 2A	£6.75 + £1.20 p&p
0-12-15-20-30V 2A	£6.75 + £1.20 p&p

Veroblock & CSC Breadboard, Antex & Oryx Soldering Irons & Bits. Denco Coils, Tools Etc. in Stock

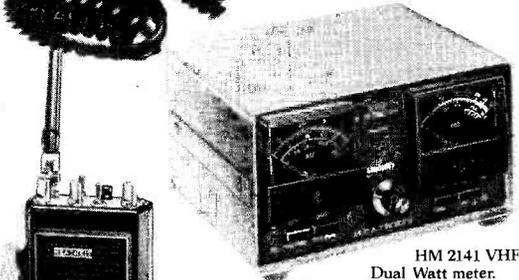
Prices include VAT All Mail Orders to Luton Access Barclaycard

11 King Street, Luton, Beds. Tel. 20907
Open 9 am - 5.30 pm Mon - Sat, closed all day Wednesday
Also visit **D. P. HOBBS NORWICH LTD.**
13 St. Benedict's St., Norwich. Tel. 615786
Closed all day Thursday

Get them. Write now.



VF 7401-2 2-Meter Digital Scanning Transceiver.
Fully synthesized, 15 watt solid-state rig. Scanning Capability. Mobile or fixed station use.



HM 2141 VHF Dual Watt meter.
Measures forward and reflected P.E.P. and SWR to 175 MHz. Output up to 30/300 watts and 10/100 watts reflected.

VF 2031 Hand-Held 2-M FM Transceiver.
Nickel-cadmium battery pack. 120/240V AC recharger. Optional carry case, external microphone and tone burst encoder available.

Heathkit make it easy for you to make these, and a wide range of top quality radio equipment kits.

And easy on your pocket too.

Full details are available in the Heathkit catalogue. Send for your copy now.

Heathkit Electronics Centres—233 Tottenham Court Road, London (01-636 7349). Bristol Road, Gloucester (0452-29451). Registered in England. No. 606177.

To: Heath Electronics (U.K.) Limited, Dept (sw6), Bristol Road, Gloucester, GL2 6EE. Please send a copy of the Heathkit catalogue. I enclose 25p in stamps.

Name _____

Address _____

Soldering
Iron offer
FREE

N.B. If you are already on the Heathkit mailing list you will automatically receive a copy of the latest Heathkit catalogue without having to use this coupon. When you receive your catalogue you will get details of this free offer.

HEATHKIT

HEATH
ZEPHYRUS

("SITUATIONS" AND "TRADE")

20p per word, minimum charge £2.40. No series discount. All charges payable with order. Insertions of radio interest only accepted. Add 50 per cent for Bold Face (Heavy Type). No responsibility accepted for transcription errors. Box Numbers 40p extra. Replies to Box Number should be addressed to the Short Wave Magazine, Ltd., 34 High Street, Welwyn, Herts., AL6 9EQ.

SITUATION

Due to continued expansion, **London Car Telephones** are looking for bright engineers to maintain VHF and UHF mobile radio systems. Well-equipped modern workshops in Croydon, with work in the field. Preference given to job ability rather than formal qualifications. Good basic salary, plus bonuses linked to profitability. **We need the best, so capable persons only need apply to 01-680 4444..**

TRADE

Apple 2 software. Grey Line DX, £7.50 inc. QRA locator/distances, £7.50 inc. Disc versions, £2.00 extra. S.A.E. for lists. — G3ZPF or G4JCP (ex-G8HHK), QTHR.

Aluminium quad spiders, boomless, £18.50 pair. Fibreglass quad spreaders, 1-in. dia. tube, 13-ft. 7-in. long, set of eight, £84. All including carriage, s.a.e. for details. — Willmot, G3ZHC. (Tel: 0922-26659, Walsall).

Used equipment required for cash. Second-hand lists, metal box list, U.S. publications lists, send s.a.e. please. — **Derwent Radio**, Columbus Ravine, Scarborough, Yorks.

Radio Amateur Examination City & Guilds. Pass this important Examination and obtain your G8 Licence with an RRC Home-Study Course. For details of this and other courses (GCE, professional examinations, etc.) write or phone: **The Rapid Results College, Dept. JV/1, Tuition House, London SW19 4DS**, Careers Advisory Service, 01-947 7272 or ring 01-946 1102 for Prospectus (24-hr. Recordacall.)

Good second-hand equipment always wanted. Come to **AMATEUR RADIO EXCHANGE** for the best deal. — 2 Northfield Road, Ealing, London W13 9SY. (Tel: 01-579 5311.)

QSL cards. Sample pack and price list forwarded on receipt of 20p stamp. — **Derwent Press**, 69 Langstone Drive, Exmouth, Devon EX8 4HZ.

Coax cables at trade prices. UR43, UR67, UR76, UR57 and UR70. Also mains and multicores, s.a.e. for lists. — W. H. Westlake, Clawton, Holsworthy, Devon.

FREE 1980 AMTRON CATALOGUE with new range of kits and equipment cabinets. Send s.a.e. — Amtron UK Ltd., 7 Hughenden Road, Hastings, Sussex TN34 3TG (Tel: Hastings 436004).

CALL BOOKS

INTERNATIONAL:

RADIO AMATEUR CALL BOOKS (1980)	
"DX Listings"	£9.65
"U.S. Listings"	£10.15
U.K. Call book, 1980 Edn, (RSGB)	£3.80

MAPS

"SHORT WAVE MAGAZINE" DX ZONE MAP (GREAT CIRCLE)

In colour, 8th Edition..... £2.50

AMATEUR RADIO MAP OF WORLD

Mercator Projection — Much DX Information
— in colour. Second Edition..... £1.10

RADIO AMATEUR MAP OF THE U.S.A. AND NORTH AMERICA

State Boundaries and Prefixes, size 24" x 30",
paper

95p.

RADIO AMATEUR'S WORLD ATLAS

In booklet form, Mercator projection, for
desk use. Gives Zones and Prefixes
(New 9th Edition)

£1.65

LOG BOOKS

Amateur Radio Logbook	£2.50
Receiving Station Log	£1.65
Mobile Logbook	£1.10

(The above prices include postage and packing)

Available from:

Short Wave Magazine

Publications Dept.,

34 High Street, Welwyn, Herts. AL6 9EQ

Tel: Welwyn (043871) 5206/7

(Counter Service, 9.30-5.15 Mon. to Fri.)

(Giro A/c No. 547 6151)

PORTABLE MASTS EX-GOVERNMENT

32 ft. heavy duty aluminium.

COMPRISING

8-4 ft. sections complete with 4 wire rope guys, base
plate, 4-27 ins. securing stakes and marine ply carrying
case.

£35.00 + carriage and VAT

WILLIAMSONS
BROOK STREET, MUMPS BRIDGE,
OLDHAM, LANCs.
Telephone 061-624 5441.

READERS' ADVERTISEMENTS

10p per word, minimum charge £1.50, payable with order. Add 25 per cent for Bold Face (Heavy Type). Please write clearly, using full punctuation and recognised abbreviations. No responsibility accepted for transcription errors. Box Numbers 40p extra. Replies to Box Number should be addressed to the Short Wave Magazine, Ltd., 34 High Street, Welwyn, Herts., AL6 9EQ.

READERS

Sale: Joystick VFA, plus LoZ 500X tuner with meter, 500 watts (System 'J'), bargain £35 plus carriage. (Eire.) — Box No. 5713, Short Wave Magazine Ltd., 34 High Street, Welwyn, Herts. AL6 9EQ.

Wanted: Circuit/manual for Telequipment S.52 oscilloscope. Buy or photocopy, expenses gladly refunded. — Westell, 422 Simpson Village, Milton Keynes (670023), Bucks.

Selling: BC-221M, £35. BC-221AK, modulated, new, £45. LM-14, £40. Type W-1649 wavemeter, £5. CT-53 signal generators, new, £35; Type 130A s/g, £15. TS-47/APR, £43. Type 339 oscilloscopes, £15. CT-52, brand new, £40. Hewlett Packard 200A audio generator, brand new, £38. TF-340 output meter, £8. PR7NA/RAY-5 receiver, £8. S-meter suitable for AR88, £15; spares available for AR88, send s.a.e. for list, Carriage extra. — Reynolds, 5 Headland Way, Lingfield, Surrey RH7 6DH (Tel: 0342-834228 after 7 p.m.).

Selling: Standard C-146G portable, with external mic., nicads, helical and six channels, £90. — Mansi, 47 New College Close, Gorleston, Great Yarmouth, Norfolk NR31 7DF.

Sale: Eddystone EC-10 communications receiver with extension speaker, mint condition, £60. — Ring Griffin, Cambridge (0223) 76976 evenings.

For Sale: RTTY/CW VDU, £175. RTTY/CW keyboard, £175. UT-4, £50. ST-6, £75. Xtal AFSK osc., £10. Fluke 8000A DMM, £50. — Ring Manklow, G4CGV, Hastings 427994.

Sale: MMT-432/28S, including BNC leads, £118. MM-432/50 watt linear, £95. J-Beam 432 MHz, 18-cle, £12. 432 MHz 8-over-8, £10. Strumech electric winch, £100. Yaesu FT101E, £450. FL-100 mobile linear, £115. — Ring Thurlow, G3WBN, 01-654 2761.

Selling: CR bridge, £4. VHF meter, £4. LF rejector, £2. Hallicrafters, handheld, £10. Speakers, baffles. Pair of transceivers, £3. HF filter, £2. RF indicator, £2. BC chassis, mini valve, £2. Amplifier, solid state, £4. RSGB "Handbook", £2. Insulated reel, 75p. Mast sections, £2. Buyers collect, or post/packing extra. — Ring Turner, Beaconsfield 5953.

Selling: TH-3Jr. tri-band beam, £40. — Ring Bushnell, 0842-828617.

Wanted: GM, GI, GD and GW support for a 2m. repeater near Wigtown, to assist contacts along A75 and across water. Comments please, to G8APX, QTHR.

Sale: Murphy 'Rover' 2m. Tx/Rx, AM, with xtals for 145.0 and 145.2 MHz, £28. Storno 'Viscount' 4m. Tx/Rx, FM, 70.26 xtal, £22. — Ring Kay, G4GCB, Belper 6851 (Derby).

Wanted: Circuit and information on 'Recordacall' telephone answering machine and Baird 'Bantam'. — Ring (reverse charges) Eaton, G3SMK, Earlswood 3423 (Warks.) after 7.30 p.m. QTHR.

Wanted: Trio 599 Rx, preferably with two-metre converter included. — Eyles, 41 Bredon Grove, Poolbrook, Malvern (62385), Worcs.

Exchange: My 22-in. colour television for low-band (98-120 MHz) receiver, 'Westminster' or similar. — Ring Wheeler, Ingrebourn 47968.

Wanted: For collection: German military radio equipment of W.W.II vintage. — Box No. 5714, Short Wave Magazine Ltd., 34 High Street, Welwyn, Herts. AL6 9EQ.

Wanted: K.W. 'Valiant' in good condition. Details and price please. — Lee, 1 Ronald Park Avenue, Westcliff-on-Sea, Essex.

For sale: Datong active aerial plus MPU, as new (cost £42.55), £35. — Ring Mathews, 01-876 7868.

Sale: Eimac 3-500Z, new and boxed, £75 pair plus post. — Ring Surman, 0403-722909.

Wanted: 'Suitcase' sets Mks. 119, 122, 217, B2, Australian A510 etc; incomplete or damaged items, manuals etc. welcome. Also Mk. 128 in wooden case (A.H. Supplies) — Box No. 5715, Short Wave Magazine Ltd., 34 High Street, Welwyn, Herts. AL6 9EQ.

Sale: Belcom Four-Thirty 70cm. transceiver, £130. 10-ele 70cm crossed Yagi, £18. Yaesu CPU-2500KR 2m. FM transceiver, £265. Microwave Modules 2m. converter, 4-6 MHz IF, £15. — Cummings, 31 Stockton Road, Haughton, Darlington.

Wanted: 10X or FT crystals for 40m. FM — Lee, 1 Ronald Park Avenue, Westcliff-on-Sea, Essex.

For Sale: Eddystone 750 general coverage and amateur band receiver, 160-10m., good working condition, £70. Hallicrafters SX-28, new oil filled PSU and output transformers, with instruction book, £50. Buyers collect. — Ring Land, Bishops Cleeve 5557.

Wanted: Military radios built inside civilian-style suitcases. any condition! — Melton, Box 2037, Ogden, Utah 84404, U.S.A.

Sale: AR88D communications receiver, overhauled, with speaker, £85. — Ring Haigh, Ashford 52974 (Middx.) any time.

Selling: FR-DX400 amateur bands receiver, 160-2m., all filters and options fitted, with speaker, £140 or near offer. — Ring Garfoot, Derby 764753.

Wanted: Codar PR-40 preselector, or similar. Details and price please. — Wojciechowski, Flat 11, 27 Cross O'Cliff Hill, Lincoln.

Sale: Sony portable air-band receiver, battery/mains, preset tuning, excellent condition, £25. — Ring Brooks, Basingstoke 3715.

Wanted: "SWL Antenna Construction Projects" by E. M. Noll. — Lissok, rue M. Poedts 9, B-1160 Brussels, Belgium.

Don't throw it away!

Short wave listeners — you may not be giving your receiver a chance. Tune up for DX-ability with a

PJ COMMUNICATIONS ANTENNA TUNE/SELECT

between your set and antenna. Match your antenna to your receiver input circuit.

PLUS: choose your antenna — long wire, whip or whatever — with the special plus-feature of this brand-new unit, a three-way antenna select switch.

Now — in one smart, compact unit (blue/black and white, 280mm wide x 160mm deep x 75mm high) — antenna tuning AND selection.

Input and output sockets are standard co-axial.

Priced at only £21.95 (plus £1.20 post/packing). Allow 28 days for delivery. Cheques/postal orders payable to PJ COMMUNICATIONS at 159a High Street, Maldon, Essex.



PJ COMMUNICATIONS — a division of Radio Essex Limited

Name & Address _____

Please find cheque/P.O. for £21.95 (plus £1.20 p&p)

YAESU MUSEN

FT-101Z
FT-901
FRG-7000
FT227RB
FT-7B



FT-101ZD
FRG-7
FT225RD
CPU-2500R
FT207R

All ex-stock and FREE SECURICOR DELIVERY

APPOINTED JAYBEAM DISTRIBUTOR FOR NORTH WALES
ASP MOBILE ANTENNAS. SEM PRODUCTS STOCKED
FULL RANGE OF AMIDON TOROIDAL CORES IN STOCK

STANDARD 8800 2m FM MOBILE	£252
STANDARD 7800 70cm FM MOBILE	£275
KDK 2025 2m FM MOBILE	£250
FDK MULTI 700EX 2m FM MOBILE	£225
FDK MULTI 750 2m SSB/CW/FM (Provisional)	£299
FDK PALMSIZER 2M FM	£149
FDK PALM 2 2m FM	£99
FDK PALM 4 70cm FM	£159
BELCOM HC 1400 2m FM MOBILE	£199
BEARCAT 220FB	£241
SR9 2m MONITOR RECEIVER	£46

SECONDHAND

SWAN 700CX & PSU	£350
FT221RD 2m MULTIMODE	£350
FDK MULTI 700 2m FM	£165
TRIO 2200GX	£135
LINEAR 2 2m SSB	£120
DATONG CLIPPER	£35

TMP ELECTRONIC SUPPLIES

Britannia Stores, Leeswood, Mold,
Clwyd. CH7 4SD

Tel: Pontybodkin 846 (035287)

Shop hours: Mon, Wed, Thurs, Fri, 9.30-5pm Tues & Sat. 9.30-1pm

ANTENNA FAULT?

LOSING DX? Poor reports? Check FAST with an Antenna Noise Bridge, MEASURE resonance 1-150MHz and radiation resistance 2-1000 ohms, accurate ANSWERS directly, get a STRONGER SIGNAL, £9.80.

TIME WRONG? MSF Clock is ALWAYS CORRECT — never gains or loses, self setting at switch-on, 8 digits show Date, Hours, Minutes and Seconds, larger digit Hours and Minutes, receives Rugby time signals, 1000Km range, built-in antenna, have the ABSOLUTE TIME, £48.80.

Each fun-to-build kit includes all parts, printed circuit, case, postage etc, instructions, money back assurance so SEND off NOW.

CAMBRIDGE KITS

45 (SF) Old School Lane, Milton, Cambridge.

CRAYFORD ELECTRONICS

G8AYN G81WX
FLEXIBLE HELICAL AERIALS FOR HAND PORTABLES
VHF—UHF

Frequency	Connector/Fitting	Price
70MHz (4m)	2BA, BNC, PL259	£6.00
145MHz (2m)	2BA, BNC, PL259, Pye PF70, 2200GX, 2300, IC215, IC202S	£4.20
	Right angle BNC, PL259, TNC	£5.35
	Storno 500, Pye Bantam	£5.00
433MHz (70cm)	4BA (use on PFI)	£2.65
	BNC, min BNC, Pye PF70, 3200, Storno 500	£3.35

Prices inclusive of VAT and carriage, most items ex-stock. Many others available, including commercial, marine etc.

ACCESS SAE all enquiries BARCLAYCARD
6 LOVELACE CLOSE, WEST KINGS DOWN,
SEVENOAKS, KENT TN15 6DJ
24hr Answer Service 047485 2577

Valves Valves Valves

Worried about supplies? Unobtainable, been obsolete for years. No worries about supplies here. Over 150 Types available Ex Stock.
6JB6/A 6JS6/C 6KD6 6HF5 6LQ6 6146A 6146B, all in matched pairs.
Blow a bottle, clumsy thing; don't despair, give us a ring on

0204 54165 WILSON G4AZM
SAE for Price List

MORSE MADE EASY BY THE RHYTHM METHOD!

FACT NOT FICTION NO, TAPEWONT WORK AS WELL
If you start RIGHT you will be reading amateur and commercial Morse within a month. (Most students take about three weeks). That's why after 25 YEARS we still use three scientifically prepared 3-speed records with which you cannot fail to learn the MORSE RHYTHM automatically, it's as easy as learning a tune. 18 w.p.m. in 4 weeks guaranteed. Complete course comprising 2 x 12" + 1 x 7" 3 speed records + books. £5.50 plus (U.K. p.p. + 75p. Overseas, sufficient for 750 grms). For details only: ring S. Bennett 01-660 2896. SNOOPER radar detectors, 4 yr gtee. £74. S.A.E. to S. BENNETT (Box 14), 45 GREEN LANE, PURLEY, SURREY CR2 3PQ

ALL VALVES & TRANSISTORS

Call or phone for a most courteous quotation
01-749 3934

We are one of the largest stockists of valves etc. in the U.K.

COLOMOR ELECTRONICS LTD. 170 GOLDHAWK ROAD
LONDON W12

For Sale: Daiwa SR-9 mobile 2-metre receiver, 11 channels, new and boxed, £38. — Smith, 29 Fylingdale Way, Wollaton, Nottingham.

Selling: Racal MA-79G universal drive unit, covers 1-30 MHz, SSB/RTTY/AM/CW, matches RA-117 and can transceive with it as VFO covers same range (Making superb combination covering future band expansions), £550. Racal RA-1218 receiver, solid-state, coverage 1-30 MHz, with digital easy-to-read nixie tube readout, rock stable and can be tuned to within 10 Hz (makes Japanese equipment seem shoddy). Both units in showroom condition (as seen at Alexandra Palace Show), £1,250. **Wanted:** Wireless Set No. 22 and No. 11. — Morriss, G4GEN, QTHR (Tel: 082571-2205).

Wanted for cash: SP-600, HQ-180 or BRT-400 receiver. — Ring Donnelly, Adlington (0257) 481617.

Selling: Bearcat 220 and Discone antenna (bought new in May), £210. — Ring Murphy, Epsom 26539.

Sale: Drake L4-B linear amplifier, mainly stored since new, £500 or offers. — Ring Holmes, GW3GA, 055932-2333.

For Sale: Eddystone 770U, good condition, with spare valves and circuit diagrams, £75. — Ring Hurrell, Seaford 891159.

Sale: Heath station: HW-101 with CW filter, SB-600, HP-23B, HM-102 watt meter, and SB-200 linear, £375. Drake 2B with 2CQ, £95. — Ring Sullivan, G5BCR, Bicester 42145.

Selling: Heathkit SB-102 with SB-600 speaker, HP-23B PSU, GH-12A microphone; K. W. E-Zee match, dummy load and LPF; unused 12AVQ; Datong RFC; SWR meter; antenna noise bridge. All immaculate, £450. — Soo, G4DAK, QTHR (Tel: 01-242 4433).

For Sale: Trio TS-520S with CW filter, AT-200, Kenwood MC-50 mic., and EK-105D, complete station £550 or near offer. — Ring Garner, G3XZY, Haverhill 63214.

Selling: KP-202 including nicads, S20, S22, R5/6/7 installed, mod. for sixth pair of xtals on back with external trimmers, with 5 pairs of xtals to complete RO to R7 set, rubber duck, tatty but tough, working well (no toneburst), £70 inc. post. — Jarvis, G8APX, QTHR.

SALE: Yaesu FRG-7000, one month old (gift to chauffeur), £300. — Ring Pix, 01-272 2465 anytime.

FOR Sale: National DR-22 general coverage receiver, as new, £80. — Ring Birkenshaw, 062982-3072.

S.W.M. "DX ZONE MAP"

8th EDITION

In four colours, on durable paper for wall mounting, 33 3/4 in. wide by 24 1/2 in. deep. Giving essential DX information — bearing and distance of all parts of the world relative to the U.K., the Zone areas into which the world is divided for Amateur Radio purposes, with major prefixes listed separately. Distance scale in miles and kilometres. Time scale in GMT. Marking of Lat./Long. close enough for accurate plotting. Hundreds of place names, mainly the unusual ones, and most of the rare islands.

Price £2.50

including postage and special packing in postal tube to avoid damage in transit.

Publications Dept.

Short Wave Magazine Ltd., 34 High Street,
Welwyn, Herts. AL6 9EQ. Tel: Welwyn (043871) 5206/7

RADIO AMATEUR PREFIX-COUNTRY-ZONE LIST

published by GEOFF WATTS
Editor of "DX News-Sheet" since 1962

The List you have always needed, the list that gives you everything, and all on one line! For each country:-

- a. its DXCC "status"
- b. the normal prefix
- c. the special prefixes
- d. the ITU callsign block allocation
- e. the continent
- f. the "CQ" Zone No.
- g. the ITU Zone No.

Full information on Antarctic stations, USSR Klub-stations, obsolete prefixes used during the past 5 years, and much more, and the List can be kept always up-to-date because ample space has been provided for adding every new prefix, each new ITU allocation, etc. Everything arranged alphabetically and numerically in order of prefix. Ideal for Contest operators and SWL's.

Tell your Club-members about it. Order an extra copy for that overseas friend. 15 pages. Price 50p (UK) overseas (air mail) \$2.00 or 6 IRCs.

GEOFF WATTS

62 BELMORE ROAD, NORWICH NR7 0PU, ENGLAND

CABLES AT TRADE PRICES

- UR43, 50 ohm Standard Coax, 17p per M (post 3p per M)
- UR76, 50 ohm Stranded Conductor, 10p per M (post 3p per M)
- UR67, 50 ohm low loss, 1/2" dia, 58p per M (6p per M)
- UR70, Standard 70 ohm Coax, 17p per M (4p per M)
- UR39, Low loss 75 ohm Coax, 27p per M (3p per M)
- 300 ohm Ribbon Twin Feeder, 10p per M (2p per M); 75 ohm Twin Feeder, 17p per M (2p per M); 14 swg hard drawn Aerial Wires, 19p per M (2 1/2p per M); Twin Flat Mains Cable, 8p per M (2p per M); 3 core Mains Cable 3-5 amp, 14p per M (3p per M)
- Low Loss UHF TV Feeder, 75 ohms, 17p per M (2 1/2p per M)
- PL259s, 50p, SO239 chassis skts, 50p, 4 pin Mike Plugs, 60p, 4 pin Mike Chassis Skts, 60p, Elbow Couplers, PL259s, £1. Stick on Rubber Feet, 6p each, PTFE Sleeving, 6p per M. All plugs etc plus 20p per order post, SAE lists.
- Just arrived. A few F27AM Base Rx and Tx Units, mint, around £28 plus Vat/post each. 88-132 MHz Aerial filters, £5. Ni-Cad Chargers, Brand New take 8 at a time with full metering etc. Boxed £12 each, post £2.50 (worth it for breakdown parts).

W. H. WESTLAKE, CLAWTON, HOLSORTHY, DEVON

G2DYM ANTI-TVI AERIALS

1980 Range: Shortwave Listener
Indoor models £14.50 & £27.50.
Outdoor models £30.00 & £36.00.

Tx-ing models £42.50, £52.50 & £59.75.

Lists 10 x 8in 17p SAE. Aerial Guide 50p.

New Publication "Indoor and Invisible Aerials for S.W.L.s" - £3.50.

G2DYM, UPLOWMAN, TIVERTON, DEVON

HAM BAND AERIALS GALORE

with

EEZEBUILD Telescoping Aluminium Tubing

- UHF 6 element YAGI 432 Mhz £5.75 pp £1.15
 - VHF 5 element 2 metre YAGI £6.33 pp £1.15
 - 8 element 2 metre YAGI £9.20 pp £1.15
- Available now - the NEW J pole vertical 2 metre Radiator, excellent matching, enclosed connectors . £6.33 pp £1.55

HF Mono Bands 1/4 Wave Verticals

28Mhz £8.05 21Mhz £9.20 14Mhz £11.15 pp £1.15

Verticals now have Insulator and Ground Post sections

All prices include current VAT. For further information please send 20p for descriptive leaflets and prices.

Uppington Tele-Radio (Bristol) Ltd.

12-14 Pennywell Road, Bristol BS5 0TJ
Telephone: 0272 557732

AMATEUR RADIO OPERATING MANUAL

by R. J. Eckersley, G4FTJ

This latest RSGB publication has chapters on the amateur service; setting up a station; operating practices and procedures; DX; contests; mobile, portable and repeaters; amateur satellites; RTTY; slow-scan television; special-event stations; with appendices and index. *Extracts from a review in "Short Wave Magazine", December 1979: "Once in a while a really first class publication turns up for review . . . packed with a great deal of very useful, up to date information for both the newcomer and old-timer"; " . . . a superb manual . . . must be enthusiastically recommended to all amateurs".*

190 pages **£4.80** inc. post

Order from:

Publications Dept.

SHORT WAVE MAGAZINE LTD.

34 HIGH STREET, WELWYN,
HERTS. AL6 9EQ

CALLBOOK 1980

★

DX Listings £9.65

U.S. Listings £10.15

★

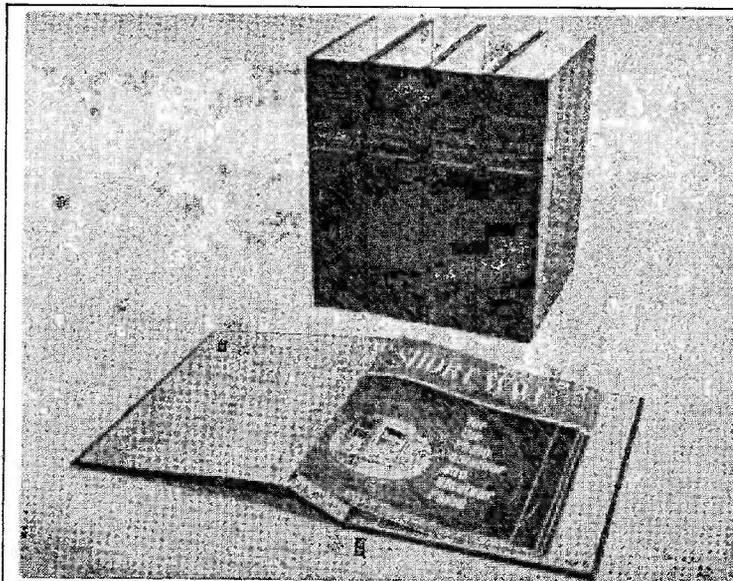
The above prices include postage and packing

Publications Dept.,

Short Wave Magazine

34 High Street, Welwyn, Herts. AL6 9EQ

Tel: Welwyn (043871) 5206/7



CREATE YOUR OWN REFERENCE LIBRARY

The "EASIBINDER" is designed to bind 12 copies of the Magazine as you receive them month by month, eventually providing a handsomely bound volume for the bookshelf.

No need to wait until twelve copies are assembled. As each copy is received, it is quickly and simply inserted into the binder. Whether partially or completely filled, the binder is equally effective, giving the appearance of a book, with each page opening flat.

Strongly made with stiff covers and attractively bound in maroon Rexalon and Milskin, the binders have only the title gold-blocked on the spine and the date frame.

Price **£2.70** (incl. P&P)

PUBLICATIONS DEPARTMENT
SHORT WAVE MAGAZINE
34 HIGH STREET,
WELWYN,
HERTS. AL6 9EQ

**Subscription rate to Short Wave Magazine is £6.50
for a year of twelve issues, post paid.**

Have you got all these ARRL titles on *your* shelf? . . .

Solid State Design for the Radio Amateur	£5.00
Electronics Data Book	£3.25
Antenna Book, 13th edition	£3.60
Understanding Amateur Radio	£3.65
A Course in Radio Fundamentals	£2.80
FM and Repeaters for the Radio Amateur	£3.20
The Radio Amateur's Handbook 1980 (soft cover)	£7.65
Antenna Anthology	£2.75
Specialised Communications Techniques for the Radio Amateur	£2.85
Hints and Kinks	£2.85
Single Sideband for the Radio Amateur	£2.95
VHF Manual	£3.30
Learning to Work with Integrated Circuits	£1.70
Weekend Projects for the Radio Amateur	£2.15
Radio Frequency Interference	£2.20
Satellite Communications	£3.25
Solid State Basics for the Radio Amateur	£3.35

(all prices include post/packing)

Available from **SHORT WAVE MAGAZINE**

Publications Dept.,

34 HIGH STREET, WELWYN, HERTS. AL6 9EQ. Telephone: Welwyn 5206/7.

Technical Books and Manuals

(ENGLISH AND AMERICAN)

AERIAL INFORMATION

Antenna Handbook (Orr and Cowan)	£4.10
Practical Aerial Handbook, 2nd Edition (King)	£7.00
Beam Antenna Handbook	£3.15
Cubical Quad Antennae, 2nd Edition	£3.15
Simple Low Cost Wire Antennas, by Orr	£3.50
73 Vertical Beam and Triangle Antennas (E. M. Noll)	£4.00
73 Dipole and Long-Wire Antennas (E. M. Noll)	£4.00
Antenna Book (ARRL) 13th Edition	£3.60
The ARRL Antenna Anthology	£2.75
Two-metre Antenna Handbook, F. C. Judd G2BCX	£4.35

BOOKS FOR THE BEGINNER

Elements of Electronics, <i>Book 1</i>	£2.50
Elements of Electronics, <i>Book 2</i>	£2.50
Elements of Electronics, <i>Book 3</i>	£2.50
Solid State Short Wave Receivers for Beginners (R. A. Penfold)	£1.15
Beginners Guide to Radio (8th Edition)	£3.70
Beginners Guide to Electronics	£3.35
Beginners Guide to Microprocessors and Computing Course in Radio Fundamentals, ARRL	£2.05
Guide to Amateur Radio (17th Edition) (RSGB)	£2.80
Ham Radio (A Beginners Guide) by R. H. Warring	£3.95
Morse Code for the Radio Amateur (RSGB)	O/S
Understanding Amateur Radio (ARRL)	£3.65
Radio Amateur's Examination Manual, 8th Edition (<i>new syllabus</i>) RSGB	£2.70

GENERAL

How to Build your own Solid State Oscilloscope (Rayer)	£1.75
Radio Circuits Using IC's	£1.55
Projects in Radio and Electronics (Newnes)	£2.60
How to Make Walkie Talkies (Rayer)	£1.50
How to Build Advanced Short Wave Receivers (Penfold)	£1.40
Better Short Wave Reception, New 4th Edition	£3.00
FM & Repeaters for the Radio Amateur (ARRL)	£3.20
Easibinder (to hold 12 copies of "Short Wave Magazine" together)	£2.60
Oscar — Amateur Radio Satellites	O/S
World Radio & T. V. Handbook 1980 Edition	£9.40
World DX Guide	£5.40
Guide to Broadcasting Stations (new 18th Edition)	£3.40
Radio Stations Guide	£1.75
Long Distance Television Reception (TV-DX) for the Enthusiast	£1.75
Solid State Basics for the Radio Amateur (ARRL)	£3.35
Counter Driver and Numerical Display Projects, Rayer	£2.05
Weekend Projects for the Radio Amateur, ARRL	£2.15

HANDBOOKS AND MANUALS

Radio communication Handbook, Vol. I (5th Edition) (RSGB)	£9.75
Radio Communication Handbook Vol. II (5th Edition) (RSGB)	£8.40
TVI Manual (2nd Edn.) (RSGB)	£1.60
Radio and Electronic Laboratory Handbook by Scroggie-Johnstone, 1980 (9th) Ed.	£19.05
RTTY Handbook (73 Magazine)	£3.55
Slow Scan Television Handbook (73 Magazine)	£3.55
Specialized Communications Techniques for the Radio Amateur (ARRL)	£2.85
Working with the Oscilloscope	O/S
The Radio Amateur's Handbook 1980 (ARRL) soft cover	£7.65
The Radio Amateur's Handbook 1980 (ARRL) hard cover	£10.65
Shortwave Listener's Handbook	£3.30
Learning to Work with Integrated Circuits (ARRL)	£1.70
Weather Satellite Handbook	O/S
Single Sideband for the Radio Amateur (ARRL)	£2.95
Test Equipment for the Radio Amateur (RSGB)	£4.50
Amateur Radio Operating Manual (RSGB), <i>new title</i>	£4.80
Satellite Communications (ARRL)	£3.25

USEFUL REFERENCE BOOKS

Solid State Design for the Radio Amateur (ARRL)	£5.00
Foundations of Wireless and Electronics, 9th Edition (Scroggie)	£5.40
Amateur Radio Techniques, 6th Edition (RSGB)	£4.00
U.K. Call Book 1980 (RSGB)	£3.80
Hints and Kinks (ARRL)	£2.85
Radio Data Reference Book (RSGB)	£3.65
Electronics Data Book (ARRL)	£3.25
ARRL Ham Radio Operating Guide	O/P
Radio Frequency Interference (ARRL)	£2.20
Amateur Radio Awards, RSGB	£3.40

VALVE AND TRANSISTOR MANUALS

Towers' International Transistor Selector 1980 Edition (Up-Date No. 2)	£10.40
Service Valve and Semiconductor Equivalents	O/P
Radio Valve and Semiconductor Data (10th Edition)	£3.45

VHF PUBLICATIONS

VHF Handbook, Wm. 1 Orr	£4.00
VHF Manual (ARRL)	£3.30
VHF/UHF Manual (RSGB) 3rd Edition	£7.20

O/P (Out of print)

THE ABOVE PRICES INCLUDE POSTAGE AND PACKING

O/S (Out of stock)

Many of these titles are American in origin

(Terms C.W.O.)

Prices are subject to alteration without notice.

Available from

SHORT WAVE MAGAZINE

Publications Dept.

34 High Street, Welwyn, Herts. AL6 9EQ - Welwyn (043871) 5206/7

(Counter Service. 9.30-5.00 Mon. to Fri.)

(GIRO A/C No. 5476151)

G3CED G3VFA REALLY GREAT ANTENNAS

THE JOYSTICK VFA

● The MICROSCOPIC 230cm GIANT Joystick VFA (Variable Freq. Antenna) ● Simple, rapid erection ● Not only 6-band but CONTINUOUS 0.5-30MHz, incl BC ● Omni-directional ● Substantially Harmonic FREE ● 1 million miles per watt, world record! ● Poor QTH's enhanced! ● QUOTE from RADIO ZS (South Africa) "A remarkable antenna with great possibilities. Its physical size makes confined space operation a practical proposition."

SYSTEM "A" For the SWL or 160m. Tx. **£48.55**

NEW JOYMASTER SYSTEMS

● Amateur Bands 3.5-30 Mhz ● System "J" has been superseded by our IMPROVED JOYMASTER SYSTEM "JM2" ● SYSTEM "JM3" is a NEW DEVELOPMENT for the PRISONER OF CIRCUMSTANCE! ● THE HIGH-RISE BLOCK DWELLER'S DREAM!

SYSTEM "JM2" 500 w.p.e.p. **£69.00**

SYSTEM "JM3" 500 w.p.e.p. **£90.00***

* Does not include 50 ohm coax cable where required to feed remotely located JOYSTICK VFA.

JOYSTICK OWNERS — PLEASE NOTE. ● CONVERT YOUR EXISTING SYSTEM "A" OR "J" TO "JM2" (plus £43) OR TO "JM3" (plus £61) less UP TO £10 TRADE-IN ALLOWANCE on your 111B or Lo.Z-500 ATU subject to condition.

UNBEATABLE FRG 7/7000 BARGAINS

● FRG7 + free wire aerial and purpose-built JOYMATCH ATU ONLY **£189.00** ● FRG 7000 + free wire aerial and purpose-built JOYMATCH ATU ONLY **£339.00**

● Package "R.1." (FRG7 + World Record VFA and FREE HEADPHONES) **£218.00** ● Package "R.2." (FRG7000 + World Record VFA and FREE HEADPHONES) **£368.00.**

COMPLETE RECEIVING STATIONS — ASSEMBLED IN SECONDS!

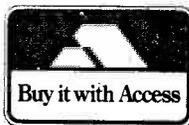
YAESU/SWAN PACKAGES with a Partridge Antenna

● Many popular Tx/Rx units available in BARGAIN PACKAGES with an appropriate antenna system

● Phone us for a "deal" or write (12p) for latest literature.

VHF BUSINESS RADIO

● We can help! Just phone or send stamp.



JUST TELEPHONE YOUR CARD NUMBER

0843 62535 (Ext. 4) (62839 after office hours) or send 12p for FREE literature. Prices correct as at press. NOTE our prices are always INCLUSIVE OF VAT, carriage. Prompt service too, goods usually despatched WITHIN 48 HOURS!

4 Partridge House, Prospect Road, Broadstairs, Kent CT10 1LD

(Callers by appointment)