

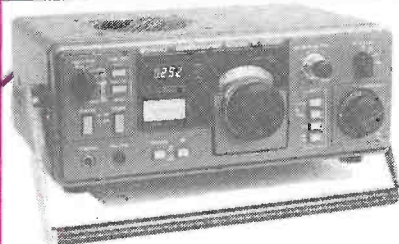
The SHORT WAVE Magazine

VOL. XXXVIII

SEPTEMBER 1980

NUMBER 7

Contact Lowe Electronics for all that's Good in Receivers



TRIO R1000

THE FINEST
RECEIVER ON
THE MARKET

£298 inc. VAT

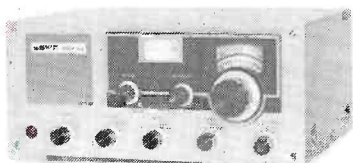
2 metre FM = SR9



SR9 Value
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2m FM TUNABLE 144-146 MHz
0.3µV Sensitivity. 12V Operation
plus 11 Channel Crystal Control

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NEW LOW PRICE

LOWE SRX-30

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The SRX30 is the most impressive mid price Receiver available to the keen DX-er.
500 kHz — 30 MHz Continuous.
Drift Cancelling System.

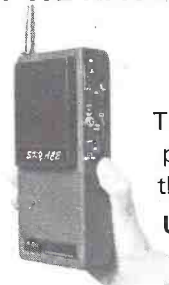
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TRIO

TR7800

2m FM at its very best
£268 inc. VAT



The new TR7800 just has to be voted the best 2 metre FM transceiver to appear on the world scene. Following detailed market research, Trio have produced what we think is the perfect mobile/home station rig for all users, incorporating all the features which were requested by amateur radio operators worldwide.

What does it do?

Let's take the basic specification first, and say that the TR7800 is a fully synthesised 2 metre FM transceiver having a minimum output power of 25 W on transmit (typically 30 - 35 W on random samples), and an incredible receiver which is typically producing sensitivity measurements of 0.12 microvolts for 12 dB SINAD. This is certainly the best FM receiver of which we know (we have naturally checked samples of its major competitors and they are all inferior). That's the basic story so let's go on to the user features.

It's clear from the photograph that you have direct keyboard entry of frequency actually from the front panel. From the keyboard, you can also select simplex and repeater shift functions for use either on UK or American repeaters. The digital readout tells you the operating frequency including any selected shift so you are completely in touch with your mode of operation.

So far so good — but what about the mysterious knob on the right hand side of the panel? Well, that selects a bank of 15 (yes, 15) memories for frequency storage and the smart part is that these are designated not 1 to 15 but 0 - 14. "So what?" sez you. "Aha!" sez I, that means that if you programme in all repeater channels from R0 to R9 using memories 0 to 9, the memory channel display shows you the repeater channel number whilst at the same time, the digital readout shows you your transmit and receive frequencies. In addition to this, the memory channels also store the repeater shift so that it's called up automatically when you use the memory.

The remaining memories can be used to store any frequencies within the band, but a further smart part is that memories 13 and 14 can store completely separate transmit and receive frequencies for non standard shifts etc. And memory 14 is also designated the priority channel so that any frequency put into it can be constantly monitored at 5 second intervals, whatever else the transceiver may be doing. And if you have

the volume turned down, a piezo bleeper alerts you if a signal has appeared on the priority channel. You also have direct access to the channel by simply pushing the "Priority operate" button. Final features for repeater operation include a tone burst which can be turned on or off as desired, and reverse repeater operation at the touch of a button.

Now for more facilities pertaining to scanning. In keyboard operation, you can scan the entire band in 25kHz or 5kHz intervals by simply touching the SC button. In memory mode, you can scan all fifteen memories using the same SC button. The scan system is (in my opinion) the best yet offered in that the transceiver scans until a signal is heard, stops on the frequency for about 5 seconds to allow you to check what's on, then steps on automatically to find the next busy frequency. If you want to stop the scan, simply press the PTT bar on the microphone or touch the C (cancel) button on the keyboard. By scanning this way, you eliminate the annoying locking up on busy repeater channels that so often ruins your enjoyment of an otherwise satisfactory scanning system.

In addition to scanning, the TR7800 can be stepped up and down the band in 25 KHz or 5 KHz steps using the UP/DOWN buttons on the hand microphone. The microphone is supplied as a standard with the TR7800. If either button is held down, the TR7800 tunes across the band until the button is released.

The mic buttons also allow you to step up and down the memory channels.

LED indicators show Simplex, +600 or -600 operation, a busy lamp on occupied frequencies and "on air" indication. Signal strength and TX output are indicated on an LED bar display.

Memory contents can be retained by installing four standard AA size Nicad batteries inside the transceiver. The batteries are charged when the TR7800 is switched on, and the memories are then retained for up to five days on the batteries.

All in all, the TR7800 is an amazing transceiver and follows the Trio design pattern for the 80s'. Let's face it, Trio are now showing the way to go and the others are true a long way behind. Why not see the TR7800 soon and test the truth in what I've been saying.

SPECIFICATIONS

[GENERAL]

Semiconductors:	MPU 1, ICs 18, transistors 58, FETs 9, diodes 77
Frequency range:	144,000 to 145,995 MHz
Frequency synthesizer:	Digital control, phase locked VCO
Mode:	FM (F3)
Antenna impedance:	50 Ω
Power requirement:	13.8 V DC ± 15%
Grounding:	Negative
Operating temperature:	-20°C to +50°C
Current drain:	0.4 A in receive mode with no input signal 6 A in HI transmit mode (Approx.) 2.5 A in LOW transmit mode (Approx.)
Dimensions:	175 mm (6 7/8") wide 64 mm (2 1/2") high 206 mm (8 1/4") deep (projections not included)
Weight:	2.1 kg (4.63 lbs) approx.

[TRANSMITTER SECTION]

RF output power (at 13.8 V DC, 50 Ω load):	HI 25 W min LOW 5 W approx. (Adjustable)
Modulation:	Variable reactance direct shift
Frequency tolerance:	Less than ± 20 × 10 ⁻⁶
Spurious radiation:	Less than -60 dB

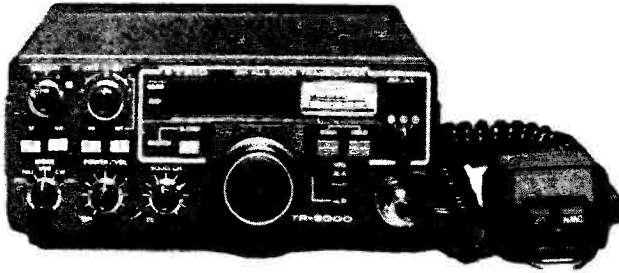
Maximum frequency deviation: (FM)	± 5 kHz
Microphone:	Dynamic microphone with PTT switch

[RECEIVER SECTION]

Circuitry:	Double conversion superheterodyne
Intermediate frequency:	1st IF 10,695 MHz 2nd IF 455 kHz
Receiver sensitivity:	FM better than 0.2 μV for 12 dB SINAD
Receiver selectivity:	FM 12 kHz (-6 dB)
Spurious response:	Better than 60 dB
Squelch sensitivity:	0.16 μV (threshold)
Auto scan stop level:	Less than 0.2 μV (threshold)
Audio output:	More than 2.0 W across 8 Ω load (10% dist.)

Don't forget, we stock almost everything that the keen DXer, short wave listener or radio amateur could possible 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
£345.00 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.

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°C
 Current drain: 0.4A in receive mode with no input signal
 2.9A 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:

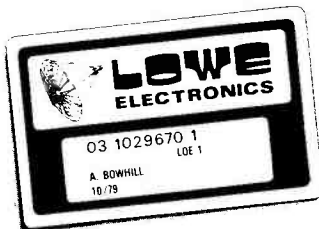
TRANSMITTER SECTION:

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 $\pm 20 \times 10^{-6}$
 Spurious radiation: Less than -60 dB
 Carrier suppression: Better than 40 dB

Unwanted side band suppression: Better than 40 dB
 Maximum frequency deviation (FM): ± 5 kHz
 Microphone: 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 μ V for 12 dB SINAD
 SSB, CW: 0.2 μ V 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 μ V (threshold)
 Auto scan stop level: Less than 0.2 μ V (threshold)
 Audio output: More than 2.0 Watts across 8 ohm load



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Everyone is talking about the new Low 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 Low 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
TRANSCEIVER" 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 OM, 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 blanker, 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 DC5 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 FT 101Z 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 is 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
32D	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

Please add £1 for carriage on above.

SPECIFICATIONS	
General	
Frequency range:	160 metre band: 1.8 to 2.0MHz 80 metre band: 3.5 to 4.0MHz 40 metre band: 7.0 to 7.5MHz 20 metre band: 14.0 to 14.35MHz 15 metre band: 21.0 to 21.5MHz 10 metre band: 28.0 to 28.5MHz 28.5 to 29.1MHz 29.1 to 29.7MHz
Mode:	WWV: 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: 312 - 6146B, 1 x 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 1/4) wide x 153 (6.0) high x 335 (13 1/4) deep mm (inch)
Weight:	16.0kg (35.2lbs)
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
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For GPV5, GDX2, HF5, carriage by Securicor £4.50

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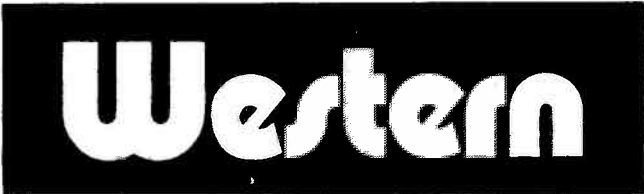
CHESTERFIELD ROAD, MATLOCK, DERBYS. TEL: 0629-2817 or 2430. TELEX 377482. OPEN 9-5.30 TUES-SAT. PHONE IN 9am-9pm

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.

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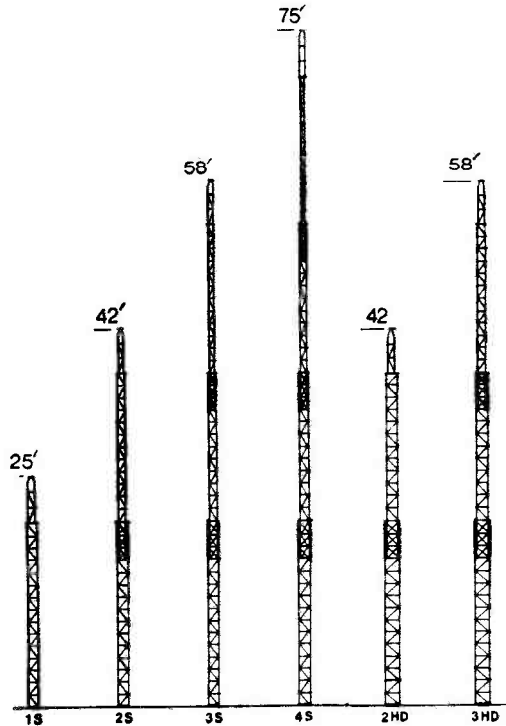
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HB-1	Hinged base unit	£31.05
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TP-1	Top plate with sleeve	£13.23
GB-1	Guy brackets (set of 3)	£11.50

All prices include carriage and VAT at 15%

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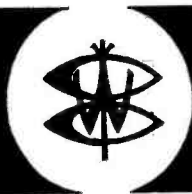
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Western

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YAESU FRG-7 £189

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Western FOR HF TRANSCEIVERS FROM TRIO—KENWOOD

TS120-S A really popular solid-state mobile (or base) transceiver. Small in size but big on features and performance. Digital readout, IF shift to beat the QRM, VOX and CW break-in keying are all standard. 100 watts RF out on all bands 80-15m, slightly lower on 10m. Outstanding value in the HF field.

TS-180S/DFC The truly de-luxe solid-state HF transceiver. Full band coverage, 160-10m, with allowance for adding new WARC frequencies. Digital Frequency Control (DFC) and 4 memories allow for full operating flexibility. RF power control, digital readout, VOX and compressor are all fitted as standard. Try one today!

TS-820S Trio's well-proven base station transceiver for those who prefer valve PAs. In use world-wide, tried and respected, this is one of the classics among transceivers. Full coverage 160-10 metres; 6146Bs in the PA for years of dependable service, factory-fitted digital readout, IF shift control. Top Trio quality as always.

FROM YAESU MUSEN

FT-1012 (ZD) Latest in a famous line, but what an improvement! Full band coverage, IF width control for superior selectivity, excellent performance and Yaesu's well-known quality. ZD model has digital readout built-in, both models in excess of 100 watts RF out (lower on 10m). Try our price for size!

FT-707 Truly christened the "Wayfarer". Yaesu's new solid-state rig goes anywhere, base or mobile, and has all the facilities of the bigger rigs. Digital readout, IF width and other features. This is the HF rig you Yaesu lovers have been waiting for — ALL THE NEW WARC BANDS FITTED!

Western FOR VHF/UHF TRANSCEIVERS TRIO

ICOM and FDK
ALSO AVAILABLE

TR-7825 A fully synthesized, 25 watt 2m FM mobile with all the up-to-date features you need. Remote control feature using optional RM-76 microprocessor unit.

TR-9000 The one everyone is talking about! A complete 2m multi-mode transceiver in a size you normally imagine an FM only box! SSB/CW/FM, 25 or 12.5 kHz channels on FM, 100Hz tuning steps on SSB/CW (and FM if you wish). Search and scan modes, 5 memories, repeater shift, tone access. This is the one that makes all the others obsolete!

TR-2400 Trio ingenuity in your hand! Fully synthesized, microprocessor-controlled 2m FM hand portable transceiver. Ten memories, scan, tone access, keyboard frequency, entry with continuous LCD readout — it's all there! Includes battery pack and charger — good value in a portable!

YAESU

FT-720RV Yaesu's new modular approach to 2m FM mobile. A 10-watt transceiver module with separate remoteable control head for maximum freedom of vehicle mounting. Fully synthesized, including scan and memory facilities

FT-720RU The 70cm counterpart to the RV-720RV. Similar modular concept, using the same control head (FT-720RI). 10 watts output on 70cm FM, 25kHz channels. One control head can be used (with optional S-72 switch unit) to operate two rigs (one on 2m, one on 70cm).

FT-227RB Fully synthesized 2m FM mobile, 10 watts up/down scanning from microphone, full band coverage, tone-burst and 4 memories.

ALL LISTED PRICES INCLUDE VAT AT 15% AND CARRIAGE

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Yaesu CPU-2500RK Reduced to £299
Yaesu FT-301D Transceiver (ex-demo.) £599
Drake SPR-4 G/C Receiver £375
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All new except
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RM-15 for 15 metres £6.56
RM-20 for 20 metres £8.17
RM-40 for 40 metres £10.06
RM-80 for 80 metres £11.44
Accessories (optional):
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QD-1 quick disconnect £10.06

Add carriage £2.30 (Antenna) or 60p (accessories).

THE VERY BEST FOR HF MOBILE

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PM-2000 Reads peak or RMS RF power from 3.5 to 30MHz. Patent peak-reading facility for direct reading of SSB, PEP during normal transmission. Impedance 50ohms, power ranges up to 2kW... £51.75

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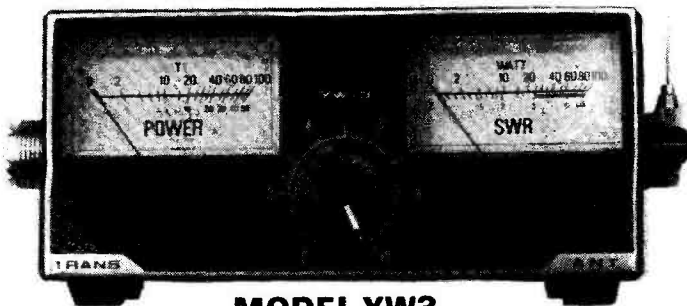
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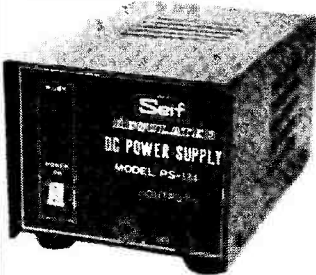
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SOUND AIR 008 FM POCKET MONITOR

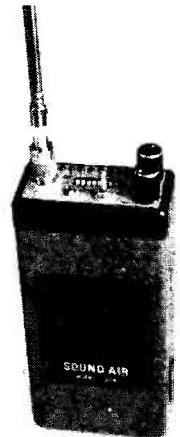
2 metre amateur band or marine versions

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£69^{inc. VAT}
FREE DELIVERY
FITTED S20 OR
CHANNEL 16

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FT-720V	£166.75
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SR9 Marine	£46.00
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FX213 Aircraft	£13.50
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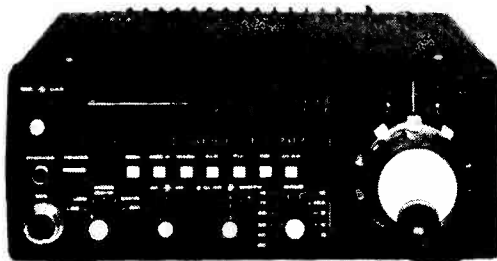
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FROM NORTH. Leave M6 at Junction 6 (Spaghetti) and follow left fork down to traffic island beneath motorway complex. Take third turning off to Lichfield. One mile further on follow A4040 to the right and within 100 yds veer again to the right, approximately one mile further on brings you to the Fox & Goose. Turn right and see preceding directions.

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Detachable RF head/indicator unit
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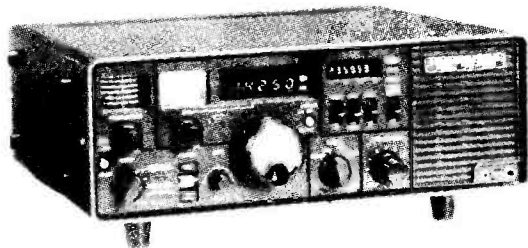
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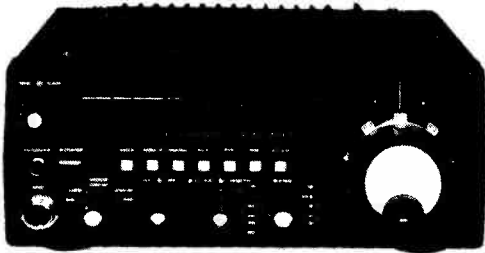


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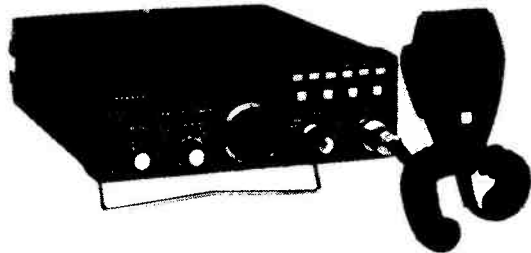
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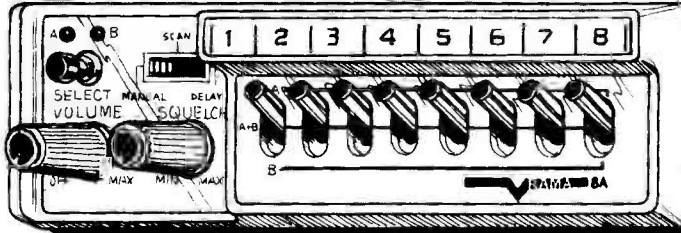
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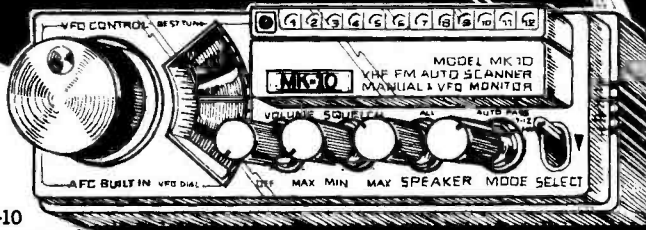
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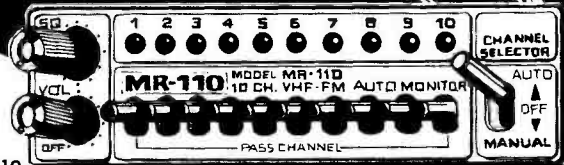
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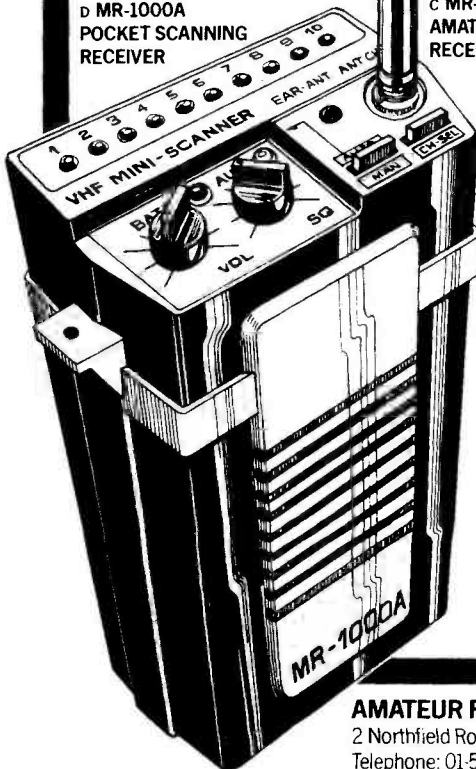
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VHF BANDS

NORMAN FITCH, G3FPK

Canaries Captured

ROGER Thorn, G3CHN, added another bit of history on August 6 when, at 2234, he worked EA8XS on 2m. via tropospheric propagation. According to SM5AGM's records, G3CHN's QSO with UP2BBC in March 1976, is a European *Auroral* DX record. Now, this 2,656 km. contact convincingly shatters the previous mode/band record set by IT9KSO and 4Z4AQ of 2,168 km. in August, 1977. The respective QTH locators are YK61b and SO73d.

This is believed to be the first England to Canary Islands contact on 2m. although the EA8 told Roger he had worked five G stations on 2m. before. If there are any claims for earlier 2m. tropo. G/EA8 QSO's, it would be nice to hear of them. However, it seems unlikely that anyone would work into EA8 from the U.K. and keep quiet about it.

At the time of this contact, Roger was working an EA in northern Spain and the opening lasted till 2250 ending with the EA8 slowly fading into the noise. On this evidence, CT2 at a mere 2,200 km. should be a "dodder!"

Universal Locator System

In the October, 1978 column, mention was made of a proposed world-wide QTH locator system to replace the current European one. In the interim, during which 18 systems were considered, mainly by IARU Region 1 VHF Managers, little has been heard about this idea. The matter was discussed at the Maidenhead meeting on April 26/27, prior to which some proposals had been sent to IARU Region 2 and 3 officials for comment.

A modified G4ANB system has emerged as front runner in which the Earth is divided into "fields" of 20° by 10° to be identified by unique pairs of letters, the first denoting longitude, the second latitude. Thus there would be 18

x 18 fields from "AA" through "RR." Each field would be sub-divided into 10 by 10 "squares" each 2° by 1° as in the primary QTH Locator Square system, but identified by two figures from 00 through 99. These squares would then be further divided into 24 by 24 "sub-squares" each 5' by 2.5' and identified by two further letters from AA through XX.

At latitude 54° the sub-squares would be 5.44 by 4.63 kms. giving a maximum diagonal error of plus/minus 3.57 kms. which is about 400 metres less accurate than the present system. Your scribe's QTH locator ZL60j would be 1091 WH under the new proposals. The advantage of this idea is that the system is unique and lends itself to computer calculation of distances. It is suggested to refer to this simply as the *Locator System* without any QTH or QRA description and the final decision whether or not to adopt it would be taken during the 1981 IARU Region 1 conference. Readers' comments would be appreciated, meantime.

Awards News

The 10th QTH Squares Century Certificate has been awarded to Edmond Ramm, DK3UZ, from Kalttenkirchen in EN20c. He has 206 squares confirmed so the basic certificate plus the stickers for 125, 150 175 and 200 has been despatched, dated July 28. 160 QSO's were on A1, 45 on SSB and one on FM. Propagation modes were: 119 via tropo; 6 via E's; 35 via Ar; 45 via MS and one by an MS/tropo. mixture.

Eddi started serious VHF work in 1975 running 50 watts into a 20-ele. colinear array fed by 50m of RG-213 cable. During the next couple of years, the aerial corroded badly so was replaced by four 8-ele. Yagis vertically stacked. The latest array consists of a couple of home made 10-ele. DL6WU Yagis vertically stacked, fed with 300 watts of RF. The feeder is now 22mm. *cellflex*, still 50m. long. The first Rx front end was a BF225/TIS88 affair, later a 3SK288CN, now a BF981.

VHFCC Certificate no. 325 for 2m. has been awarded to Ken Porter, G3KEN, from Ansdell, Lancs. First licensed as GW3KEN in Cardiff, his first ever QSO was with GW8UH on 2m. CW on Jan. 26, 1955 using an SCR-522 TX feeding a home made 4-ele. Yagi turned by the popular "armstrong" method. The RX was a home made

converter using three CV66 (EC54) valves feeding an R-1155 Rx. Ken moved to Canada in 1957 and operated as VE3CKP from 1958 to 1964, using 100 watts input to a 10-ele. beam. He gained the Ontario 2m. Century Award.

The first QSO as G3KEN was on June 20, 1965 from the Wirral, with G3SKT and he moved to the present QTH in Aug. 1970. The present gear comprises the *Trio-Kenwood* TS-520SE driving a valve type, home made transverter with an 832A PA stage at 25w. input, feeding a 10-ele. beam at 25ft. For FM, an *Icom* IC-22A feeding a coaxial dipole is used. Ken listens on 4m. and 70cm. but says that 2m. has always been his favourite band. He enjoys building his own gear and reckons he is one of a diminishing breed.

Beacon Notes

The Cyprus 4m. beacon referred to in last month's column is now operational from the QTH of 5B4AZ on a frequency of 70.112 MHz. It runs 15 watts to a 4-ele. beam pointing to the U.K. from locator QU51b. John Baker, GW3MHW, says it sends bleeps and its callign on A1 between 1200 and 2200 GMT. G4BPPY, who made this beacon, would like to hear from any other 4m. enthusiasts with the ultimate aim of setting up more 4m. beacons in various places. (See the 4m. section later.)

Contests

Results: 29 entries were received for the 70 MHz contest on June 1. The single operator, fixed station section was won by GM3WOJ whose 42 contacts totalled 422 points. GD2HDZ was runner up with 308 pts. from 34 QSO's. The other stations part was won by the Addiscombe ARC who operated GW4ALE/P from Clwyd, making 80 QSO's and 730 pts. The Westmorland VHF Group were second with 618 pts. from 64 contacts from G3FDW/P. The best DX was GW4ALE/P to ZB2BL at 1,925 kms.

The Barking Club's contest on Mar. 30 attracted a record entry. The Essex stations section was won by G8PUB, The *Hadrabs* Group, with 3,813 pts. with G8KAX/P runner up with 3,213. The outside Essex section was won by G8KPZ/P with 8,800 pts., G3NAQ being runner-up with 8,190 and G8RZP/P in 3rd place with 8,036. The *s.w.l.* part was won by N. B. Henbrey, BRS 28198, with 1,364 pts.

Coming events: The VHF (2m.) part

of the IARU Region 1 contest is scheduled for the weekend Sept. 6/7, 1600-1600 GMT. There are two sections: 1) Single operator — not clubs — and 2) All other stations. Exchanges to consist of usual RS(T) followed by serial number and QTH locator with scoring at one point per kilometre. This one coincides with the RSGB's 144 MHz event and only the QTH locator need be sent. The sections are as for the main event but with radial ring scoring. Both contests may be entered with the one log but with two sets of points.

The 12th BARTG VHF/UHF contest is in the usual two parts, the first from 1800-2300 GMT on Sept. 13, the last on Sept. 21 0700-1200 GMT. This is open to all RTTY folk in WAZ zones 14 and 15 using 144 and 432 MHz but no cross-band QSO's permitted. Radial ring scoring. Full details from G8APB, 148 Porter Road, Brighton Hill, Basingstoke, Hants., RG22 4JT.

The RSGB Region 1 VHF Contest is from 0900-1700 GMT on Sept. 16 and covers 70, 144, 432 and 1,296 MHz, with participants free to choose any three. The three sections comprise: 1) Multi-op., fixed or portable with separate call signs on each band and simultaneous operation; 2) Single op., fixed or —/P. All operators must state they are in or from RSGB Region 1 which comprises Cheshire, Cumbria, Gtr. Manchester, Lancs., Merseyside and GD. They may travel up to 20 kms. outside this region. The third section is for operators outside Region 1 working Region 1 stations. Scoring is one point per five kms. on 1,296 MHz and normal radial ring points on the other bands.

Sept. 21, 0900-2000 GMT sees the fifth and final leg of the 10 GHz *Cumulatives*. The last of the 1980 *AGCW-DL* contests is due on Sept. 27 from 1900-2300 GMT on 2m. CW. Contest exchanges as page 41 in the March issue, with entries postmarked before Oct. 31.

Satellite News

The AMSAT Convention at the University of Surrey planned for September has been postponed till next year. AMSAT satellite *A-O-10*, if ready in time, could be launched by *ARIANE* LO-11, early in 1982. AMSAT-UK has launched a £40,000 appeal for funding the next *Phase 3* satellite and is spearheading the appeal in Europe, IARU Region 1. It is proposed to donate the fund to AMSAT-DL as the German

THREE BAND ANNUAL VHF TABLE January to December 1980

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL Points
	Countries	Countries	Countries	Countries	Countries	Countries	
G4CMV	33	5	71	17	46	12	184
GD2HDZ	38	5	55	12	38	7	155
G8OPR	—	—	65	19	50	8	142
G4HNS	14	3	59	12	41	9	138
G3BW	—	—	69	23	37	7	136
G8GXE	—	—	60	14	50	9	133
G8VLO	—	—	62	14	50	7	133
G8MFD	—	—	59	14	50	7	130
GJ4ICD	—	—	59	19	41	10	129
G3PBV	7	3	53	13	40	8	124
G8IFT	—	—	61	11	41	9	122
G4BYP	32	5	48	11	21	3	120
G8FMK	—	—	60	12	40	7	119
G3F1J	39	6	44	10	16	3	118
G8HHI	—	—	55	11	40	9	115
G8TFI	—	—	54	16	25	7	102
G4DEZ	—	—	67	28	—	—	95
G3FPK	—	—	67	20	—	—	87
G3CO	22	3	36	11	9	4	85
G8KGF	—	—	48	14	17	6	85
G8KAX	—	—	36	10	31	8	85
G4ERN	15	2	30	10	18	8	83
G4IGO	—	—	58	24	—	—	82
G3KPU	—	—	33	5	28	6	72
G8RWG	—	—	58	14	—	—	72
GW3CBY	18	5	27	8	8	4	70
G4ARI	12	2	44	7	—	—	65
G3EKP	22	5	18	6	8	5	64
G4FKI	27	3	17	4	7	3	61
G8VJJ	—	—	50	11	—	—	61
G8TIN	—	—	46	11	—	—	57
G8JJR	—	—	28	7	19	1	55
GM8TSI	—	—	42	9	1	2	54
G4HGT	—	—	42	6	—	—	48
G4BWG	—	—	20	11	9	6	46
GW3MHW	40	5	—	—	—	—	45
G8RZA	—	—	36	9	—	—	45
G8JGK	—	—	33	9	—	—	42
GM8MNG	—	—	33	5	—	—	38

organisation will be constructing most of the electronics as it did for the ill-fated *A-O-9*. All contributions should be sent to AMSAT-UK, marked "Project Oscar Fund" to the secretary, G3AAJ at 94 Herongate Road, London E12 5EQ.

Oscar 7 appears to have bucked up again and is once more operating well off its solar cells. The battery has long since been defunct and now acts as a capacitor, it seems. AMSAT-UK is requesting telemetry reports from users/listeners for 0-7 and 0-8. 0-7's mode "B" beacon on 435.1 MHz is now coming in very well.

Murphy Strikes Again

Bryn Llewellyn's, G4DEZ, proposed QRO 2m. operation from WR square was a sad failure. The family arrived to find nobody waiting for them at ferry. They had understood they would be able to operate from a house built for the parents of GM8SAU. However, said house had not been built. On their first night, they had to evacuate their tent and sleep in the car as wind gusts of 160 km. per hour were recorded. Next day, they went up to a hut on a nearby hill where there was supposed to be a mains supply. Unfortunately there was not so they had

to use 300 feet of cable from the nearest power source. It took some time to dry it out though.

During a trip to another high spot, 30 miles away, more rain and gales occurred. All the radio gear was put into the Land Rover. Later on, one of Bryn's daughters asked did he know the Land Rover's door was open? All the gear had got soaked, water having to be poured out of the memory keyer, cassette recorder, the amplifier. Obviously, it was impossible to use the QRO gear for MS and only a few local QSO's were made.

DX notes

Mike Theiss, LA0BY, operates periodically from an *Ekofisk* oil rig in the North Sea. Your scribe and many others, worked him on July 25 when he was signing LA1EKO from BQ37g. Eddi Ramm, DK3UZ, has passed on Mike's periods on the rig for the months ahead as follows: Sept. 26-Oct. 3; Oct. 12-19; Oct. 28-Nov. 4; Nov. 13-Dec. 2; Dec. 15-22 and Dec. 31-Jan. 6. His CW QRG is 144.045 and the SSB one, 144.290 MHz using a *Yaesu FT-225RD* and 6-ele. Quad.

The QSL address is: Mike Theiss,

Safety Dept., Ekofisk Q, c/o Helicopter Service, N-4003 Forus, Norway.

Anyone looking for VO square and Co. Donegal will be pleased to read that EI4DU and EI9DM have been worked from London. They are in VO29e and G3KEQ had a contact with them on 2m. on July 10.

Four Metres

Jim Whittle, G3EKP, (Lancs.) is active on SSB most evenings from 1950 to 2015 but did not indicate if that was BST or GMT. Alan Scott, G4BYP, (Cheshire) worked a few new ones for the table during VHF NFD using a dipole at 15ft. These included GM4IPK/P (Grampian); G3PDH/P (Norfolk) and GM4HAM/P (Borders). Dave Thorpe, G4FKI, (Essex) has compiled a list of stations operating on the band, indicating their counties and modes and sked. details, if known. A large s.a.e. will bring a copy of it and it is proposed to issue an up-dated version in October. Send your requests to: G4FKI at 161, Tomswood Hill, Hainault, Ilford, Essex, IG6 2HR. It occurs to your scribe that perhaps Dave and G4BPY should get together as the latter has been contemplating the creation of a 4m. club along the lines of the 6m. SMIRK group.

Gary Allitt, G4HNS, (Notts.) has now finished an amplifier for the band and hoped to have an aerial up in time for the Aug. 17 contest. Arthur Breese, GD2HDZ, used NFD weekend to add 11 new counties. On July 23, G4HEB provided Cleveland, while the 27th produced G3UKV/P in Cornwall and G13TLT in Co. Down.

John Baker, GW3MHW, (Dyfed) has worked Franz Turk, OE3NTK, for the first GW/OE crossband 4m./10m. QSO. G4BPY made and sent a converter to Franz. DK1PZ is also looking for crossband QSO's and heard meteor pings from John. G4BPY has sent a converter to ZE2JV who reports that it is working satisfactorily and that he hopes to hear 5B4CY via transequatorial propagation. During NFD, John noted more stations on than for a long time and from his difficult QTH, worked 46. He keeps his nightly sked. with G2AOK and G3LIT and new stations call in quite often. GW3MHW enters the annual table with 40 counties and five countries. Confirmations are not required but only in-band QSO's are counted. Dave Lewis, GW4HBK, (Gwent) reports that his local club, Blackwood and District,

QTH LOCATOR SQUARES TABLE

Station	23 cm.	70 cm.	2 m.	Total
G3JXN	39	81	107	227
G3COJ	24	66	93	183
G8LEF	22	62	101	185
G8IFT	14	30	68	112
GD2HDZ	12	41	76	129
G8HVV	12	73	130	215
G8FMK	12	48	35	95
G8GML	11	74	122	207
G3SPJ	10	36	71	117
G4CMV	8	55	148	211
G8LHT	7	39	98	144
G8ATK	5	51	104	160
G3PBV	5	36	79	120
G8GXE	5	40	68	113
G4AEZ	5	29	61	95
G3OHC	4	33	104	141
G3BW	3	26	120	149
G1RKNV	2	54	119	175
G2AXI	2	54	93	149
G8KAX	2	40	66	108
G8HHI	1	40	107	148
G8OPR	1	30	92	123
G4ERX	1	41	72	114
G3J3RAX	1	27	74	102
G3POI	—	—	294	294
I4EAT	—	25	238	263
G3VYF	—	72	165	237
DK3UZ	—	—	223	223
G3IMV	—	—	219	219
GJ4ICD	—	58	157	215
9H1CD	—	13	178	191
G4ERG	—	16	174	190
G3CHN	—	—	190	190
G3SEK	—	—	182	182
9H1BT	—	11	163	174
GM4COK	—	12	154	166
G3FPK	—	—	166	166
GM4CXP	—	25	136	161
G4BWG	—	32	125	157
G3KEQ	—	—	157	157
G4IJE	—	—	156	156
EA3LL	—	15	137	152
G4IGO	—	—	141	141
G4AWU	—	22	110	132
G4HYD	—	40	83	123
G4DEZ	—	—	121	121
G8LGL	—	17	101	118
G3KPU	—	25	91	116
G8KGF	—	20	95	115
G8IXG	—	—	111	111
G8TFI	—	32	77	109
G4FBK	—	5	100	105
G8MFI	—	20	85	105
GM8NCM	—	12	84	96
G3FIJ	—	27	68	95
G8KPL	—	7	87	94
G18EWM	—	25	67	92
G6UW	—	1	89	90
G8VLQ	—	29	60	89
G8LFI	—	—	89	89
G4GEE	—	28	60	88
G8JJR	—	9	78	87
G8JAG	—	7	79	86
G8KSP	—	2	76	78
G4GHA	—	—	71	71
G4GXT	—	1	56	57
G4CSA	—	6	51	57
G8TGM	—	—	54	54
G8JGK	—	—	52	52
G4HFO	—	15	36	51
G8PRG	—	12	39	51
G8RWG	—	—	50	50

Starting Date January 1, 1975. No satellite or repeater QSO's. "Band of the Month" 23 cm.

operated on 4m. in NFD using his call making 73 valid QSO's, best DX being GM3WOJ/P. At home, he has had to close down due to TVI to Ch. 5. "Roll on, 1982!" he says. G4CMV is now on with 40 watts to a dipole from W. Yorks

Two Metres

Anyone complaining that this past

month was not very good must either have a very deaf receiver or live in an impossible QTH. There have been several E's openings, some excellent tropo., an Auroral event and, as this is being compiled, the Perseids meteor shower is in full swing. But first, the E's happenings, the first of which was on July 11. In the first phase, there was an opening to the Swedish 4, 5 and 0 districts for half an hour from about 1630. Few readers caught this, but Roger Thorn, G3CHN, (Devon) worked nine, Ken Osborne, G4IGO, (Bristol) one as he only arrived home at the end, and Geoff Brown, GJ4ICD, two new squares — HT and IT but he did not say how many others he worked.

A warning of imminent E's to the south was received at G3FPK at 1710 and Spanish and Italian stations were very strong on Band 2 FM broadcast. From about 1715 to 1745, stations in Sardinia, Malta and Sicily were worked by stations in the Midlands and south of England, and in South Wales. G3CHN's list included Paul Galea, 9H1BT, from his new Dingli home, HV12b. G4IGO worked IS0SCB and GJ4ICD contacted IS0DKU, both in EZ66a. Sheldon Hands, GW8ELR, (Dyfed) heard a 9H1 at 1730 and worked IS0PDQ (EZ) Paul Broadhurst, G8LGL, (Avon) worked three IS0's and EA6FB from 1730-1746.

A third phase to Spain started just after 1800 when G4IGO worked EA3BRC (BB23a) at 1804. This opening continued in spasms till about 2000. No doubt the star catch was EA6FB (AY07j) from Ibiza, who was barely audible in London, worked by G3PBV, G4IGO and GW8ELR. An unusual one, which may have caused seizures for some, was 9G1JX operating portable from EA5. Jurgen is now back in Ghana and says to QSL via DL7SI. Many operators worked ZX square for the first time, thanks to EA5TD and EA5AVX. The former's QSL has arrived at G3FPK but does not reveal any rig information. EA3LL (AB56b) was worked by Mark Turner, G8OBS, (Beds.) at 1805 and by GW8ELR at 1854. During these openings, YU1EU said he worked into C3, CT, EA and F, while CT1WW had 150 QSO's. Clive Morton, G4CMV, (W. Yorks.) heard EA3LL, EA6FB and the 9G and reckoned the south Midlands fared best.

On July 12, another E's even began at about 1700 lasting about 2½ hours, on and off. G4IGO heard IT9TDN (HY) at 1704 briefly, then contacted him at 1712, followed quickly by 12KSX/8 in the

same square. Ken made seven contacts including IC8EGO (HA32g) in Capri. All stations worked and logged were in the 8, 9 and 0 districts. G3CHN's tally were all from the 5, 6, 7 and 8 districts, including I7HVP in IB74c. Dave Sellars, G3PBV, (Devon) worked I8TUS (HY) at 1659 but this one also signed I8TUS/P in IZ52g according to G4IGO's report. Dave's last QSO was with I5CTE (FD) at 1915.

Mike Harsey, G8ATK, (Surrey) contacted DK8FY/18 who said he was in Paestum, which is HA45, plus I0SSW (GB); I2KXSX/8 and IC8ZUQ (HA), Tony Collett, G8GXE, (Berks.) caught his first ever *E*'s opening to work IT9TDN., who was also worked by G4CMV (W. Yorks.). John Pilags, G8HHI, (Surrey) worked IC8ZUQ and IOEIO (GB) for his first *E*'s contacts. In a quarter hour from 1900, Jim Rabbits, G8LFB, (London) heard I2KXSX/8, IT9TDN IC8ZUQ and IOGCO (GB) with an *Icom* IC-202S and indoor, 4-ele. *Yagi*. George Gullis, G8MFJ, (Wilts.) had three QSO's into HA and HY and Kevin Piper, G8TGM, (W. Sussex) had his first *E*'s QSO's starting at 1800 with I2KXSX/8, then DK8FY/18 and finally DF8DL/18 in HZ30g. From Dyfed, GW8ELR heard I8CVS (HA) very strongly but did not work anyone. G8LGL got IT9 and five I's from 1705-1752 in GB, HA, HB and HY and two more I's in GB from 1915-1922.

On July 13, the first time after a bout in hospital, Bill Hodgson, G3BW, (Cumbria) switched on the rig and worked EA5TD for a new square. G3CHN's list shows Roger's first QSO at 1650 with IC8EGO, the last Italian heard being IOZDR/6 in HC at 1733. However, at 1915, he worked EA5HM (ZZ39f) for a new square. G3PBV managed exchanges with IC8ZUQ and I8CVS between 1704 and 1709, then EA5HN (ZZ) and EA5NY (ZZ) exactly two hours later before fade out at 1918.

G4BYP reckons he was one of the few northern stations to get in when he worked IT9TDN and, in common with many others, wonders why all the Italians seem to cluster around the calling frequency creating colossal QRM. G4CMV worked 9H1BT at 1704 for country no. 34, and IOAMU (GB) 12 mins. later. This one lasted from 1650-1740. Clive heard someone calling "CQ Sporadic E!" John Cleaton's, G4GHA, (Dorset) sole success was IOCMD (GB). G4IGO was on for the whole period from 1649 to 1920 and lists lots of Italians heard, all 8, 9 and 0

districts, and worked a couple. At 1907, Ken worked EA5TD and heard EA5HM and EA5AMR, both in ZZ square.

The only one worked by G8ATK in this affair was IOJNI (GC). Using just three watts to a 9-ele. beam, G4IRX worked CT1AIF in VB square for a very choice piece of DX. This was at 1736. G8GXE managed the rare GA square thanks to IC8TRA on Ischia, plus I8REK (HA); IW0AYO (GB) and IC8EGO. G8HHI contacted I8CVS and IC8EGJ (HA) and heard IW9AIG/P in HX. G8LFB opened his innings at 1700 working 9H1FL (HV13a). Other 8's and 9's were heard and I2KXSX/8 was worked at 1740, using just three watts from Jim's "barefoot" IC-202S.

G8LFJ (Essex) heard everyone calling "CQ Sporadic E" at 1655 and heard 9H1FL with whom he exchanged reports. Shortly afterwards, Jon worked 9H1BT, then I2KXSX/8 and IT9TDN. G8MFJ contacted eight Italians between 1708 and 1734 but George, the IC8 was TRA, not ERA in GA30a. Derek Simpson, G8NDF, (N. Yorks.) using a *Belcom* Liner 2 to a 19-ele. *Cushcraft* "boomer" aerial worked 9H1BT and IT9VMN (GY) between 1706 and 1711. G8TGM heard IT9TDN blasting in at 1700 and worked IT9FCA (HY) at 1706. then IODLP/P (GB) and I8CVS. Roger Gregory, G8TIN, (Oxon.) had his first ever *E*'s QSO with IC8ZUQ so is justifiably pleased. From 1656-1738, G8LGL worked IT9 and 11 I's in GA, GB, GC, HA, HX and HY then, at 1906 EA5TD and at 1916 EA5AMR (ZZ).

At 1650 on the 13th, GW8ELR is certain he heard UG6?? calling CQ just before the opening proper commenced. He later worked I2KXSX/8, IT9TDN, IC8EGO and I8REK. Sheldon mentioned that last year, just prior to an *E*'s opening, GW8BXQ reckons he heard an OD5. G3CHN wrote that FICRP told him that, on July 14, a French station in CE square had worked OD5MR, and that someone in CH had worked into Israel.

On July 21, GW8ELR's CQ call at 1753 was answered by LZ1AB, and another at 1928 by YU10HK (KE). G4DEZ (Essex) was in on another *E*'s affair on July 31 which did not reach into the London area. Bryn worked IT9VMN, IW9ABZ and IT9XIX. G4GHA also mentions this opening from 1750-1830 during which he worked IT9IKF and IT9XIX in HY square. Finally, on Aug. 9, G8ATK caught a fleeting opening amid the fine tropospheric conditions and worked

IS0DSQ/P (EZ62c) at 1809 and heard IS0DKU/P.

There was a good *Aurora* which began at about 2315 on July 25 when G8GXE heard a very strong signal from GM8MBP (YR) whom Tony promptly worked with just 10 watts. Afterwards, he switched on the 250 watts amplifier and contacted GM4AFF (YR); GM8BJF, GM8TSI (YP) and GM80FX (YR). The last was very strong but had little *Ar* sound. The last signal heard in this, his first *Aurora*, was an unidentified CW one at 0035. G4HNS heard LA8SJ (FT05j) and LA1EKO on CW and worked GM8BJF in Edinburgh on SSB. The event was happened upon at G3FPK at 2325. QTF's were due, true north and for once, SSB signals were very easy to read. LA8SJ and SM4IVE (HT68d) were worked on CW. Activity seemed low but the GM's were working PA and DL stations.

There have been several periods of really excellent tropo. in the past month, the first of which was on July 22 when G3PBW at last worked BG square — F1DV and F1DOF — plus portables in CJ and DI. On the 28th, after reading the GB2RS news bulletin, Dave worked F1EUI/P (BC) who was 2,000m. *a.s.l.* The funny beacon, FX5THF, in AC08d, nominally on 145.145 MHz, was coming in and remained audible till the following morning. G4GHA also worked BG for the first time on the 22nd and found signals to southern France consistent but weak. On the 28th, John worked AE and ZE for two more new ones, best DX being F1DSQ (ZD) on the Spanish border.

Martin Blythe, G4HFO, has now moved from Tiverton to St. Austell (Cnwl.) and was in on the first good opening on the 22nd. Stations worked included F6DRQ/P (YG); F1CHR/P (CE); F6GQE/P (ZC); F9NL (AD) and EA2WM (ZD). G8ATK worked three French portables in CE, CJ and DF on the 24th and two more in CG and CH the next day. The period 27/28 brought a whole lot of fine DX to southern France, including five stations in AD, one in ZD and EA1ED in VD59c.

G8GXE's trip to Wales was quite successful and Tony enjoyed better weather than was the case most everywhere else at the end of June. From XM square, 90 stations were worked on 2m. while from Anglesey, XN, the tally was 110 stations. The path to London seemed marginal with better propagation to the east coast. From home, Tony added G8RZP/P (Cnwl.)

on July 17; GD8SFI/P on the 20th. On the 22nd, French stations in AF, AG, AH, BF, BG, ZH and ZI were worked late at night, while Lancs. was worked at last on the 26th in the shape of G8SZW/P, just 200 yards inside the county. On the 27th, more DX French stations were worked including FIEGB (AD61g).

G8HHI heard EA1CV (XD) on the 27th and worked F1FAG (ZG09a) on the same day. Between 2023 and 2219 on July 22, G8LFJ added F6GDX (AF) and F1DTC/P (CE) for a couple of new squares, plus FIGAF (AG). On the 27th, F6CCH and F1FAG, both in ZG, were contacted but EA1ED was very weak at 2300 when Jon went to bed. On the 23rd, G8MFJ got his signals down to FIAGO and F6GRA in AG and to F1FHI and F6BQX/P in ZH. The lifts of July 22 and 27 enabled Neil Montanana, G8RWG, (Surrey) to add another seven squares including F1CLT in AD69g. G8TGM did not fare so well however on the 24/25 period with F6GDX (AF) the only DX worked. Kevin heard EA1CV in Gijon on the 26/27th plus lots of Frenchmen in AD, BD, BE, etc. His station comprises an Icom IC-202, 25 amplifier and 9-ele. *Tonna* Yagi.

David Hutchinson, G14FUM, (Antrim) now runs an FDK Multi 750E. Just three miles away is an excellent site for portable operation, 1,200ft. *a.s.l.* He uses a portable 9-ele. *Tonna* on an 18ft. *Tufnel* lifeboat mast lashed to a convenient fence post in XO11a. On July 22, David worked into F, ON, DL and PA, and reports increased SSB activity in GI with G1's 4GVS, 4GID, 8JPG and 8ULK in Antrim; 3TLT, 5SJ and 8TBQ in Down and 5MPS and 8RLE in Armagh. GW8ELR worked F1EVI/P (BC11g) on the morning of July 27. The F1 was running about 10 watts to an 8-ele. beam and was very strong. That evening, Sheldon heard stations in ZL square working EA1ED whose signal he could not even detect in Milford Haven. On July 27, GJ4ICD worked EA1ED for a new square plus *twenty* stations in CD square!

On the morning of Aug. 6, Jack Mitchell, G3KEQ, your scribe's near radio neighbour, worked EA3AQT and EA3BBW (ZB11d) *via* tropo. They were about 8,000ft. *a.s.l.* They were still operating on Aug. 9 in the evening when many people worked them. Also in demand was F6GRC/P (YG10e) and C31RN in Andorra, (AC). The

conditions seemed to be a re-run of those on July 27.

Seventy Centimetres

More operators are using 70cms. now and have been rewarded with some fine tropo. conditions recently, paralleling those on 2m. Surprisingly, though, G3PBV found little to report with just YH square added. Mike Lee, G3VYF, (Essex) added GD8SFI/P on July 16, and, on the 22nd, F1DTC/P (CE); F8QD/P (BF); F1EKQ (CF); F1EAN (AG); F1DOF (BE) and F1QV (AG). In the 27/28th lift, he managed QSO's with F6CCH (ZG); F1BYM and F1ADT (ZE); F9NL (AD); F1COW/P (ZF) and F1CIDI (ZD).

G4HFO has a very good look out from east through south and is on from 2100 local time, most evenings from Cornwall. On July 21/22, Martin worked F9NL and F6CBC/P (ZD) but reckons his best DX was EA1CR (XD), both stations running just 10 watts. F6CBC/P was contacted again on the morning of the 24th at S9 both ways, compared to S2 on 2m. where both ran higher power.

G8ATK worked F1DTC/P on the 24th and had a ball on the 27/28th with F9NL, F1BYM, F1ADT (ZE), F8SM/P (ZF), F6BMC (ZG), F1AJD (AF), F1COW/P, F1CBL (ZE), F6BQX/P (ZH), F6EAS (ZJ), F6CBC/P and F1QV. The best DX for the past two months for Ray Cox, G8FMK, (Oxon.) was F9NL at 940 kms.

During the Welsh trip, G8GXE managed 17 QSO's from XM and 18 from XN. After returning home, Tony added Clwyd, N. Yorks., Staffs., S. Glam., Cornwall, Lincs., and Dorset to his 1980 haul. He comments on the ducting to the south on the 22nd July when F1DTC/P was worked but when stations in AG, BI and ZH were barely detectable. On the 27th, F1BYM, F6BQX/P and F1AJD were all new ones and were still there the following morning along with F9NL, who was working into ZM square. G8HHI also worked F1AJD, F1BYM and F9NL on the 27th.

During NFD, GJ4ICD worked into GM which could be a "first" GJ/GM on the band? GM4DIJ/P was at the other end. G3EKP is on SSB now and was expecting to put up a new beam. G4FK1 also has 10 watts of SSB going to a 48-ele. *Multibeam*. G4GHA is getting

near to being fully operational from Dorset and G4GSA in Weymouth has a line on the stocks.

Twenty-three Centimetres

It is proposed to include the latest All-time table next month so would the participants please up-date their scores and base them on the *current* counties/regions only so as to make it fair for the newcomers. G3PBV reports that GB3IOW is putting out a fine signal, S3-4 at least, never fading into the noise. It was S9-plus-40 dB. on July 21! Dave has a sea path to it and says it is often a good signal in the early morning. GB3AND and GB3BPO have been heard weakly, two days out of three.

From London, John Tindle, G3JXN, made 48 contacts in NFD during eight hours of spasmodic operation. He now has an amplifier with 2C39's going. July 17th was the night when G8GXE made his first QSO on the band with G3NNG. On the 19th, a sked with G4ERX did not quite come off, nor did one with G3AUS in Devon. Early on the 24th, Tony just managed a QSO with G8KWI (Surrey). Ian Gordon, G8IFT, was contacted from the first YM and for Hereford and Worcester — not W. Midlands as wrongly stated in the July piece. On the 27th, Tony just made it with G8IEM (Hants.) and ZK square. He is making a 2C39 amplifier to boost the present five watts. G4CMV is QRV with a *SOTA* transverter and 36-ele. *Q-L-Y*.

GD2HDZ is a happy man; Arthur has at last worked the Isle of Man on 23cm., thanks to GD8SFI/P, worked on July 16. He reckons this four mile QSO to have been a "first," and one for which he has been waiting for at least five years!

There seems to be support for the inclusion of 23cm. in the Annual Table. Before making any firm proposals, more readers' views are sought. The basic idea is to compensate Class B licensees who cannot use the 4m. band.

Sign Off

Space precludes any more news so we will try to catch up on the MS, etc., next time. All your contributions to: "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. The October deadline is Sept. 3, and the following one, October 8. *73 de G3FPK*.

VHF DUMMY LOAD

IAN H. MOTH, B.Sc., G8SOH

THE dummy load is one of those items of test equipment which lie about in the instrument cupboard, hardly ever used. When the occasion arises however, it is surprising how indispensable they quickly become. A sudden fault in a transmitter system can be analysed to the extent of proper operation of the transmitter. If the transmitter operates normally into the dummy load (which is, in effect, a perfect ideally matched antenna as far as the transmitter's output transistors are concerned) then it is OK – the fault must be elsewhere. Most amateurs will fully appreciate the sense of relief that one feels when a serious fault is shown to lie in the £2's worth of home made 'Slim Jim' out on the roof rather than the more expensive transceiver lying on the table. An SWR meter is valuable here also, but when the SWR goes high good quality meters become rather inaccurate and may become unreliable and misleading. The dummy load described in this article is intended for VHF use up to 10 watts in 50-ohm systems.

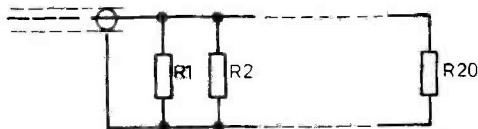


Fig. 1 CIRCUIT DIAGRAM

D
530

Circuit

Fig. 1 shows the circuit diagram, which is merely a coaxial cable terminated by 20 resistors connected in parallel. The resistor values are $1K \frac{1}{2}W$ and the 'sum' therefore 50 ohms, 10 watts. 20 resistors may seem rather a handful, but any fewer would entail a non-standard resistance value and more power dissipated per component. Also, the more resistors there are, the less accuracy matters. Small errors in each resistor will tend to even out so the result will approach $50R$ very closely.

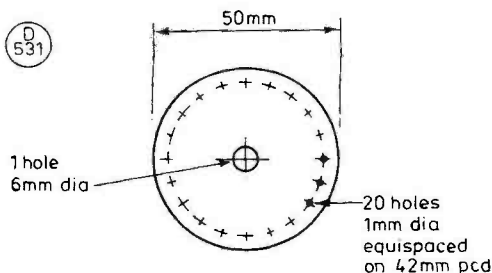


Fig. 2 DIMENSIONS OF BOARD

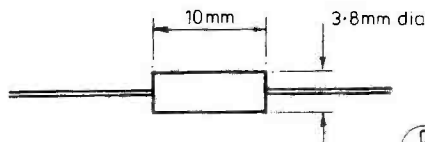


Fig. 3 CR37 DIMENSIONS

D
532

Construction

The resistors are mounted on a circular piece of copper-clad board, Fig. 2. The dimensions given are appropriate to resistors in a CR37 package, Fig. 3. If appreciably different size resistors are obtained the board dimensions will require to be altered.

Take a short length of good quality 50-ohm coax and strip back one inch of plastic cover. Push the braid sheath back so that it 'concertinas' and pull the edges to make a disc; trim away excess sheath and solder the cable to the board. Resistors are added as in Fig. 4, bearing in mind that it is desirable to use the minimum possible lead length. The resistors should be carbon, other types will not work so well. Purists will arrange the resistors so that adjacent pairs point in opposite directions, the colour bands defining the resistor's polarity. It is said that in this way residual inductance will cancel out; in fact the 'coils' are not close enough at this frequency to make any difference.

D
533

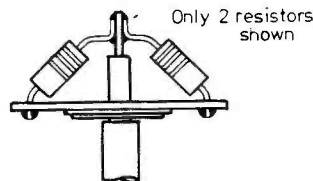


Fig. 4 CONSTRUCTION OF DUMMY LOAD

A common variation on the layout described here is to make two identical boards and mount resistors between them like a sandwich. This would unfortunately be a parallel plate capacitor and may compromise performance, but it must be admitted that the result is much neater and that the effect at these dimensions is probably very slight.

Another slight effect would be produced by mounting the resistor assembly inside an enclosure, tin can, tobacco tin etc. The dummy load will certainly last longer so protected but capacitance inside the can may affect performance. The author's dummy load is stored in a tin, the cable entry via a grommet in the lid. When the dummy is required, the tin is opened and the resistor assembly allowed to hang clear of any metal or system circuitry. This method is recommended, but be sure to pass the cable through the grommet before connecting the plug onto the end of the cable!

THE LAMBDA DIODE VFO

R. W. Micklewright, G3MYM

THE Lambda Diode is a negative resistance, two terminal device, that dissipates very little power, and can be used to make a simple and stable VFO. The diode is an N-channel jFET and a P-channel jFET connected as in Fig. 1. The voltage/current curve of this configuration has a substantial negative resistance region, see Fig. 2, and it is the shape of this curve that gives the diode its name.

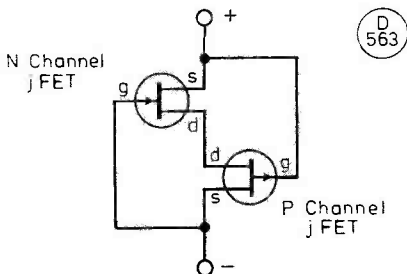


Fig.1 CIRCUIT OF LAMBDA DIODE

In order to design a successful VFO, it is necessary to understand how a lambda diode works. A few articles have been written which show applications of the lambda diode, but the writer has not seen anything written that shows why a negative resistance region is produced, or how the characteristics of the diode are related to the parameters of the two jFETs from which it is made. Therefore, before building a VFO, the writer felt it was essential to provide answers to these questions.

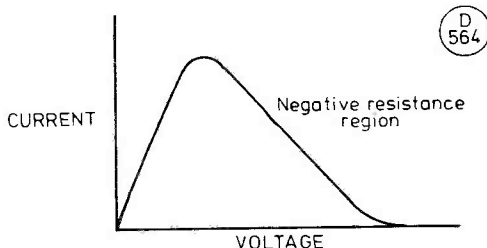


Fig 2 VOLTAGE/CURRENT CURVE OF LAMBDA DIODE

Lambda diode operation

Fig. 1 shows that the gate and source of each jFET are connected across the supply voltage, and that the polarity of the supply is such that the voltage is a reverse bias for each transistor. Fig. 1 also shows that the channels of the two jFETs are in series across the supply, and therefore the current in each channel must be the same. The magnitude of this current depends on two factors, the conductance of the channel and the voltage between the drain and source of the jFET, and in the lambda diode both these parameters are functions of the supply voltage.

Increasing the supply voltage from zero will cause the channel conductance to fall and the voltage across the device to rise. Initially the increasing drain-source voltage will dominate, and the current will increase from zero. Eventually the decreasing channel conductance will become the significant factor, and a further increase in the supply voltage will produce a decrease in the lambda diode current. This is the negative resistance region. This process will then continue until the current finally reaches zero.

The writer's mathematical analysis shows that the negative resistance region will start when the supply voltage is approximately equal to $\frac{(V_{C1} + V_{C2})}{3}$ and will end when the supply voltage is equal to $(V_{C1} + V_{C2})$. V_{C1} and V_{C2} are the gate-source cut-off voltages (pinch-off voltages) of jFET₁ and jFET₂, respectively.

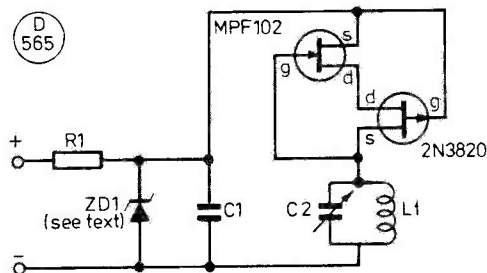


Fig.3 CIRCUIT OF LAMBDA DIODE VFO

VFO circuit

A negative resistance VFO will oscillate when the positive resistance of the tuned circuit is cancelled by the negative resistance of the active device. The basic circuit for the lambda diode VFO is shown in Fig. 3. An MPF102 N-channel jFET and a 2N3820 P-channel jFET are used for the lambda diode, as both are readily available and their lead arrangements make the physical construction of the diode easy. See Fig. 4.

The voltage to the lambda diode is stabilised by R_1 , C_2 , and the Zener diode. The Zener voltage should be between $\frac{(V_{C1} + V_{C2})}{3}$ and $(V_{C1} + V_{C2})$. The VFO frequency is determined by the tuned circuit L, C_2 , and the criterion here is that the loaded dynamic resistance should be as high as possible.

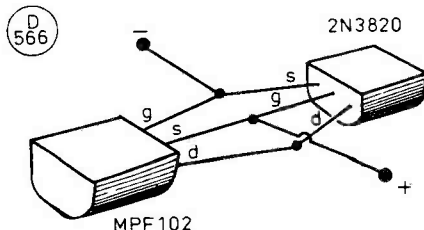


Fig.4 PHYSICAL CONSTRUCTION OF LAMBDA DIODE

Conclusion

The writer's circuit was designed to operate on 14 MHz. It has been completely successful in operation, and is used as the VFO in a 20 metre direct conversion receiver.

THE BELGIAN VHF CONVENTION

A LIGHT-HEARTED ACCOUNT

BRYN LLEWELLYN, G4DEZ

THE idea of going to the Convention arose when Chris Bartram, G4DGU, was invited over to Belgium to give a talk on his experiences of back-garden moonbounce on 70cm. Chris mentioned the trip to me, and also to other amateurs who have a keen interest in VHF/UHF matters, and the final party to go included: Chris Bartram, G4DGU, and XYL (70cm. E-M-E); Charlie Suckling, G3WDG, and XYL (70cm. E-M-E); Julian Gannaway, G3YGF, and Hugh Griffiths, G4CNV (both from the Oxford University E-M-E Group); John Morris, G4ANB (Harwell group and *Radio Communication* "4-2-70" feature writer); Paul Turner, G4IJE, and myself (both keen 2m. DX-er's, plus contests).

The best laid plans . . .

The trip has all that is loved by contest operators — absolute chaos! The plan was for one group, driving a Landrover complete with roof-mounted dish, to go directly to Felixstowe, and the other group to make their way from Didcot, *via* Sheering to pick up G4IJE, to my QTH in Hockley and thence to Felixstowe to meet the others.

A schedule was made for Paul to call Chris on two-metres to arrange talk-in to Sheering. Unknown to Paul, Chris' rig was in pieces and hence no talk-in! A phone call from Chris, asking for directions, showed that he had overshot Sheering by some ten miles. However, G4DGU and co. arrived at last and we set off to Felixstowe to catch the 2330 ferry.

We arrived at the docks at eight minutes to eleven, only to be told that the ferry had already left because the dock was needed for a container ship! Meantime the Landrover was still trundling slowly towards Felixstowe, blissfully unaware of the situation. At about 2305 both parties met, and the news of the missed ferry was met first with disbelief and then frustration.

After various unprintable suggestions had been made as to what could be done, it was discovered that the only way to get to Zeebrugge was to catch a ferry from Dover at 05.30! We also decided that we ought to try and telephone ON5FF, Marc, the Convention organiser, and the Holiday Inn Hotel (where the Convention was being held), in order to prevent Belgian amateurs from waiting for us at Zeebrugge at 0700.

So off we all set, back to Hockley, to make the phone calls and perhaps raise some Belgians on two-metres. When we arrived there, Charlie, G3WDG, found phone numbers for the hotel and ON5FF. The call to the hotel in Charlie's halting French ended in hysterics when it was realised that the hotel receptionist spoke fluent English; however, a message was left, and we continued our journey to Dover. We arrived in Dover early!

Onboard Entertainments

Safely aboard, we wondered if we might be able to persuade the ship's R/O to send a message to Zeebrugge to let the Belgians know that we would be arriving on a later ferry. Chris

arranged this — and, indeed, we were all invited to visit the ship's radio station.

The visit was arranged for 0700, and at this time we duly appeared and were met by the ship's radio/electronic officer. We arrived in time to hear our message being relayed over the 'wireless' to Zeebrugge. The radio officer made us all very welcome and spent considerable time explaining the function of the various pieces of equipment in his 'shack'.

As we were about to leave, he asked if we would like to visit the bridge — needless to say we agreed. We then spent another hour or so in the company of the Master and Officers and were allowed access to radar navigation equipment, again being given a full explanation of everything.

The hospitality we received from *Townsend Thoresen* was superb.

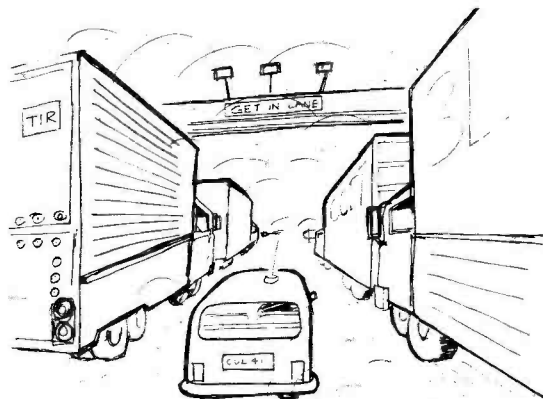
The Arrival

When we finally arrived in Zeebrugge, we expected to be greeted by the ON's who were to take us on to Ghent, but — there were none to be seen! After more phone calls it became apparent that the messages we had arranged had not got through. However, an hour later three cars arrived and we began the final phase of the journey to Ghent. The time was now midday with the Convention in full swing.

One of the most notable aspects of the journey was the antenna array on nearly every household we passed: they were enough to make the average amateur in this country green with envy. Almost every house had a *tower* on the roof, sometimes 6m. tall, with steel guys and rotatable TV/FM arrays.

The Convention

We arrived at the Convention at lunchtime, unfortunately having missed Chris' lecture period. After lunch a group of us settled down for a chat about E-M-E with F9FT and PAØSSB, and during the afternoon session I went into the lecture room and listened to ON5FF give a talk on 3cm. equipment. The lecture, accompanied by slides and epidiascope pictures, was tri-lingual — Flemish, French and English. During the coffee recess I met several amateurs who until then I had only spoken



GMB3CO

"...ullo Syd... are you still there? The band's gone dead
...ullo? ..."

to, though many times, over the air. One of these was ON7RB Roland, who acted as interpreter for me during later lectures — I can't understand a word of Flemish.

John Morris, G4ANB, gave a short talk on satellite scatter, *i.e.* using satellites and space junk as passive reflectors. The response from the audience was good, although I think they now believe all Englishmen are mad!

ON4ZN gave a lecture on antennas, mainly in French and Flemish but with a little English thrown in; he went into great detail and it was at this point that ON7RB's translations were very useful.

Visit to Ghent Radio Club

After the Convention we were taken to our hotel to freshen-up (remember, no sleep for nearly two days): we had about twenty minutes for this! Then we left for Ghent Amateur Radio Club, which was an experience in itself. Most British clubs meet in factory canteens, church halls, pubs, etc., but the Ghent A.R.C. is what it says it is: a club — complete with bar and eating facilities. There they serve a rather remarkable beer called 'Trapiste', and Chris now has a reputation in Belgian

amateur circles as a man who can hold his beer (though this fact has long been established in Britain); three small glasses being enough to raise a 4/1 with QSB report to a glowing 5/9-plus — rather like the proverbial angler's tale.

A group visited ON7RB's shack and were amazed at the range and complexity of his equipment. The whole day finally ended at about 0300, though this is only a guess.

Next morning, some went to see ON4DY's moonbounce system, while others explored Ghent in the rain. Finally we had lunch at the hotel with ON6UG Freddy, ON5FF Marc, and ON4DY Bob, where again all aspects of amateur radio were discussed at length. The meal was excellent, but it is now thought that the delicious steaks were of equine, not bovine, variety! ON5FF made all the arrangements for the trip back to Zeebrugge.

I would like to thank, on behalf of this British contingent, all Belgian amateurs concerned, for their overwhelming hospitality during the weekend visit; everyone said they are already looking forward to the next Belgian Convention.

G4DEZ is a regular contributor to "VHF BANDS".

CLUBS ROUNDUP BY 'Club Secretary'

WE have a pretty full pile on the desk right now, and pressures on space, so we may as well press on straight away.

Nationals

Our first is the **G-QRP Club**, comprising the amateurs and SWLs who are interested in low-power activity, the nominal figure being just on the five watts DC input as a maximum — albeit one feels on occasion that the club is as much for home-constructors as anything! Details, of course, from the Hon. Sec. at the address in the Panel.

The invalid and blind are catered for in all sorts of ways by **RAIBC**, and of course they are the full members. There are also the representatives, who are active helpers in getting full members along the way to their own station either as SWL, or hopefully with a ticket. As for the supporters — that's us, in the main: the general run of people who offer what help they can, right down to nagging the club treasurer to make a donation when AGM time comes round. Every little helps, and the Hon. Sec's. address details are in the Panel.

A.R.M.S. is the one for the /M enthusiasts, whether at VHF or on the HF bands. Details from the Hon. Sec. his address being in the Panel.

WACRAL is the group who are practising Christians wherever they may be in the world — groups exist in Africa,

VK/ZL, USA, and of course in UK. Again we refer you to the Hon. Sec. — see Panel.

The **Ex-G Club** is meant for those who were born in UK but are now resident in other parts of the world (wonder if "North of Watford" counts as foreign?). Seriously, the club is well worth getting to know about if you are an expatriate, or have friends who are members. Details from the UK Hon. Sec. — see Panel.

Scotland and North England

Our first one is **Dumfries & Galloway** who are based at Cargenholm Road, New Abbey Road, Dumfries, on the first and third Mondays of each month. This gives September 1 for a social evening and a short visit to a rural telephone exchange, while on September 15 they have GM4DIJ talking about the practical approach to UHF and microwaves. We also note they are approaching the local Tech. for an RAE class this autumn, details of which can be obtained from the Hon. Sec. at the address in the Panel, or direct from the Dumfries Technical College.

That old English weather seems to have attacked the **York** lads when they went to visit R.A.F Linton, as the heavens opened up — but they were right-royally entertained by the R.A.F. to make up for not seeing the night-flying activities. They are normally to be found on Fridays at the United Services Club, 61 Micklegate, York, every Friday evening *except* the third in each month. We notice that they will also be at the Great Yorkshire Show at Harrogate, Stand 568 and signing, as for many years, GB2GYS.

Northern Heights covers the Halifax area, and the Hq is at the Bradshaw Tavern, Bradshaw, Halifax, every Wednesday evening. Our latest newsletter says the new committee is "slaving over a hot syllabus", which rather indicates it has been "got at" for something!

Wales & West

Exeter's Hon. Sec. has been ill for some time, and so for the moment we have the address of the PRO in the Panel. He tells us that the group have a place at the Community Centre, St. Davids Hill, Exeter. The general arrangement is to foregather on the second Monday — thus on September 8, G3OFY will be talking to them of the principles of FM transmitters and receivers, with the AGM on October 13.

A familiar handwriting comes in now, by way of the **Yeovil** club scribe, who tells us that the gang are to be found at Building 101, Houndstone Camp, Yeovil, where they have a lecture room, a comprehensive club station, and a library of books on amateur radio.

With a rush the **South Dorset** club's PRO writes to indicate that they are looking for a new Hq and this may involve a change of meeting-night as well; hence contact should be made with the Hon. Sec. — see Panel — for the latest state of play.

It is sad to hear that the **Axe Vale** group is having such a hard time finding a place to get together. However, they will have a gathering in the George Hotel in Axminster at 7.30 p.m. on 3rd September — but a contact with the Hon. Sec. would give you all the gen.

At **Loughor** we hear the membership is growing nicely which can't be a bad thing. The venue is Loughor Boating Club, fortnightly on Mondays unless this should fall on a Bank Holiday, in which case the Tuesday evening is used. Talk-in is available for anyone who wants to attend, and to the Hon. Sec. should be consulted for the latest gen and talk-in if required.

Just up the road is **Swansea**, based on the Technician's Common Room on the second floor of College House, Swansea University, and assembling there fortnightly on Thursdays.

Down we go now to **Plymouth**, where the venue is now Tamar Secondary School, Paradise Road, Stoke, Plymouth; September 1 is an Activity Night and on 15th G3YJQ is to talk about teleprinters.

September 3 for **Cornish** is set aside for G3OCB to chat about test gear — a large subject to compress into a short time. It is also a large club to squeeze into their clubroom, which is the SWEB Clubroom, Pool, Camborne.

Midlands

Off we go with **Stourbridge** who have honoured us this time with a newsletter bearing two front covers! It says they are still at Longlands School, Brook Street, Stourbridge, and the dates are: September 1 for Construction, September 5 for preparation for SSB Field Day on 6/7th, and September 15 is down for D/F.

Now we head for **Worcester** where the front page of our copy of the newsletter is full of details of the Rally. The club hold their normal meetings at the Old Pheasant in New Street; September 1 is down for an Open Forum, and October 6 will be interesting too — G3TQZ is going to bring along some test gear

and show how to "Test Your Spec." — we hope nobody's gear is unlucky enough not to pass muster!

Bury come next, at the Mosses Youth and Community Centre in Cecil Street, Bury. They are in attendance on every Tuesday evening but try to ensure something a bit special is fixed up for the second Tuesday each month. Thus on September 9 they have a talk on Commercial Micros and BASIC programming. We notice in addition they have an RAE course lined up at Bury Technical College on Thursday evenings from the first week in September 7 to 9 p.m. Interested? Contact either G4JAG or the College direct.

The club now known as **Douglas Valley** is the reformed ex-Wigan gang who meet every Thursday in the month except the *second*, in Shevington Conservative Club, Wigan. More details from the Hon. Sec. — see Panel. We note that, despite a bit of novel spelling, their newsletter is one of the best — we hope they can keep it up.

Deadlines for "Clubs" for the next three months—

(October issue — August 29th)
November issue — September 26th
December issue — October 31st
January issue — November 28th

Please be sure to note these dates!

The numbers are slowly increasing at **Kidderminster**, where on Mondays they have a pint at Bellmans Cross Inn, Shatterford, some 2 miles out on the Bridgnorth Road, and on alternate Tuesdays they can be found at Aggborough Community Centre, Hoo Road, Kidderminster from 2000 clock.

The **Derby** Hq is the top floor of 119 Green Lane, Derby, and the programme: September 3 for a Junk Sale, September 10 a session when you can bring your rig along to be checked for nasties. G2CVV will be talking about "How it all began" on 17th, and there is a Film Show on 24th.

On we go again, this time to **Wirral** — the one which is based at the Sports Centre, Grange Road West, Birkenhead (as distinct from the other club which uses a similar place at the other end of the peninsula). This Birkenhead group are to be found on the first and third Wednesdays.

Cheltenham are at the Old Bakery, Chester Walk, Clarence Street on the first Thursday and the third Friday, although we are not able this time to tell you precisely what will be going on in September. From the newsletter's HF DX correspondent we noted what must be something of a record for a fast QSL — he

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- WEST KENT: B. P. Castle, G4DYF, 6 Pinewood Avenue, Sevenoaks, Kent. (0732 56708)
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- YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil.
- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

received a card for his contact with ZD8KM in just 15 minutes. No secret, ZD8KM's QSL Manager lives just round the corner!

The Ipswich Hq situation is so complex that we suggest you contact the Hon. Sec. — see Panel before attending meetings. Second and last Thursdays are the dates, and the general area seems to be Handford House, Ranelagh Road.

We have a letter from a reader next, which indicates the clubs regarded as "local" to him in Great Yarmouth. These are: **Great Yarmouth** club itself where the venue is 67 Southtown Road on the last Thursday of the month; **Lowestoft** who are based on North Suffolk Teachers Centre, Lovewell Road, Lowestoft, where they meet fortnightly, September 12 being the AGM; and **Norwich**, who are at Cromie Community Centre, Telegraph Lane East, every Wednesday evening.

Hereford have G8CGK, Grant Dixon, talking to them about Slow Scan TV on September 5, and on 19th they have an informal; both are at the County Control, Civil Defence Hq, Gaol Street, Hereford.

Ormskirk have a place at the 'Over-Sixties Hut' in Liverpool Road, which is opposite Christ Church, the starting time being 8.30 every Tuesday evening.

Another 'every Tuesday' group is at **Liverpool**; on

September 2 they have G3PFZ to talk about "LF DX on a Simple Aerial", and a Surplus Sale on 9th. September 16 is down for a talk on CW operating techniques by G3XSN, and on 23rd the tape-and-slide lecture on an expedition to St. Pierre & Miquelon by W1PFA/FP8BH will be shown. September 30 is a pre-AGM evening so that the AGM on October 7 will run nice and smoothly. All this at the Conservative Rooms, Church Road, Wavertree.

Yet another group in this area is the one called **Sefton**, based on the Liverpool Prison Officers Social Club, where they are to be found every fortnight. They say they have a very interesting and varied programme coming into shape and would like to see visitors and new members. For the details, contact the Hon. Sec. — see Panel.

At **Midland** work continues on the new club premises, with the target set for occupation sometime in the early part of 1981; all the heavy and dirty work is completed which is a blessing. Coming back to the current programme, they are at Aston University on September 22 for G3HAZ to give his talk on VHF aerials.

South-East

A definition to be treated fairly loosely. Let us make our

start at **Verulam**. Their Hon. Sec. landed himself in the local 'bandage factory', but nonetheless they made sure someone would pass on the word that their main meeting is now on the fourth Tuesday (was fourth Thursday) at the new venue, which is Charles Morris Memorial Hall, Tyttenhanger, Near St. Albans. Under the circumstances, for this time we will put the PRO's call in the Panel.

At **Bournemouth** the dates are September 5 and 19; the first for a show of films from the RSGB Film Library, and the second will be an Open Meeting for all members. The venue, as ever is the Dolphin Hotel, Holdenhurst Road, Bournemouth, 7.30 for 8 p.m. — which gives time for the nattering to stop when the business begins!

On we go now to **Barking**, where the Westbury School, (Westbury Recreation Centre), Ripple Road, Barking, lies between the Westbury Arms and the Railway crossing; the meeting is on Thursday evenings formally, but they also are open on Monday, Wednesday and Friday — and there are Morse classes on Tuesday evenings! The club re-opens after the summer break on September 1st. Details from the Hon. Sec. — see Panel.

We must be careful to get the **West Kent** September 12 programme right: for those who have booked in advance, there is a trip to see the GB3SX/GB3WHA beacon site, while for the others, there will be a two-metre Fox Hunt, meeting in the car park behind *Marks and Spencer*. As for September 26, they are back to the Adult Education Centre, Monson Road, Tunbridge Wells, for an Open Evening at which there will be an equipment display, a short talk, a sale of RSGB and ARRL publications, and the opportunity to chat to club members. 'Open' means just that — a chance for the public to get to know all about our hobby.

A new group has been formed, called the **Vale of the White Horse** who foregather at the White Hart in Harwell on the first Monday in each month. The start is timed 7.30 in the lounge, ready for an organised move at 8 p.m. to the upstairs meeting room.

Over to **Bishops Stortford**, who have the third Monday in each month at the British Legion Club in Windhill; it is nice to see this club is now out of its bad patch. They have a programme pretty well organised to the end of the year.

It's a long time since last we heard of that old game where the club is divided up into groups, each with an identical box of components, and the first lot to get a working receiver together wins a small prize. It is being revived at **Crawley** on September 14, against other clubs, but to make it harder they have to put a transmitter/receiver together and make some contacts. They are calling it the Desert Island Contest! On 21st, they have a 21st birthday party on the air, with as many present and former members as possible: 14130 kHz 0830z under G3TR, 1000-1130 on 3.7 MHz under G3YVR, and 11.30-12.30 on S2I under G3GRO. On September 24 they have a Junk Sale. Hq is at Trinity United Reformed Church Hall, Ifield, Crawley.

Chiltern have their place at the John Hawkins furniture works, Victoria Street, High Wycombe, and the date is always the last Wednesday of each month — the September one being a film show and demonstration of microcomputing.

Over to **Acton, Brentford & Chiswick** at the Chiswick Town Hall, High Road, Chiswick; on September 16 G3OJX will be giving a talk on his visit to VK and ZL.

September at **Cray Valley** is Surplus Sale time; the first Thursday, at Christ Church Centre, High Street, Eltham, S.E.9. The third Thursday in the month is at the same place but is the natter night.

Another new group report for the first time — this one from **St. Neots**, who are now at home in Ernulf Community School, Barford Road, Eynesbury, St. Neots, on alternate Mondays. More details from the Hon. Sec. — see Panel.

Now we go over the water to the **Isle of Wight**; we have it that they meet on Friday evenings at Unity Hall, near the Sloop Inn, Wootton Bridge, I.O.W. Details from the Hon. Sec. — see Panel — or by telephone from G8SOH on Freshwater 3948.

Back up to the north side of London, to **Cheshunt**, where they can be found every Wednesday evening in the Church Rooms, Church Road, Wormley. September 3 is down for CW and a Natter, and 10th for a Mr. Parker to come and talk about the Fire Communications System — he is from the County Fire Service. Another Natter and CW date is on September 17, while on 24th, Derek Bastin will be talking about audio modules.

Now to **Guildford** where we seem to have been left in the dark for once; however we can tell you that they are based on Guildford Model Engineering Society's Hq, on the second and fourth Fridays. GMES, by the way is in Stoke Park. For more details, contact the Hon. Sec. — see Panel.

Southgate have the use of the Scout Hut in Wilson Street, near Winchmore Hill Green, N.21. On the second Thursday in September the subject will be Hi-Fi and the speaker G8VCM.

At **Mid-Sussex** the dates to watch are September 4 and September 18; the former for a talk on Aerial Design and Tuning Quads by G5RV, and the latter date for an SWL's evening. The venue is Marle Place, Burgess Hill, Leylands Road, Burgess Hill.

Brighton have what the newsletter describes as a good Hq at 47 Cromwell Road, Hove; on September 10, H. S. O'Neill will be talking about the Apple Computer, and on 24th out come the goodies for the Construction Contest.

From the South Coast we head north again up to **Cambridge**, where the Hq is in the Visual Aids Room, Coleridge Community Centre, Radekund Road. Every Friday evening they are in residence, but some are informals with no set programme or speaker. If we disregard those, we see a Top Band D/F Hunt starting from Hq at 7.30 on September 5, while the details for September 19 were in the pipeline at the time of their letter. Contact the Hon. Sec. — see Panel.

At **Reigate**, it looks as though the newsletter will close down because no-one is prepared to take on the task of being the editor in succession to a chap who has put in 21 years and 235 editions; however, such is life. The club itself is a thriving and active one, getting together on the third Tuesday of each month in the Upstairs Meeting Room of the Constitutional and Conservative Centre, Warwick Road, Redhill; September 16 sees G3RIM, the Chairman, talking about Switched-Mode Power Supplies.

Deadlines

These are given in the 'box', and your material should be posted to arrive here on the given date. Address it to: "Club Secretary", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

"OPEN CHANNEL"

As we closed for press, the Government published its Green Paper entitled "Open Channel — A Discussion Document". Copies of this publication (which carries an address to write to with your views) may be obtained, free of charge, from: Officer-in-Charge, Home Office Supply and Transport Branch, Royston Road, Caxton, Cambridge CB2 8PN.

A TRANSVERTER FOR TWO OR FOUR METRES

R. I. THOMAS GW4BCD

THE following article describes a VHF transverter design which has been successfully used by the author for two prototype rigs, one for two metres and one for four. Identical circuitry was used for them both (except for the tuned circuits, of course) and the author can recommend this design as being reliable and trouble-free. No claims are made for originality, the design is certainly not state-of-the-art, but if care is taken in alignment the transverter will put out a clean, stable signal on the chosen band. Valves are used on the transmit side as the author's junk box was full of them, and the cost of VHF power transistors is still quite high. MOSFETs are used in the receive converter however.

Circuitry

An EF80 oscillator is used — at 42 MHz for 4 metres and 38.666 for 2 metres, see Fig. 1; this is fed by a stabilized 150 volt supply. This arrangement was found to give more than adequate drive to an E180F, which is a straight amplifier in the 4 metre version, and triples to 116 MHz in the 2 metre rig. From the anode of the E180F the local oscillator signal is inductively coupled to the grids of a QQV03-10A balanced mixer (Fig. 2). This method is preferred by the writer to cathode injection, as it was found that to obtain adequate cathode injection another stage of local oscillator amplification was needed, this especially so at 116 MHz. About 500 mW of 28 MHz RF is applied to the mixer cathode, resulting in 70 or 144 MHz RF appearing at its anode.

The buffer amplifier, another QQV03-10A, is essential in

the interests of a clean signal. It is possible to drive the final amplifier directly from the mixer, but the output is then far from clean. (Try explaining to the Home Office that "CQ" was not really being called on 98 MHz!) Also do make sure that the 28 MHz exciter has a fairly clean output spectrum, as even the best designs which utilize mixing from HF to VHF are bound to produce some *spuri*. A 28 MHz filter is shown at Fig. 2a which should substantially reduce any 'nasties' which accompany the wanted 28 MHz output. Shown in Fig. 2b are two methods used successfully by the author of attenuating the 100 watts or so normally obtainable from a HF transceiver to the 500 mW needed by the transverter. One method requires internal modification to the exciter, whilst the other dissipates most of the transceivers output into a dummy load. Neither method is the most elegant of solutions, but they both work well.

Returning to the transverter, the final linear amplifier is a QQV06-40A, run at about 100 watts input. This is a well-ried and reliable design, and when run at this sort of power level the '6-40 should last a long time. Initially, in the 2 metre rig, the writer attempted to run the '6-40 final at 200 watts *p.e.p.* input. This involved applying a plate voltage of around 1000 to the '6-40 which was, to say the least, not very successful. All sorts of problems were met — parasitic oscillation, as well as seemingly incurable instability. As soon as plate voltage was dropped to a more reasonable 600v. all these problems disappeared as if by magic. Output was considerably reduced of course, but this would appear to be a small price to pay for complete stability in the final. Both the author's finals are about 35% efficient, a figure which would seem to be hard to improve upon, at least judging by the results at this QTH. Note the slight difference in the 2 and 4 metre final amplifiers (Fig. 3), the 144 MHz version requiring two fewer capacitors than the 70 MHz rig. The receive converter is straightforward. Mixer injection is taken from the E180F anode which enables the transceive facility to be retained at VHF.

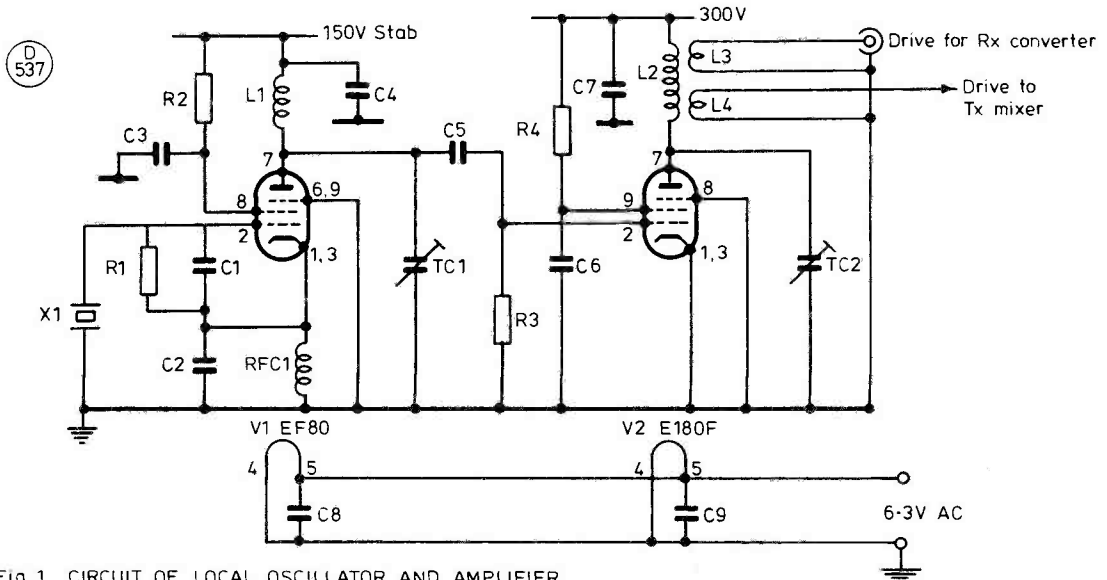


Fig. 1 CIRCUIT OF LOCAL OSCILLATOR AND AMPLIFIER

Note that the E180F is a straight buffer at 70 MHz, and a tripler to 116 MHz in the two-metre rig.

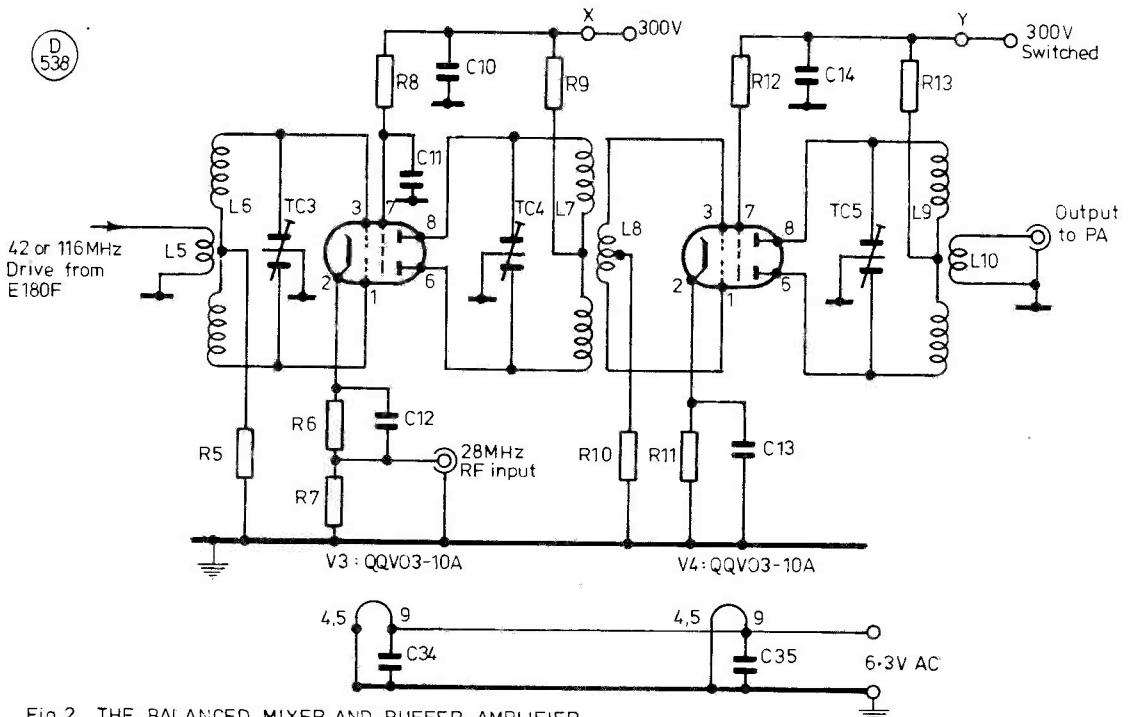


Fig 2 THE BALANCED MIXER AND BUFFER AMPLIFIER

Note that it is very unwise to omit the converter RF amplifier protection circuitry. This was discovered the hard way by the writer, who lost three MOSFETs, which were damaged by RF leaking across the c/o relay during transmission. The converter had two diodes wired back-to-back across its input when this occurred: they proved to be useless — be warned! The author is indebted to *Microwave Modules Ltd* for suggesting this form of converter protection, see Fig. 4.

Construction

This follows standard VHF practice. All tuned circuits are mounted very close to their associated valves. In most cases the tuned circuit coil is soldered to its relevant valve pin; reference to the photographs will show this clearly. It is very important to

employ this 'no lead' technique at VHF as it is very easy to introduce instability problems at these frequencies. Note the liberal use of decoupling capacitors — the 'no lead' rule applies here also. They should be soldered to the nearest earth tag with minimal lead length if instability problems are to be kept at bay.

Apart from the aforementioned 2-metre PA stage no problems were encountered with instability in either of the prototype transverters. This could be due to the pains taken in decoupling and layout, or more likely, sheer luck. Stages where instability is most likely to be a problem are the straight amplifier stages, that is the 42 MHz amplifier in the 70 MHz version, and the two buffer amplifiers. If problems do arise here a simple screen mounted across the valve base should take care of the situation. The screen should be earthed of course, and mounted so that the anode/grid coils of the stage cannot 'see' each other. The layout used by the author is shown in Fig. 5.

All coupling between stages which are any distance apart is done by miniature coaxial cable; ceramic stand-off insulators and solder tags are used to anchor the co-ax at its termination point. Note that if a screening ring is not used with the QQV06-40A valveholder it is advisable to mount the valveholder so that the internal screening in the valve is level with the chassis. This helps maintain PA stability.

Considerable trouble was taken by the writer in screening the two-metre version which was the first of the two prototypes to be assembled. (See Fig. 5). When contemplating building an identical four-metre rig the writer happened to take a look inside a commercial transverter at a rally: this was totally devoid of any screening. It was then decided to build the four-metre version without screening on the basis of "if they can do

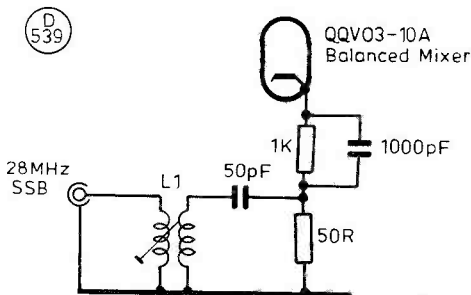
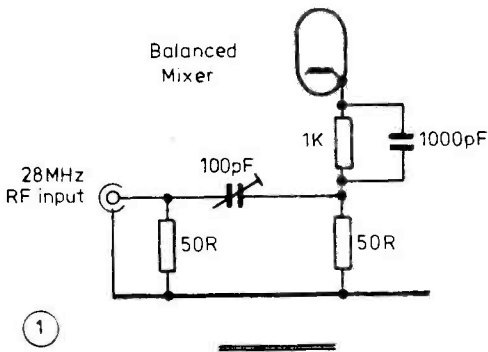
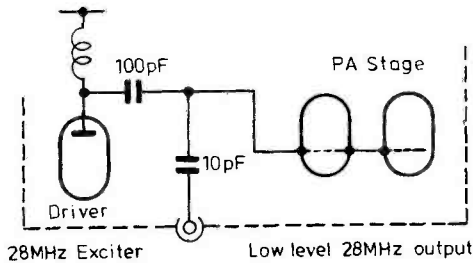


Fig 2A THE 28MHz INPUT FILTER

L1 consists of a primary of 6½ turns of 22 gauge enamel wire on a ½-in. dust core; the secondary has 2 turns overwound on the cold end.



1



2

Fig. 2B

D 540

Two methods of achieving low level drive from a medium power HF rig. In (1) the 50-ohm resistor across the input should be capable of handling at least 40% of the peak output of the HF rig. Method (2) involves inserting a 10 pF capacitor in the driver stage of the HF rig.

it, so can I". Surprisingly, perhaps, no problems have arisen from this lack of screening. It must be stressed, though, that the output of the 70 MHz rig has not been checked on a spectrum analyser, although some tests with an absorption wavemeter show that the inevitable 'sproggies' are well down on the wanted 70MHz output. The biggest offender would appear to be the 3rd harmonic of the 70MHz output, at 210MHz. This is estimated to be around 55 to 65 dB down on the main carrier at the antenna.

The receive converter was built on a piece of plain Veroboard and incorporated screening between input and output of both 3N204 RF amplifiers; this was found to be essential. Local oscillator injection was taken via coaxial cable from the anode of the E180F local oscillator amplifier/tripler.

Alignment

Making sure that voltages appear normal on the rig, ascertain that the EF80 oscillator is operating. In the 70 MHz rig with a 42MHz third overtone crystal, a carrier will be heard at 14 and 28 MHz on a near-by receiver. Insert a meter at point 'X' in Fig. 2: it should show a quiescent mixer current of about 12 mA. Next tune TC1, TC2 and TC3 for maximum current. Mixer current with TC1, 2 and 3 at resonance should rise to around 60 mA in the 70MHz version, and about 25 mA in the 144 MHz rig. It will be necessary in the 70MHz rig to loosen the coupling between L5 and L6 so that mixer current reduces to around 25 mA. Remember to keep re-peaking the relevant trimmer whilst doing this. (It should be done fairly quickly as the rated dissipation of the '3-10 mixer is only 10 watts).

Having achieved this, apply about 500 mW of 28 MHz RF to the mixer cathode: mixer current should rise by 2 or 3 mA. This gives optimum mixing levels. Ensure that when 28 MHz drive is ceased mixer current falls back to 25 mA. Remove the meter and replace at point 'Y' in Fig. 2.

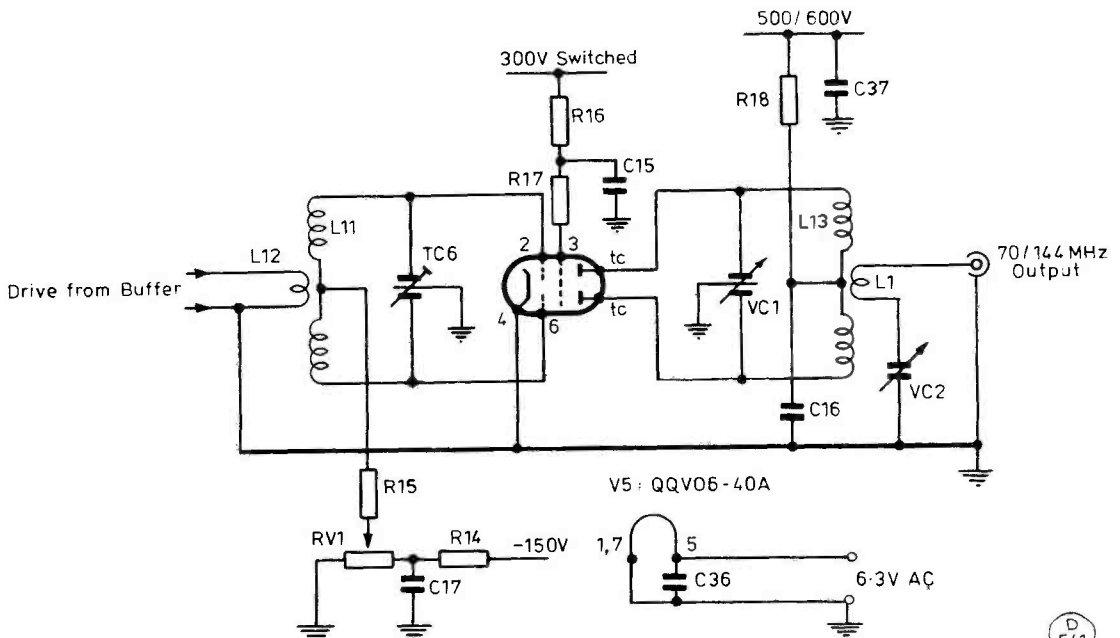


Fig. 3 THE PA Note: TC6 and C16 are not required in the two metre rig.

D 541

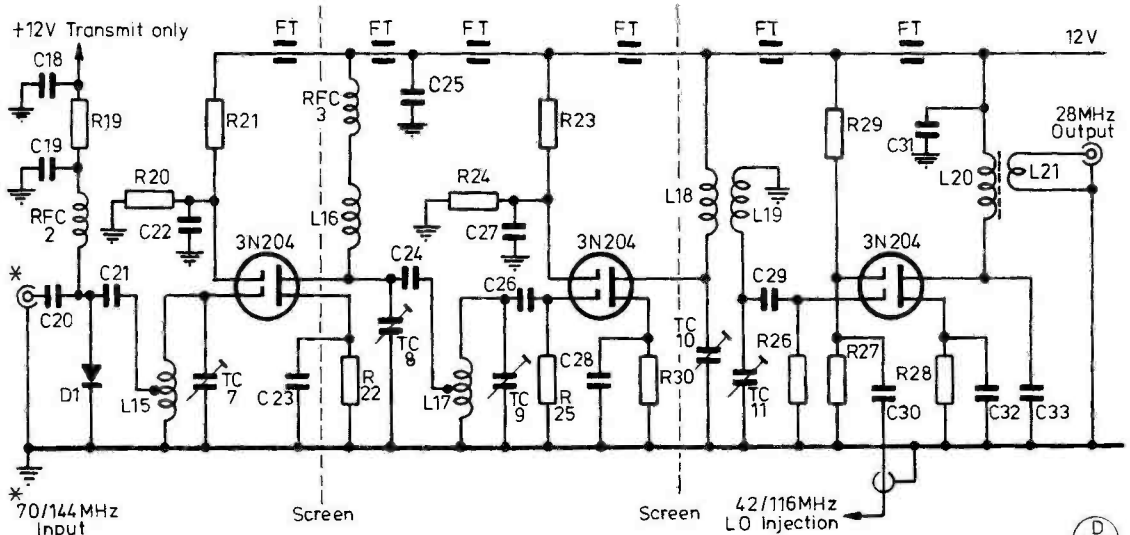


Fig. 4 THE RECEIVE CONVERTER AND RF AMPLIFIER PROTECTION CIRCUITRY

Table of Values
Basic Circuit

- R1, R21, R23 = 100K
- R2, R3, R4,
- R8, R12, R20 = 47K
- R5, R6,
- R10, R15 = 1K
- R7 = 50R
- R9, R13 = 100R
- R11, R30 = 330R
- R14 = 10K
- R16, R17 = 120R, 1w.
- R18 = 100R, 5w.
- R19 = 150R, 5w.
- R22, R28 = 270R
- R24, R27 = 22K
- R25, R29 = 270K
- R26 = 470K
- RV1 = 10K
- C1 = 25 pF, s/m
- C2 = 220 pF s/m
- C3, C4 = 1000 pF
- C5 = 50 pF s/m
- C6 to C15 = 1000pF
- C16, C37 = 1000 pF, 3 kv.
- C17 to C23 = 1000 pF
- C24 = 3.3 pF s/m
- C25, C27, C28, C31,
- C32, C34, C35, C36 = 1000 pF
- C26, C29 = 33 pF s/m
- C30 = 150 pF s/m
- C33 = 10 pF s/m
- RFC1 = 2.5 mH
- RFC2, RFC3 = 33 μH
- D1 = OA90 or similar
- RL1, RL2 = 2-pole changeover
- X1 = 42 or 38.666 MHz crystal

Note: All resistors are 1/2-watt unless otherwise stated; all capacitors are 1000v. DC disc-ceramic unless otherwise stated.

Table of Values
70 MHz Transverter Tuned Circuit

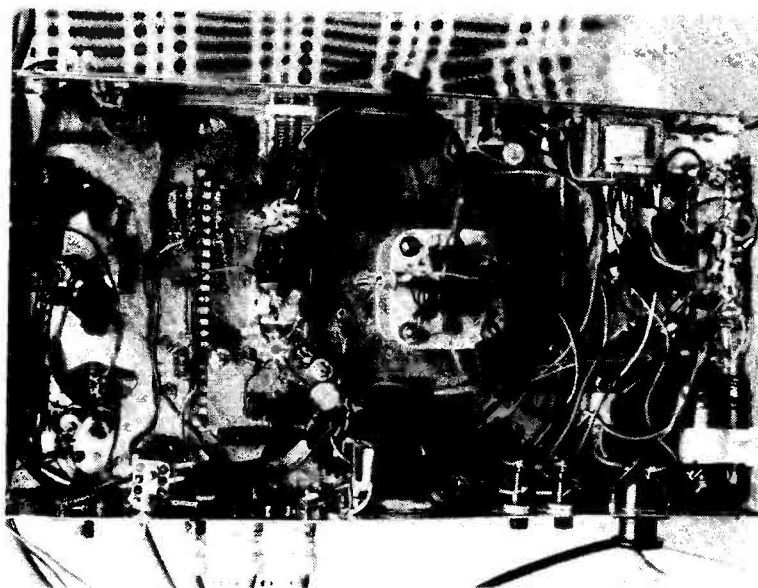
- L1, L2 = 13t, 18 swg, air-wound
- L3, L4 = 1t link at earthy end of L2
- L5 = 2t, 20 swg, at centre of L6
- L6 = 7 + 7t, 18 swg, 1/2" dia., with 1/2" gap at centre
- L7, L9, L11 = 5 + 5t, 18 swg, 1/2" dia., with 1/2" gap at centre
- L8 = 2t, 20 swg, 1/2" dia., at centre L7
- L10 = 2t, 20 swg, 1/2" dia., at centre L9
- L12 = 2t, 20 swg, 1/2" dia., at centre L11
- L13 = 3 + 3t, 14 swg, 1 1/2" long, with 1/2" gap at centre
- L14 = 2t, 16 swg, at centre of L13 (exact position to be optimised for max. power transfer)
- L15, L17, L18,
- L19 = 5t, 18 swg, 1/2" dia., tap 1t from cold end
- L16 = 5 1/2t, 18 swg, 1/2" dia., close-wound
- L20 = 11t, 20 swg, on 3/8" dia., slug tuned former
- L21 = 1t link on L20
- TC1, TC2 = 30 pF trimmer
- TC3 = 38 + 38 pF split stator, or two 30 pF trimmers
- TC4, TC5, TC6 = 38 + 38 pF split stator
- TC7 to TC11 = 30 pF trimmer
- VC1 = 38 + 38 pF split stator, wide spaced
- VC2 = 60 pF

Table of Values
144 MHz Transverter Tuned Circuit

- L1 = 13t, 18 swg, 1/2" dia., air-wound
- L2 = 3t, 18 swg, 1/2" dia., air-wound
- L3, L4 = 1t link at earthy end of L2
- L5 = 1t link at centre of L6
- L6 = 2 + 2t, 18 swg, 1/2" dia.
- L7, L9, L11 = 2 + 2t, 16 swg, 1/2" dia., 1/2" gap at centre
- L8, L10, L12 = 1t link at centre L7
- L13 = 3t, 14 swg, 1" outside dia., 1" long
- L14 = 1t, 16 swg, at centre L13

- L15, L17 = 4t, 18 swg., 1/2" dia., air-wound, tap 1t from earthy end
- L16, L18 = 4t, 18 swg, 1/2" dia., air-wound
- L19 = as L16 closely coupled to L18
- L20 = 11t, 20 swg, on 3/8" dia., slug-tuned former
- TC1 = 30 pF trimmer
- TC2 = 10 pF trimmer
- TC3, TC4, TC5 = 15 + 15 pF split stator
- TC6 = not required
- TC7 to TC11 = 15 pF trimmer
- VC1 = 15 + 15 pF split stator, wide-spaced
- VC2 = 50 pF

The underside of the 70 MHz transmitter. The local oscillator and 42 MHz amplifier are on the left, next the mixer and buffer amplifier, with the PA valve base almost in the centre of the picture; the 'rat's nest' on the right is the PSU.



Terminate the output of the PA with a dummy load capable of dissipating 40 watts or so; this should be connected *via* an SWR bridge. Next energise the relay that applies screen voltage to the PA and HT to the buffer (buffer amplifier quiescent current should be around 20 mA). Set the PA standing current to 30 mA by means of VR1. Now resonate the mixer anode —

that is tune TC4 for maximum current through the buffer amplifier; buffer amplifier current should rise to around 30 mA in both versions. Excess drive is only likely to be a problem in the 70 MHz version, and is easily taken care of by loosening coupling between L7 and L8, again keeping associated resonating capacitors 'on the nose'.

Next resonate the buffer amplifier anode circuit, keeping an eye on the final amplifier current meter. It should be possible

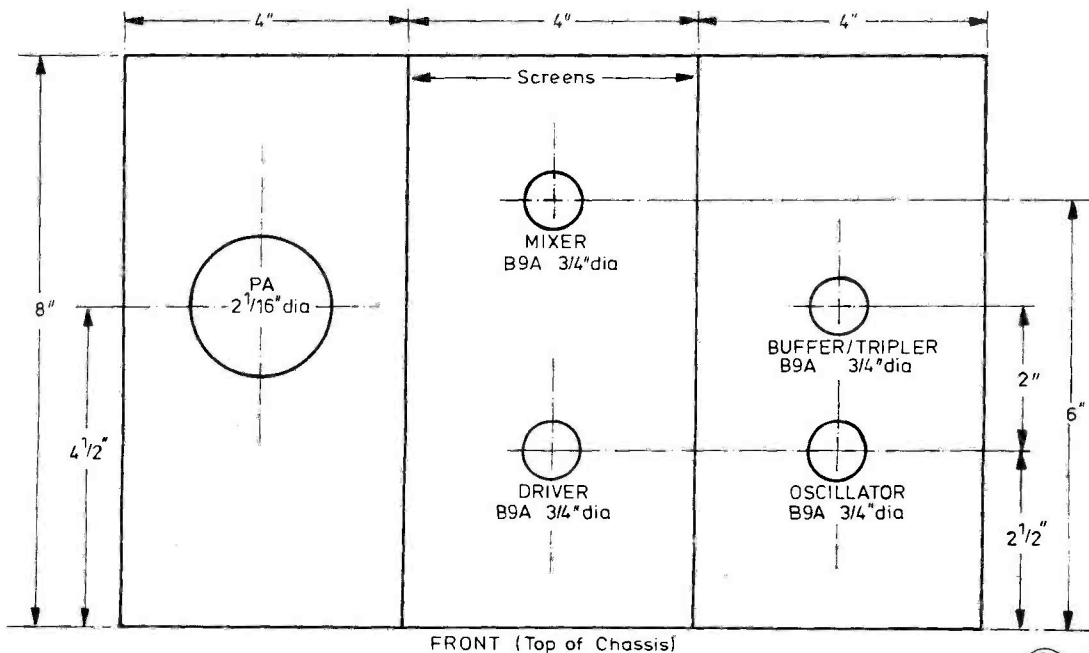
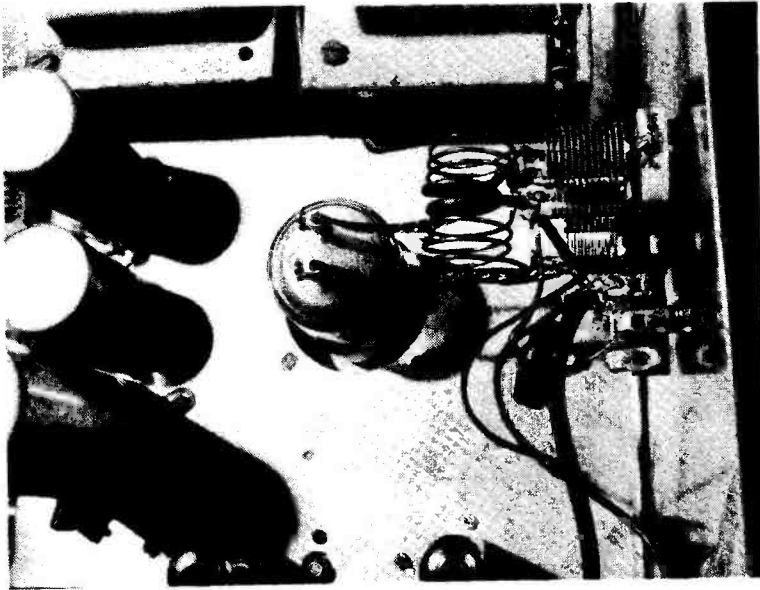


Fig. 5 LAYOUT USED BY AUTHOR SHOWING MAJOR COMPONENTS



Looking down at the 70 MHz PA. Note that the valve is mounted so that the screening disc inside the valve is level with the chassis.

to drive the PA plate current to around 250 mA off resonance and, with the PA tuned for maximum RF output into the dummy load, this should drop to about 200 mA. As previously stated, expect about 35 - 40 watts RF output for around 100 watts input.

Do make sure the PA is stable before trying the rig on the air! Make sure also that when 28 MHz drive ceases all RF output ceases. Until these two conditions are met the rig is not ready to be air-tested. If all seems well, however, it should now be possible to raise someone locally who knows what to look for to check out the signal. Aligning the receive converter is relatively simple: all the writer did was peak the 28MHz coil for maximum 'sharsh' on the receiver, and then peak all the trimmers for maximum S-meter reading on a 70 or 144 MHz signal. With the circuitry shown it is possible to hear GB3SU at

an average S7 on 70.695 MHz at a QRB of about 200 miles. The antenna for four metres here is a four-element beam at 40 feet.

Once again, don't be tempted to omit the protection circuitry unless you are prepared to replace the RF amplifier MOSFET after every transmission.

Control Circuitry

This is self-explanatory and is shown in Fig. 6. Apart from signal path switching, which is done by RL1, all that is needed is to remove screen voltage from the PA and HT from the buffer. This is taken care of by RL2 which also applies the 12v. to the MOSFET protection circuitry. It is worth adding here that since this protection circuitry has been in use no MOSFET has ever been damaged by RF, even when running a pair of 4CX250B's at full power.

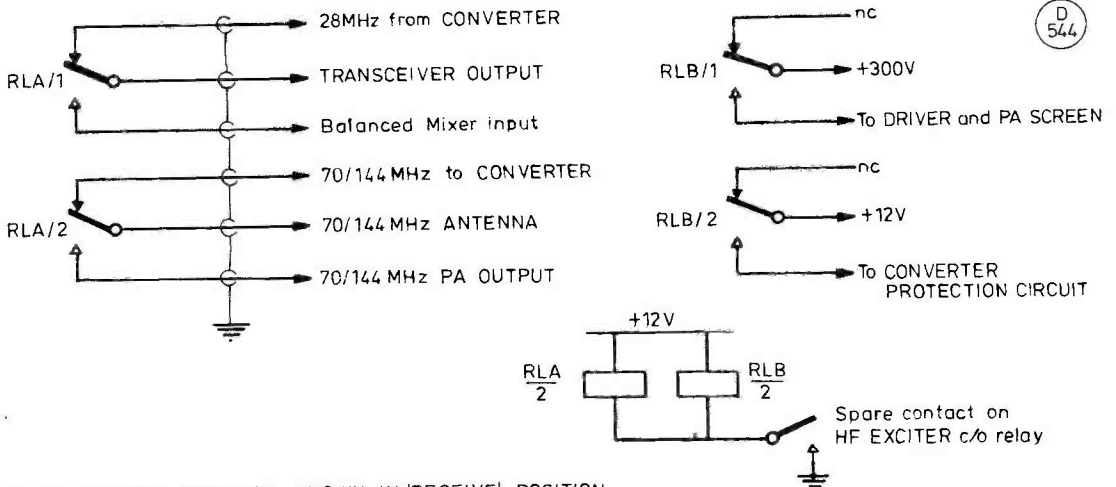


Fig 6 CONTROL CIRCUITRY, SHOWN IN 'RECEIVE' POSITION

Points to Note

When resonating the different stages in the transmitter do make sure that they resonate at the wanted frequency. It is very easy, for example, to tune the E18OF amplifier to 56 MHz in the 70 MHz rig. This could result in a good signal being radiated on 84 MHz as the following stages would quite possibly tune to this frequency. This, of course, is the quickest way of losing one's licence, quite apart from the chaos that could be caused to other services. It should be possible to beg or borrow a GDO to align the tuned circuits in the rig before

complete alignment is attempted. At the very least a digital frequency meter should be to hand during alignment to ensure the different circuits are on the correct frequency.

Conclusion

Both the prototype transverters are in regular use on their respective bands, and no problems have arisen in three years of operation. Providing care is taken in alignment the writer has no hesitation in recommending this method of getting onto two or four metres, using one's existing HF gear.

• • • SWL • • •

SHORT WAVE LISTENER FEATURE

By Justin Cooper

The Post

R. K. Askham (*Huddersfield*) wants to know about QSL handling. Basically, you either send 'em direct, or to the call's QSL Manager, or through the QSL Bureau system. To do the last-mentioned you need to be a member of — in UK — either RSGB or ISWL.

It's a bit late now, but we have a letter from G2HOF (*Wallasey*) about our comments on AM phone back in May. He reckons Phone DX was easier to work in 1956 than it is today. Maybe there was something to do with location in G2HOF's case, or that he was a dab hand at DX, but his list of countries picked out at random from his old log shows some very nice DX. But on the other hand, the writer maintains that the majority of DX worked was on CW because the *average* AM phone operator just couldn't make a two-way of it through the QRM. What makes it even harder today is the world-wide fall in standards of behaviour, and the enormously increased numbers of stations on the HF Bands.

GJ3RAX points out the ins and outs of the stations heard from USA signing with a call/Interim and a couple of letters; for example, KA8AOT/Interim DT. This is normal practice over there now while a licence up-grade is being processed after the test for it has been passed, and the two letters indicate the test centre where the pass was obtained — in this case Detroit. The idea is that when a chap upgrades his licence category for more facilities, say from Novice to General, once he has the pass he can use the higher grade band limits and any of the FCC monitor stations wishing to check can refer to the office where the test was taken directly. As Lawrence points out the current systems of USA call signs is clear enough if you take the number as indicating where the call was issued initially; most Americans, in fact, sign with the number suffix of the call area they are currently situated e.g. W6XYZ/W2 — but not all, and that's where the confusion lies.

Now we have a monster letter from *J. P. Goodrick* (*Bognor Regis*). For one thing he wants this piece to be monthly — no fear, we'd never get any time to listen ourselves! Talking of CW, his speed is, he reckons, somewhere between 25 and 30 as checked against W1AW transmissions, but as he says, some of

the really high-speed ops are too fast for him. If you want to write it down, then 25 or so is about the limit for most, albeit those who print rather than write may find it hard to reach 12. Copy after your writing speed is exceeded is a matter of memory storage; or you can use a Morse decoder, such as the Xitex coupled to the receiver to give either printer output or a display on a VDU or TV screen. In effect this box turns Morse code into Murray code in either direction, even to accepting some pretty lousy sending and decoding it right!

Now we have *N. W. Thornton* (*Romford*) who has an FRG-7 now but reckons he would still be on homebrew if he could find the bits and pieces. He started with an H.A.C. one-valver and had many hours of pleasure building it, listening with it, modifying it, building an ATU, playing aerials and all the rest. On a different tack, here is another contributor who finds the transmitting stations are often far too lax over call signs — sometimes, your J.C. believes, to the extent of breaking the terms of their licence.

Another one with the same thoughts on receivers and homebrews is *H. M. Graham* (*Moulton*). Maurice found 28 MHz not so good with lots of short-skip and the occasional opening north-south, and 14 MHz not very exciting either, so he opted for 21 MHz and sorted himself out a goodly crop. As for 40 and 80, it was just a case of filling in the odd WAB square here and there.

K. Kyezor (*Brandon*) has built himself a peak and notch filter to fit between receiver and speaker or phones, and not surprisingly it is a great success. It's an interesting point that the notch filter is not built in to any of the modern receivers, and yet it is extremely useful. There is a Datong FL2 at *S. W. M.* for review and by all accounts the notch is the most useful facility in all modes. When your J.C. had his bite at it, he tacked it on the end of a KW77 receiver and compared the receiver IF notch filter and the one in the FL2, and in a CW contest session was surprised to realise he was using both notches at once!

Now to *F. C. D. Barnes* (*Cardiff*) who points out that the Ally Pally Rally could have 'gone for a burton' because of the fire there; something which this writer, for one, hadn't thought

about! If the site is rebuilt, in whatever manner it is done, the cost of the work is likely to make the economic hire charge impossibly high. On a different tack, he has a QSL from JY1 to add to his collection — or rather, to start it.

At *Staines*, *B. Shepherd* didn't send in an entry to the point where we were on the way to dropping him; he hadn't given up, but just wasn't hearing any new ones. The classic cure was applied, namely a change of listening hours to early mornings and a few more go on to his total.

M. Law (Chesterfield) heard ZB2FA/MA in QSO with ZB2FU/MM. Two maritime mobiles, of which one was at anchor, (if they were genuine), both calls issued in Gibraltar. The /MA *doesn't* start a new series!

The summer doldrums on Ten annoy *J. Doughty (Bloxwich)*, he being a lover of that band; but, as he says, things will improve in the autumn if all goes to the book.

The matter of the new Y prefixes being used in what was DM seems to be worrying *B. A. Payne (Horsforth)*; the rules were never intended to cope with the call sign styles being adopted in 1980 when they were formulated in 1960! But, since we have accepted '25' and '50' in commemorative special calls, we have to accept that Y2 and Y21, for instance, are different prefixes. Perhaps the GDR had the WPX contest in mind in formulating their new allocation system!

Another one with prefix queries is *J. F. Hobson (Ely)* who heard an AN3ADW in the Latin-America/Spain 'thing' on May 24, and sounding to be Spanish; a strong aroma of fish as well as onions! The other one is Market Reef, and here John's question is simply — where is the darn place? The *Times Atlas* doesn't show it, neither does the *Edinburgh*. However when the place originally came up, years ago, we had a search round; bear in mind that the usual jumping-off ground is Aland, and we find that at the mouth of the Gulf of Bothnia and the Gulf of Finland. To get even close you must then turn to naval charts and look for lighthouse symbols!

B. F. Hughes (Worcester) is a wise man who knows when the time has come to renew aerial supports, by regular inspection, and a complete overhaul to the mast is called for before the gales; this will give Bernard a chance to change aeriels too. Looking at his list, he has quite a few assorted AN calls and it does raise the possibility that John Hobson's one, a Spanish-speaking operator, *might* be genuine; as AN is allocated to Spain it would make sense, although they have never before used the block even as "specials."

D. J. F. Gordon has quite an array of gear; an FRG-7000 and ATU, a seventy-foot end-wire, a Microwave Modules 2-metre converter plus some dipoles, FT-207RB, Standard C8800, with Top Band and 70cm coming shortly. Quite an array!

Mrs. R. Smith (Nuneaton) has a couple of lists; as she remarks the Pacific contest certainly brought out the Japanese prefixes in force!

N. Edwards-Bell (Newcastle-on-Tyne) wants to know lots of things! Firstly, a club in his area. G4DQA on Boldon 2274 might be able to help there; he is the nearest we have on file, but there is surely a club closer to the Chopwell district. Neil says he lives in a house with no site for *any* aeriels, indoors or outside, and what does he do about that? We have never come across such a place yet! One must think in terms of thin wire, 28 s.w.g. at the thickest, bearing in mind the reduced breaking strain requires lighter insulators, like buttons or curtain rings of plastic; and of course these thin wires won't bear the weight of a coaxial cable in their middle, so you have to think of a way of dealing with that. (J.C. is prepared to say that he could go outside now, and put up a good SWL aerial that even his own family could not spot). Another fair question is "how does the TV signal get to the set in this house?" — which should offer some indications. Indeed, the TV set aerial outer and inner shorted together and fed to the receiver with a good earth and an ATU could be very rewarding when the box is switched off. Finally, the HPX Rules — these are reprinted in full in the piece two or three times a year, and last appeared on p. 299 of the July issue.

R. Baker (North Walsham) queries that bit about "No AM-only or SSB-only entries accepted" in the HPX rules. The meaning is essentially that we have one Phone listing and one CW listing. There was a time, many years ago, when people started putting in two entries for Phone, separating the AM from the SSB — nowadays doubtless it would be three with an FM list. The operators of these lists all seemed to get in a twist with their records and so did we, so in the end we opted-out. The most anyone can have is one Phone entry and one CW entry; the separation of the Phone into All-Time and annual is to let the newcomers play themselves in against others of similar calibre, and then at 500 to go into the ring with the experts. Thus, as far as may be, like is matched by like — the equipment, site and aeriels being all secondary considerations compared with operator skill. However, the words are *not* intended to mean that you must have an AM station or an FM station in each update list you send in. If they happen to be all-SSB, or all-AM, fine; nowadays practically all entries are in effect all-SSB if the SWL is on the HF bands only, or mixed SSB/FM if he listens also on Ten and the VHF's.

J. Worthing (Shrewsbury) harks back to March when we were talking about low-pass and high-pass filters. It's still a Good Question, because we got a bit carried-away with the front-end of the receiver, and didn't mention filters in the IF and AF sections of the receiver. These two are, in essence, for sorting out two signals that are too close together — but of course if the front-end overloads, the non-linearities resulting therefrom will produce a noise which the whole band will feel. The case can well be observed by putting a receiver with two RF stages or a bipolar transistor RF stage on to a good aerial on, say 7 MHz; tune the band, and the noise floor will be so high that no amateurs can be distinguished. Turn down the RF gain control slowly, and you will notice as the gain goes down the noise goes with it until, suddenly, the noise drops away and amateur signals appear. Now, before you turned the RF gain down, no amount of filtering at IF or AF would have brought those signals to light; at the non-linear stage the big signal(s) were driving it out of linearity and then, in effect, every signal was mixing with every other signal. Turning the RF down had no effect until the biggest signal was reduced to a level which

ANNUAL HPX LADDER

Starting Date, January 1, 1980

SWL	PREFIXES	J. Weston (Borehamwood)	246
R. D. Newall (Bracknell)	493	Miss J. Ribton (Oxted)	243
J. Worthing (Shrewsbury)	437	C. M. Nagle (Lisburn)	221
R. Baker (North Walsham)	413	M. Hill (Bedworth)	207
B. Musselwhite (Warmminster)	335	T. Morgan (Swansea)	200

200 Prefixes must have been heard for an entry to be made, all since January 1, 1980, and in accordance with HPX Rules (see p. 299, July issue).

HPX LADDER

(All-Time Post War)

SWL	PHONE ONLY	PREFIXES		
K. Kyezor (Brandon)	2389	L. Stockwell (Grays)	821	
B. Hughes (Worcester)	2213	J. F. Hobson (Ely)	809	
S. Foster (Lincoln)	1973	D. C. Casson (Reading)	795	
E. W. Robinson (Bury St. Edmunds)	1718	J. Doughty (Bloxwich)	775	
M. C. P. Bennett (Datchet)	1522	B. A. Payne (Leeds 18)	700	
M. J. Quintin (Wotton-u-Edge)	1514	F. C. D. Barnes (Cardiff)	639	
H. A. Londesborough (Swanland)	1450	L. Joyce (Grimsby)	616	
H. M. Graham (Moulton)	1273	B. Shepherd (Staines)	571	
M. Rodgers (Harwood)	1182	T. Anderson (Stroud)	549	
M. Law (Chesterfield)	1187	D. J. S. Williams (Wednesbury)	518	
M. Ribton (Oxted)	1091	B. L. Henderson (Salisbury)	516	
M. Shaw (Huddersfield)	1038	D. J. F. Gordon (Chepstow)	503	
P. Ford (Longlevens)	929			
R. Middleton (Bury St. Edmunds)	860			
Mrs. R. Smith (Nuneaton)	851			
		CW ONLY		
		H. A. Londesborough (Swanland)	1222	
		D. W. Waddell (Herne Bay)	1062	
		T. Grimbleby (Hull)	722	
		J. Goodnick (Bognor Regis)	612	
		A. Rowland (Mansfield)	477	

Minimum score for an entry: 200 for CW, 500 for Phone. Listings include only recent claims and are in accordance with HPX Rules (see p. 299, July issue). A 'Nil' return is allowable in order to hold a place.

caused no non-linearity; then signals appeared at IF which could be sorted by filters or whatever.

From the above argument it doesn't need a genius to see that the ideal is a crystal filter in the aerial lead, which is a bit impractical. But then another factor comes into the picture, which is the noise of the receiver itself; if we have the crystal filter in the aerial, it looks like we don't want any more selectivity, but each stage generates noise itself and amplifies the noise of the one ahead, and each oscillator will add an extra component of noise depending on its spectral purity. So, practically, we buy a receiver which gives us what its designer thought to be the best trade-off to keep the sales graph going up, of the sort of buyers he is aiming at; taken from that point of view, the better amateur receivers do very well at their price. As for adding filtering to the front-end of a receiver, and whether to build it or buy it, we do it in the crude sense by way of an ATU, and an attenuator or RF gain control. Anything much sharper would be such a nuisance in operation as to negate the advantages (save in special circumstances such as a ship, where transmitters and receivers may share an aerial, and both transmitter and receiver in use simultaneously albeit on different frequencies). Turning to aeriels, our friend has Joystick and wonders about its directional properties if used horizontally with a rotator. Your scribe hasn't heard of such a system, but it is in general true of very short arrangements that they will not show much directivity, and the pick-up from the single-wire feeder would mask the effect. If memory serves right, some years ago someone used to write to *CDXN* with results from two Joysticks in a phased arrangement.

D. Briery (*Blackpool*) wants our views on the comparison between Yaesu FRG-7, Trio R-300 and Lowe SRX-30 — and we get two or three like him every month. It's very difficult, however, to make any meaningful comparison which can help

the individual because, as we said earlier, there are so many factors in the design of (and so in the choice of) a receiver, and their relative importance is different in the mind of every designer and every buyer. All we can say in a competitive market such as this is that you get pretty well what you pay for, and hence if you find the receiver you've bought doesn't suit you and your interests, you've chosen the wrong one rather than a bad specimen.

J. Rowland (*Mansfield*) added another 100 to his list, and remarks how nearly all the /MMs heard were found between 9th and 16th June — odd coincidence, isn't it.

M. Shaw (*Huddersfield*) sends in a Nil report, and says he has decided that the pressure of work means he will have to get the RAE out of the way before he tackles the Morse.

Next we come to J. Timms (*Barking*) who has done a count-up and now wants to know whether we want QSL cards as proof; and we hope that when he wrote 'countries' he really meant 'prefixes' since the two are a lot different! We want prefixes, we don't want QSLs.

D. C. Casson (*Earley*) has done less listening and more RAE study — a good thing. However he still has time for some nice pickings.

The controversy surrounding the new-style RAE is off-putting, says R. Howes (*Weymouth*); but it is interesting to see that the pass-rate for the first of the new-style papers was within a fraction of the pass-rate for the last few in the old mode. Before he listens to the "experts with degrees in electronics" Ray needs to remember they have probably forgotten their basics! Sure, there are some wacky questions and equally wacky answers — but that sometimes happened in the old-style RAE too!

Lists

Have come in from B. L. Henderson (*Salisbury*); L. Stockwell (*Grays*); S. Foster (*Metheringham*); E. W. Robinson (*Bury St. Edmunds*); R. Middleton (*Bury St. Edmunds*); D. W. Waddell (*Herne Bay*); and P. Ford (*Longlevens*). Thank you all, and we have taken them in to the Ladder.

Ending

Means we've got through the pile again; the deadlines for arrival for the next two SWL pieces are September 18th and November 20th, and the address is to your old scribe, "SWL", SHORT WAVE MAGAZINE, 34 HIGH STREET, WELWYN, HERTS. AL6 9EQ.

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

October issue due to appear on Friday, September 26th.

COURSES FOR THE R.A.E., 1980-81

- Bangor:** Bangor Technical College, commencing Sept. 16, enrolment from Sept. 3, Tuesday and Thursday evenings. Details from course tutor, C. A. Billington, G13WSS, QTHR. (Tel: Holywood 4277).
- Belfast:** College of Technology (G12BX), College Square East, Belfast, commencing Sept. 16, Tuesdays 5.30-8.30 p.m. (Theory and Practical), Thursdays 6-8 p.m. (Morse), enrolment early Sept. Further details from lecturer, J. E. Wilson, at the above address.
- Belfast:** Castlereagh College of F.E., commencing late Sept. Details from W. McKinney, G13TZB, QTHR.
- Birkenhead:** North Wirral College of Technology, Borough Road, Birkenhead, starting Sept. 15, enrolment Sept. 8-10. Tutor, D. E. Owen, G4GGB. Further information from Dept. of Electrical Engineering, 051-652 1521 ext. 21.
- Birmingham:** Bournville Institute, Selly Park Centre, Pershore Road, Selly Park, Birmingham, Thursdays 7.15-9 p.m., enrolment date for all B'ham Adult Education will be announced in the local press. Course tutor, Ron Blacker G4GBE.
- Birmingham:** Perry Common Adult Education Centre, College Road, Birmingham 23, enrol between 7.15-8.15 p.m. Sept. 9. fee £6 per term; teacher, Frank Fear G8CVR.
- Borehamwood:** De Havilland College, Elstree Way, Borehamwood, Herts. (01-953 6024), starting Sept. 15, enrolment 7-8.30 p.m. Sept. 8/9. Lecturer, G. L. Benbow, G3HB.
- Bracknell:** Bracknell College, Dept. of Engineering and Science, Church Road, Bracknell, starting Sept. 29, enrolment Sept. 11/12/15, tutor G8KIL.
- Bury:** Bury Technical College, starting 1st week in Sept. Contact G4JAG (via G4GSY, QTHR).
- Colchester:** Colchester Institute, Sheepen Road, Colchester, Tuesdays at 6.30 p.m. starting Sept. 16, enrolment at first meeting. Further details from G3FIJ, QTHR.
- Crawley:** Marle Place A.E. Centre, Leylands Road, Burgess Hill, Sussex, Tuesdays 7.30-9.30 p.m. starting Sept. 23. Tutor Dr. R. C. Lock B.Sc., Ph.D.
- Crawley:** Sarah Robinson School, Ifield, Crawley, Sussex, Thursdays 7-9 p.m. starting Sept. 25, enrolment Sept. 8/9. Contact R. Scrivens, G3LNM (Crawley 22540) for further details.
- Derby:** Allestree Adult Centre, Woodlands Road, Allestree, Derby, Tuesdays at 7 p.m. starting Sept. 23. Course tutor, R. Buckby, G3VGW. Further details from Mr. B. Dobson, Derby 31111 ext. 404.
- Dudley:** Dudley C. of T., Dudley, West Midlands, Tuesdays 6.30-8.30 p.m., enrolment commences Sept. 2. Course lecturer, J. Raby, G8RF.
- Dumfries:** Contact D. Rodgers, GM8TKA, 5 Elder Avenue, Lincluden, Dumfries DG2 0NL, for full details.
- Exeter:** 3 Palace Gate, South Street, Exeter, commencing Sept. 30 at 7 p.m., enrolment at first meeting.
- Hemel Hempstead:** Dacorum College, Marlowes, Hemel Hempstead, Wednesdays at 6 p.m. starting Sept. 24, enrolment Sept. 8. Further details from course organiser, C. Burke, G3VOZ (Hemel Hempstead 833300).
- Leamington:** Mid-Warks. College of F.E., Warwick New Road, Leamington Spa, Thursday evenings starting Sept. 18; enrolment Sept. 4/5 between 9-12 a.m., 2-4 p.m. or 6.30-8 p.m.
- London (Harrow):** Harrow College of F.E., Hatch End High School, Headstone Lane, Harrow, Wednesdays 7-10 p.m. starting Oct. 8; enrolment at Nower Hill School on Sept. 27, 10 a.m. to 3 p.m. Lecturer, D. T. Busby, G4HFL.
- London (Highbury):** De Beauvoir ILEA School, Tottenham Road, London N1, Mondays, Tuesdays, Wednesdays and Thursdays 7.30-9.30 p.m., starting Sept. 17, enrolment commences Sept. 8. Two tutors and a Morse instructor. Full details from senior tutor, F. J. Barns, G3AGP, QTHR.
- London (Holloway):** Holloway Institute, Mondays 7-10 p.m., commencing Sept. 15, enrolment week Sept. 8-12. Lecturer B. C. Bond, G3ZKE (01-485 7065).
- London (Paddington):** Paddington Evening Institute, Amberley Road, Paddington, Mondays and Thursdays 7-9 p.m. beginning Sept. 15; enrolment week Sept. 8-12, 6-9 p.m. Lecturer, D. T. Busby G4HFL.
- Manchester:** Pendlebury High School, Cromwell Road, Swindon, Thursdays at 7.30 p.m., commencing end of Sept., enrolment prior to first class. Details from course instructor, P. Whaimough, G4HYE (061-794 3706).
- Melton Mowbray:** Melton Mowbray College of F.E., Asfordby Road, Melton Mowbray, enrolment early Sept., watch local press for details, or contact College or course tutor, K. Melton, G3WKM (Melton 68810).
- Newcastle-upon-Tyne:** Gosforth Adult Association, Gosforth Secondary School, Gosforth, Newcastle-upon-Tyne, Tuesdays 7-9 p.m. starting in Sept. Course tutor D. R. Loveday, G3FPE. Enquiries to The Principle at the above address, or ring Newcastle-upon-Tyne 668439.
- Newport (Gwent):** Newport A.R.S., Brynglas House, Brynglas Hill, Newport, Mondays at 6.30 p.m. beginning Sept. 8, Lecturers will be GW3YTJ, GW4HYZ, GW3NWS and T. J. Wynn.
- Northampton:** Duston Upper School, Duston, Northampton, Tuesdays 7-9 p.m. commencing Sept. 23, enrolment evenings Sept. 3/4 and 8/9, fee for 30 lectures £15. Lecturer D. F. Watton, G4AYZ, QTHR. For further details ring 0604-33834.
- Slough:** Langley College of F.E. (G3XPL), Station Road, Langley, Slough, Mondays 5.30-7 p.m. (Operating Techniques), Mondays 7-8.30 p.m. (Morse), Thursdays 7-9 p.m. (Theory); enrolment Sept. 9/10, 12.30-8.0 p.m. Contact senior lecturer, E. C. Palmer G3FVC, for further details.
- Southampton:** Southampton Radio Club, The Clubroom, City Engineers' Yard, Kent Road, Portswood, Southampton, Fridays at 7.30 p.m. beginning Sept. 5. Further information from J. R. Compton, G4COM, QTHR.
- Stockton-on-Tees:** Stockton-Billingham C. of T., Oxbridge Avenue, Stockton, Mondays at 6.30 p.m., enrolment Sept. 2/3. Contact J. A. Ross, Science Dept., at the above address, for full details.
- Walsall:** Broadway North Centre, Walsall, enrolment Sept. 15/16 6.30-8.30 p.m., fee £4 per term. For further information contact F. Fear, G8CVR, QTHR.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

ONE of the more satisfying aspects of this hobby is the unexpected, both 'rough' and 'smooth'. For your scribe there was the realisation that his sked with A22AJ wasn't going to work, either on 21 or 14 MHz, and a somewhat disconsolate G3KFE dropped down to Forty, where he has not been for some time. On the other hand, playing with the *Datong FL2* trying to find a situation which would overwhelm it, your scribe heard C31TY calling "CQ" who responded to my first call before the Roller Gang noticed! Then again, I built a VFO to go with the home-brewed Top Band QRP rig, buckled it to the Tx, and found my little half-watt load getting nicely warmed up after just one component change to persuade the keyed stage *not* to double to Eighty. Great! Go to lunch; then return. Misery — the VFO wouldn't oscillate save intermittently, and the keyed stage reverted to doubling. Some you win, some you lose! Or, as a friend put it — "I get *lots* of luck, but it's always addled by the time I get it!"

The Bands

Varied from excellent, to good, to fair, to mediocre, to just plain awful (largely summer static and thunderstorms). But — regardless of it all, we have fun; CW, or SSB or RTTY or even SS/TV if that's your thing — build the gear or buy it, operate it or make it work, and with either chase the DX or take what the gods have to offer — it's all fun.

Happenings first; if you can't work Okino Torishima by the end of the year, you can say farewell to that one as a new country — as of December 1, 1980, it comes off the DXCC list. This of course was a political decision, at least in part; the initial agreement to make an exception for 7J1RL was probably taken in the awareness that JARL wanted to celebrate its 50th birthday fittingly, and that its moneybags would help more than somewhat in the run-up to WARC '79. Now that the battle is over, our bands very much less mauled than we had dare hope, the 7J1 prefix will be quietly forgotten with no loss of face on either side. That will make the current countries total some 318 which is

enough for the young squirts to work on!

Serrana Bank, and possibly Bajo Nueva is planned to happen in the first week in September, says HKØBKK, and noises are being made at the time of writing about a possible Market Reef operation in late September, the July affair having somewhat pre-empted the original dating — but it's an ill wind that blows nobody any good, and 28 MHz should be livelier in September.

If you are after Willis Is., then take note that VK9ZG is going to be around until the end of the year; it seems the weather station will be automated after that and the chances of amateur operation there correspondingly reduced.

There are plans afoot for an operation in YI-land, to be a combined effort of YI and JY chaps, signing, it is hoped, YI1JY. At the time of writing there seems a certain vagueness as to the dates, mid-August, mid-September and later in the year all having been mentioned!

Juan de Nova plans are being made by DK9KD and a group, with intentions to leave Cologne on September 9, stopping off at Reunion first; apparently they made a good impression in Reunion last time around.

Now we turn to another letter from P29JS on the Heard Island DX Association and its proposed expedition to Heard. The letter says that the licence has been issued, the call being VKØJS, and that the Government department concerned has indicated no objection in principle to the expedition, provided certain conditions pertaining to the wildlife and safety of personnel are met. Negotiations are underway for a boat charter, and this is the big hurdle, where the costs are going to bite. Some 20 days of the charter will be concerned with merely getting there and back, and the intent at the time of writing was for a stay of some 14 days; six operators, with a vacancy for a scientific officer with Antarctic experience who will assist the expedition and help add to the store of knowledge of Heard. Jim says they need, right now, help in any form whatever, with donations to cover the

boat charter as an obvious priority. However, it is quite clear, reading between the lines, that they have a very tough nut to crack indeed, and any help or information which can be imparted will be eagerly appreciated. Write to HIDXA, PO Box 2053 Konedobu, Papua, new Guinea.

Eighty

G2NJ (Peterborough) has been having trouble again with the noise from various electrical appliances around his place, especially during his favourite midday sessions with the QRP lads. However, one evening at 2020 he found G3CFW in London — you know, that little village up the road! — who was testing a transceiver giving out less than a watt. It was, it seems, built by G3CFW's son, who was waiting for his licence to come through, and it rated a good 579 report in Peterborough. Another one of interest was with DF6XP/PA in Hulst and due to travel to UK later the same day to commence a fortnight's holiday in Scotland, sadly without a licence for operation in this country.

Next we hear from G3ZPF (Dudley) who economised in postage for the local club by dropping his "Clubs" report in with his "CDXN" offering. David says he's been trying to be a bit more active and so keep clear of the micro-computer; thus on eighty CW he worked 4K1A, PY1MAG, LU9E1E, and OH1DL/OHØ. On a different tack David notes the odd reasons which lure people back to CW operation: in his own case a touch of laryngitis, while G3SIO came back to it when he found a keyer built in to his nice new rig. David says the keyer merchants are pulling away from him in sending speed, as he can't go above 18 w.p.m. with his straight key, although he still has some reserve of receiving speed left; he finds it difficult to write it down much above 20, but by using the brain as a store he can copy the gist of 30's without too much strain.

G4BUE (Upper Beeding) has been somewhat busy at work and at home, which caused him to miss reporting last time out. This time Chris has a little

groan about the DL-AGCW Summer QRP contest, where the rules have been changed to the degree that you have to make a good score by sitting on a band and working lots of QRO chaps, instead of the old aim of contacts between QRP stations. In the event, over that weekend, G4BUE played it the old-fashioned way with nearly all his 87 QSOs with other QRP stations; on Eighty these included G4ELZ, PA3FFF, SM7BNG, DJ5KB, OR5AG, Y27EO, F9YZ, OK1DKW and OZ6SF.

5N4BPC (Enugu) says that in Nigeria now there are some 90 or more operators licensed, of whom most are the users of the Lagos repeater 5NØRA, which has 145.025 and 145.625 MHz. Brian has been appointed "State Scout Commissioner for Communications" — an HF station signing 5N4BSE is planned for JOTA, and there will be at least ten troupes on VHF, using equipment that they will be building themselves as part of the training. As a postscript to his letter Brian asks for the QTH of G4JOC, and skeds with Greater Manchester. Contact him with anything on these by writing to B. P. Collinge, 5N4BPC, P. & T. Division, Service Centre Enugu, Nigeria.

G2HKU (Sheppey) had an interesting one: at 0449z he was on the prow around the band and there was just one signal, from LU9ELE on CW.

Nice to hear from G3PKS again: Jack had a holiday at Weymouth and took along the HW-101 and wire for an aerial. The set up was to have the rig in a small bedroom, with the aerial six feet below the transmitter — some 70-odd feet of wire about 8-9 feet above the lawn, end-fed, with an "earth" comprising a wire hung out of the window, into a galvanised bucket full of water, in its turn standing on a cast-iron manhole cover set in a paved area; and the thing worked. The site was a bit more in the clear than the home QTH, and so the G3PKS sked contacts on Eighty and Forty were all kept without trouble. Oh, yes, and we forgot to mention in describing this wonder aerial-system that there was some end-loading, by way of an eighty-metre whip secured to the iron frame of a children's swing. Back at home, Eighty was used for the regular skeds, but while it is slowly improving for local QSOs it is quite unstable and occasionally the skip is long as early as tea-time.

Forty

G4EZA (Colchester) attacked the early-morning stuff, rising at least once at 0400z — crikey! — to find some strong signals from the Americas and the Caribbean, but not much VK/ZL. SSB yielded C31HD and FMØFJE (Martinique), while CW managed to latch on to CM1HJ, K1K1, K20Y, K3EST, K5OGU/4, K9FW, LU7DAT, N4XY, PY2XB, PY7AWZ, VE2FOU, VE3HNN, W1ZM, W3LPL, WA2BRE, WA3GYW, WB2JVP/1; QRP CW added DL5KC, GM3HSF, GW5TW, PAØLIS, SP6CJK and, believe it or not, Y37ZK/P/Y22DK! What a fistful of a call that was!

GM4ELV (Arrochar) has been all QRP, and on 7MHz he offers VP8QG, CP6EL, H13JEI, LU3MCO, PT2ASB/PJ2, FS7JS, CX5CH, LU3EEG, ZP5PT, OX3ZM, 5L8AEN (an Arctic Survey Expedition and SMØGU the op.), PY1APJ, UD6CN, VK6LK, ELØAP/MM, KP4A, PT7CAW, PY7CPC, KB2DF/VP9, and a ZB2B about whom David has doubts as the call does not appear in the *Call Book*.

Continuing with Forty, we next have a list from G4BUE all gleaned from the QRP contest, on CW, including EI1DA, PAØWX, G31GU, FØEOV, and DL1PB.

G2HLU (Earley) seems to have been in the wars, with a visit to the local bandage-works which pulled him down a bit more than he realised, so his activity has been mainly a gentle attack on the garden, and the odd hour in the shack when sleep eluded Harold. On Forty, and indeed on Eighty, it was a case of ragchewing on the key.

To G3PKS the band seemed very lively, with good inter-G working and sudden changes in the skip. He wonders what the LX1PD around 7.09 MHz, heard several afternoons just holding a channel, CW and S9+ in signal strength.

Snippets

We have a nice long letter from Jock Perrett, who was 7Q7DW before all 7Q7 licences were determined and gear impounded; they are still off the air, although after much lobbying there has been one concession, in that Jock has finally got the gear back, with the stipulation that it was to be handed over to him, or someone, who was leaving Malawi — so it now sits with the Radio Dept. Hq at Johannesburg where Jock

went on leave. However, he didn't get any ham radio there as they refused to issue a call as in the past, despite him showing all his past history and documentation. So — Jock has been buying books to get up-to-date with the technical requirements of the new RAE, and hopefully in a year's time he will be on the air again with a ZS call. Meantime, he threatens to write an article, on operating standards and ethics as seen by an OT who for four years has been forced to be just an SWL watching both sides! It sounds as if it could be interesting and well worth writing.

Looking a little ahead, there is the popular VK/ZL/Oceania contest, Phoned October 4-5, CW October 11-12, in both cases 1000z to 1000z. The emphasis is on working VK/ZL stations; Oceania stations score two for each VK or ZL, one for others. Stations outside Oceania score two for VK/ZL stations worked and one for any other Oceania station. Multiplier is the total number of VK and ZL call areas on each band. As to logs, they must show date-time GMT, station worked, number sent and received and QSO points. Underline the QSO with each new call area on each band, and of course a separate log for each band. Summary sheet and declaration as usual, and all logs to be in the hands of ZL2GX, 152 Lytton Road, Gisborne, New Zealand by January 31, 1981. For the SWL section, you must log the VK/ZL stations only, including the call of the station he is working, and the final score for the SWL is the sum of the Phone and CW score.

RSGB's 21/28 MHz contest is on October 12, 0700 to 1900z, and it indicates that we have 42 prefixes when you include the numerals but exclude the GB stations. Swap RS plus serial number starting at 001, 3 points a QSO and the multiplier is the number of prefixes. You may work the same station once on each band and the same prefix once on each band, final score the sum of the two band scores so computed. Logs to M. Harrington, 123 Clensham Lane, Sutton, Surrey SM1 2ND to arrive before December 1st.

October 18-19 is a busy weekend, with the CLARA YLs battling it out, JOTA, and WADM DX contest all on, not to mention the ARCI QRP contest. October 25-26 is the CQ WW DX Phone weekend, and the CW leg is November 29-30. Rules as in the past years, but some clarifications: Multi-multi entries require all transmitters within a

500-metre diameter area, computer print-out or re-copied logs to be accompanied by a photocopy of the original. Send logs to CQ Amateur Radio Journal, 76 N. Broadway, Hicksville N.Y. 11801, U.S.A. Indicate Phone or CW on the envelope, and the deadline is given as Phone December 1st 1980, and for CW logs January 15 1981.

Enough on contests and things, we must get on to the HF bands before the space runs out! Best thing to do would be to summarise the conditions, and then mention each correspondent's interesting DX.

'CDXN' deadlines for the next three months—

October issue — September 4th
November issue — October 2nd
December issue — November 6th

Please be sure to note these dates.

HF

So — in sum, July has seen summer conditions on the bands. On Ten, mainly short-skip Europeans by day, with the odd evening PY/LU. On 21 MHz, the band has been quiet between, say, 0800 and 1500z; Pacific openings from 0600z, including VK, the west coast of W, and KH6. JAs on short path on occasion from 1000 to 2100z, a few ZS signals around 1900 but most of the Africans heard were north of the Equator. SE Asia around 1600-1800, and the east coast Ws 10-1200z, and again in the late evening. West coast Ws appear around 1600-1800, and again around 2200. Turning to 14 MHz, it has been lively most mornings around 0700 and in the evenings; but the morning VK/ZLs, which one recalls as almost daily during the last peak, seem to be patchy, and there is a shortage of the Pacific stations — maybe buried under QRM. Thus the summary by G3NOF (Yeovil). Don seems to have been leaving Ten alone and concentrating on the other two: 14 MHz gave him, on sideband, FO8FU, KL7H, OH2BDN/OHØ (Degerby Island), VK9ZG (Willis Island), WA4MBG/OHØ, WA7UB/5, and 4U1ITU. Much more of the log space devoted to 21 MHz, where Don talked to: A4XGC, A4XIH, A4XIY, A6XJC, AH2E, C5ACA, C5ACO, CE1BLL, CT2CE, C31MK, C31SY, DJOTI/HBØ, FØCH/FC,

FMØAB, G4CPC/OY, H44DX, HC8EE, HH2W, HP1XRK, HZ1TB, JAs, K5YY/KS6, K7JJ (Nevada), KA7DQQ (Arizona), KH6IJ, KH6XX, KL7ITG, KP4AH, N4ADJ/KH2, PJ2CZ, TI8WH, TU4AT, UA1PAL (Franz Josef), U18AEE, VU2WIR, VQ9DM, W6s, W7s, including W7EOI in Montana, WA4MBG/OHØ, YBØACL, YB2BSF, YV1EAH, ZB2BL, ZE8JD, ZF1GC, ZK1BQ, ZL1BFR, ZS1EZ, ZS3MS, ZS6BR, 3D2CS, 3D2SG, 4S7TK, 5N2AKY, 5NØDOG, 5NØSID, 5N9GM, 9G1RF, 9M2DW, 9M2GZ, 9V1UH, W1XK/PJ7, ZD7SD, and ZD8TC.

Turning to G2HKU was a matter of SSB with ZL1VN, ZL3SE, ZL3FV and TU2GH, but the CW managed with VE6AYI, I2IZC/IA5 (Isle of Elba), CX4CQ; and on 21 MHz, four watts of CW went from the 'Argonaut' to RZ3AAH and UAØACJ.

G3PKS noted quite a lot of DX on Twenty at times, but also some of the one-way propagation. For example Jack heard a call from KH6IJ to him at 0630 one Sunday; it took four tries to read the callsign correctly, and then Jack received a 579 report but could only give a 319 in return (!) and at that he was being kind. After the QSO, KH6IJ was heard calling again but with no takers. Turning to 21 MHz, Jack found it variable but with DX a-plenty. He worked WØRT, and UJ8AW who said the temperature was 30-40°C, a 2C3XC of whom we have doubts, N6NY, NØAIE and a few "locals." This was better than Ten, where the highlights were UL7MAR and PP5AN, and the rest, including South Americans and JAs, were all Gotaways although they were giving good reports to Europeans.

G2HLU, as we have seen, hasn't been too active, but he did manage to work some Ws on Twenty, including Bill, W3KRG, who made his start in amateur radio back in 1913 with spark. On the Gotaway front was ZK1AC, heard at good strength but working Antipodean stations; before he got to Europe he decided to change to SSB!

For G2NJ the 14 MHz band meant another trip with G5NX/M, keybashing on the back seat while G5NX/M played two-metre phone and drove. This trip around Northants seems to have been largely working HAs — the first QSO as they moved off was with one, and so were the last three before QRT —, it was only a short run, but the Europeans kept Nick plenty busy with the key.

G3ZPF and the locals around him

have their rattle-channel on 28.3 MHz; and on 21 MHz there was a QSO with FØCH/FC. This last was a bit of a problem as he was working split and David doesn't have an external VFO, so some smart knob-tiddling was needed to complete the QSO. About the only answer to this problem and ensure you come back to the same place each time is to use the IRT on one or both end-stops, which adds to the changeover function (hitting the button *and* twiddling the IRT), but the limit of the pot is at least consistent usually.

G4EZA didn't think much of 14 MHz save for a bit of QRP CW in the IARU contest, with lots of Europeans and Russians with "Olympic" call signs. 21 MHz SSB accounted for NP4A (really, and in KP4-land too!) and YV1DQU, while the CW brought home the bacon from JAs, PT2CWR, TA1UA, and W6RDF. The proportion was reversed on Ten, with C31s, FG7BG, HV2VO, VK6NDF, VK6NGP, ZP5CPE, 4X4HQ, 5B4JC, and a single CW QSO, with ST2SA. Interesting contrast, in that Tim reckons he spent about the same proportion of time on CW on each band.

GM4ELV offers A15P/SV1, DF1TS/IA5, VP2AZG, a station which looks like "VS7AE" but is probably being misread by your conductor, and a WP4.

G4BUE is now at 201 countries-up on QRP, by way of a contact with 9V1UH on 21 MHz SSB, and OY8KH was also worked on the same band and mode. For the rest it was all QRP CW during the AG CW weekend. On Twenty there were contacts with SP5AGU, OK1DKW, SM7LCV, DK5RY, 17CCF, F9YZ and OZ6SF; plus a couple more on 21 MHz in the same contest in DL7IA and F9YZ.

Finale

Sadly, we know that there is at least one poor soul who is going to miss the bus because his letter is still *en route* to your scribe. The local postmen seem to be falling back on schedules with the summer leave period at its peak. However, the deadline for next time is as you see it in the 'box', to *arrive* at Welwyn; address your letter to "CDXN", SHORT WAVE MAGAZINE, 34 HIGH STREET, WELWYN, HERTS AL6 9EQ. Thanks to all for letters and info, particularly of course Geoff Watts' invaluable *DXNS*, and *TDXB* from the States. But — we can always use more news.



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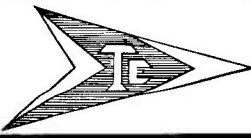
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USB/LSB), CW (A1), FM (F3). Modulation system: SSB Balanced modulation. FM Variable reactance frequency modulation. Max. frequency deviation: ± 5 KHz. Spurious emission: More than 60 dB below peak power output. Carrier Suspension: More than 40 dB below 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 10 dB S + N/N. FM more than 30 dB 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.



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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 12V 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

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 TRANSCEIVER 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 144.000.0MHz, Recycling changes 145.999 MHz to 144.000.0MHz 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 MQS 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

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MICROWAVE MODULES

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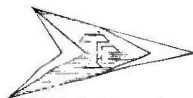
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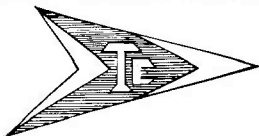
HP AND PART EXCHANGE WELCOMED



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THE MOBILE/PORTABLE CHECKLIST:—

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|--------|---|---------|------------|
| IC240 | The most popular, simplest to operate, synthesized 10w — 2m — FM mobile ever made | ★ £ 169 | INC
VAT |
| IC255E | The 25w, digital, synthesized, 2m — FM mobile for the man that wants just a little more | ★ £ 255 | INC
VAT |
| IC260E | The 10w, multimode, synthesized, digital, 2m mobile for the man that wants even more again! | ★ £ 339 | INC
VAT |
| IC2E | The smallest, synthesized, 2m — FM, hand-portable available | ★ £ 159 | INC
VAT |
| IC202S | The <i>BEST</i> SSB/CW, 3w-2m, portable made | ★ £ 169 | INC
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| IC402 | The <i>ONLY</i> SSB/CW, 3w-70 cm portable made | ★ £ 242 | INC
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Note all our prices include VAT, some dealers prefer to show the lower VAT-less prices — so don't get caught out.

We offer FREE DELIVERY for all equipment too!

ANNOUNCING A NEW COMMUNICATIONS COMPUTER!

TONO

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 ch × 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).



£640 inc.

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)



RADIO SHACK LTD for



R.L. DRAKE PRODUCTS

		inc. vat	carr.
TR-7/DR-7	Transceiver/Gen. cov. Receiver. Digital	1035.00	5.00
PS-7	Power Supply 120/240V for TR-7	207.00	5.00
PS-75	Sideband Duty P.S.U. for TR-7120/240V	138.00	5.00
RV-7	Remote V.F.O. for TR-7	132.25	2.00
MS-7	Matching Speaker for TR-7 and R-7	29.90	2.00
R/7DR-7	Digital Receiver 0.30 MHz	989.00	5.00
SL-300	CW Filter for TR-7 and R-7 (300 Hz)	39.10	0.50
SL-500	CW Filter for TR-7 and R-7 (500 Hz)	39.10	0.50
SL-1800	SSB/RTTY Filter for TR-7/R-7 (1800 Hz)	39.10	0.50
SL-4000	AM Filter for R-7 Receiver (4000 Hz)	39.10	0.50
SL-6000	AM Filter for TR-7 and R-7 (6000 Hz)	39.10	0.50
AUX-7	Range Prog. board and 1 Receiver module	32.20	1.00
RRM-7	Range receiver modules for Aux-7 (1500 KHz)	5.75	0.50
RTM-7	Range tcve. modules for Aux-7 (1500 KHz)	5.75	0.50
NB-7	Noise Blanking for TR-7	66.24	1.00
NB-7A	Noise Blanking for R-7 Receiver	66.24	1.00
FA-7	Fan for TR-7 and PS-7	20.70	2.00
MMK-7	Mobile mounting kit for TR-7	34.50	2.00
MN-7	ATU/RF Wattmeter. 160-10 m (250w)	124.20	5.00
MN-2700	ATU/RF Wattmeter 160-10 m (2 kw)	207.00	5.00
WH-7	RF Wattmeter/VSWR Bridge (HF)	59.80	2.00
385-0004	Service Manual for TR-7	18.50	2.00
385-005	Service Manual for R-7	18.50	2.00
7037	TR-7 Service Kit	37.95	1.00
L-7E	Linear Amp. 2kw. 10m-160m Without Tubes	759.00	10.00
	Tubes for L-7E (2 x 3-500Z)	138.00	5.00
	Transceiver AM SSB/CW with R.I.T.	496.80	5.00
TR-4CW(RIT)	120/240V Power Supply for TR-4CW	109.25	5.00
AC-4	Plug-in Noise Blanking for TR-4CW	73.60	1.00
34-PNB	DC Power Supply for TR-4CW	138.00	5.00
DC-4	Remote V.F.O. for TR-4CW	109.25	5.00
RV-4C	Crystal Control for TR-4CW	39.10	1.00
FF-1	Speaker for TR-4CW. R-4C. SPR-4	29.50	2.00
MS-4	Low Pass Filter 100w	10.35	1.00
TV-42LP	Low Pass Filter 2kw	18.40	1.50
TV-3300LP	Hand Microphone for TR-7	18.40	1.00
7073	Desk Microphone for TR-7	29.90	2.00
DL-390	Dummy Load 300w	20.70	0.90
DL-1000	Dummy Load 1000w	37.95	2.00
RCS-4	Remote control ant. switch 5 way (4 line)	82.80	5.00
CS-7	Remote control ant. switch 5 way (7 line)	115.00	5.00
B-1000	Balun for MN-7 and MN-2700. 4:1	20.70	1.00
1525-EM	Encoder Microphone	36.80	1.00
AA-10	2m Amplifier. 1w in 10w output	46.00	1.00
VW-4	RF Wattmeter 20-200 MHz	69.00	2.00
SPR-4	Programmable gen. purpose Receiver	460.00	5.00
DC PC	DC Power Cord for SPR-4	4.60	0.50
FL Filters	For R-4C. 25-51.5/4.0/6.0/kHz each	39.10	0.50
Manuals	Spare Operating Manuals	6.00	1.00
Crystals	Accessory Crystals for R-4C and SPR-4	6.44	0.50
AK-75	R-7/TR-7 connecting cable	20.70	1.00
AA-75	Multiband Antenna	23.00	2.00
RP-700	Antenna Insulator Kit	2.30	0.50
SP-75	Receiver Projector	69.00	1.00
	Speech Processor	79.35	2.00

BENCHER PRODUCTS

BY-1	Keyer Paddle (Black base)	28.75	2.00
BY-2	Keyer Paddle (Chrome base)	37.75	2.00
BY-3	Keyer Paddle (Gold plated)	92.00	2.00
ZA-1	Balun 3.5-30 MHz for dipoles	12.95	1.00
ZA-2	Balun 14-30 MHz for beam antennas	13.80	1.00

COLLINS EQUIPMENT

KWM-380	Amateur HF Transceiver	1897.50	10.00
KWM-380 OPTIONS			
AC-3801	Noise Blanking	124.20	5.00
AC-3802	Speech Processor		
AC-3803	Control Interface	86.25	2.00
AC-3810	CW Filter 500 HZ	62.10	1.00
AC-3811	CW Filter 250 HZ	62.10	1.00
AC-3812	RTTY Filter 1.7 kHz	62.10	1.00
AC-3813	AM Filter 6 kHz	62.10	1.00
KWM-380 ACCESSORIES			
AC-2801	Rack Mount	86.25	2.00
AC-2808	Blower Kit	124.20	2.00
AC-2821	DC Standby Power Cable	34.50	2.00
MM-280	Handheld Microphone	23.00	2.00
MM-281	Handheld Noise cancelling Mic.	28.75	2.00
SM-280	Desk Top Microphone	48.30	2.00
SM-281	Desk Top Noise cancelling Mic.	54.05	2.00
AC-2827	CW Key	18.40	2.00
AC-2828	Microphone Foot Switch	23.00	2.00
AC-2829	Headphones	41.40	2.00
AC-2830	Lightweight Headphones	23.00	2.00
KWM-380 BOOKS			
NTN	Owners Manual	4.00	1.00
NTN	Service Manual	20.00	2.00

HAL COMMUNICATIONS

		inc. vat	carr.
DS-2000	KSR	322.00	5.00
	Optional Morse for DS-2000	98.90	5.00
	KSR version 3 X	920.90	5.00
DS-3000	KSR version 2 X	675.00	5.00
DS-3100	ASR super deluxe	1536.40	5.00
ST-6000	Demod. Keyer Scope	414.00	5.00
ST-5000	Demod. Keyer	207.00	5.00
RVD-1005	V D U Baudot	230.00	5.00
DKB-2010	Demod. keyboard with memory	253.00	5.00
TEN-TEC EQUIPMENT			
515	Argonaut. 5w. SSB/CW. 3.5-30 MHz	276.00	5.00
540	Triton IV 200w SSB/CW. 3.5-30 MHz	437.00	5.00
544	Triton IV as above with Digital readout	545.25	5.00
545	Omnii-A. Analog. Series B. SSB/CW. 1.8-30 MHz	598.00	5.00
546	Omnii-D. Dig. Series B. SSB/CW. 1.8-30 MHz	701.50	5.00
570E	Century 21. CW only. 3.5-29 MHz	230.00	5.00
574E	Century 21. Dig. 70w. CW. 3.5-29 MHz	299.00	5.00
580	Delta Digital. 200w. SSB/CW. 9 Bands	552.00	5.00
POWER SUPPLIES			
210/E	115/230 vac. 13vdc. 1A. for Argonaut	27.60	2.00
252MO/E	115/230 vac. 13vdc. 18A. for Omni	89.70	5.00
262M/E	230 vac. 13vdc. 18A. deluxe with VOX (Triton)	101.20	5.00
280	230 vac. for Delta tcvr	92.00	5.00
ACCESSORIES			
206A	Crystal Calibrator	18.86	2.00
208A	CW Filter for Argonaut	29.90	2.00
212	29.0-29.5 Crystal for Models 540/544	3.45	0.50
213	29.5-30 MHz Crystal for models 540/544	3.45	0.50
215P	Microphone. ceramic, with plug	18.40	2.00
217	500Hz 8pole Ladder Filter	36.80	1.00
218	1.8 kHz 8pole Ladder Filter	36.80	1.00
240	160m Converter for Models 540/544	69.00	2.00
241	Crystal Oscillator for Models 540/544	23.00	1.00
242	Remote V.F.O. for Models 540/544	112.70	5.00
243	Remote V.F.O. for Models 545/546	87.40	5.00
244	Dig. Display/Counter for Models 540/544	124.20	5.00
245	CW Filter for Models 540/544	17.25	2.00
247	Antenna Tuner	43.70	2.00
248	Noise Blanking for Models 545/546	32.30	1.00
249	Noise Blanking for Models 540/544	18.40	1.00
276	Crystal Calibrator for Model 570E	18.86	1.00
277	Ant. tuner/VSWR Bridge for Century 21	57.50	2.00
1140	DC Circuit Breaker for 540/544/545/546	5.75	1.00
1170	DC Circuit Breaker for Century 21	5.75	1.00
KEYERS			
645	Ultramatic. dual paddle for 545/546	55.20	2.00
670	Single paddle keyer for 570/574	18.86	2.00
KR-5A	Single paddle keyer 6-14 vdc	25.30	2.00
KR-50	Ultramatic. dual paddle. 117 vac/6-14 vdc	69.00	2.00
AVANTI ANTENNAS			
AH151-3G	2m on-glass mount antenna	19.78	5.00
AH150-3M	2m magnetic mount antenna (3dB)	24.95	5.00
AH450-5G	17cm on-glass mount antenna	21.85	5.00
AH450-3G	17cm on-glass mount antenna (3dB)	19.78	5.00
AH28-98	10m dual polarity base antenna	79.35	5.00
AV-200	27 MHz on-glass mount antenna	17.25	2.00
AV-241	27 MHz magnetic mount antenna	25.30	5.00
VIBROPLEX			
	Super deluxe	89.70	2.00
	Deluxe	59.80	2.00
	Standard	46.00	2.00
	Lightning	59.80	2.00
	Deluxe	46.00	2.00
	Champion	43.70	2.00
	Vibro-Keyer	59.80	2.00
	Vibro-Keyer	46.00	2.00
BEARCAT SCANNING RECEIVERS			
BC-210		184.00	5.00
BC-220		258.75	5.00
BC-250		258.75	5.00
TELEX COMMUNICATIONS INC.			
HFC-91	Underchin headphones	6.21	1.00
HMC-2	Underchin headphones	9.20	1.00
HTC-2	Twin Receiver headphones	14.72	1.00
BOOM MICROPHONE HEADSETS			
CM-610	3.2-20 ohms. high impedance mic.	29.90	2.00
CM-1210	3.2-20 ohms. high impedance mic.	39.10	2.00
CM-1320	3.2-20 ohms. high impedance mic.	48.30	2.00
CM-1320S	3.2-20 ohms. Single headphone	36.80	2.00
DUAL MUFF HEADPHONES			
C-610	Dual Receiver magnetic	6.90	2.00

		<i>inc. vat</i>	<i>carr.</i>			<i>inc. vat</i>	<i>carr.</i>
SWL-610	Dual Receiver magnetic	8.28	2.00	CS-1575	Dual trace 4ch. audio scope	270.25	5.00
C-1210	Dynamic, foam-padded	18.86	2.00	CO-1303D	Sgl. trace 5MHz service/student scope	109.25	5.00
C-1320	3.2-20ohms. TELEX'S BEST	26.22	2.00	DM-800	Dip resonance meter 700kHz-250MHz	51.75	1.00
MICROPHONES (battery powered)				AG-203	Sine/square generator, 10Hz-1MHz	120.75	5.00
PROCDOM 1	High Output	11.96	2.00	AG-402	Sine/square generator, 20Hz-200kHz	65.55	5.00
PROCDOM 11	Variable gain	17.95	2.00	SG-402	Matching RF generator, 100kHz-30MHz	52.90	5.00
CB-73R	Dynamic, noise-cancelling	23.92	2.00	DL-705	Digital multimeter	80.50	5.00
CB-73S	as above with 6-wire lead	25.30	2.00	FC-756	Frequency counter, 10Hz-500MHz	258.75	5.00

ADVANCED ELECTRONIC APPLICATIONS

MM-1	Morsematic Special Keyer	124.20	2.00	TS-820	160-10m Transceiver, 200w P.E.P.	669.30	5.00
MK-1	Keyer	49.45	1.00	DG-1	Digital readout to 100Hz	121.90	1.50
ISO-144	2m Antenna	34.50	2.00	SP-820	Speaker	37.95	1.50

HUSTLER ANTENNAS

MO-1	Foldover Mast (fold is 15 inches above base)	13.80	5.00	VFO-820	External V.F.O.	118.45	5.00
MO-2	Foldover Mast (fold is 27 inches above base)	13.80	5.00	YG-88C	CW Filter, 8pole	36.80	0.50
BM-1	Bumper Mount	10.35	2.00	TS-520SE	160-10m Transceiver, 200w P.E.P.	437.00	5.00
C-32	Ball Mount	5.29	2.00	DG-5	Digital readout and freq. counter	103.50	1.50
C-29	Stainless steel Spring	8.05	2.00	SP-520	Speaker	17.25	1.50
RM-10	10m Resonator	6.90	2.00	VFO-520S	External V.F.O.	98.90	5.00
RM-15	15m Resonator	8.05	2.00	VG-3395C	CW Filter, 8pole	37.95	0.50
RM-20	20m Resonator	9.20	2.00	DK-520	Conversion Kit to fit DG-5 to older TS-520	19.95	1.00
RM-40	40m Resonator	11.50	5.00	AT-200	160-10m Antenna Tuner, 200w	82.90	1.50
RM-80	80m Resonator	13.80	5.00	SM-220	Station Monitor scope	197.80	5.00
SF-2	2m S/B whip	9.20	5.00	BS-8	TS-820 scan board for SM-220	48.30	0.50
RM-10S	High Power 10m Resonator	9.20	2.00	BS-5	TS-520 scan board for SM-220	48.30	0.50
RM-15S	High Power 15m Resonator	10.35	2.00	R-820	Amateur Band Receiver	690.00	5.00
RM-20S	High Power 20m Resonator	11.50	2.00	YG-455C	CW Filter, 500Hz	58.65	0.50
RM-40S	High Power 40m Resonator	13.80	5.00	YG-455CN	CW Filter, 250Hz	60.95	0.50
RM-80S	High Power 80m Resonator	18.40	5.00	YG-88A	AM Filter, 6kHz	34.50	0.50
4-BTV	10-40m Vertical	69.00	5.00	TS-180S	160-10m solid state Transceiver, 200w P.E.P.	589.95	5.00
5-BTV	10-80m Vertical	87.40	5.00	TS-1805	As above but with Digital frequency memories	679.65	5.00
DCX	Discone VHF/UHF 40 700MHz	13.80	5.00	VFO-180	External V.F.O.	96.60	2.00
DCL	Discone VHF/UHF 40 700MHz (with 50ft. coax)	20.70	5.00	SP-180	Speaker	36.80	2.00
QD-1	Quick Disconnect	10.35	1.00	DF-180	Digital frequency control	104.65	1.00
5105	Top section of QD-1	8.05	1.00	AT-180	160-10m Antenna Tuner	95.45	5.00
HLM	Trunk lip Mount	12.65	2.00	PS-30	Mains Power Unit for TS-180	85.10	5.00
CG-144	2m Colinear	23.00	5.00	TS-120S	80-10m mobile Transceiver	432.40	5.00
CG-144A	2m Colinear with Mount	29.90	5.00	MB-100	80-10m mobile Transceiver, 20w P.E.P.	347.30	5.00
G8-144A	2m Colinear for Base Station use	52.90	5.00	YK-88C	Mobile mounting bracket	17.25	1.00
G7-144	2m Colinear for Base Station use (70dB)	73.60	5.00	SP-120	CW Filter, 500Hz for TS-120S or TS-120V	28.75	0.50

ASTATIC MICROPHONES

T-UG9-D104	Golden Eagle	71.30	2.00	VFO-120	External V.F.O.	89.70	5.00
T-UPG-D104	Silver Eagle	50.06	2.00	AT-120	100w Antenna Tuner	55.20	2.00
UG8-D104	Crystal D104	32.20	2.00	PS-20	AC Power Supply for TS-120V	44.85	5.00
T-UG9-D104	D104 with amplifier and grip to talk	41.40	2.00	PS-30	AC Power Supply for TS-120S	85.10	5.00
T-UP9-D104	D104 with amplifier and p.t.t.	41.40	2.00	TL-120	80-10m 200w P.E.P. Linear for TS-120V	128.80	5.00
525-DL6	Hand microphone, Dynamic, 400ohms	12.42	2.00	TL-922	160-10m Linear Amp, 2kW. <i>Tubes included</i>	672.75	5.00
400	Hand microphone, Dynamic, BUCKEYE	5.75	2.00	MC-50	Desk Microphone dual impedance	24.15	2.00
565-M6	Hand microphone, FET amp, MARINER	32.20	2.00	MC-35S	Handheld Microphone, 50K	13.80	1.00
D104-M	Hand microphone, FET amp, 4 wire	24.15	2.00	MC-30S	Handheld Microphone, 500ohm	13.80	1.00
D104-M6	Hand microphone, FET amp, 6 wire	28.75	2.00	LF-30A	HF Low Pass Filter, 1kW	18.40	1.00
565	Hand mic. noise-cancelling, 4 wire	21.85	2.00	BPF-2A	2m Bandpass Filter, 144-146MHz 50wrms	21.35	1.50
567	Hand mic. noise-cancelling, 6 wire	26.45	2.00	RD-300	High Power Dummy Load	48.30	2.00
531	Hand microphone, High impedance	8.05	2.00	TS-770E	2m-70cm all mode Transceiver	763.60	5.00
539	Hand microphone, Noise-cancelling	8.05	2.00	SP-70	Matching Speaker	18.40	2.00
1104-C	Desk Microphone, FET amp	36.80	2.00	TR-9000	2m synthesised multi-mode mobile tcvr	345.00	5.00

TRIO OSCILLOSCOPES

CS-1830	Dual trace 30MHz B.W. with delayed sweep	523.25	5.00	BO-9	Base plinth for TR-9000	32.20	5.00
CS-1577	Dual trace 30MHz with signal delay	471.50	5.00	TR-7600	2m synthesised mobile fixed tcvr	220.00	5.00
CS-1572	New dual trace 30MHz scope for VTR servicing	488.75	5.00	RM-76	Microprocessor control unit	60.95	1.50
CS-1566	Dual trace 20MHz	339.25	5.00	TR-2300	2m FM portable tcvr, PLL with all 80ch	5.00	
CS-1560A	Dual trace 15MHz 10mV/cm on X and Y	316.25	5.00	VB-2300	10w booster	49.45	2.00
CS-1562A	Dual trace 10MHz auto run and trigger TB	261.06	5.00	MB-2	Mobile mount	17.25	1.00
CS-1352	Dual trace 15MHz portable, mains:12v	362.26	5.00	RA-1	Helical rubber antenna	166.75	0.50

The above scopes are complete with probes

BARCLAYCARD

DRAKE ★ SALES ★ SERVICE



RADIO SHACK LTD.

188 BROADHURST GARDENS, LONDON NW6 3AY

Giro Account No. 588 7151

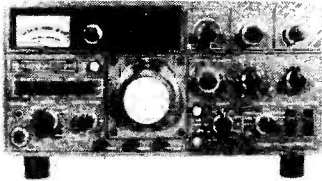
Telephone: 01-624 7174

Cables: Radio Shack, NW6

Telex: 23718

STEPHENS-JAMES LTD.

47 WARRINGTON ROAD, LEIGH, LANCs. WN7 3EA **G3MCN**
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

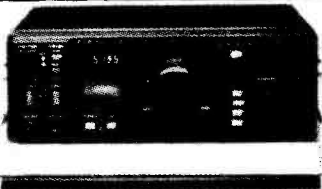


TR2300

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, 6 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
MBM48/70cms, Multibeam	£28.18
MBM88/70cms, Multibeam	£37.49
TAS 1/2m, Whip mobile	£15.30
C5m, Colinear	£40.02
C8/70cm, Colinear	£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 25 KHz steps (for mobile use) FM2 for precise 100 Hz 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	£668.30
VFO820	£118.45
DSIA 12v, DC inverter	£42.93
SP820 Speaker	£37.95
SM220 Monitorscope	£197.80
TL922 Linear Amplifier	£672.75
VFO520S	£98.80
SP520 Speaker	£17.25
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
TR2300 2m, Portable Transceiver	£166.75
TS520SE HF Transceiver	£437.00
TR2400 Hand held 2m Transceiver	£210.45
TS120S200 watt Transceiver	£432.40
TL120 Linear Amplifier	£128.80
H55 Headphones	£21.85
H54 Headphones	£10.35
MC50 Desk Microphones	£24.15
MC30S Hand Microphone 50K	£13.80
DM800 G.D.O. Wavemeter	£51.75

Crystals and accessories in stock

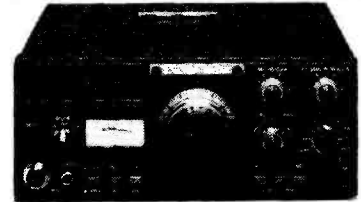


TR7800

Continuing TRIO's policy of presenting the Radio Amateur with the finest equipment available, we are pleased to announce the NEW TR7800 2m FM Mobile Transceiver. 15 memory channels - Priority channels with simplex \pm 600 KHz or non-standard operation - "Priority alert" beeps when signal on M14 priority channel. Frequency coverage 144.00, 145.955 in switchable 5 KHz or 25 KHz steps. Front keyboard for selecting frequencies, programming memories and control scan function. ALL THIS and MORE for £268.50.

NEW ANTENNA MODELS

H.S. HFS Vertical 10-80m	£41.40
HFR, Ground Plane Kit	£23.00
GDX 2 Discone Antenna 50-460 MHz	£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 10watts PEP	£347.30
TS 120S 200watts 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 144-146 MHz 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	£199.00
Phillips FM321 70cms FM Transceiver	£264.00
Yaesu FRG7 Receiver	£214.00
Yaesu FRG7000 Receiver	£375.00
FDK TM563 Scanning 2m Receiver	£109.00
'SkyACE' Hand held Aircraft Band Receiver	£49.50
Bearcat 220 Scanning Receiver	£258.75

SECONDHAND 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 & BARCLAYCARD facilities. Instant HP service Licensed Credit Broker - quotations upon request

Try our new "Overnite" service for £5.00. Guaranteed 24 hour service if order placed before 11 a.m. (except North GM).

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, 5 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	CABLE
DR7500X £98.04	UR43 24p metre
DR7500R £107.98	UR67 80p
ART300C £97.50	300 ohm Ribbon
Sky King SU200. £40.40	12p metre
Sky King SU400. £75.00	75 ohm low loss. 24p
DR7600X £135.00	
SRX-30	
Solid State Receiver 550kHz-30MHz	£158.00

Mobile Antenna Range	
5/8th Whip PL259 fitting	£6.50
Magnetic Mount PL259 fitting	£8.50
7/8th Whip	£11.00
Basemount and lead	£3.00
Gutter mounts	£3.50
Bantex Magnetic mounts	£12.59
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 0.500 MHz	£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
T345M Thru Line Wattmeter 140-435 MHz	£34.45
DL50 50 watt 50 ohm Dummy Load	£7.50
DL-1000 1kW Dummy Load 50 ohm	£37.95
Morse Keys Lightweight	£3.25
Oscerblock SWR200B Twin Meter	£40.19
HyMound HK708	£10.50
Katsumi EK 150 Electronic Keyer	£79.00
Benchner IAMBIC keying paddle	Black £28.75 Chrome £37.95
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
Full Range of Insulators — plus Valves — etc.	

Mini Products	
C4X 3 band Vertical	£48.00
HQ1 Mini Beam	£96.00
Hy Gain	
12AVQ 3band Vertical	£43.12
14AVT/WB 4 band Vertical	£60.37
18AVT/WB 5 band Vertical	£87.40
Diawa 144 Mhz and 70 cms Antennas in stock	

R517 Hand Held Tunable 118.144MHz plus Crystal Control on three Fixed Frequencies. **UNDER £50 inc. VAT**



£258.75

BEARCAT 220 FB
Specifications.
Frequency range:
66 - 88 MHz
118 - 136 MHz
144 - 148 MHz
148 - 174 MHz
420 - 450 MHz
450 - 470 MHz
470 - 512 MHz

Low Band Mobile	
Aircraft	118 - 136 MHz
Amateur Band	144 - 148 MHz
Public Service & Marine	148 - 174 MHz
UHF Amateur	420 - 450 MHz
UHF Band	450 - 470 MHz
UHF Band	470 - 512 MHz
STANDARD	
C8800 2M FM Mobile Transceiver	£252.00
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

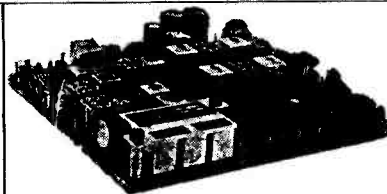
DRAKE

TR7 Digital Transceiver	£1035.00
PS7 Power supply	£207.00
RV7 Remote VFO	£138.00
MS7 Speaker	£29.90
R7 Digital Receiver	£989.00
Filters for TR7	£39.10
FA7 Fan for TR7	£20.70
MN7 ATU/RF Meter 250 Watts	£124.20
MN2700 ATU 2KW	£207.00
DL300 Dummy Load 300watts	£207.00
DL1000 Dummy Load 1 KW	£37.95
TV3300 Low Pass Filter	£18.40
AK75, Doublet Antenna 132" top with 470 ohm Feeder	£23.00

MICROWAVE MODULES

MMT1296/144 1296 MHz Lin/Transverter	£159.85
MMT70/144 4m Lin/Transverter	£99.00
MMA 1296 Receiver pre-amp	£25.88
MML 144/40 40 watt Linear Amplifier	£69.00
MMA 144V 2m RF Switched preamplifier	£24.90
MML 432/20 Lin Amp and Pre-amp	£69.00
MMT 144/28 2m Transverter	£90.85
MMT432/28S 70cm Transverter	£136.85
MMT432/144R 70cm Transverter	£173.65
MMT70/144 4m Transverter	£99.00
MML 144/25 2m 25 watt Linear	£48.30
MML 144/100 2m 100 watt Linear	£142.60
MMC70/28 4m Converter	£21.85
MMC 144/28LO 2m Converter	£24.15
MMC432/28S 70cm Converter	£29.90
MMC 1296/144 23cm Converter	£32.20
MMDO50/500 500 MHz freq. conter	£69.00

COMING SHORTLY
From the SHIMIZU - DENSHI group the SS-10S Solid State 10 watt mobile Transceiver. 3.5 MHz to 30 MHz with USB/LSB/CW and FM (ideal for use with VHF Transverter). Small compact — more details next month.



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

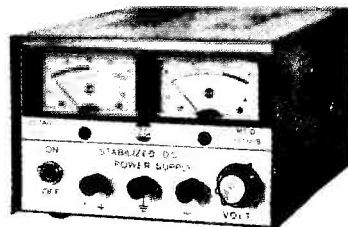
SECONDHAND EQUIPMENT

We have a very rapid change over of secondhand equipment, especially in receivers. Our lists are updated each day, please send SAE for latest or telephone. Here are a few of the items from our range. All prices include VAT.

Heathkit SB301 Rx-SB401 Tx-SB610	
Monitorscope Speaker-Microphone	£350.00
Drake TR4C HF Transceiver M54S Speaker power supply	£395.00
Eddystone EC958-9 Solid State Digital readout Receiver AM FM/CW/SSB 10kHz to 30MHz	£1,200.00
Drake TR7 Transceiver PS7	£900.00
Icom IC701 HF Solid State Transceiver with remote control unit	£800.00
Swan 100MX Transceiver + AC PSU	£450.00
Drake R4C Receiver + CW Filter	£395.00
Collins 75S3A Amateur Band Receiver	£275.00

SOLID STATE STABILISED POWER SUPPLIES

Maximum ratings quoted. Prices include postage.	
Model 122 12.6V 2.5A	£15.55
Model 125 10-15V 5amp	£28.00
Model 156S 4-15V 5amp Twin Meter	£40.00
Model 1210S 4-20V 10 amp Twin Meter	£85.00
Model 1210S 4-20V 10 amp Digital Readout	£110.00
Model 1220 1 13.5V 20 amp	£90.00
Model 1220 2 13.5V 12 amp	£80.00



Mod. 1210 S

STEPHENS-JAMES LTD.

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



WESTERN COMMUNICATIONS (Galway) LTD.

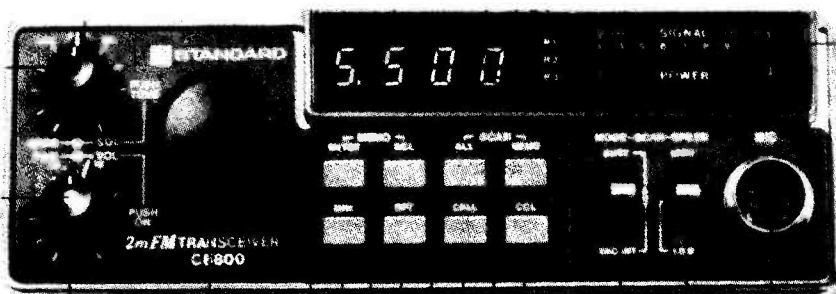
KILCOLGAN, GALWAY, IRELAND

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

U.K. Callers: 0009-86206 or 22567

Telex: 8933 MHTC EI

THIS MONTH WE SET A NEW STANDARD



The C8800 and the C7800 Transceiver.
144 - 146 MHz and FM 430 - 440 MHz.

FEATURES:

2 Speed Scanning — 15 Watts RF OUT — The sharpest receiver on the band. Each receiver adjusted at our workshops at .22 uv for a 20 DB Quieting figure. 5 memory position micro processor controlled + Memory Scan and all Scan. 3 Repeater shifts standard. Complete with **Workshop Manual**.

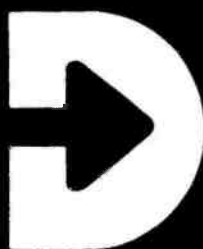
Fitting Kit — Instructions + ¼ wave on 5/8. H.M.P. Professional Antenna — your choice!
@ £258 incl. V.A.T. for C7800. This offer for orders placed this month.

Your nearest AGENT —
West, Midlands and South
for:

YAESU MUSEN; DRAKE;
BEARCAT; H.M.P.;
G. WHIP; SYT;
J. BEAM; CUSHCRAFT;
DANCOM Landmobile;
QUARTZ Crystals;
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Importers — Exporters — Factors
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ANNOUNCING THE BEARCAT 300



DATONG ELECTRONICS LIMITED

PRODUCTS FOR THE SERIOUS COMMUNICATOR

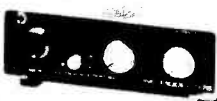
WORK MORE DX

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 D75

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



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.

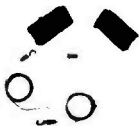
RECEIVE MORE BANDS



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.

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.

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

Science Mills, Mill Lane, Bramley, Leeds LS16 3RH, England. Telephone: (0532) 25141

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 & 25U	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											
144.480	b											
144.800	c											
144.850	c											
145.000/ROT	a											
145.025/R1T	a											
145.050/R2T	a											
145.075/R3T	a											
145.100/R4T	a											
145.125/R5T	a											
145.150/R6T	a											
145.175/R7T	a											
145.200/R8T	a											
145.300/S12	a											
145.350/S14	a											
145.400/S16	a											
145.425/S17	a											
145.450/S18	a											
145.475/S19	a											
145.500/S20	a											
145.525/S21	a											
145.550/S22	a											
145.575/S23	a											
145.600/R6R	a											
145.625/R1R	a											
145.650/R2R	a											
145.675/R3R	a											
145.700/R4R	a											
145.725/R5R	a											
145.750/R6R	a											
145.775/R7R	a											
145.800/R8R	a											
145.950/S38	a											

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.

S18 and S19 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 RB0 (434.60/432.00), RB2 (434.66/433.05), RB4 (434.70/433.10), RB6 (434.75/433.15), SUB (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), Pocketone (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.

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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
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SR = Series Resonance *HC25 only

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	5	50	1.00 to 1.499 MHz	£9.00	£6.00
	6	10	1.50 to 1.999 MHz	£4.75	£4.20
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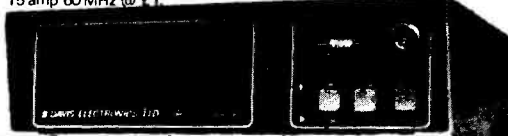
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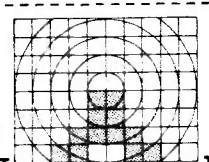
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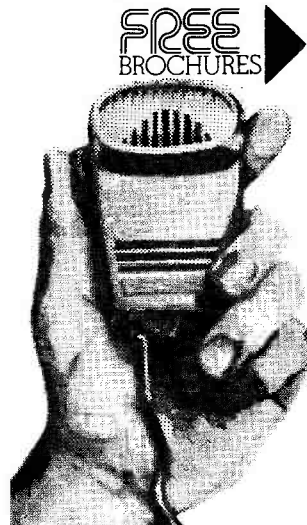
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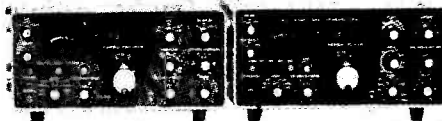
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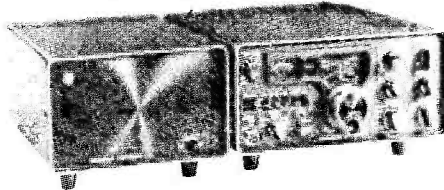
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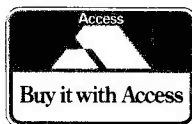
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